

2 *Data Sheets*

This section presents complete electrical specifications for Teccor's *SIDACtor* solid state overvoltage protection devices.

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See next page for acronyms.

Acronyms:	CATV	Community Antenna TV
	HFC	Hybrid Fiber Coax
	LCAS	Line Circuit Access Switch
	SIP	Single In-line Package
	SLIC	Subscriber Line Interface Circuit

DO-214AA Package Symbolization

Part Number	
Catalog	Symbolized
P0080SA	P-8A
P0080SA MC	P-8AM
P0080SB	P-8B
P0080SC	P-8C
P0080SD	P-8D
P0080SC MC	P-8CM
P0300SA	P03A
P0300SA MC	P03AM
P0300SB	P03B
P0300SC	P03C
P0300SD	P03D
P0300SC MC	P03CM
P0640SA	P06A
P0640SB	P06B
P0640SC	P06C
P0640SD	P06D
P0640SC MC	P06CM
P0641CA2	P62A
P0641SA	P61A
P0641SC	P61C
P0720SA	P07A
P0720SB	P07B
P0720SC	P07C
P0720SD	P07D
P0720SC MC	P07CM
P0721CA2	P72A
P0721SA	P71A
P0721SC	P71C
P0900SA	P09A
P0900SB	P09B
P0900SC	P09C
P0900SD	P09D
P0900SC MC	P09CM
P0901CA2	P92A
P0901SA	P91A
P0901SC	P91C
P1100SA	P11A
P1100SB	P11B
P1100SC	P11C
P1100SD	P11D
P1100SC MC	P11CM
P1101CA2	P02A

Part Number	
Catalog	Symbolized
P1101SA	P01A
P1101SC	P01C
P1200SA	P12A
P1200SB	P12B
P1200SC	P12C
P1200SD	P12D
P1200SC MC	P12CM
P1300SA	P13A
P1300SB	P13B
P1300SC	P13C
P1300SD	P13D
P1300SC MC	P13CM
P1302SA	P132A
P1402CA	P14A
P1500SA	P15A
P1500SB	P15B
P1500SC	P15C
P1500SD	P15D
P1500SC MC	P15CM
P1502SA	P152A
P1602CA	P16A
P1800SA	P18A
P1800SB	P18B
P1800SC	P18C
P1800SD	P18D
P1800SC MC	P18CM
P1802SA	P182A
P2000SA	P20A
P2000SB	P20B
P2000SC	P20C
P2000SD	P20D
P2000SC MC	P20CM
P2202CA	P22A
P2300SA	P23A
P2300SB	P23B
P2300SC	P23C
P2300SD	P23D
P2300SC MC	P23CM
P2302SA	P232A
P2500SA	P25A
P2500SB	P25B
P2500SC	P25C

Part Number	
Catalog	Symbolized
P2500SD	P25D
P2500SC MC	P25CM
P2600SA	P26A
P2600SB	P26B
P2600SC	P26C
P2600SD	P26D
P2600SC MC	P26CM
P2602SA	P262A
P2702CA	P27A
P3002CA	P30A
P3002CB	P30B
P3002SA	P30A
P3002SB	P30B
P3100SA	P31A
P3100SB	P31B
P3100SC	P31C
P3100SD	P31D
P3100SC MC	P31CM
P3500SA	P35A
P3500SB	P35B
P3500SC	P35C
P3500SD	P35D
P3500SC MC	P35CM
P3502SA	P352A
P3602CA	P36A
P4202CA	P42A
P4202SA	P422A
P4802CA	P48A
P4802SA	P482A
P6002CA	P60A
P6002CB	P60B
P6002SA	P602A
B1100CA	B10A
B1100CC	B10C
B1160CA	B16A
B1160CC	B16C
B1200CA	B12A
B1200CC	B12C
B2050CA	B25A
B2050CC	B25C

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Note: Date code is located below the symbolized part number.

SIDACtor Device



DO-214AA *SIDACtor* solid state protection devices protect telecommunications equipment such as modems, line cards, fax machines, and other CPE.

SIDACtor devices are used to enable equipment to meet various regulatory requirements including GR 1089, ITU K.20, K.21 and K.45, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68).

Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μAmps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
P0080S_	6	25	4	5	800	2.2	50	100
P0300S_	25	40	4	5	800	2.2	50	110
P0640S_	58	77	4	5	800	2.2	150	50
P0720S_	65	88	4	5	800	2.2	150	50
P0900S_	75	98	4	5	800	2.2	150	50
P1100S_	90	130	4	5	800	2.2	150	40
P1300S_	120	160	4	5	800	2.2	150	40
P1500S_	140	180	4	5	800	2.2	150	40
P1800S_	170	220	4	5	800	2.2	150	30
P2300S_	190	260	4	5	800	2.2	150	30
P2600S_	220	300	4	5	800	2.2	150	30
P3100S_	275	350	4	5	800	2.2	150	30
P3500S_	320	400	4	5	800	2.2	150	30

* For individual "SA", "SB", and "SC" surge ratings, see table below.

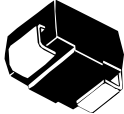
General Notes:

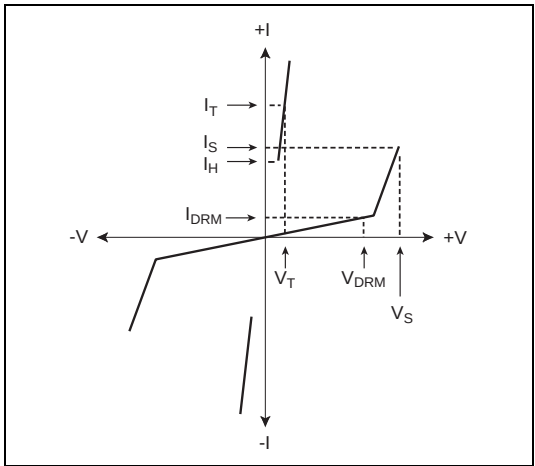
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed *SIDACtor* devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM}.
- V_S is measured at 100 V/μs.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured at 1 MHz with a 2 V bias and is a typical value for "SA" and "SB" product. "SC" capacitance is approximately 2x the listed value. The off-state capacitance of the P0080SB is equal to the "SC" device.

Surge Ratings

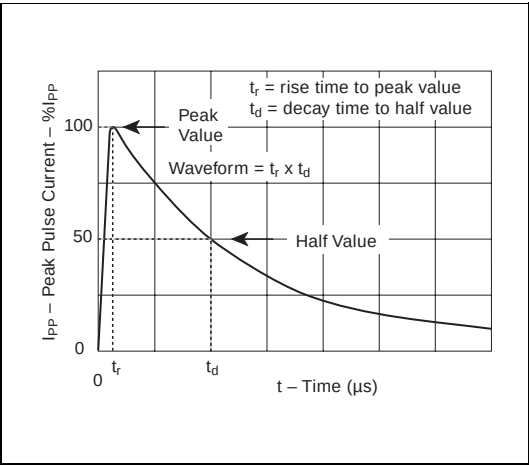
Series	I _{PP} 2x10 μs Amps	I _{PP} 8x20 μs Amps	I _{PP} 10x160 μs Amps	I _{PP} 10x560 μs Amps	I _{PP} 10x1000 μs Amps	I _{TSM} 60 Hz Amps	di/dt Amps/μs
A	150	150	90	50	45	20	500
B	250	250	150	100	80	30	500
C	500	400	200	150	100	50	500

Thermal Considerations

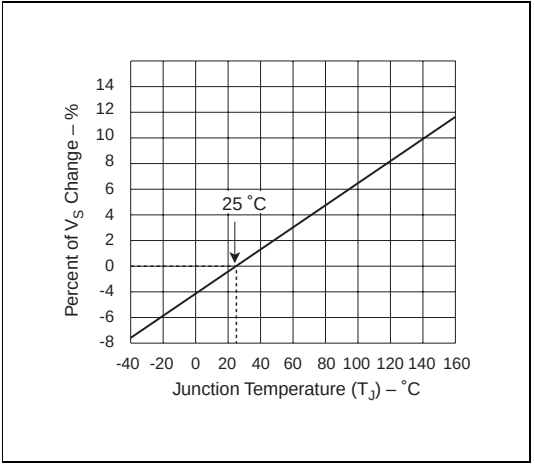
Package	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	90	°C/W



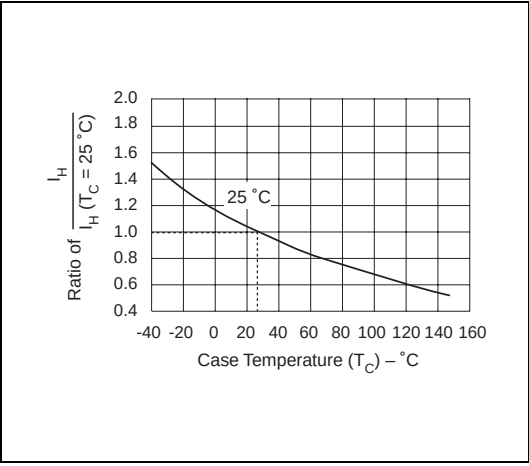
V-I Characteristics



t_r x t_d Pulse Wave-form



Normalized V_S Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature

Data Sheets

MicroCapacitance (MC) SC SIDACtor Device



The DO-214AA SC MC *SIDACtor* series is intended for applications sensitive to load values. Typically, high speed connections require a lower capacitance. C_O values for the MicroCapacitance device are 40% lower than a standard SC part.

This MC *SIDACtor* series is used to enable equipment to meet various regulatory requirements including GR 1089, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68). Contact factory regarding ITU K.20, K.21, and K.45.

Electrical Parameters

Part Number *	V_{DRM} Volts	V_S Volts	V_T Volts	I_{DRM} μ Amps	I_S mAmps	I_T Amps	I_H mAmps	C_O pF
P0080SC MC	6	25	4	5	800	2.2	50	55
P0300SC MC	25	40	4	5	800	2.2	50	35
P0640SC MC	58	77	4	5	800	2.2	150	60
P0720SC MC	65	88	4	5	800	2.2	150	60
P0900SC MC	75	98	4	5	800	2.2	150	60
P1100SC MC	90	130	4	5	800	2.2	150	50
P1300SC MC	120	160	4	5	800	2.2	150	50
P1500SC MC	140	180	4	5	800	2.2	150	50
P1800SC MC	170	220	4	5	800	2.2	150	40
P2300SC MC	190	260	4	5	800	2.2	150	40
P2600SC MC	220	300	4	5	800	2.2	150	40
P3100SC MC	275	350	4	5	800	2.2	150	40
P3500SC MC	320	400	4	5	800	2.2	150	40

* For surge ratings, see table below.

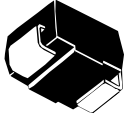
General Notes:

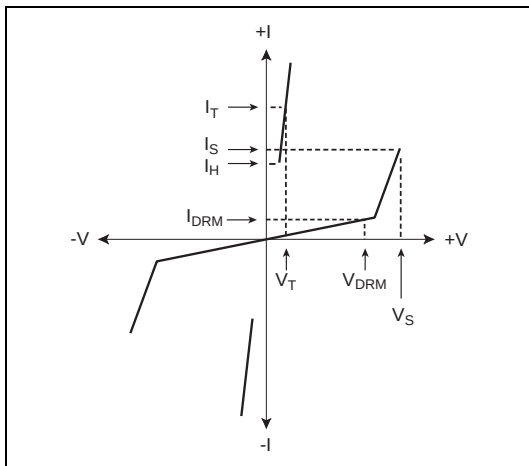
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed *SIDACtor* devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM} .
- V_S is measured at 100 V/ μ s.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured at 1 MHz with a 2 V bias.

Surge Ratings

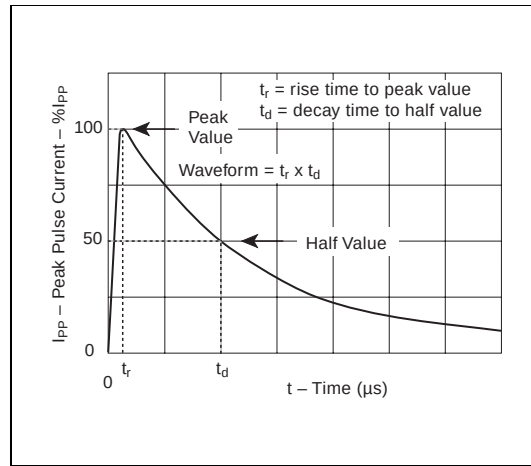
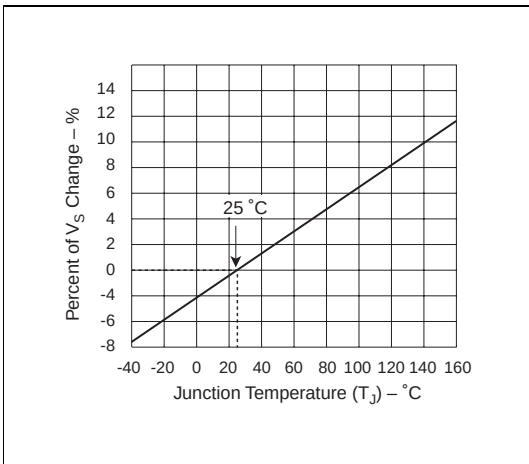
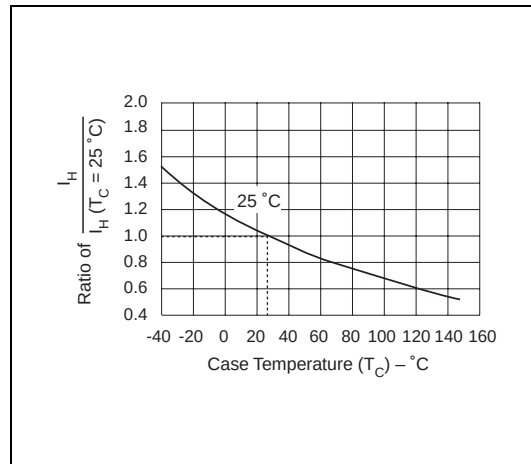
Series	I_{PP} 2x10 μ s Amps	I_{PP} 8x20 μ s Amps	I_{PP} 10x160 μ s Amps	I_{PP} 10x560 μ s Amps	I_{PP} 10x1000 μ s Amps	I_{TSM} 60 Hz Amps	di/dt Amps/ μ s
C	500	400	200	150	100	30	500

Thermal Considerations

Package	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	90	°C/W



V-I Characteristics

 $t_r \times t_d$ Pulse Wave-formNormalized V_S Change versus Junction Temperature

Normalized DC Holding Current versus Case Temperature

MicroCapacitance (MC) SA SIDACtor Device



The DO-214AA SA MC *SIDACtor* series is intended for applications sensitive to load values. Typically, high speed connections require a lower capacitance. C_O values for the MicroCapacitance device are 40% lower than a standard SA part.

This MC *SIDACtor* series is used to enable equipment to meet various regulatory requirements including GR 1089, ITU K.20, K.21, and K.45, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68).

Electrical Parameters

Part Number *	V_{DRM} Volts	V_S Volts	V_T Volts	I_{DRM} μ Amps	I_S mAmps	I_T Amps	I_H mAmps	C_O pF
P0080SA MC	6	25	4	5	800	2.2	50	45
P0300SA MC	25	40	4	5	800	2.2	50	25

* For surge ratings, see table below.

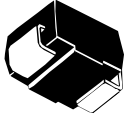
General Notes:

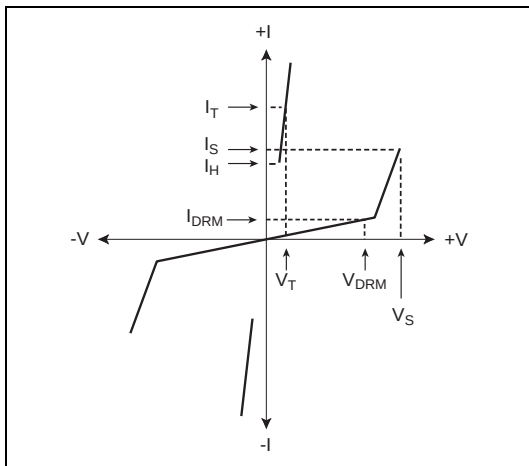
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed *SIDACtor* devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM} .
- V_S is measured at 100 V/ μ s.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured at 1 MHz with a 2 V bias.

Surge Ratings

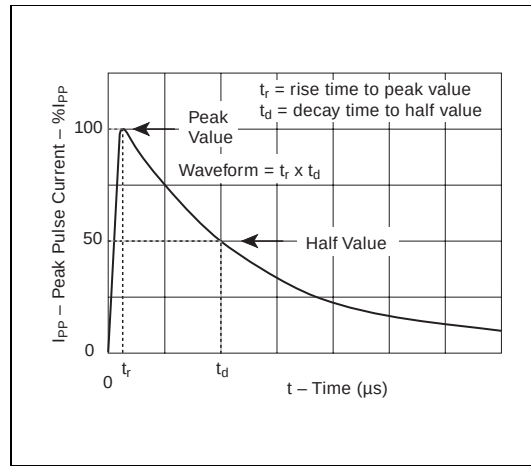
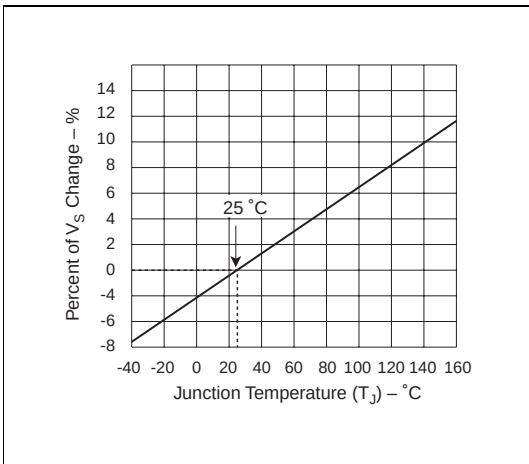
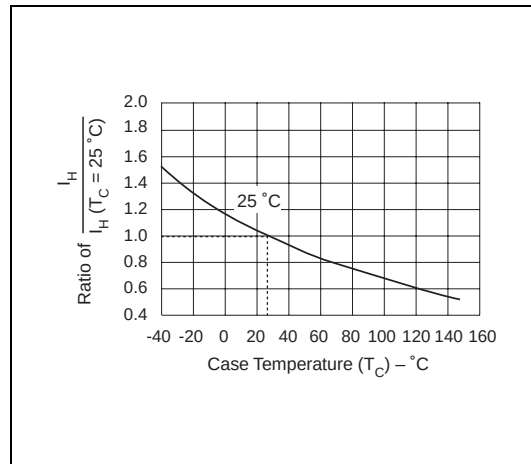
Series	I_{PP} 2x10 μ s Amps	I_{PP} 8x20 μ s Amps	I_{PP} 10x160 μ s Amps	I_{PP} 10x560 μ s Amps	I_{PP} 10x1000 μ s Amps	I_{TSM} 60 Hz Amps	di/dt Amps/ μ s
A	150	150	90	50	45	20	500

Thermal Considerations

Package	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	90	°C/W



V-I Characteristics

 $t_r \times t_d$ Pulse Wave-formNormalized V_S Change versus Junction Temperature

Normalized DC Holding Current versus Case Temperature

High Surge Current (D-rated) SIDACtor Device



DO-214AA SIDACtor solid state protection devices with a D surge rating protect telecommunications equipment such as modems, line cards, fax machines, and other CPE.

These SIDACtor devices withstand simultaneous surges incurred in GR 1089 lightning tests. (See "First Level Lightning Surge Test" on page 4-5.) Surge ratings are twice that of a device with a C surge rating. This allows a discrete surface mount version of Teccor's patented "Y" configuration. (US Patent 4,905,119)

SIDACtor devices are used to enable equipment to meet various regulatory requirements including GR 1089, ITU K.20, K.21 and K.45, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68).

Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μ Amps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
P0080SD **	6	25	4	5	800	2.2	50	200
P0300SD **	25	40	4	5	800	2.2	50	220
P0640SD **	58	77	4	5	800	2.2	50	100
P0720SD **	65	88	4	5	800	2.2	50	100
P0900SD **	75	98	4	5	800	2.2	50	100
P1100SD	90	130	4	5	800	2.2	50	80
P1300SD	120	160	4	5	800	2.2	50	80
P1500SD	140	180	4	5	800	2.2	50	80
P1800SD	170	220	4	5	800	2.2	50	60
P2300SD	190	260	4	5	800	2.2	50	60
P2600SD	220	300	4	5	800	2.2	50	60
P3100SD	275	350	4	5	800	2.2	50	60
P3500SD	320	400	4	5	800	2.2	50	60

* For surge ratings, see table below.

** Contact factory for release date.

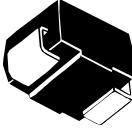
General Notes:

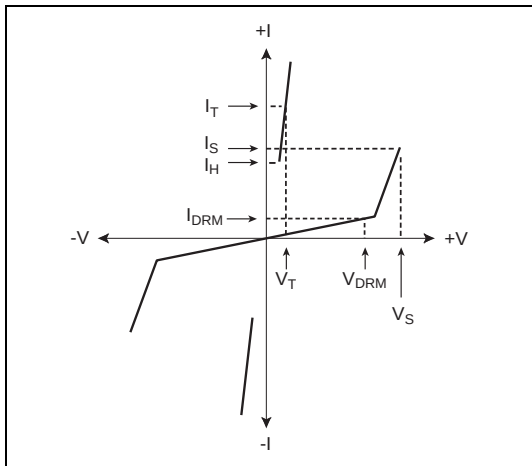
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed SIDACtor devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM}.
- V_S is measured at 100 V/ μ s.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured at 1 MHz with a 2 V bias and is a typical value.

Surge Ratings

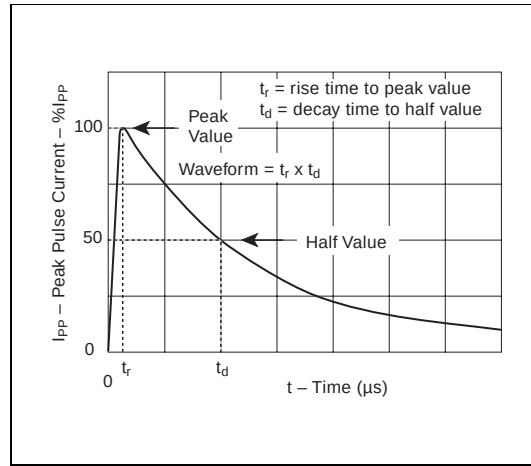
Series	I _{PP} 2x10 μ s Amps	I _{PP} 8x20 μ s Amps	I _{PP} 10x160 μ s Amps	I _{PP} 10x560 μ s Amps	I _{PP} 10x1000 μ s Amps	I _{TSM} 60 Hz Amps	di/dt Amps/ μ s
D	1000	800	400	300	200	50	1000

Thermal Considerations

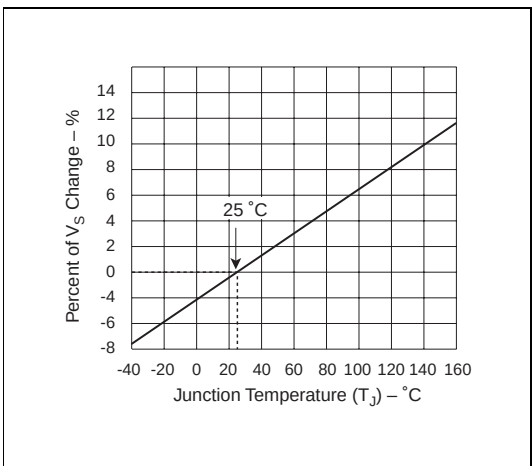
Package	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	90	°C/W



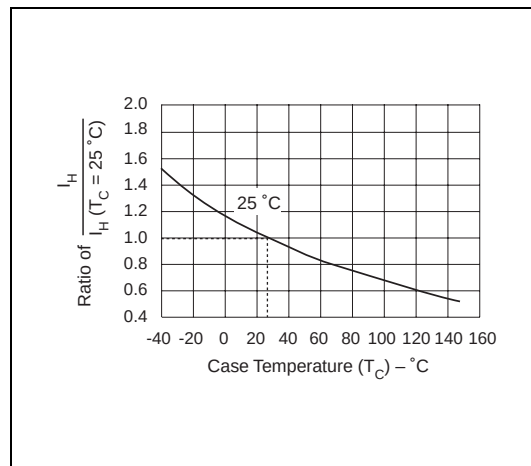
V-I Characteristics



$t_r \times t_d$ Pulse Wave-form

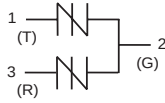


Normalized V_S Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature

Compak Two-chip SIDACtor Device



The modified DO-214AA SIDACtor device provides low-cost, longitudinal protection.

SIDACtor devices are used to enable equipment to meet various regulatory requirements including GR 1089, ITU K.20, K.21, and K.45, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68).

Electrical Parameters

Part Number	V _{DRM} Volts	V _S Volts	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μAmps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
	Pins1-2, 2-3		Pins 1-3							Pins 1-3
P1402C_	58	77	116	154	4	5	800	2.2	120	15
P1602C_	65	95	130	190	4	5	800	2.2	120	15
P2202C_	90	130	180	260	4	5	800	2.2	120	15
P2702C_	120	160	240	320	4	5	800	2.2	120	15
P3002C_	140	180	280	360	4	5	800	2.2	120	15
P3602C_	170	220	340	440	4	5	800	2.2	120	15
P4202C_	190	250	380	500	4	5	800	2.2	120	15
P4802C_	220	300	440	600	4	5	800	2.2	120	15
P6002C_	275	350	550	700	4	5	800	2.2	120	15

* For surge ratings, see table below.

General Notes:

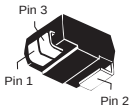
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed SIDACtor devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM}.
- V_S is measured at 100 V/μs.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured between Pins 1-3 at 1 MHz with a 2 V bias.
- UL 60950 creepage requirements must be considered.

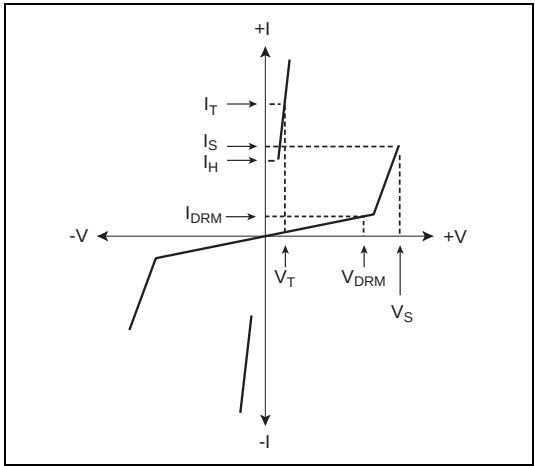
Surge Ratings

Series	I _{PP} 2x10 μs Amps	I _{PP} 8x20 μs Amps	I _{PP} 10x160 μs Amps	I _{PP} 10x560 μs Amps	I _{PP} 10x1000 μs Amps	I _{TSM} 60 Hz Amps	di/dt Amps/μs
A	150	150	90	50	45	20	500
B *	250	250	150	100	80	30	500

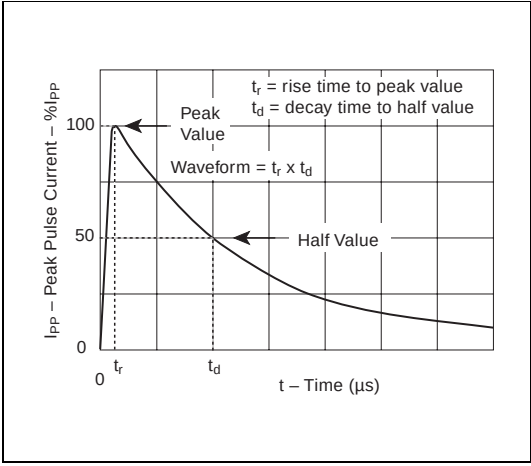
* Contact factory for release date.

Thermal Considerations

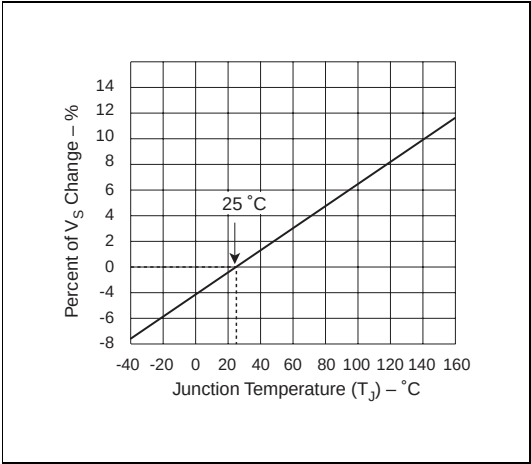
Package	Symbol	Parameter	Value	Unit
 Modified DO-214AA	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	85	°C/W



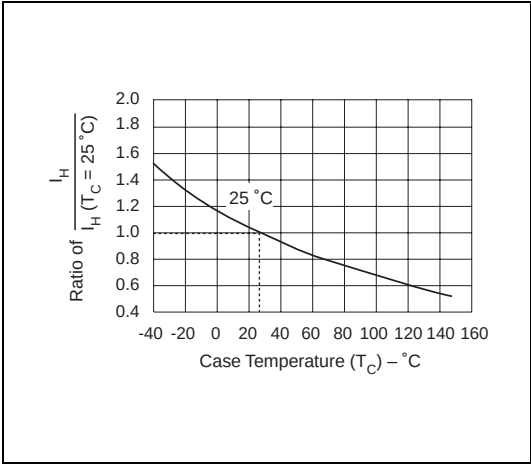
V-I Characteristics



$t_r \times t_d$ Pulse Wave-form



Normalized V_S Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature

Data Sheets

Ethernet/10BaseT/100BaseT/1000BaseT Protector



The DO-214AA *SIDACtor* Ethernet protection series is intended for applications sensitive to load values. Typically, high speed connections require a lower capacitance. C_O values are 40% lower than standard devices.

SIDACtor devices are used to enable equipment to meet various regulatory requirements including GR 1089, ITU K.20, K.21 and K.45, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68).

Electrical Parameters

Part Number *	V_{DRM} Volts	V_S Volts	V_T Volts	I_{DRM} μ Amps	I_S mAmps	I_T Amps	I_H mAmps	C_O pF
P0642S_	58	77	4	5	800	2.2	120	25
P0722S_	65	88	4	5	800	2.2	120	25
P0902S_	75	98	4	5	800	2.2	120	25
P1102S_	90	130	4	5	800	2.2	120	20
P1402S_	140	180	4	5	800	2.2	120	20
P3002S_	280	360	4	5	800	2.2	120	15
P4802S_	440	600	4	5	800	2.2	120	15

* For surge ratings, see table below.

General Notes:

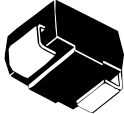
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed *SIDACtor* devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM} .
- V_S is measured at 100 V/ μ s.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured at 1 MHz with a 2 V bias.

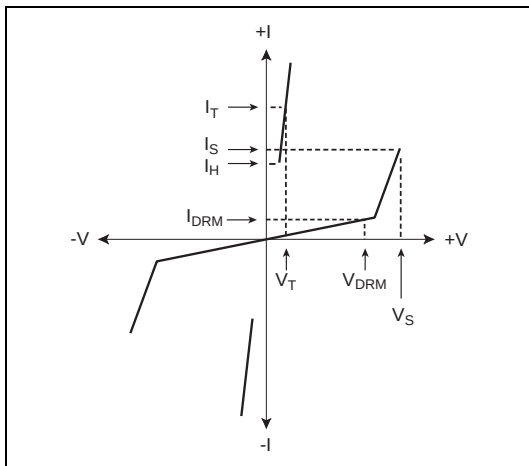
Surge Ratings

Series	I_{PP} 2x10 μ s Amps	I_{PP} 8x20 μ s Amps	I_{PP} 10x160 μ s Amps	I_{PP} 10x560 μ s Amps	I_{PP} 10x1000 μ s Amps	I_{TSM} 60 Hz Amps	di/dt Amps/ μ s
A	150	150	90	50	45	20	500
B**	250	250	150	100	80	30	500

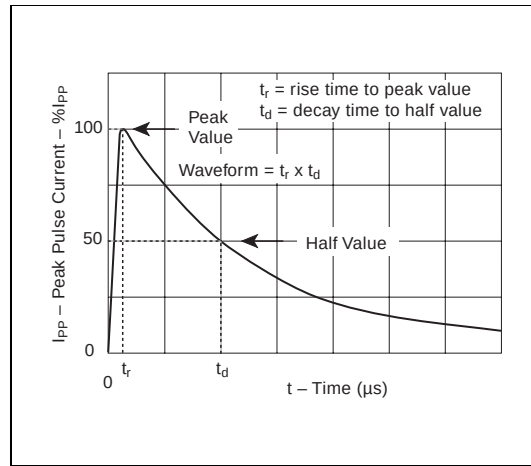
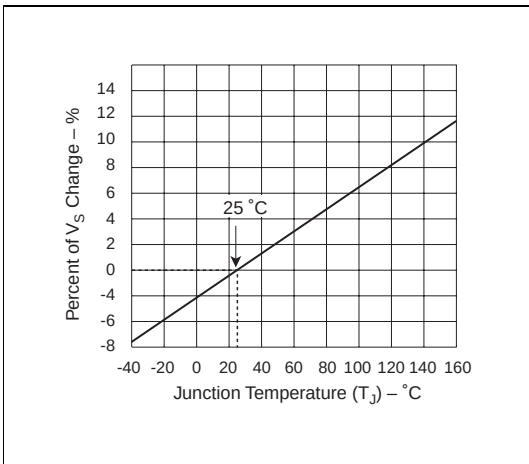
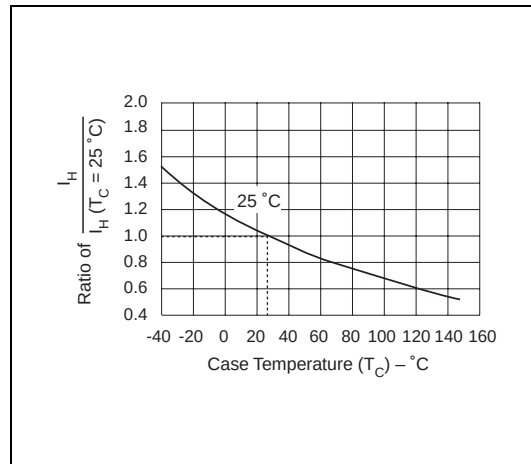
** Contact factory for release date of B-rated devices.

Thermal Considerations

Package	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	90	°C/W



V-I Characteristics

 $t_r \times t_d$ Pulse Wave-formNormalized V_S Change versus Junction Temperature

Normalized DC Holding Current versus Case Temperature

SIDACtor Device



TO-92 *SIDACtor* solid state protection devices protect telecommunications equipment such as modems, line cards, fax machines, and other CPE.

SIDACtor devices are used to enable equipment to meet various regulatory requirements including GR 1089, ITU K.20, K.21, and K.45, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68)

Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μAmps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
P0080E_	6	25	4	5	800	2.2	50	100
P0300E_	25	40	4	5	800	2.2	50	110
P0640E_	58	77	4	5	800	2.2	150	50
P0720E_	65	88	4	5	800	2.2	150	50
P0900E_	75	98	4	5	800	2.2	150	50
P1100E_	90	130	4	5	800	2.2	150	40
P1300E_	120	160	4	5	800	2.2	150	40
P1500E_	140	180	4	5	800	2.2	150	40
P1800E_	170	220	4	5	800	2.2	150	30
P2300E_	190	260	4	5	800	2.2	150	30
P2600E_	220	300	4	5	800	2.2	150	30
P3100E_	275	350	4	5	800	2.2	150	30
P3500E_	320	400	4	5	800	2.2	150	30

* For individual "EA", "EB", and "EC" surge ratings, see table below.

General Notes:

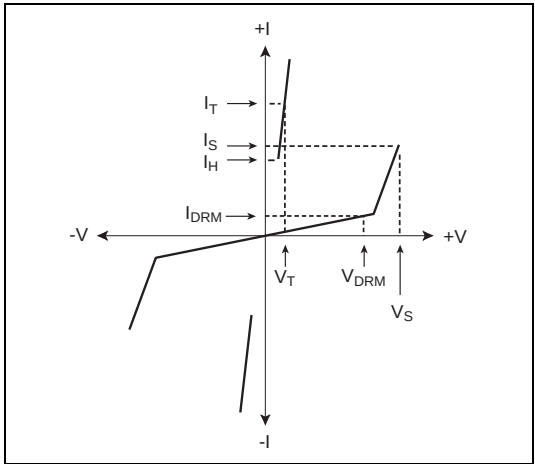
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed *SIDACtor* devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM}.
- V_S is measured at 100 V/μs.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured at 1 MHz with a 2 V bias and is a typical value for "EA" and "EB" product. "EC" capacitance is approximately 2x the listed value. The off-state capacitance of the P0080EB is equal to the "EC" device.

Surge Ratings

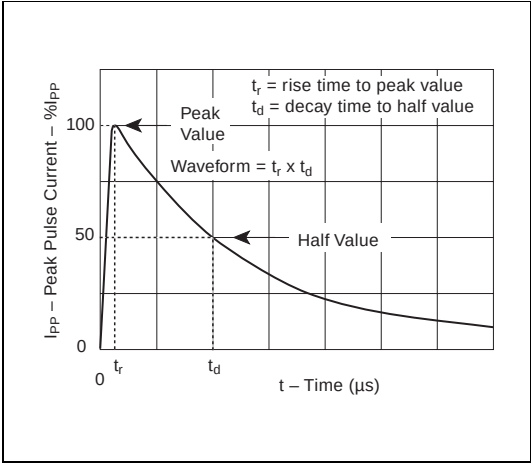
Series	I _{PP} 2x10 μs Amps	I _{PP} 8x20 μs Amps	I _{PP} 10x160 μs Amps	I _{PP} 10x560 μs Amps	I _{PP} 10x1000 μs Amps	I _{TSM} 60 Hz Amps	di/dt Amps/μs
A	150	150	90	50	45	20	500
B	250	250	150	100	80	30	500
C	500	400	200	150	100	50	500

Thermal Considerations

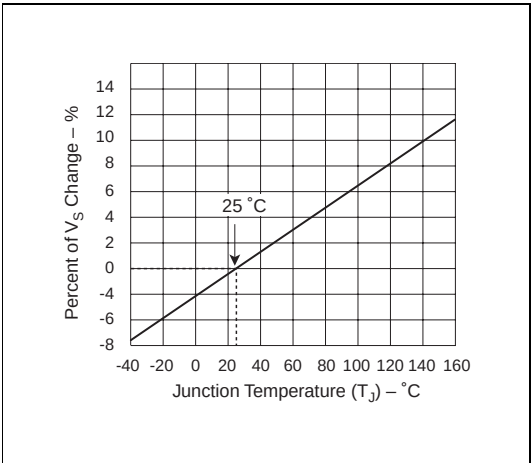
Package	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	90	°C/W



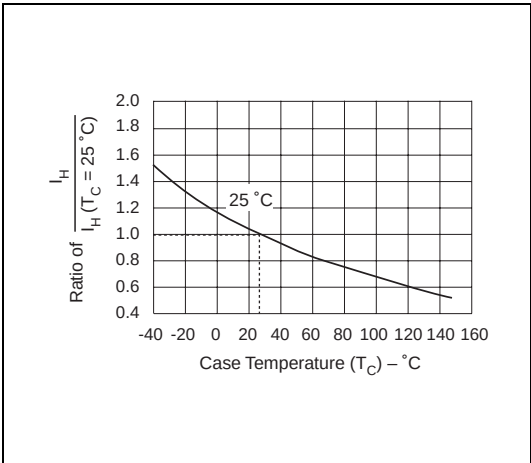
V-I Characteristics



$t_r \times t_d$ Pulse Wave-form



Normalized V_S Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature

MicroCapacitance (MC) SIDACtor Device



The TO-92 MC *SIDACtor* series is intended for applications sensitive to load values. Typically, high speed connections require a lower capacitance. C_O values for MC devices are 40% lower than a standard EC part.

This MC *SIDACtor* series is used to enable equipment to meet various regulatory requirements including GR 1089, ITU K.20, K.21, and K.45, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68) without the need of series resistors.

Electrical Parameters

Part Number *	V_{DRM} Volts	V_S Volts	V_T Volts	I_{DRM} μ Amps	I_S mAmps	I_T Amps	I_H mAmps	C_O pF
P0640EC MC	58	77	4	5	800	2.2	150	60
P1500EC MC	140	180	4	5	800	2.2	150	50
P2600EC MC	220	300	4	5	800	2.2	150	40
P3100EC MC	275	350	4	5	800	2.2	150	40

* For surge ratings, see table below.

General Notes:

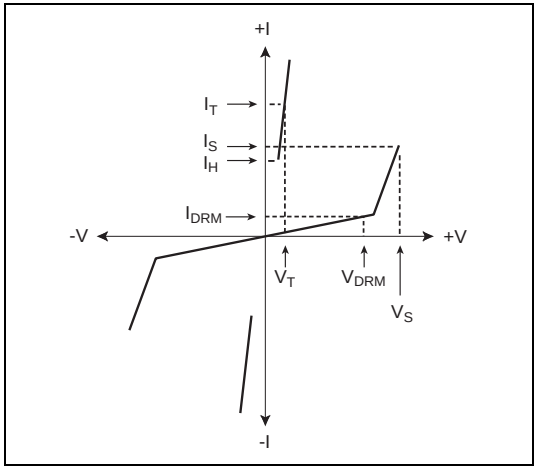
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed *SIDACtor* devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM} .
- V_S is measured at 100 V/ μ s.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured at 1 MHz with a 2 V bias.

Surge Ratings

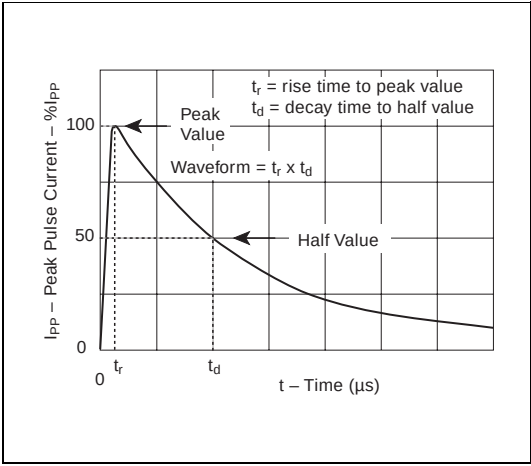
Series	I_{PP} 2x10 μ s Amps	I_{PP} 8x20 μ s Amps	I_{PP} 10x160 μ s Amps	I_{PP} 10x560 μ s Amps	I_{PP} 10x1000 μ s Amps	I_{TSM} 60 Hz Amps	di/dt Amps/ μ s
C	500	400	200	150	100	50	500

Thermal Considerations

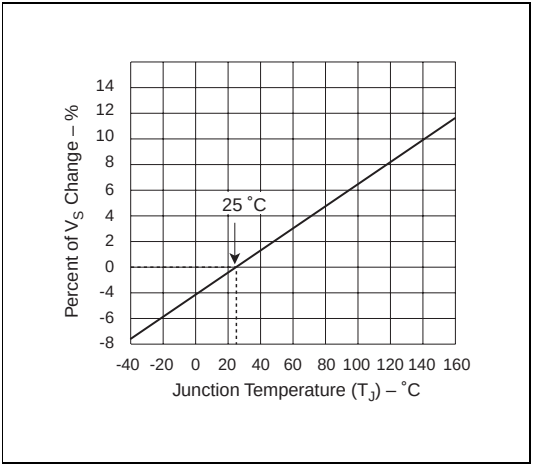
Package	Symbol	Parameter	Value	Unit
TO-92 	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	90	°C/W



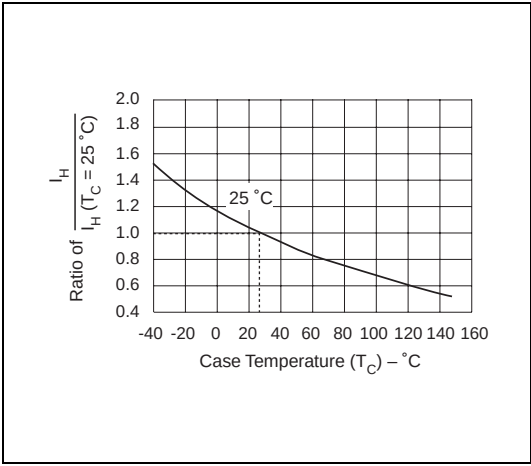
V-I Characteristics



$t_r \times t_d$ Pulse Wave-form

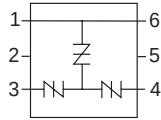


Normalized V_S Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature

Balanced Three-chip SIDACtor Device



This balanced protector is a surface mount alternative to the modified TO-220 package. Based on a six-pin surface mount SOIC package, it uses Teccor's patented "Y" (US Patent 4,905,119) configuration. It is available in surge current ratings up to 500 A.

SIDACtor devices are used to enable equipment to meet various regulatory requirements including GR 1089, ITU K.20, K.21, and K.45, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68).

Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μAmps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
	Pins 1-3, 1-4		Pins 3-4							
P1553U_	130	180	130	180	8	5	800	2.2	150	80
P1803U_	150	210	150	210	8	5	800	2.2	150	80
P2103U_	170	250	170	250	8	5	800	2.2	150	80
P2353U_	200	270	200	270	8	5	800	2.2	150	80
P2703U_	230	300	230	300	8	5	800	2.2	150	60
P3203U_	270	350	270	350	8	5	800	2.2	150	60
P3403U_	300	400	300	400	8	5	800	2.2	150	60
P5103U_	420	600	420	600	8	5	800	2.2	150	60
A2106U_3 **	170	250	50	80	8	5	800	2.2	120	80
A5030U_3 **	400	550	270	340	8	5	800	2.2	150	60

* For individual "UA", "UB", and "UC" surge ratings, see table below.

** Asymmetrical

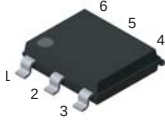
General Notes:

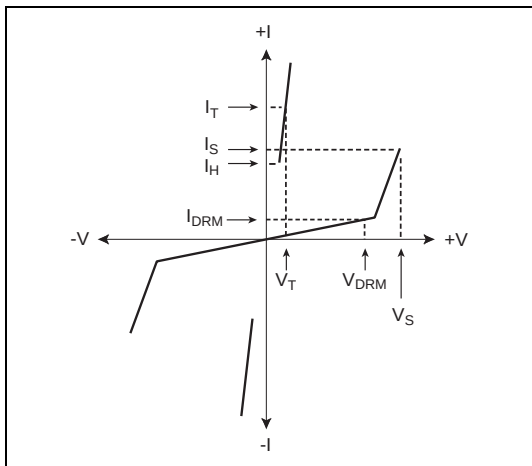
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed SIDACtor devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM}.
- V_S is measured at 100 V/μs.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured between Pins 1-3 and 1-4 at 1 MHz with a 2 V bias and is a typical value for "UA", "UB", and "UC" products.
- Device is designed to meet balance requirements of GTS 8700 and GR 974.

Surge Ratings

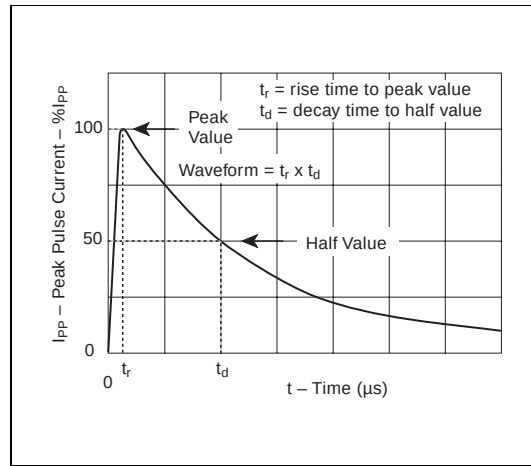
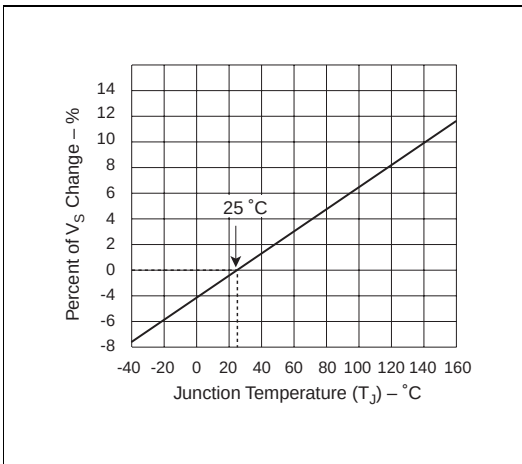
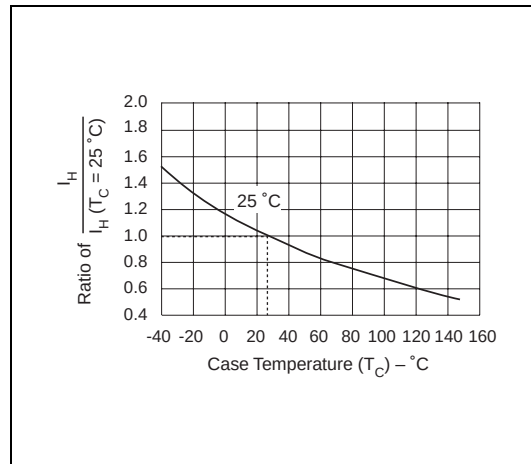
Series	I _{PP} 2x10 μs Amps	I _{PP} 8x20 μs Amps	I _{PP} 10x160 μs Amps	I _{PP} 10x560 μs Amps	I _{PP} 10x1000 μs Amps	I _{TSM} 60 Hz Amps	di/dt Amps/μs
A	150	150	90	50	45	20	500
B	250	250	150	100	80	30	500
C	500	400	200	150	100	50	500

Thermal Considerations

Package	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature Range	-40 to +125	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	60	°C/W

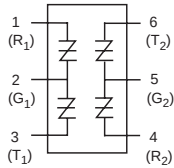


V-I Characteristics

 $t_r \times t_d$ Pulse Wave-formNormalized V_S Change versus Junction Temperature

Normalized DC Holding Current versus Case Temperature

Multiport SIDACtor Device



The multiport line protector is an integrated multichip solution for protecting multiple twisted pair from overvoltage conditions. Based on a six-pin surface mount SOIC package, it is equivalent to four discrete DO-214AA or two TO-220 packages. Available in surge current ratings up to 500 A, the multiport line protector is ideal for densely populated, high-speed line cards that cannot afford PCB inefficiencies or the use of series power resistors.

SIDACtor devices are used to enable equipment to meet various regulatory requirements including GR 1089, ITU K.20, K.21, and K.45, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68).

Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μAmps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
	Pins 1-2, 3-2, 4-5, 6-5		Pins 1-3, 4-6							
P0084U_	6	25	12	50	4	5	800	2.2	50	100
P0304U_	25	40	50	80	4	5	800	2.2	50	110
P0644U_	58	77	116	154	4	5	800	2.2	150	50
P0724U_	65	88	130	176	4	5	800	2.2	150	50
P0904U_	75	98	150	196	4	5	800	2.2	150	50
P1104U_	90	130	180	260	4	5	800	2.2	150	40
P1304U_	120	160	240	320	4	5	800	2.2	150	40
P1504U_	140	180	280	360	4	5	800	2.2	150	40
P1804U_	170	220	340	440	4	5	800	2.2	150	30
P2304U_	190	260	380	520	4	5	800	2.2	150	30
P2604U_	220	300	440	600	4	5	800	2.2	150	30
P3104U_	275	350	550	700	4	5	800	2.2	150	30
P3504U_	320	400	640	800	4	5	800	2.2	150	30

* For individual "UA", "UB", and "UC" surge ratings, see table below.

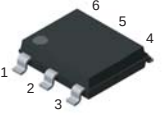
General Notes:

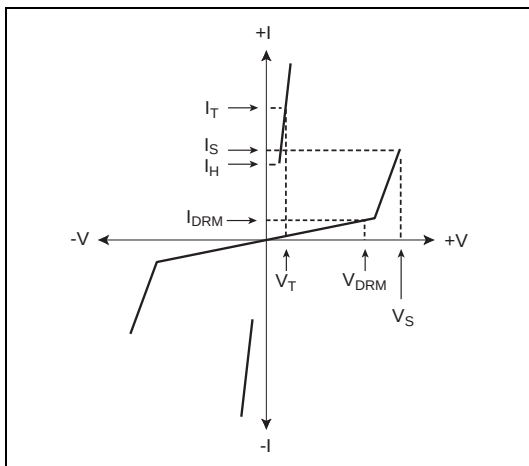
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed SIDACtor devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM}, and V_S is measured at 100 V/μs.
- Off-state capacitance is measured between Pins 1-2 and 3-2 at 1 MHz with a 2 V bias and is a typical value for "UA" product. "UB" and "UC" capacitance is approximately 2x higher.

Surge Ratings

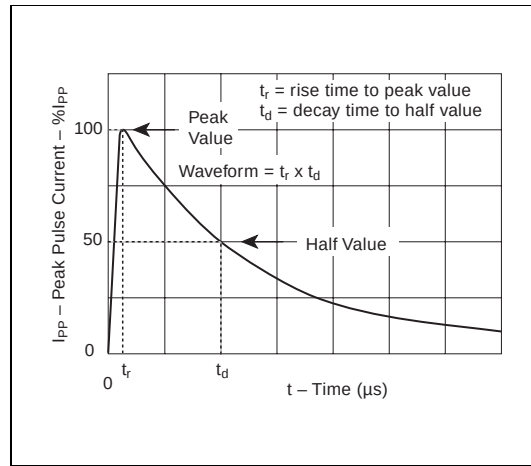
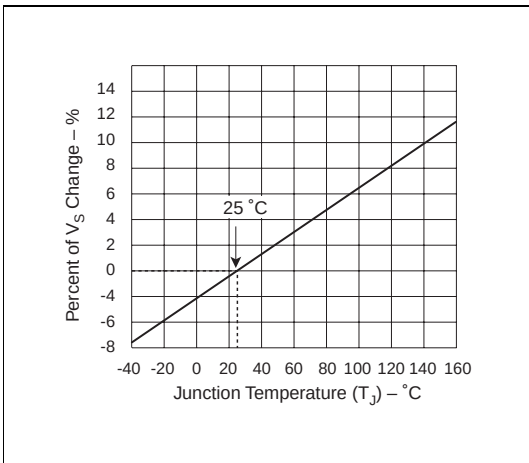
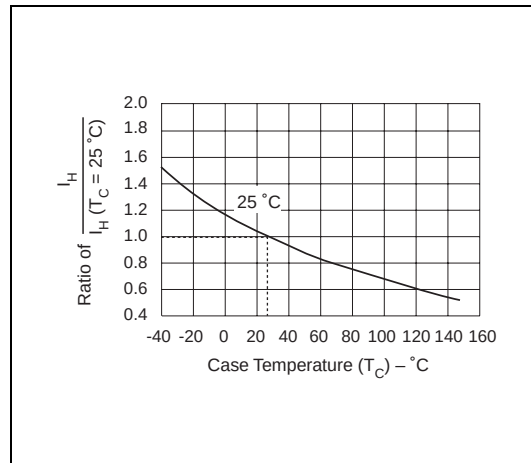
Series	I _{PP} 2x10 μs Amps	I _{PP} 8x20 μs Amps	I _{PP} 10x160 μs Amps	I _{PP} 10x560 μs Amps	I _{PP} 10x1000 μs Amps	I _{TSM} 60 Hz Amps	di/dt Amps/μs
A	150	150	90	50	45	20	500
B	250	250	150	100	80	30	500
C	500	400	200	150	100	50	500

Thermal Considerations

Package	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	60	°C/W

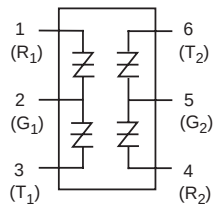


V-I Characteristics

 $t_r \times t_d$ Pulse Wave-formNormalized V_S Change versus Junction Temperature

Normalized DC Holding Current versus Case Temperature

Multiport MicroCapacitance (MC) SIDACtor Device



The multiport MC line protector is an integrated, multichip solution for protecting multiple twisted pair from overvoltage conditions. It is intended for applications sensitive to load values. Typically, high speed connections require lower capacitance. C_O values for the MC devices are 40% lower than standard UC devices

Based on a six-pin surface mount SOIC package, it is equivalent to four discrete DO-214AA or two TO-220 packages, which makes it ideal for densely populated, high-speed line cards that cannot afford PCB inefficiencies or the use of series power resistors. Surge current ratings up to 500 A are available.

SIDACtor devices are used to enable equipment to meet various regulatory requirements including GR 1089, ITU K.20, K.21, and K.45, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68).

Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μ Amps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
	Pins 1-2, 3-2, 4-5, 6-5	Pins 1-3, 4-6								
P0084UC MC	6	25	12	50	4	5	800	2.2	50	30
P0304UC MC	25	40	50	80	4	5	800	2.2	50	30
P0644UC MC	58	77	116	154	4	5	800	2.2	150	30
P0724UC MC	65	88	130	176	4	5	800	2.2	150	30
P0904UC MC	75	98	150	196	4	5	800	2.2	150	30
P1104UC MC	90	130	180	260	4	5	800	2.2	150	25
P1304UC MC	120	160	240	320	4	5	800	2.2	150	25
P1504UC MC	140	180	280	360	4	5	800	2.2	150	25
P1804UC MC	170	220	340	440	4	5	800	2.2	150	20
P2304UC MC	190	260	380	520	4	5	800	2.2	150	20
P2604UC MC	220	300	440	600	4	5	800	2.2	150	20
P3104UC MC	275	350	550	700	4	5	800	2.2	150	20
P3504UC MC	320	400	640	800	4	5	800	2.2	150	20

* For surge ratings, see table below.

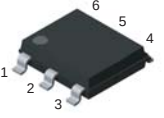
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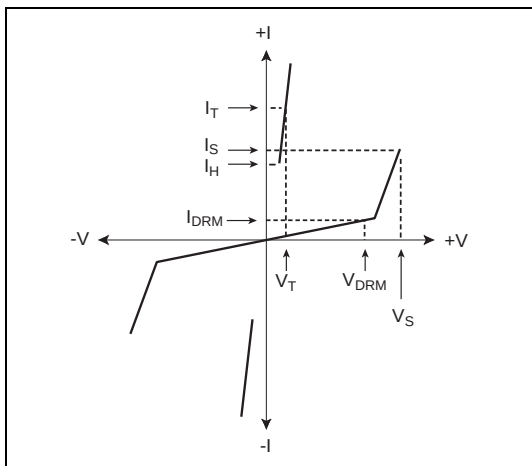
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed SIDACtor devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM} .
- V_S is measured at 100 V/ μ s.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured at 1 MHz with a 2 V bias.

Surge Ratings

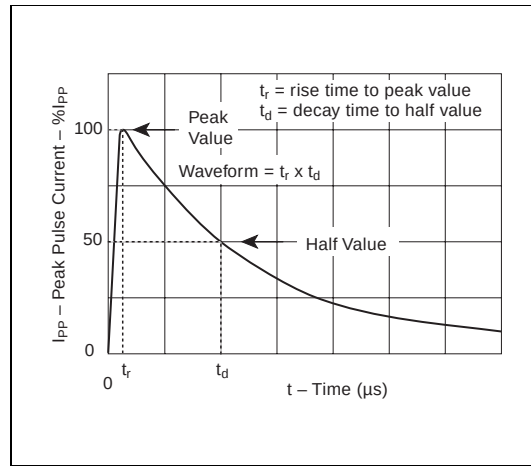
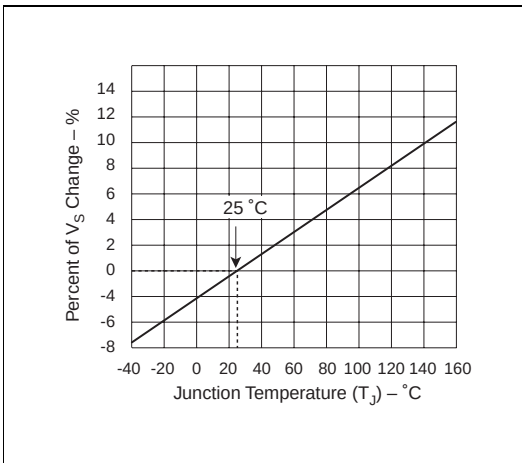
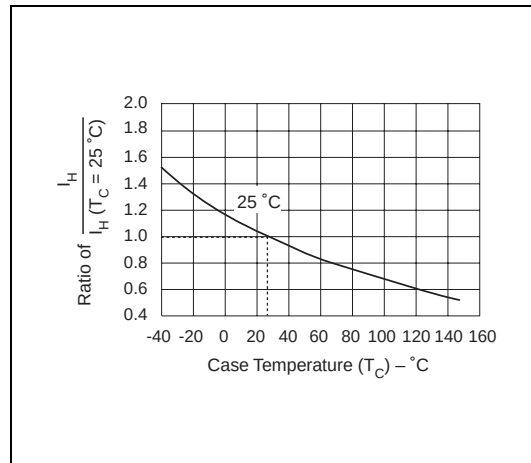
Series	I _{PP} 2x10 μ s Amps	I _{PP} 8x20 μ s Amps	I _{PP} 10x160 μ s Amps	I _{PP} 10x560 μ s Amps	I _{PP} 10x1000 μ s Amps	I _{TSM} 60 Hz Amps	di/dt Amps/ μ s
C	500	400	200	150	100	50	500

Thermal Considerations

Package	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature Range	-40 to +150	$^{\circ}\text{C}$
	T_S	Storage Temperature Range	-65 to +150	$^{\circ}\text{C}$
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	60	$^{\circ}\text{C/W}$

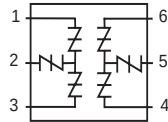


V-I Characteristics


 $t_r \times t_d$ Pulse Wave-form

Normalized V_S Change versus Junction Temperature


Normalized DC Holding Current versus Case Temperature

Multiport Balanced SIDACtor Device



This multiport balanced protector is a surface mount alternative to the modified TO-220 package. It is based on a six-pin surface mount SOIC package and uses Teccor's patented "Y" (US Patent 4,905,119) configuration. It is available in surge current ratings up to 500 A.

SIDACtor devices are used to enable equipment to meet various regulatory requirements including GR 1089, ITU K.20, K.21, and K.45, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68).

Electrical Parameters — Symmetrical

Part Number *	V _{DRM} Volts	V _S Volts	V _{DRM} Volt	V _S Volts	V _T Volts	I _{DRM} μ Amps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
	Pins 1-2, 2-3, 1-3	Pins 4-5, 5-6, 4-6	Pins 3-2, 6-5, 1-2, 4-5							
P1556U_	130	180	130	180	8	5	800	2.2	150	40
P1806U_	150	210	150	210	8	5	800	2.2	150	40
P2106U_	170	250	170	250	8	5	800	2.2	150	40
P2356U_	200	270	200	270	8	5	800	2.2	150	40
P2706U_	230	300	230	300	8	5	800	2.2	150	30
P3206U_	270	350	270	350	8	5	800	2.2	150	30
P3406U_	300	400	300	400	8	5	800	2.2	150	30
P5106U_	420	600	420	600	8	5	800	2.2	150	30

Electrical Parameters — Asymmetrical

Part Number *	V _{DRM} Volts	V _S Volts	V _{DRM} Volt	V _S Volts	V _T Volts	I _{DRM} μ Amps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
	Pins 1-2, 2-3, 4-5, 5-6	Pins 4-6, 1-3								
A2106U_6	170	250	50	80	3.5	5	800	2.2	120	40
A5030U_6	400	550	270	340	3.5	5	800	2.2	150	30

* For individual "UA", "UB", and "UC" surge ratings, see table below.

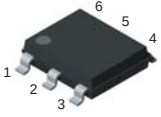
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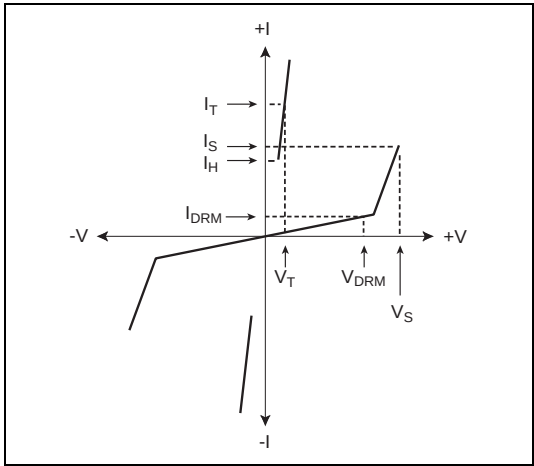
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed SIDACtor devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM}.
- V_S is measured at 100 V/ μ s.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured between Pins 1-2 and 3-2 at 1 MHz with a 2 V bias and is a typical value for "UA" product. "UB" and "UC" capacitance is approximately 10 pF higher.
- Device is designed to meet balance requirements of GTS 8700 and GR 974.

Surge Ratings

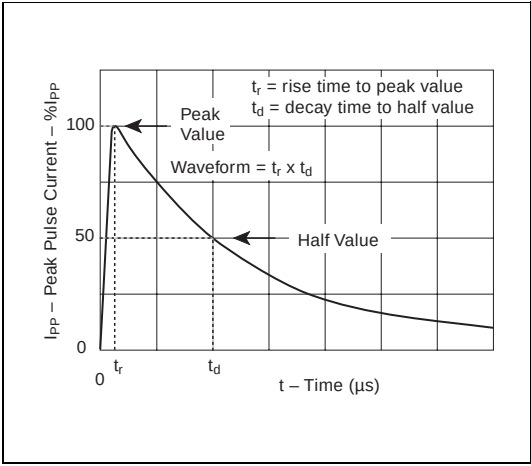
Series	I _{PP} 2x10 μ s Amps	I _{PP} 8x20 μ s Amps	I _{PP} 10x160 μ s Amps	I _{PP} 10x560 μ s Amps	I _{PP} 10x1000 μ s Amps	I _{TSM} 60 Hz Amps	di/dt Amps/ μ s
A	150	150	90	50	45	20	500
B	250	250	150	100	80	30	500
C	500	400	200	150	100	50	500

Thermal Considerations

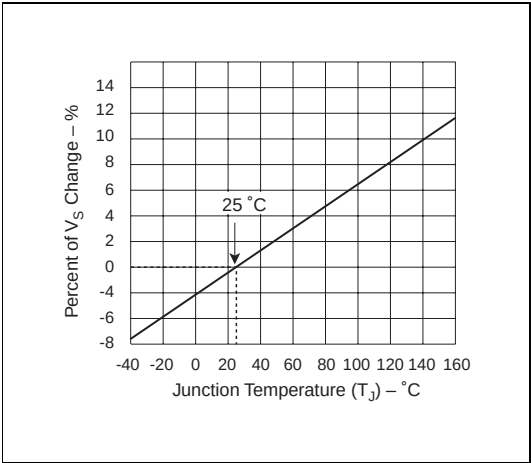
Package	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature Range	-40 to +125	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	60	°C/W



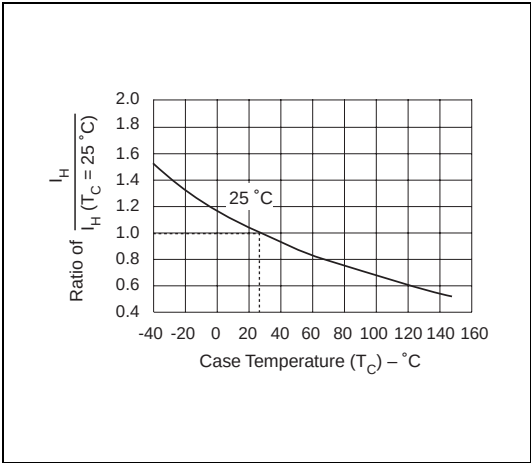
V-I Characteristics



$t_r \times t_d$ Pulse Wave-form



Normalized V_S Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature

Data Sheets

SIDACtor Device



The modified TO-220 Type 61 *SIDACtor* solid state protection device can be used in telecommunication protection applications that do not reference earth ground.

SIDACtor devices are used to enable equipment to meet various regulatory requirements including GR 1089, ITU K.20, K.21 and K.45, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68).

Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μ Amps	I _S mAmps	I _T Amps	I _H mAmps	C _o pF
P2000AA61	180	220	4	5	800	2.2	150	30
P2200AA61	200	240	4	5	800	2.2	150	30
P2400AA61	220	260	4	5	800	2.2	150	30
P2500AA61	240	290	4	5	800	2.2	150	30
P3000AA61	270	330	4	5	800	2.2	150	30
P3300AA61	300	360	4	5	800	2.2	150	30

* For surge ratings, see table below.

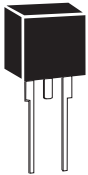
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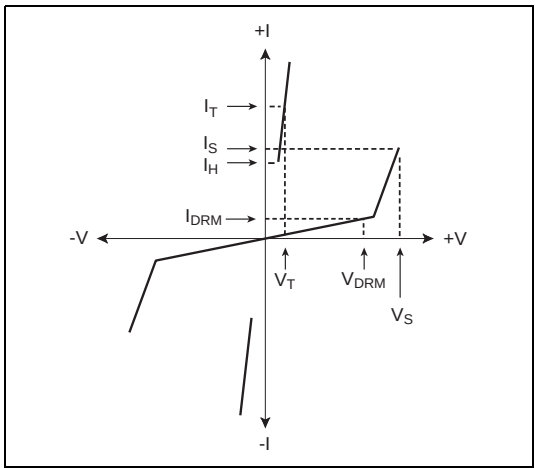
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed *SIDACtor* devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM}.
- V_S is measured at 100 V/ μ s.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured at 1 MHz with a 2 V bias and is a typical value.

Surge Ratings

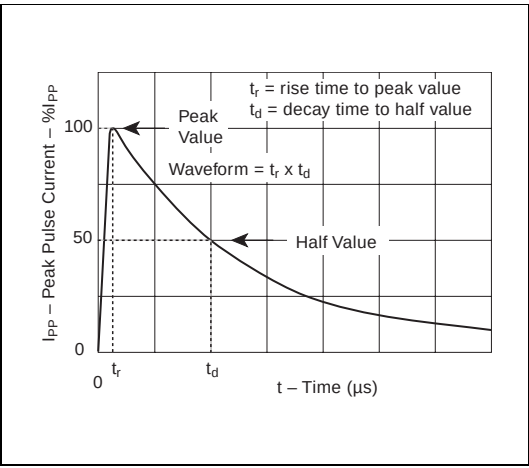
Series	I _{PP} 0.2x310 μ s Amps	I _{PP} 2x10 μ s Amps	I _{PP} 8x20 μ s Amps	I _{PP} 10x160 μ s Amps	I _{PP} 10x560 μ s Amps	I _{PP} 5x320 μ s Amps	I _{PP} 10x1000 μ s Amps	I _{TSM} 60 Hz Amps	di/dt Amps/ μ s
A	20	150	150	90	50	75	45	20	500

Thermal Considerations

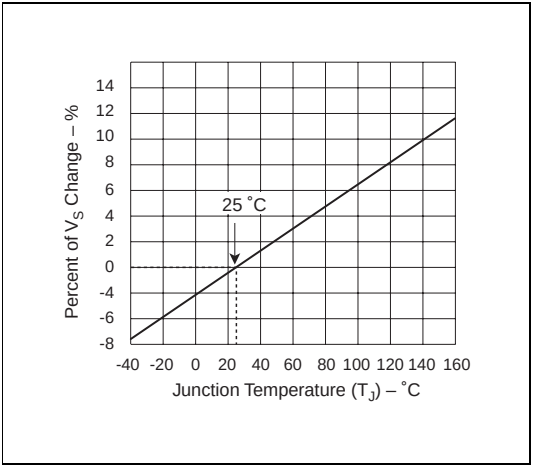
Package	Symbol	Parameter	Value	Unit
Modified TO-220 Type 61		T_J	Operating Junction Temperature Range	-40 to +150
		T_S	Storage Temperature Range	-65 to +150
		$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	50
				$^{\circ}\text{C}/\text{W}$



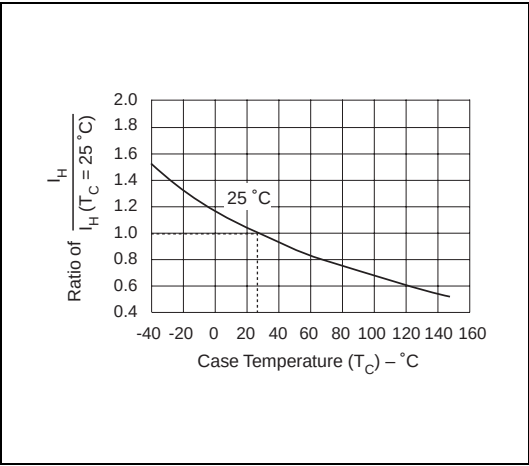
V-I Characteristics



$t_r \times t_d$ Pulse Wave-form



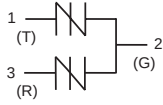
Normalized V_S Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature

Data Sheets

Two-chip *SIDACtor* Device



The two-chip modified TO-220 *SIDACtor* solid state device protects telecommunication equipment in applications that reference Tip and Ring to earth ground but do not require balanced protection.

SIDACtor devices are used to enable equipment to meet various regulatory requirements including GR 1089, ITU K.20, K.21 and K.45, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68).

Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μAmps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
	Pins 1-2, 3-2		Pins 1-3							
P0602A_	25	40	50	80	4	5	800	2.2	50	110
P1402A_	58	77	116	154	4	5	800	2.2	150	50
P1602A_	65	95	130	190	4	5	800	2.2	150	50
P2202A_	90	130	180	260	4	5	800	2.2	150	40
P2702A_	120	160	240	320	4	5	800	2.2	150	40
P3002A_	140	180	280	360	4	5	800	2.2	150	40
P3602A_	170	220	340	440	4	5	800	2.2	150	40
P4202A_	190	250	380	500	4	5	800	2.2	150	30
P4802A_	220	300	440	600	4	5	800	2.2	150	30
P6002A_	275	350	550	700	4	5	800	2.2	150	30

* For individual "AA", "AB", and "AC" surge ratings, see table below.

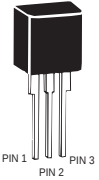
General Notes:

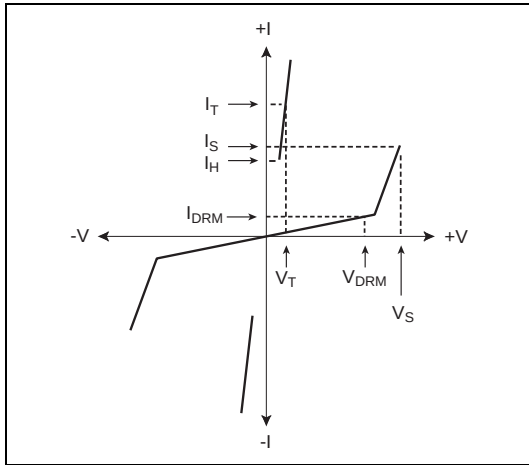
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed *SIDACtor* devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM}.
- V_S is measured at 100 V/μs.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured between Pins 1-2 and 3-2 at 1 MHz with a 2 V bias and is a typical value for "AA" product. "AB" and "AC" capacitance is approximately 2x the listed value.

Surge Ratings

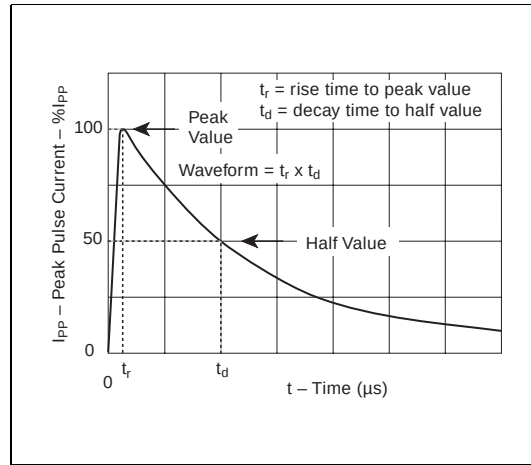
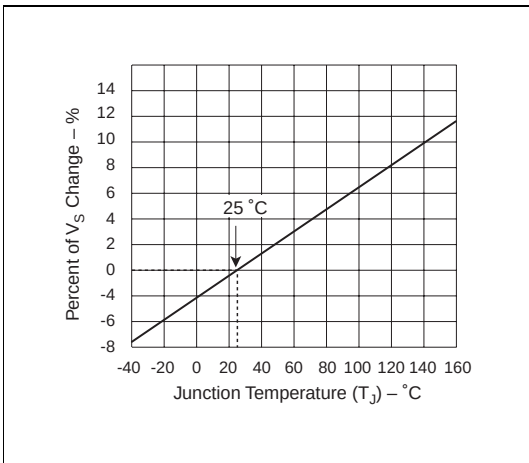
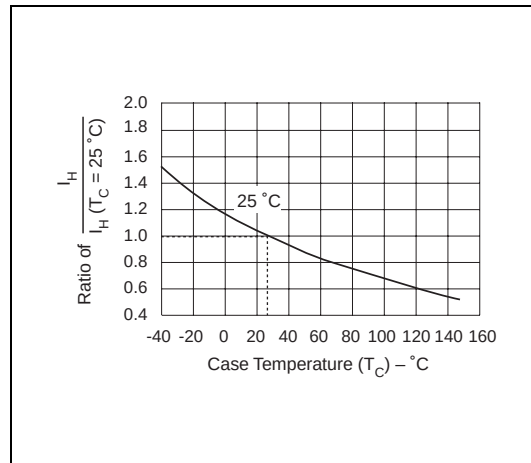
Series	I _{PP} 2x10 μs Amps	I _{PP} 8x20 μs Amps	I _{PP} 10x160 μs Amps	I _{PP} 10x560 μs Amps	I _{PP} 10x1000 μs Amps	I _{TSM} 60 Hz Amps	di/dt Amps/μs
A	150	150	90	50	45	20	500
B	250	250	150	100	80	30	500
C	500	400	200	150	100	50	500

Thermal Considerations

Package	Symbol	Parameter	Value	Unit
Modified TO-220 	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	50	°C/W

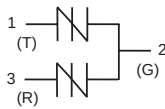


V-I Characteristics

 $t_r \times t_d$ Pulse Wave-formNormalized V_S Change versus Junction Temperature

Normalized DC Holding Current versus Case Temperature

Two-chip MicroCapacitance (MC) SIDACtor Device



The two-chip modified TO-220 MC *SIDACtor* solid state device protects telecommunication equipment in applications that reference Tip and Ring to earth ground but do not require balanced protection.

SIDACtor devices are used to enable equipment to meet various regulatory requirements including GR 1089, ITU K.20, K.21 and K.45, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68).

Electrical Parameters: A-rated

Part Number *	V _{DRM} Volts	V _S Volts	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μAmps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
	Pins 1-2, 3-2		Pins 1-3							
P0302AA MC	6	25	12	50	4	5	800	2.2	50	45
P0602AA MC	25	40	50	80	4	5	800	2.2	50	25

Electrical Parameters: C-rated

Part Number *	V _{DRM} Volts	V _S Volts	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μAmps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
	Pins 1-2, 3-2		Pins 1-3							
P0602AC MC	25	40	50	80	4	5	800	2.2	50	60
P1402AC MC	58	77	116	154	4	5	800	2.2	150	60
P1602AC MC	65	95	130	190	4	5	800	2.2	150	60
P2202AC MC	90	130	180	260	4	5	800	2.2	150	50
P2702AC MC	120	160	240	320	4	5	800	2.2	150	50
P3002AC MC	140	180	280	360	4	5	800	2.2	150	50
P3602AC MC	170	220	340	440	4	5	800	2.2	150	40
P4202AC MC	190	250	380	500	4	5	800	2.2	150	40
P4802AC MC	220	300	440	600	4	5	800	2.2	150	40
P6002AC MC	275	350	550	700	4	5	800	2.2	150	40

* For surge ratings, see table below.

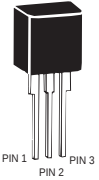
General Notes:

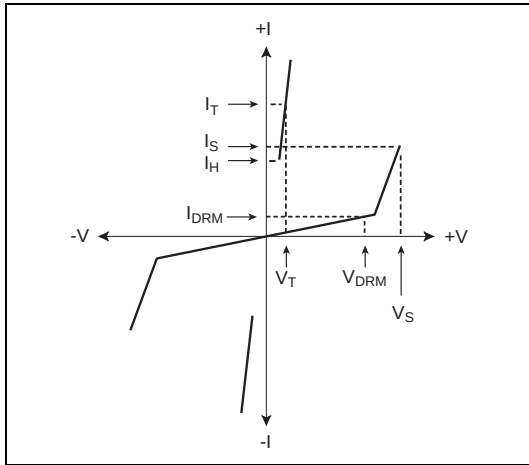
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed *SIDACtor* devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM}.
- V_S is measured at 100 V/ μ s.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured between Pins 1-2 and 3-2 at 1 MHz with a 2 V bias.

Surge Ratings

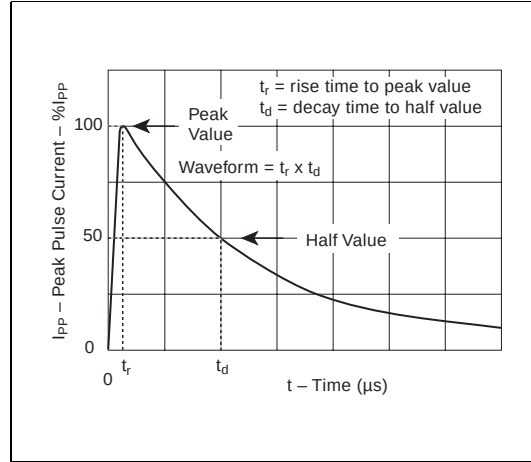
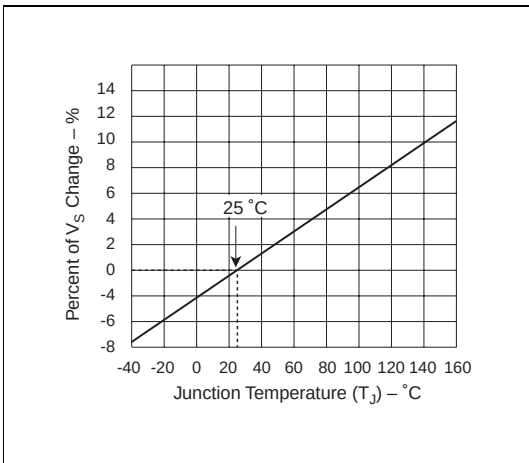
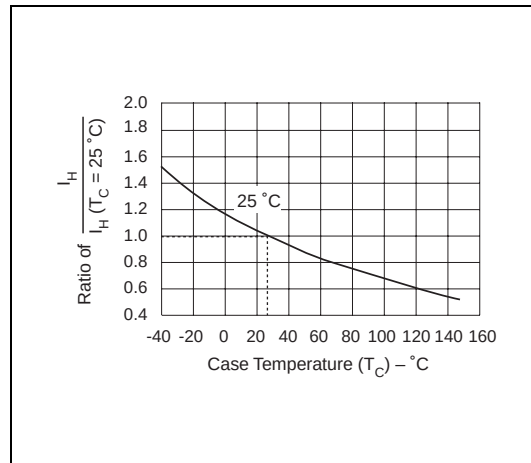
Series	I _{PP} 2x10 μ s Amps	I _{PP} 8x20 μ s Amps	I _{PP} 10x160 μ s Amps	I _{PP} 10x560 μ s Amps	I _{PP} 10x1000 μ s Amps	I _{TSM} 60 Hz Amps	di/dt Amps/ μ s
A	150	150	90	50	45	20	500
C	500	400	200	150	100	50	500

Thermal Considerations

Package	Symbol	Parameter	Value	Unit
Modified TO-220 	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	50	°C/W



V-I Characteristics

 $t_r \times t_d$ Pulse Wave-formNormalized V_S Change versus Junction Temperature

Normalized DC Holding Current versus Case Temperature

Balanced Three-chip SIDACtor Device



The three-chip modified TO-220 *SIDACtor* balanced solid state device is designed for telecommunication protection systems that reference Tip and Ring to earth ground. Applications include any piece of transmission equipment that requires balanced protection. This device is built using Teccor's patented "Y" (US Patent 4,905,119) configuration.

The *SIDACtor* device is used to enable equipment to meet various regulatory requirements including GR 1089, ITU K.20, K.21 and K.45, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68).

Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μAmps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
	Pins 1-2, 2-3		Pins 1-3							
P1553A_	130	180	130	180	8	5	800	2.2	150	40
P1803A_	150	210	150	210	8	5	800	2.2	150	40
P2103A_	170	250	170	250	8	5	800	2.2	150	40
P2353A_	200	270	200	270	8	5	800	2.2	150	40
P2703A_	230	300	230	300	8	5	800	2.2	150	30
P3203A_	270	350	270	350	8	5	800	2.2	150	30
P3403A_	300	400	300	400	8	5	800	2.2	150	30
P5103A_	420	600	420	600	8	5	800	2.2	150	30
A2106A_ 3 **	170	250	50	80	8	5	800	2.2	120	40
A5030A_ 3 **	400	550	270	340	8	5	800	2.2	150	30

* For individual "AA", "AB", and "AC" surge ratings, see table below.

** Asymmetrical

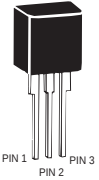
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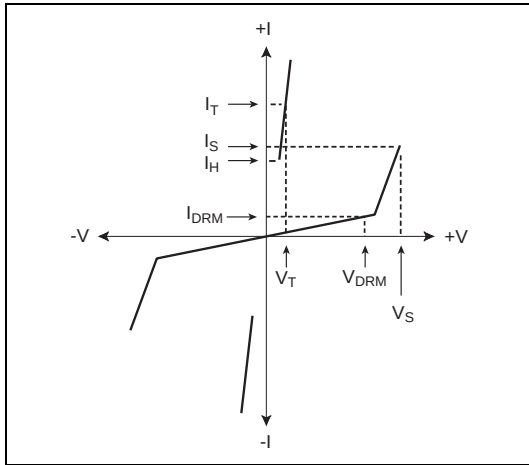
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed *SIDACtor* devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM}.
- V_S is measured at 100 V/ μ s.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured between Pins 1-2 and 3-2 at 1 MHz with a 2 V bias and is a typical value for "AA" product. "AB" and "AC" capacitance is approximately 2x the listed value.
- Device is designed to meet balance requirements of GTS 8700 and GR 974.

Surge Ratings

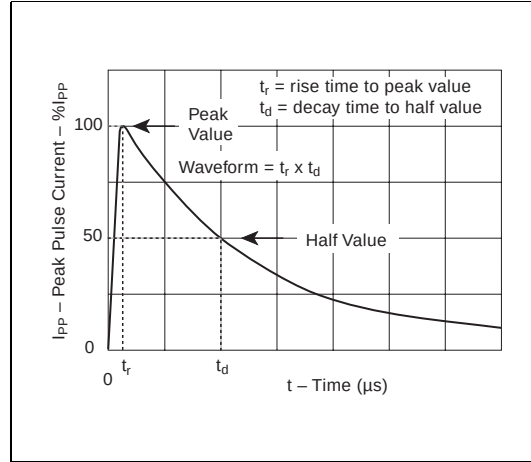
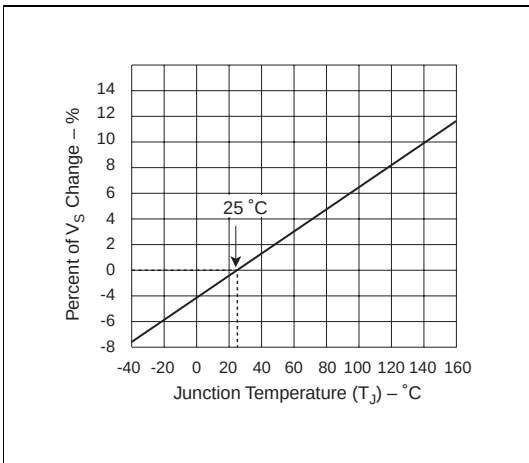
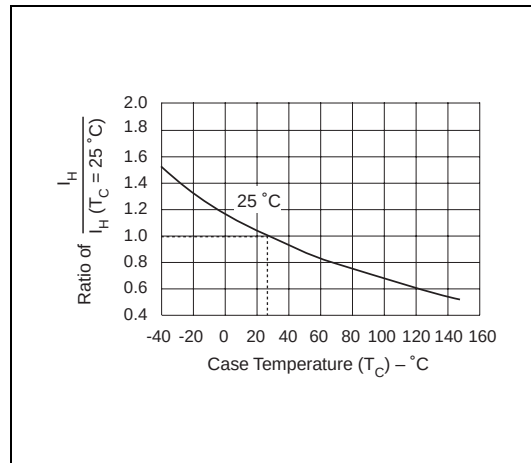
Series	I _{PP} 2x10 μ s Amps	I _{PP} 8x20 μ s Amps	I _{PP} 10x160 μ s Amps	I _{PP} 10x560 μ s Amps	I _{PP} 10x1000 μ s Amps	I _{TSM} 60 Hz Amps	di/dt Amps/ μ s
A	150	150	90	50	45	20	500
B	250	250	150	100	80	30	500
C	500	400	200	150	100	50	500

Thermal Considerations

Package	Symbol	Parameter	Value	Unit
Modified TO-220 	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	50	°C/W

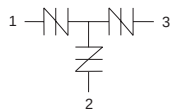


V-I Characteristics

 $t_r \times t_d$ Pulse Wave-formNormalized V_S Change versus Junction Temperature

Normalized DC Holding Current versus Case Temperature

Balanced Three-chip MicroCapacitance (MC) SIDACtor Device



The balanced three-chip TO-220 MC *SIDACtor* solid state device protects telecommunication equipment in high-speed applications that are sensitive to load values and that require a lower capacitance. C_O values for the MC are 40% lower than a standard AC part.

This MC *SIDACtor* series is used to enable equipment to meet various regulatory requirements including GR 1089, ITU K.20, K.21, and K.45, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68) without the need of series resistors.

Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μ Amps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
	Pins 1-2, 2-3	Pins 1-3	Pins 1-2, 2-3	Pins 1-3						
P1553AC MC	130	180	130	180	8	5	800	2.2	150	40
P1803AC MC	150	210	150	210	8	5	800	2.2	150	40
P2103AC MC	170	250	170	250	8	5	800	2.2	150	40
P2353AC MC	200	270	200	270	8	5	800	2.2	150	40
P2703AC MC	230	300	230	300	8	5	800	2.2	150	30
P3203AC MC	270	350	270	350	8	5	800	2.2	150	30
P3403AC MC	300	400	300	400	8	5	800	2.2	150	30
P5103AC MC	420	600	420	600	8	5	800	2.2	150	30

* For surge ratings, see table below.

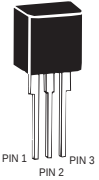
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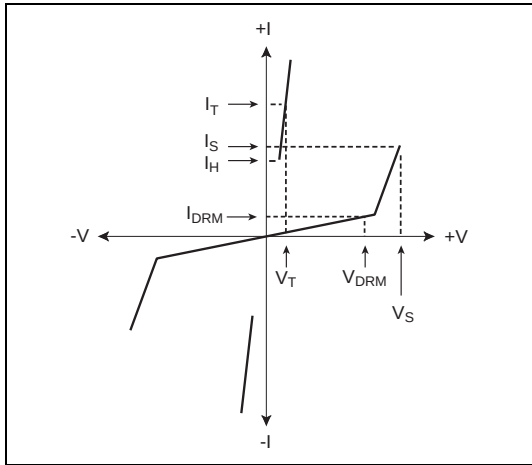
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed *SIDACtor* devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM}.
- V_S is measured at 100 V/ μ s.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured between Pins 1-2 and 3-2 at 1 MHz with a 2 V bias.
- Device is designed to meet balance requirements of GTS 8700 and GR 974.

Surge Ratings

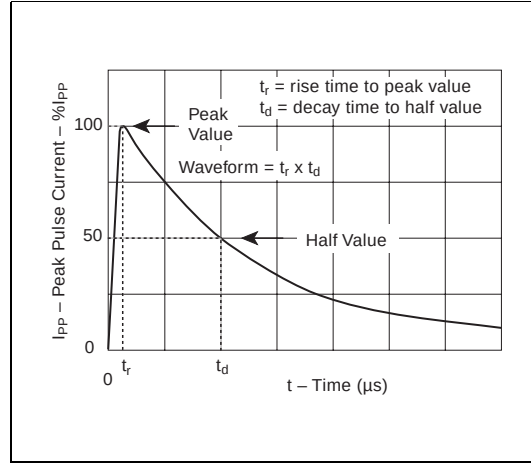
Series	I _{PP} 2x10 μ s Amps	I _{PP} 8x20 μ s Amps	I _{PP} 10x160 μ s Amps	I _{PP} 10x560 μ s Amps	I _{PP} 10x1000 μ s Amps	I _{TSM} 60 Hz Amps	di/dt Amps/ μ s
C	500	400	200	150	100	50	500

Thermal Considerations

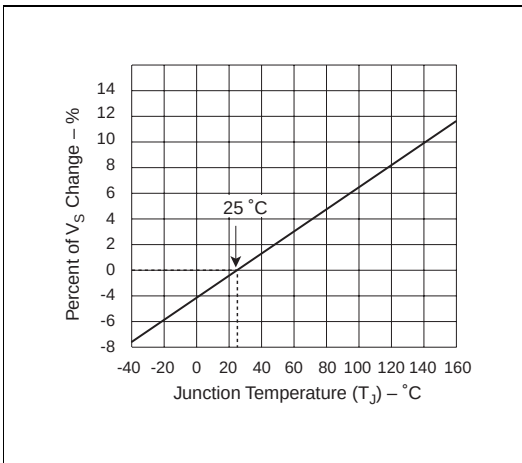
Package	Symbol	Parameter	Value	Unit
Modified TO-220 	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	50	°C/W



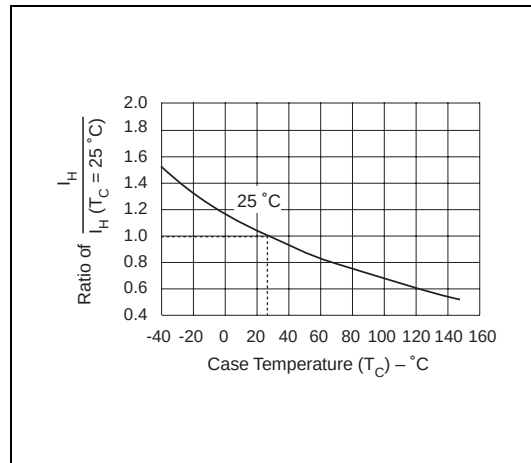
V-I Characteristics



$t_r \times t_d$ Pulse Wave-form

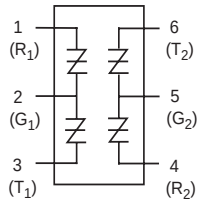


Normalized V_S Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature

LCAS Asymmetrical Multiport Device



This is an integrated multichip solution for protecting multiple twisted pair from overvoltage conditions. Based on a six-pin surface mount SOIC package, it is equivalent to four discrete DO-214AA or two TO-220 packages. Available in surge current ratings up to 500 A, the multiport line protector is ideal for densely populated line cards that cannot afford PCB inefficiencies or the use of series power resistors.

For a diagram of an LCAS (Line Circuit Access Switch) application, see Figure 3.23.

Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μ Amps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
	Pins 3-2, 6-5	Pins 1-2, 4-5	Pins 1-2, 4-5	Pins 3-2, 6-5	Pins 1-2, 4-5	Pins 3-2, 6-5	Pins 1-2, 4-5	Pins 3-2, 6-5	Pins 1-2, 4-5	Pins 3-2, 6-5, 1-2, 4-5
A1220U_4	100	130	180	220	4	5	800	2.2	120	30
A1225U_4	100	130	230	290	4	5	800	2.2	120	30

* For individual "UA", "UB", and "UC" surge ratings, see table below.

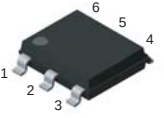
General Notes:

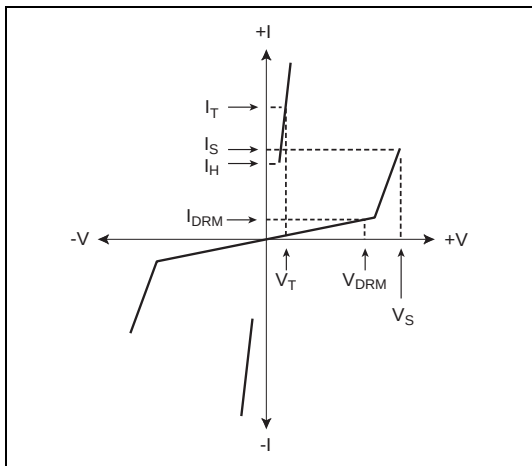
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed *SIDACtor* devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM}.
- V_S is measured at 100 V/ μ s.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured between Pins 1-2 and 3-2 at 1 MHz with a 2 V bias and is a typical value for "UA" product. "UB" and "UC" capacitance is approximately 2x higher.

Surge Ratings

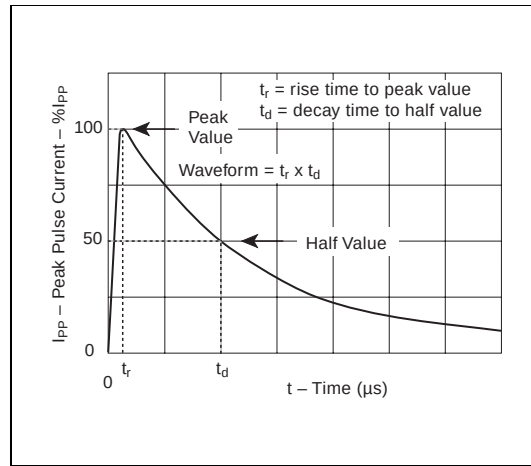
Series	I _{PP} 2x10 μ s Amps	I _{PP} 8x20 μ s Amps	I _{PP} 10x160 μ s Amps	I _{PP} 10x560 μ s Amps	I _{PP} 10x1000 μ s Amps	I _{TSM} 60 Hz Amps	di/dt Amps/ μ s
A	150	150	90	50	45	20	500
B	250	250	150	100	80	30	500
C	500	400	200	150	100	50	500

Thermal Considerations

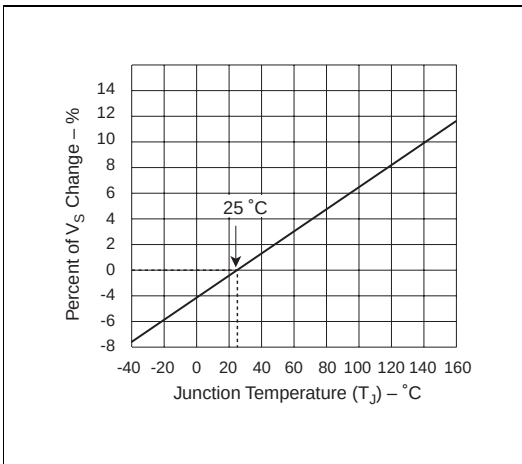
Package	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature Range	-40 to +125	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	60	°C/W



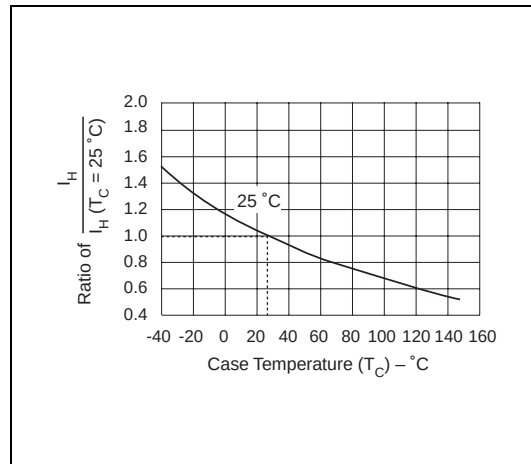
V-I Characteristics



$t_r \times t_d$ Pulse Wave-form



Normalized V_S Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature

LCAS Asymmetrical Discrete Device



These DO-214AA *SIDACtor* devices are intended for LCAS (Line Circuit Access Switch) applications that require asymmetrical protection in discrete (individual) packages. They enable the protected equipment to meet various regulatory requirements including GR 1089, ITU K.20, K.21, K.45, IEG 60950, UL 60950, and TIA-968.

Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μAmps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
P1200S_	100	130	4	5	800	2.2	120	40
P2000S_	180	220	4	5	800	2.2	120	30
P2500S_	230	290	4	5	800	2.2	120	30

* For individual "SA", "SB", and "SC" surge ratings, see table below.

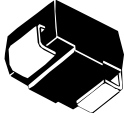
General Notes:

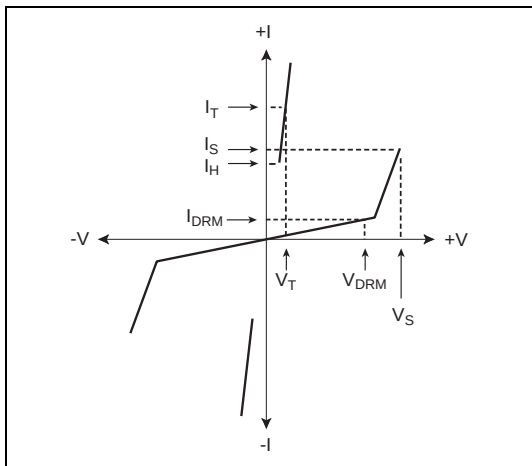
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed *SIDACtor* devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM}.
- V_S is measured at 100 V/μs.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured between Pins 1-2 and 3-2 at 1 MHz with a 2 V bias and is a typical value for "SA" and "SB" product. "SC" capacitance is approximately 10 pF higher.

Surge Ratings

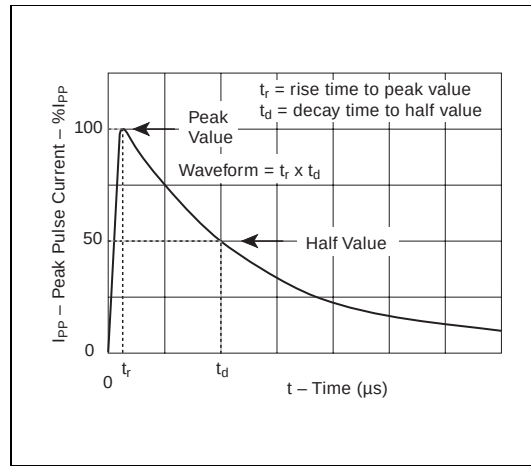
Series	I _{PP} 2x10 μs Amps	I _{PP} 8x20 μs Amps	I _{PP} 10x160 μs Amps	I _{PP} 10x560 μs Amps	I _{PP} 10x1000 μs Amps	I _{TSM} 60 Hz Amps	di/dt Amps/μs
A	150	150	90	50	45	20	500
B	250	250	150	100	80	30	500
C	500	400	200	150	100	50	500

Thermal Considerations

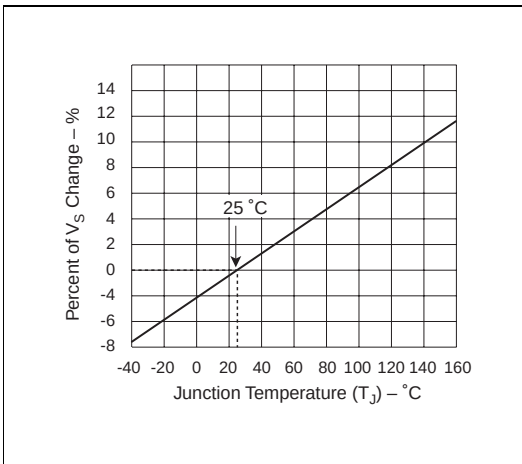
Package	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature Range	-40 to +125	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	60	°C/W



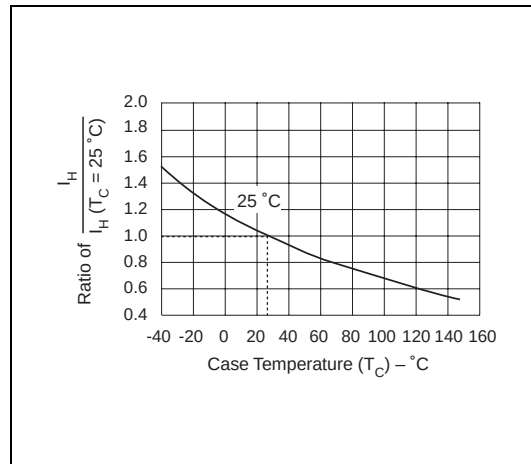
V-I Characteristics



$t_r \times t_d$ Pulse Wave-form



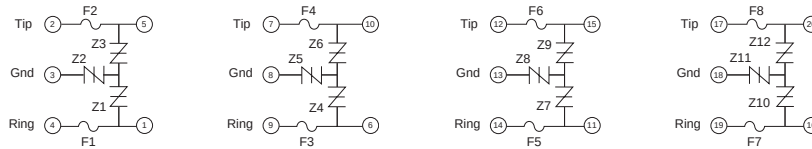
Normalized V_S Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature

Four-port Balanced Three-chip Protector

This hybrid Single In-line Package (SIP) protects four twisted pairs from overcurrent and overvoltage conditions. Comprised of twelve discrete DO-214AA *SIDACtor* devices and eight *TeleLink* surface mount fuses, it is ideal for densely populated line cards that cannot afford PCB inefficiencies or the use of series power resistors. Surge current ratings up to 500 A are available.



Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μAmps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
	Pins 2-3, 4-3, 7-8, 9-8, 12-13, 14-13, 17-18, 19-18		Pins 2-4, 7-9, 12-14, 17-19							Pins 1-3
P1553Z_	130	180	130	180	8	5	800	2.2	150	40
P1803Z_	150	210	150	210	8	5	800	2.2	150	40
P2103Z_	170	250	170	250	8	5	800	2.2	150	40
P2353Z_	200	270	200	270	8	5	800	2.2	150	40
P2703Z_	230	300	230	300	8	5	800	2.2	150	30
P3203Z_	270	350	270	350	8	5	800	2.2	150	30
P3403Z_	300	400	300	400	8	5	800	2.2	150	30
A2106Z_3 **	170	250	50	80	8	5	800	2.2	120	40
A5030Z_3 **	400	550	270	340	8	5	800	2.2	150	30

* For individual "ZA," "ZB," and "ZC" surge ratings, see table below.

** Asymmetrical

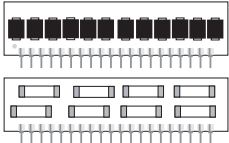
General Notes:

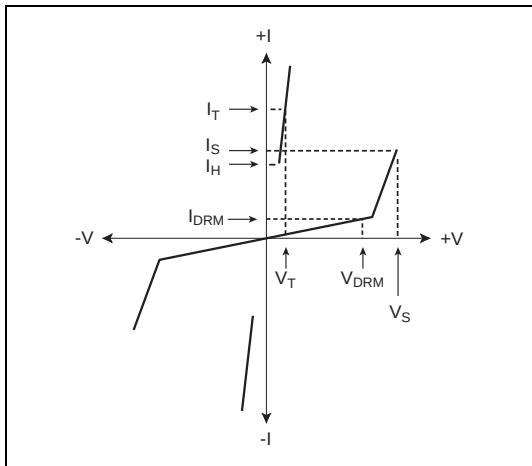
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed *SIDACtor* devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM}.
- V_S is measured at 100 V/μs.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured between Pins 4-3 and Pins 2-3 at 1 MHz with a 2 V bias and is a typical value for "ZA" product. "ZB" and "ZC" capacitance is approximately 10 pF higher.
- Device is designed to meet balance requirements of GTS 8700 and GR 974.

Surge Ratings

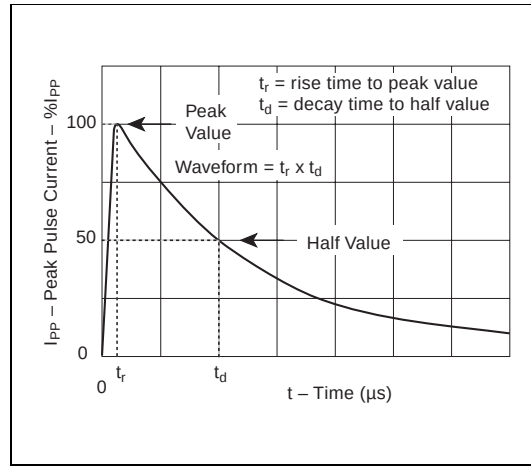
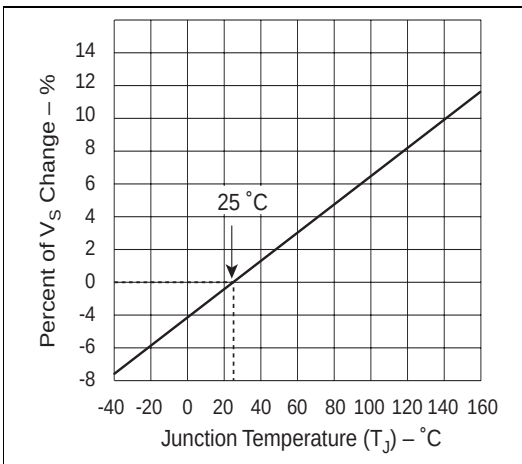
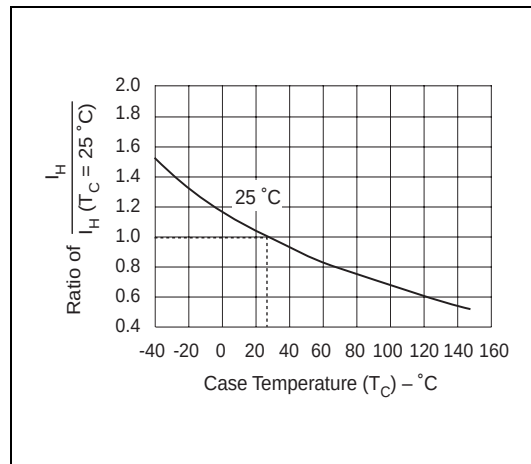
Series	I _{PP} 2x10 μs Amps	I _{PP} 8x20 μs Amps	I _{PP} 10x160 μs Amps	I _{PP} 10x560 μs Amps	I _{PP} 10x1000 μs Amps	I _{TSM} 60 Hz Amps	di/dt Amps/μs
A	150	150	90	50	45	20	500
B	250	250	150	100	80	30	500
C	500	400	200	150	100	50	500

Thermal Considerations

Package	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	90	°C/W



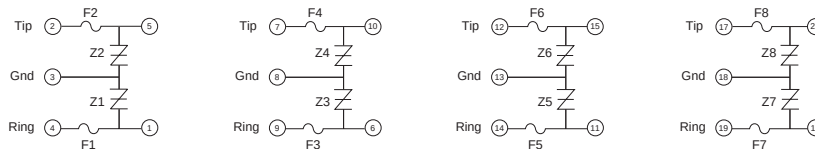
V-I Characteristics

 $t_r \times t_d$ Pulse WaveformNormalized V_S Change versus Junction Temperature

Normalized DC Holding Current versus Case Temperature

Four-port Longitudinal Two-chip Protector

This hybrid Single In-line Package (SIP) protects four twisted pairs from overcurrent and overvoltage conditions. Comprised of eight discrete DO-214AA *SIDACtor* devices and eight *TeleLink* surface mount fuses, it is ideal for densely populated line cards that cannot afford PCB inefficiencies or the use of series power resistors. Surge current ratings up to 500 A are available.



Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μAmps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
	Pins 2-3, 4-3, 7-8, 9-8, 12-13, 14-13, 17-18, 19-18		Pins 2-4, 7-9, 12-14, 17-19							Pins 2-3, 3-4
P0602Z_	25	40	50	80	4	5	800	2.2	50	110
P1402Z_	58	77	116	154	4	5	800	2.2	150	50
P1602Z_	65	95	130	190	4	5	800	2.2	150	50
P2202Z_	90	130	180	260	4	5	800	2.2	150	40
P2702Z_	120	160	240	320	4	5	800	2.2	150	40
P3002Z_	140	180	280	360	4	5	800	2.2	150	40
P3602Z_	160	220	320	440	4	5	800	2.2	150	40
P4202Z_	190	250	380	500	4	5	800	2.2	150	30
P4802Z_	220	300	440	600	4	5	800	2.2	150	30
P6002Z_	275	350	550	700	4	5	800	2.2	150	30

* For individual "ZA," "ZB," and "ZC" surge ratings, see table below.

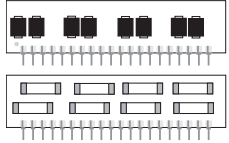
General Notes:

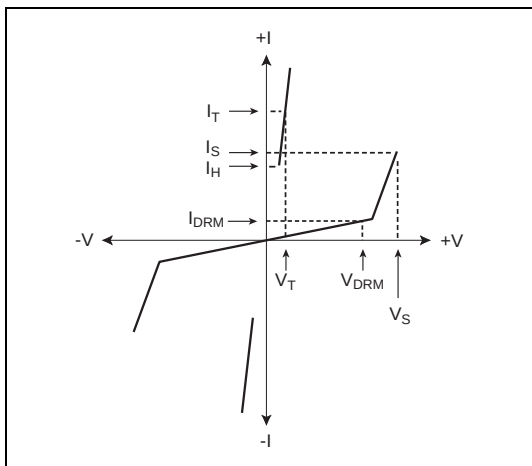
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed *SIDACtor* devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM}.
- V_S is measured at 100 V/μs.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured between Pins 4-3 and Pins 2-3 at 1 MHz with a 2 V bias and is a typical value for "ZA" product. "ZB" and "ZC" capacitance is approximately 2x higher.
- Device is designed to meet balance requirements of GTS 8700 and GR 974.
- Lower capacitance MC versions may be available. Contact factory for further information.

Surge Ratings

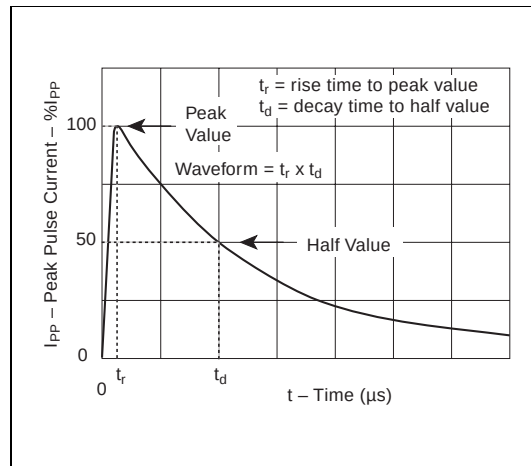
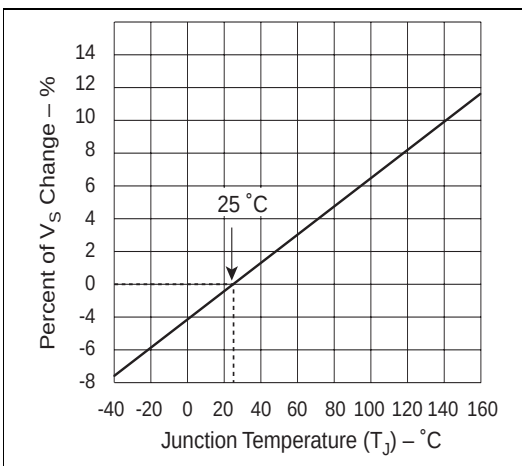
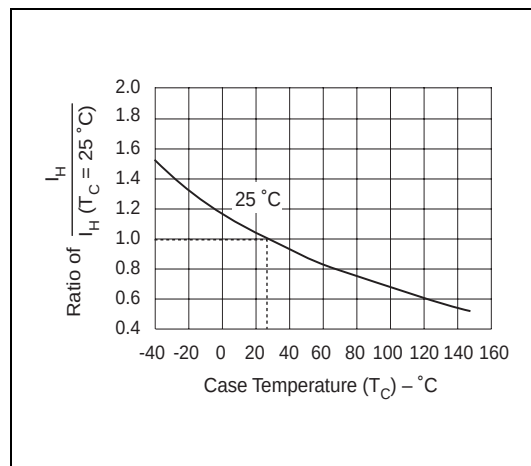
Series	I _{PP} 2x10 μs Amps	I _{PP} 8x20 μs Amps	I _{PP} 10x160 μs Amps	I _{PP} 10x560 μs Amps	I _{PP} 10x1000 μs Amps	I _{TSM} 60 Hz Amps	di/dt Amps/μs
A	150	150	90	50	45	20	500
B	250	250	150	100	80	30	500
C	500	400	200	150	100	50	500

Thermal Considerations

Package	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	90	°C/W



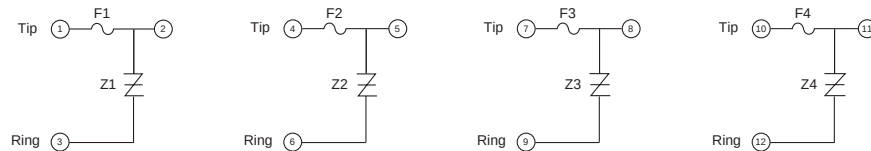
V-I Characteristics

 $t_r \times t_d$ Pulse WaveformNormalized V_S Change versus Junction Temperature

Normalized DC Holding Current versus Case Temperature

Four-port Metallic Line Protector

The four-port hybrid Single In-line Package (SIP) line protector protects multiple twisted pair from overcurrent and overvoltage conditions. Based on a SIP, it is equivalent to four discrete DO-214AA *SIDACtor* devices and four surface mount fuses. Available in surge current ratings up to 500 A, this four-port SIP line protector is ideal for densely populated line cards that cannot afford PCB inefficiencies or the use of series power resistors.



Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μ Amps	I _S mAmps	I _T Amps	I _H mAmps	C ₀ pF
P0080Z_	6	25	4	5	800	2.2	50	100
P0300Z_	25	40	4	5	800	2.2	50	110
P0640Z_	58	77	4	5	800	2.2	150	50
P0720Z_	65	88	4	5	800	2.2	150	50
P0900Z_	75	98	4	5	800	2.2	150	50
P1100Z_	90	130	4	5	800	2.2	150	40
P1300Z_	120	160	4	5	800	2.2	150	40
P1500Z_	140	180	4	5	800	2.2	150	40
P1800Z_	170	220	4	5	800	2.2	150	30
P2300Z_	190	260	4	5	800	2.2	150	30
P2600Z_	220	300	4	5	800	2.2	150	30
P3100Z_	275	350	4	5	800	2.2	150	30
P3500Z_	320	400	4	5	800	2.2	150	30

* For individual "ZA," "ZB," and "ZC" surge ratings, see table below.

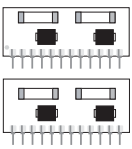
General Notes:

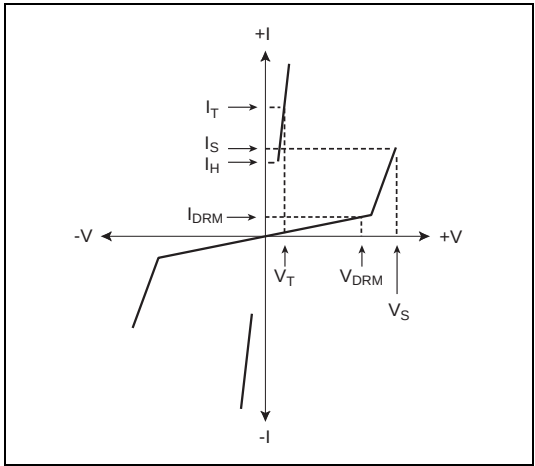
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed *SIDACtor* devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM}.
- V_S is measured at 100 V/ μ s.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured at 1 MHz with a 2 V bias and is a typical value for "ZA" and "ZB" product. "ZC" capacitance is approximately 2x the listed value.
- Lower capacitance MC versions may be available. Contact factory for further information.

Surge Ratings

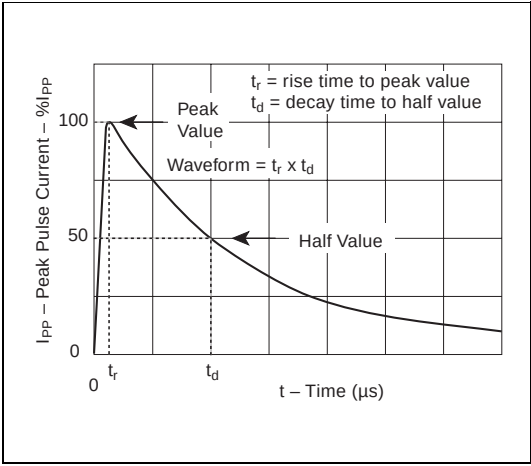
Series	I _{PP} 2x10 μ s Amps	I _{PP} 8x20 μ s Amps	I _{PP} 10x160 μ s Amps	I _{PP} 10x560 μ s Amps	I _{PP} 10x1000 μ s Amps	I _{TSM} 60 Hz Amps	di/dt Amps/ μ s
A	150	150	90	50	45	20	500
B	250	250	150	100	80	30	500
C	500	400	200	150	100	50	500

Thermal Considerations

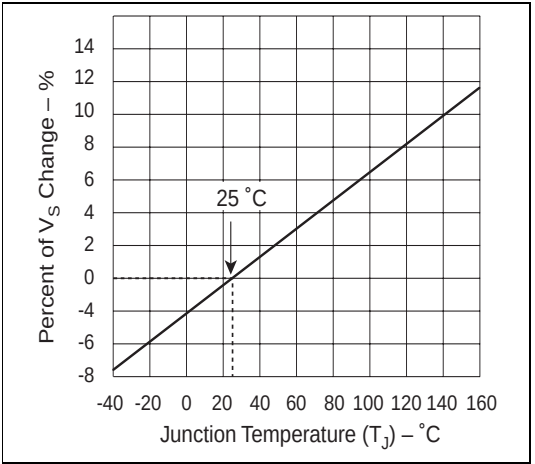
Package	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	90	°C/W



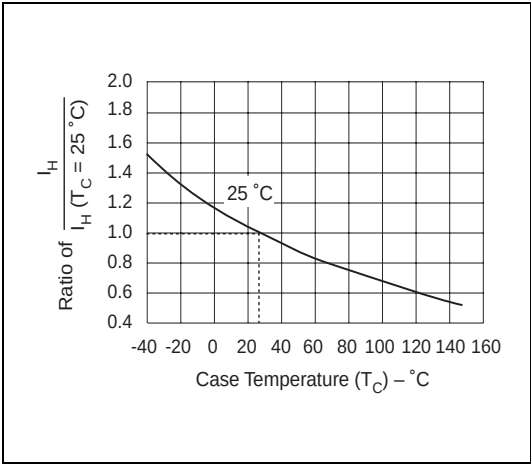
V-I Characteristics



$t_r \times t_d$ Pulse Waveform

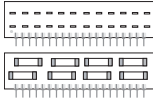


Normalized V_S Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature

Four-port TeleLink Fuse



This hybrid Single In-line Package (SIP) protects four twisted pairs from overcurrent conditions. Comprising eight *TeleLink* surface mount fuses, it is ideal for densely populated line cards that cannot afford PCB inefficiencies or the use of series power resistors. F0500T, F1250T, F1251T versions are available.

Surge Ratings

TeleLink SM Fuse	I _{pp} 2x10 µs Amps	I _{pp} 10x160 µs Amps	I _{pp} 10x560 µs Amps	I _{pp} 10x1000 µs Amps
F0500Z8	not rated	75	45	35
F1250Z8	500	160	115	100
F1251Z8	500	160	115	100

Interrupting Values

TeleLink SM Fuse	Voltage Rating	Current Rating	I ² t Measured at DC Rated Voltage	Interrupting Rating			
				Voltage, Current	MIN	TYP	MAX
F0500Z8	250 V	500 mA	1.3 A ² s	600 V, 40 A	1 ms	2 ms	60 ms
F1250Z8	250 V	1.25 A	22.2 A ² s	600 V, 60 A *	1 ms	2 ms	60 ms
F1251Z8	250 V	2 A	30 A ² s	600 V, 60 A *	1 ms	2 ms	60 ms

* Interrupt test characterized at 50° to 70° phase angle. Phase angles approximating 90° may result in damage to the body of the fuse.

Notes:

- The *TeleLink* SM fuse is designed to carry 100% of its rated current for four hours and 250% of its rated current for one second minimum and 120 seconds maximum. Typical time is four to 10 seconds. For optimal performance, an operating current of 80% or less is recommended.
- I²t is a non-repetitive RMS surge current rating for a period of 16.7 ms.

Resistance Ratings

TeleLink SM Fuse	Typical Voltage Drop @ Rated Current	DC Cold Resistance	
		MIN	MAX
F0500Z8	0.471 V	0.420 Ω	0.640 Ω
F1250Z8	0.205 V	0.107 Ω	0.150 Ω
F1251Z8	0.110 V	0.050 Ω	0.100 Ω

Notes:

- Typical inductance < 150 nH up to 500 MHz.
- Resistance changes 0.5% for every °C.
- Resistance is measured at 10% rated current.

Qualification Data

The F1250Z8 and F1251Z8 meet the following test conditions per GR 1089 **without** additional series resistance. However, in-circuit test verification is required. Note that considerable heating may occur during Test 4 of the Second Level AC Power Fault Test.

First Level Lightning Surge Test

Test	Surge Voltage Volts	Wave-form μ s	Surge Current Amps	Repetitions Each Polarity
1	± 600	10x1000	100	25
2	± 1000	10x360	100	25
3	± 1000	10x1000	100	25
4	± 2500	2x10	500	10
5	± 1000	10x360	25	5

Second Level Lightning Surge Test

Test	Surge Voltage Volts	Wave-form μ s	Surge Current Amps	Repetitions Each Polarity
1	± 5000	2x10	500	1

First Level AC Power Fault Test

Test	Applied Voltage, 60 Hz V_{RMS}	Short Circuit Current Amps	Duration
1	50	0.33	15 min
2	100	0.17	15 min
3	200, 400, 600	1 at 600 V	60 applications, 1 s each
4	1000	1	60 applications, 1 s each
5	*	*	60 applications, 5 s each
6	600	0.5	30 s each
7	600	2.2	2 s each
8	600	3	1 s each
9	1000	5	0.5 s each

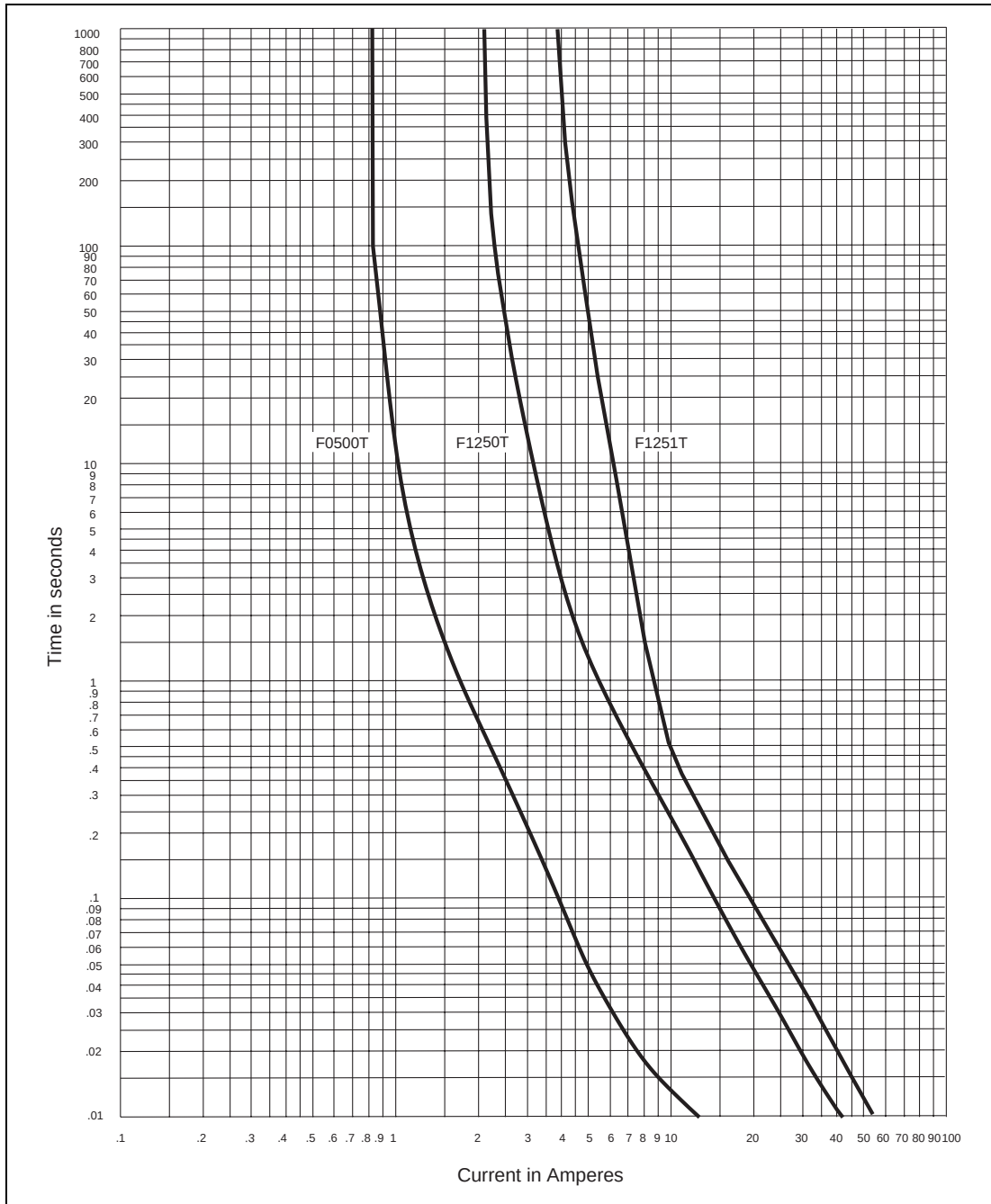
* Test 5 simulates a high impedance induction fault. For specific information, please contact Teccor Electronics.

Second Level AC Power Fault Test for Non-Customer Premises Equipment

Test	Applied Voltage, 60 Hz V_{RMS}	Short Circuit Current Amps	Duration
1	120, 277	30	30 min
2	600	60	5 s
3	600	7	5 s
4	100-600	2.2 at 600 V	30 min

Notes:

- Power fault tests equal or exceed the requirements of UL 60950 3rd edition.
- Test 4 is intended to produce a maximum heating effect. Temperature readings can exceed 150 °C.
- Test 2 may be dependent on the closing angle of the voltage source. Fuse is characterized at 50° to 70°. Closing angles approximating 90° may result in damage to the body of the fuse.



Time Current Curve

Temperature Derating Curve

Operating temperature is -55 °C to +125 °C with proper correction factor applied.

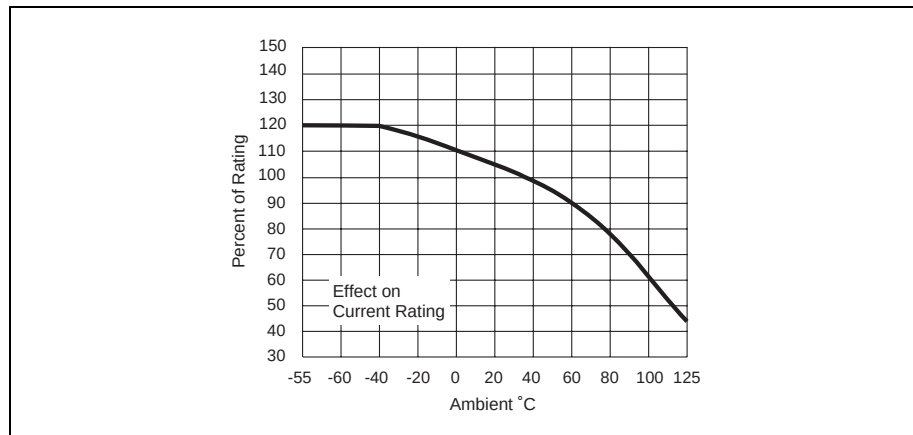


Chart of Correction Factor

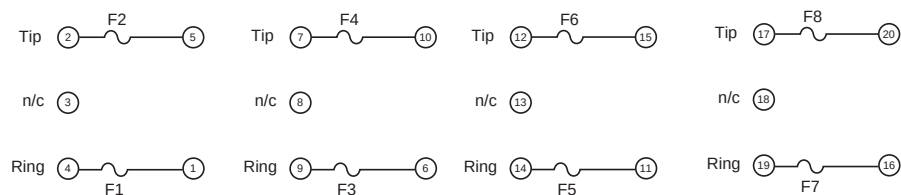
Maximum Temperature Rise

TeleLink Fuse	Temperature Reading
F0500Z8	≤75 °C (167 °F) *
F1250Z8	≤75 °C (167 °F) *
F1251Z8	≤75 °C (167 °F) *

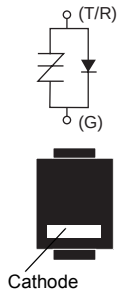
* Higher currents and PCB layout designs can affect this parameter.

Notes:

- Readings are measured at rated current after temperature stabilizes
- The F1250Z8 meets the requirements of UL 248-14. However, board layout, board trace widths, and ambient temperature values can cause higher than expected rises in temperature. During UL testing, the typical recorded heat rise for the F1250Z8 at 2.2 A was 120 °C.



Fixed Voltage SLIC Protector



These DO-214AA unidirectional protectors are constructed with a *SIDACtor* device and an integrated diode. They protect SLICs (Subscriber Line Interface Circuits) from damage during transient voltage activity and enable line cards to meet various regulatory requirements including GR 1089, ITU K.20, K.21 and K.45, IEC 60950, UL 60950, and TIA-968 (formerly known as FCC Part 68).

For specific design criteria, see details in Figure 3.23.

Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _T Volts	V _F Volts	I _{DRM} μAmps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
P0641S_	58	77	4	5	5	800	1	120	70
P0721S_	65	88	4	5	5	800	1	120	70
P0901S_	75	98	4	5	5	800	1	120	70
P1101S_	95	130	4	5	5	800	1	120	70

* For individual "SA" and "SC" surge ratings, see table below.

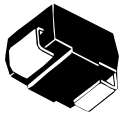
General Notes:

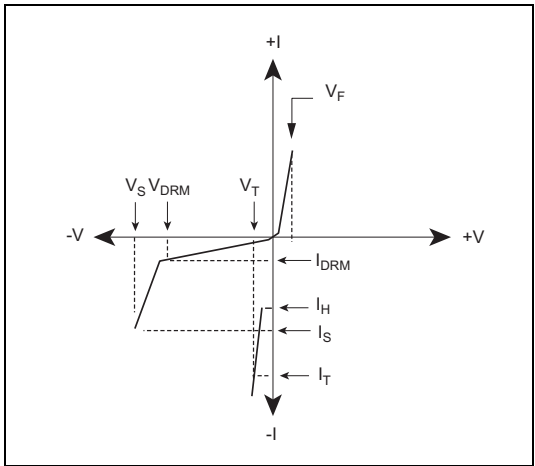
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- V_{DRM} is measured at I_{DRM}.
- V_S and V_F are measured at 100 V/μs.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured at 1 MHz with a 2 V bias and is a typical value for "SA" and "SB" product. "SC" capacitance is approximately 2x the listed value.
- Parallel capacitive loads may affect electrical parameters.

Surge Ratings (Preliminary Data)

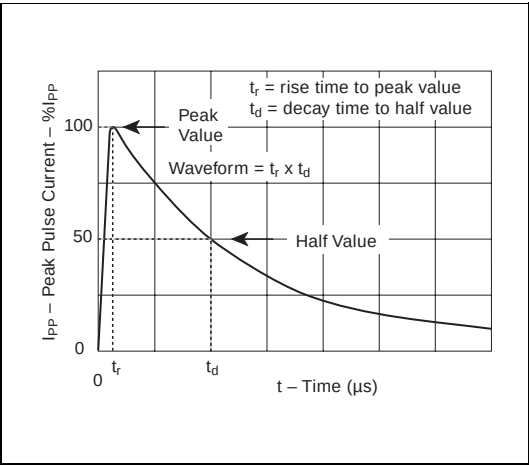
Series	I _{PP} 2x10 μs Amps	I _{PP} 8x20 μs Amps	I _{PP} 10x160 μs Amps	I _{PP} 10x560 μs Amps	I _{PP} 10x1000 μs Amps	I _{TSM} 60 Hz Amps	di/dt Amps/μs
A	150	150	90	50	45	20	500
C	500	400	200	150	100	50	500

Thermal Considerations

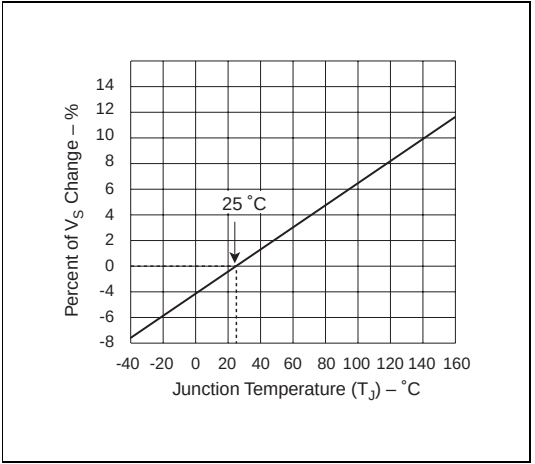
Package	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	90	°C/W



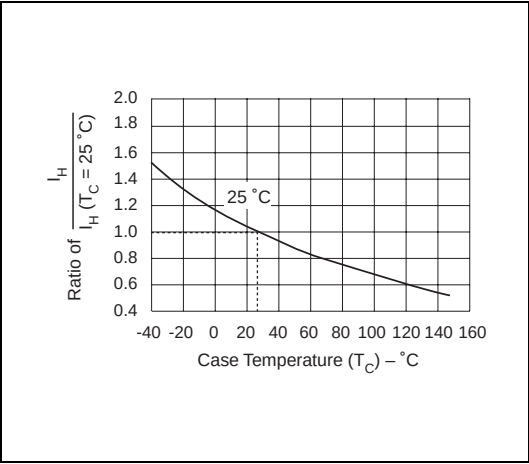
V-I Characteristics



$t_r \times t_d$ Pulse Wave-form



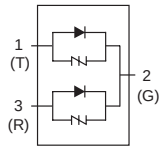
Normalized V_S Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature

Data Sheets

Twin SLIC Protector



Subscriber Line Interface Circuits (SLIC) are highly susceptible to transient voltages, such as lightning and power cross conditions. To minimize this threat, Teccor provides this dual-chip, fixed-voltage SLIC protector device.

For specific design criteria, see details in Figure 3.30.

Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _T Volts	V _F Volts	I _{DRM} μAmps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
	Pins 1-2, 3-2								
P0641CA2	58	77	4	5	5	800	1	120	60
P0721CA2	65	88	4	5	5	800	1	120	60
P0901CA2	75	98	4	5	5	800	1	120	60
P1101CA2	95	130	4	5	5	800	1	120	60

* For surge ratings, see table below.

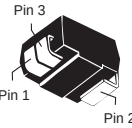
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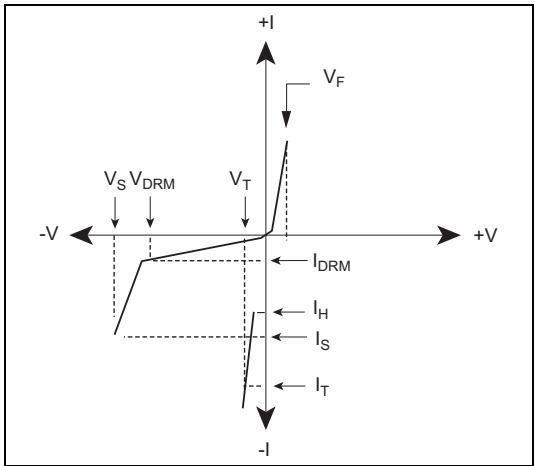
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- V_{DRM} is measured at I_{DRM}.
- V_S and V_F are measured at 100 V/ μ s.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured across pins 1-2 or 3-2 at 1 MHz with a 2 V bias. Capacitance across pins 1-3 is approximately half.
- Parallel capacitive loads may affect electrical parameters.
- Compliance with GR 1089 or UL 60950 power cross tests may require special design considerations. Contact the factory for further information.

Surge Ratings (Preliminary Data)

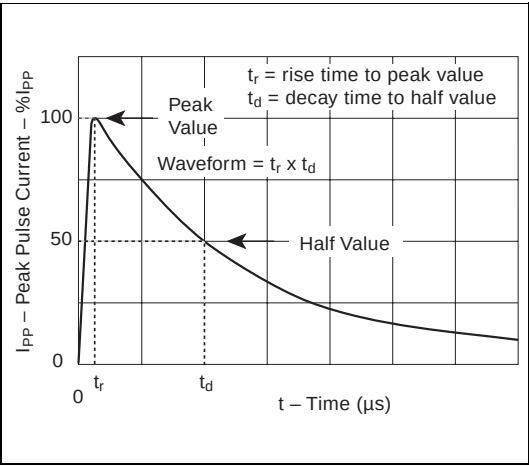
Series	I _{PP} 2x10 μ s Amps	I _{PP} 8x20 μ s Amps	I _{PP} 10x160 μ s Amps	I _{PP} 10x560 μ s Amps	I _{PP} 10x1000 μ s Amps	I _{TSM} 60 Hz Amps	di/dt Amps/ μ s
A	150	150	90	50	45	20	500

Thermal Considerations

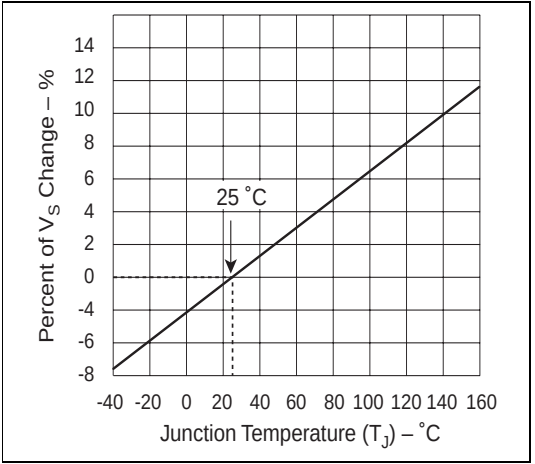
Package	Symbol	Parameter	Value	Unit
 Modified DO-214AA	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	85	°C/W



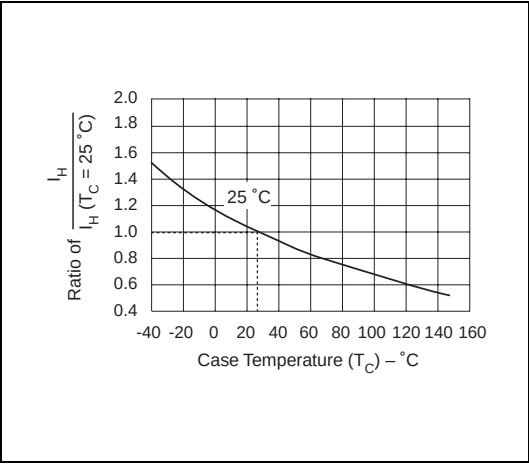
V-I Characteristics



$t_r \times t_d$ Pulse Wave-form

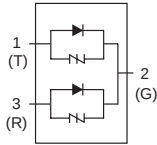


Normalized V_S Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature

Twin SLIC Protector Modified TO-220



Subscriber Line Interface Circuits (SLIC) are highly susceptible to transient voltages, such as lightning and power cross conditions. To minimize this threat, Teccor provides this dual-chip, fixed-voltage SLIC protector device.

For specific design criteria, see details in Figure 3.30.

Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _T Volts	V _F Volts	I _{DRM} μAmps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
	Pins 1-2, 3-2								
P0641A_2	58	77	4	5	5	800	2.2	120	40
P0721A_2	65	88	4	5	5	800	2.2	120	60
P0901A_2	75	98	4	5	5	800	2.2	120	60
P1101A_2	95	130	4	5	5	800	2.2	120	60

* For surge ratings, see table below.

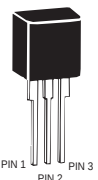
General Notes:

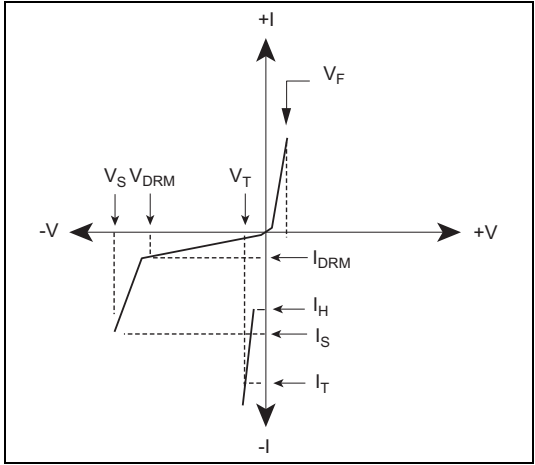
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- V_{DRM} is measured at I_{DRM}.
- V_S and V_F are measured at 100 V/ μ s.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured across pins 1-2 or 3-2 at 1 MHz with a 2 V bias. Capacitance across pins 1-3 is approximately half.
- Parallel capacitive loads may affect electrical parameters.
- Compliance with GR 1089 or UL 60950 power cross tests may require special design considerations. Contact the factory for further information.

Surge Ratings (Preliminary Data)

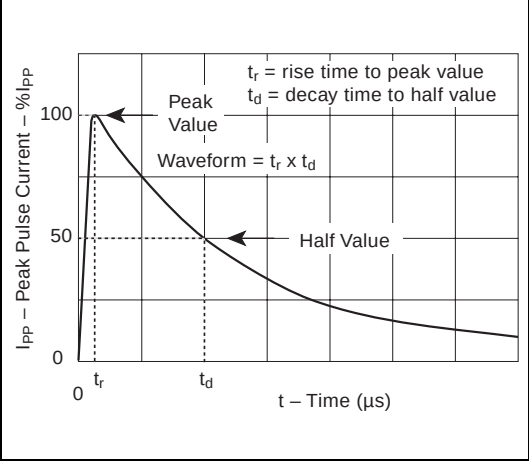
Series	I _{PP} 2x10 μ s Amps	I _{PP} 8x20 μ s Amps	I _{PP} 10x160 μ s Amps	I _{PP} 10x560 μ s Amps	I _{PP} 10x1000 μ s Amps	I _{TSM} 60 Hz Amps	di/dt Amps/ μ s
A	150	150	90	50	45	20	500
C	500	400	200	150	100	50	500

Thermal Considerations

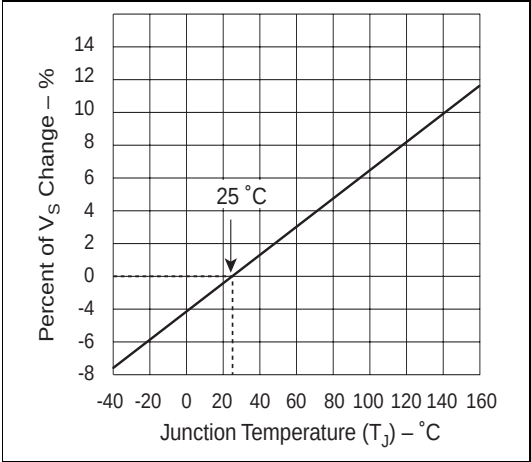
Package	Symbol	Parameter	Value	Unit
Modified TO-220 	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	50	°C/W



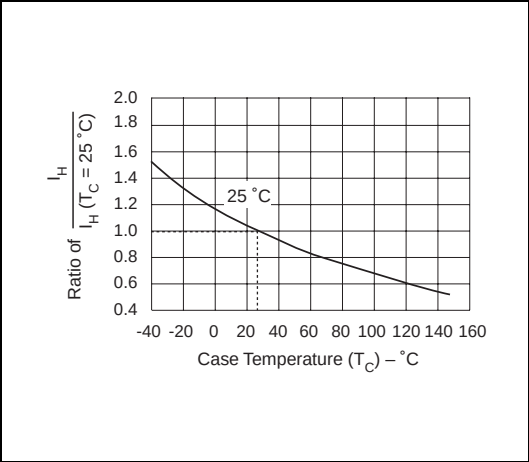
V-I Characteristics



$t_r \times t_d$ Pulse Wave-form



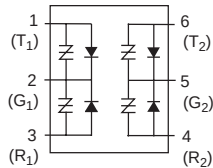
Normalized V_S Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature

Data Sheets

Multiport SLIC Protector



This multiport line protector is designed as a single-package solution for protecting multiple twisted pair from overvoltage conditions. Based on a six-pin SOIC package, it is equivalent to four discrete DO-214AA packages. Available in surge current ratings up to 500 A for a 2x10 μ s event, the multiport line protector is ideal for densely populated line cards that cannot afford PCB inefficiencies or the use of series power resistors.

For specific design criteria, see details in Figure 3.34.

Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _T Volts	V _F Volts	I _{DRM} μAmps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
	Pins 1-2, 2-3, 4-5, 5-6								
P0641U_	58	77	4	5	5	800	1	120	70
P0721U_	65	88	4	5	5	800	1	120	70
P0901U_	75	98	4	5	5	800	1	120	70
P1101U_	95	130	4	5	5	800	1	120	70

* For individual "UA" and "UC" surge ratings, see table below.

General Notes:

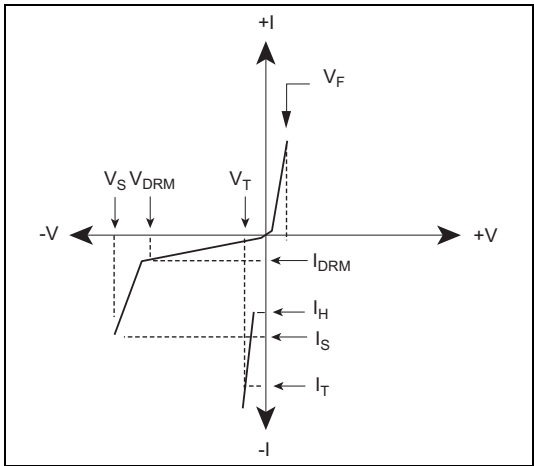
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- V_{DRM} is measured at I_{DRM}.
- V_S and V_F are measured at 100 V/ μ s.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured across pins 1-2, 2-3, 4-5, or 5-6 at 1 MHz with a 2 V bias and is a typical value. Capacitance across pins 1-3 or 4-6 is approximately half. "UC" capacitance is approximately 2x the listed value for "UA" product.
- Parallel capacitive loads may affect electrical parameters.

Surge Ratings

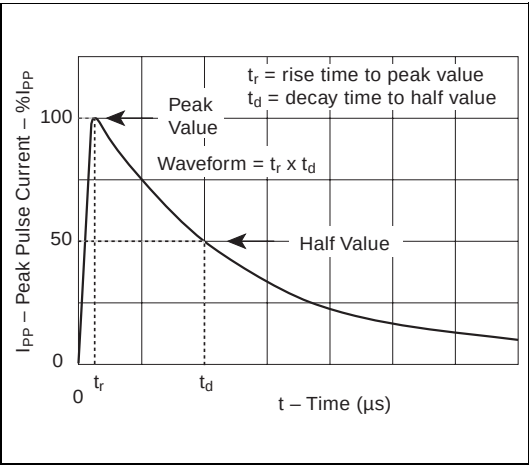
Series	I _{PP} 2x10 μ s Amps	I _{PP} 8x20 μ s Amps	I _{PP} 10x160 μ s Amps	I _{PP} 10x560 μ s Amps	I _{PP} 10x1000 μ s Amps	I _{TSM} 60 Hz Amps	di/dt Amps/ μ s
A	150	150	90	50	45	20	500
C	500	400	200	120	100	50	500

Thermal Considerations

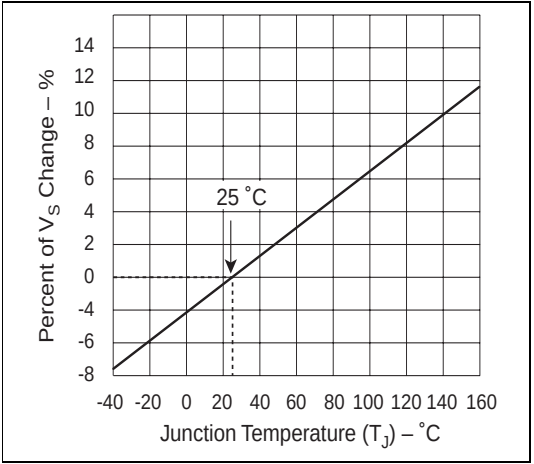
Package	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	60	°C/W



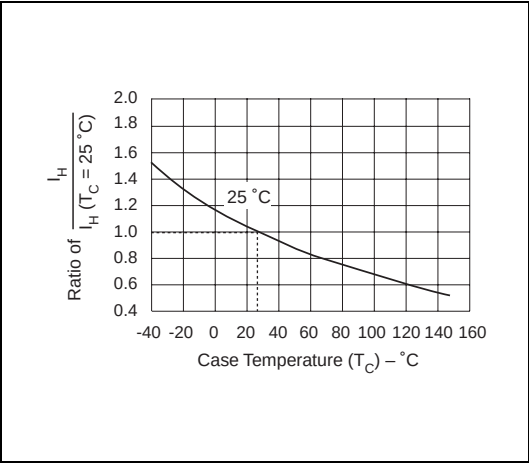
V-I Characteristics



$t_r \times t_d$ Pulse Wave-form



Normalized V_S Change versus Junction Temperature



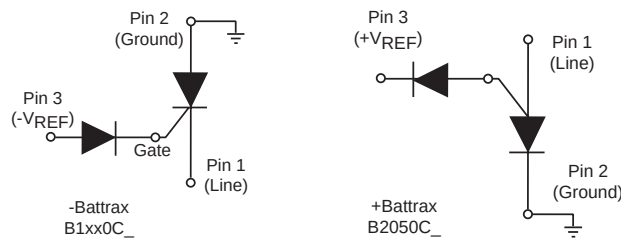
Normalized DC Holding Current versus Case Temperature

Data Sheets

Battrax SLIC Protector

This solid state protection device can be referenced to either a positive or negative voltage source. The B1xx0C_ is for a $-V_{REF}$ and the B2050C_ is for a $+V_{REF}$. Designed using an SCR and a gate diode, the B1xx0C_ Battrax begins to conduct at $|-V_{REF}| + |-1.2 \text{ V}|$ while the B2050C_ Battrax begins to conduct at $|+V_{REF}| + |1.2 \text{ V}|$.

For a diagram of a Battrax application, see Figure 3.44.



Electrical Parameters

Part Number *	V_{DRM} Volts	V_S Volts	V_T Volts	I_{DRM} μAmps	I_{GT} mAmps	I_T Amps	I_H mAmps	C_O pF
B1100C_	$ -V_{REF} + -1.2 \text{ V} $	$ -V_{REF} + -10 \text{ V} $	4	5	100	2.2	100	50
B1160C_	$ -V_{REF} + -1.2 \text{ V} $	$ -V_{REF} + -10 \text{ V} $	4	5	100	2.2	160	50
B1200C_	$ -V_{REF} + -1.2 \text{ V} $	$ -V_{REF} + -10 \text{ V} $	4	5	100	2.2	200	50
B2050C_	$ +V_{REF} + 1.2 \text{ V} $	$ +V_{REF} + 10 \text{ V} $	4	5	50	2.2	50	50

* For individual "CA" and "CC" surge ratings, see table below.

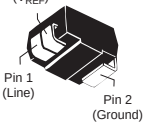
General Notes:

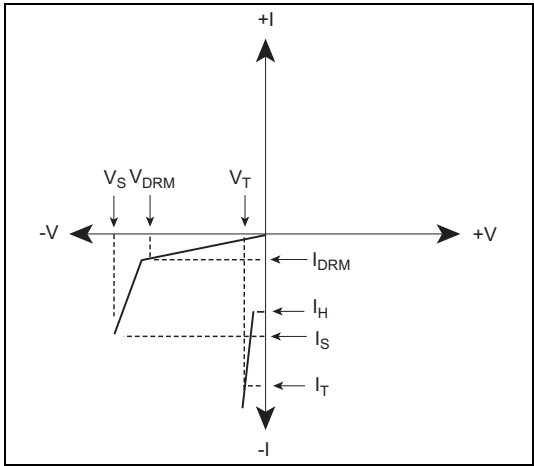
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- I_{PP} ratings assume $V_{REF} = \pm 48 \text{ V}$.
- V_{DRM} is measured at I_{DRM} .
- V_S is measured at 100 V/ μs .
- Off-state capacitance is measured at 1 MHz with a 2 V bias and is a typical value. "CC" product is approximately 2x the listed value.
- Positive Battrax information is preliminary data.
- V_{REF} maximum value for the negative Battrax is -200 V.
- V_{REF} maximum value for the positive Battrax is 110 V.

Surge Ratings

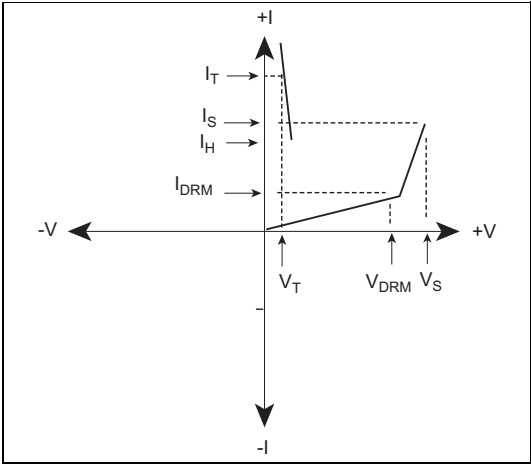
Series	I_{PP} 2x10 μs Amps	I_{PP} 8x20 μs Amps	I_{PP} 10x160 μs Amps	I_{PP} 10x560 μs Amps	I_{PP} 10x1000 μs Amps	I_{TSM} 60 Hz Amps	di/dt Amps/ μs
A	150	150	90	60	50	20	500
C	500	400	200	150	100	50	500

Thermal Considerations

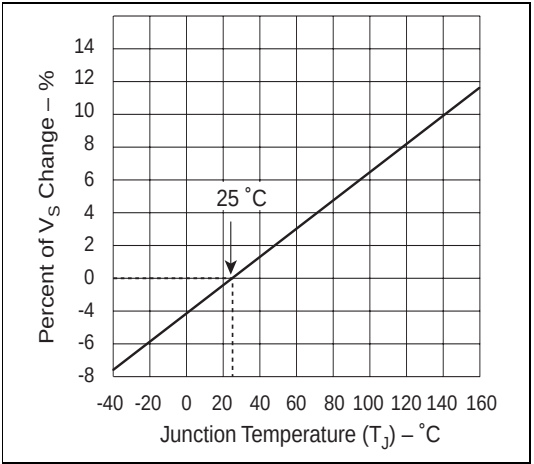
Package	Symbol	Parameter	Value	Unit
Modified DO-214AA 	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	85	°C/W



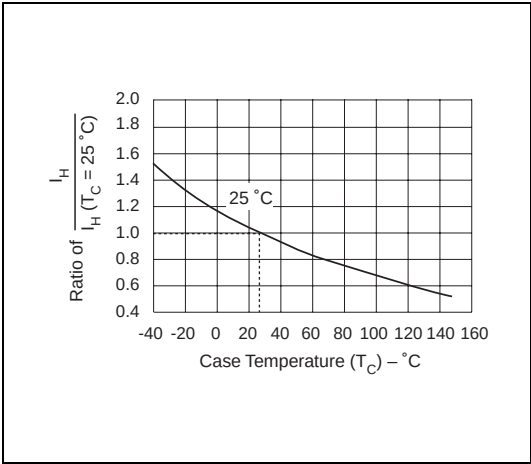
V-I Characteristics for Negative Battrax



V-I Characteristics for Positive Battrax

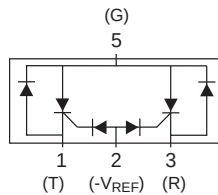


Normalized V_S Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature

Battrax Dual Negative SLIC Protector



This solid state *Battrax* protection device is referenced to a negative voltage source. Its dual-chip package also includes internal diodes for transient protection from positive surge events.

For a diagram of a *Battrax* application, see Figure 3.42.

Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _T Volts	V _F Volts	I _{DRM} μAmps	I _{GT} mAmps	I _T Amps	I _H mAmps	C _O pF
B1101U ₋	-V _{REF} + -1.2V	-V _{REF} + -10V	4	5	5	100	2.2	100	50
B1161U ₋	-V _{REF} + -1.2V	-V _{REF} + -10V	4	5	5	100	2.2	160	50
B1201U ₋	-V _{REF} + -1.2V	-V _{REF} + -10V	4	5	5	100	2.2	200	50

* For individual "UA" and "UC" surge ratings, see table below.

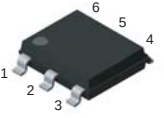
General Notes:

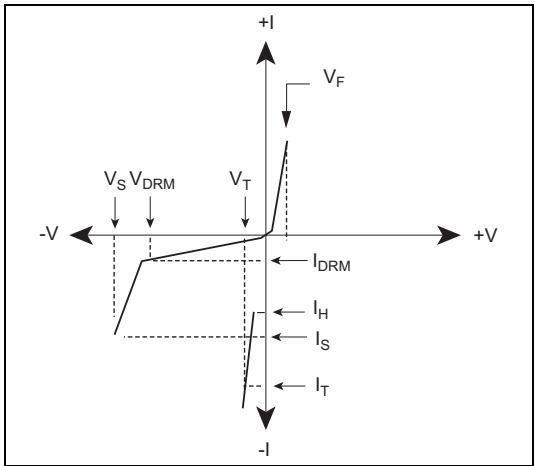
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- I_{PP} ratings assume a V_{REF} = -48 V.
- V_{DRM} is measured at I_{DRM}.
- V_S is measured at 100 V/μs.
- Off-state capacitance is measured at 1 MHz with a 2 V bias and is a typical value. "UC" product is approximately 2x the listed value.
- V_{REF} maximum value for the B1101, B1161, and/or B1201 is -200 V.

Surge Ratings

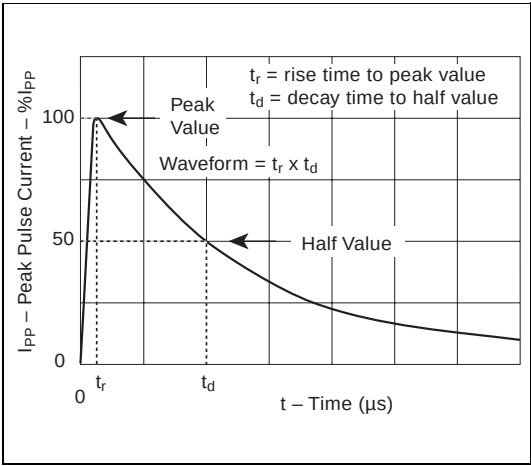
Series	I _{PP} 2x10 μs Amps	I _{PP} 8x20 μs Amps	I _{PP} 10x160 μs Amps	I _{PP} 10x560 μs Amps	I _{PP} 10x1000 μs Amps	I _{TSM} 60 Hz Amps	di/dt Amps/μs
A	150	150	90	50	45	20	500
C	500	400	200	120	100	50	500

Thermal Considerations

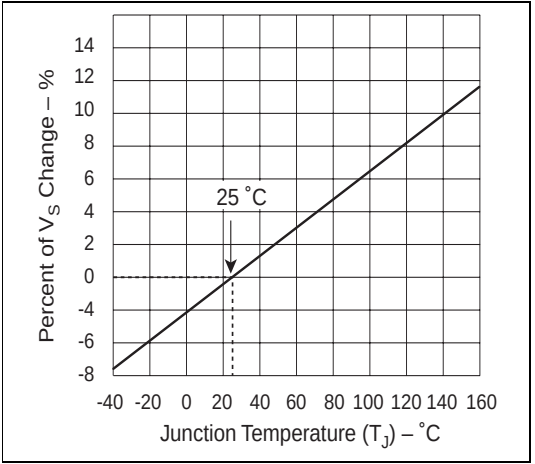
Package	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature Range	-40 to +125	$^{\circ}\text{C}$
	T_S	Storage Temperature Range	-65 to +150	$^{\circ}\text{C}$
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	60	$^{\circ}\text{C/W}$



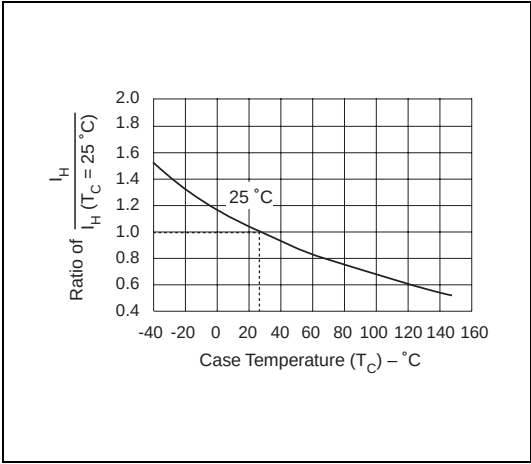
V-I Characteristics



$t_r \times t_d$ Pulse Wave-form

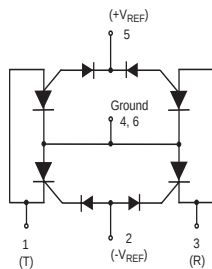


Normalized V_S Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature

Battrax Dual Positive/Negative SLIC Protector



This *Battrax* device protects Subscriber Line Interface Circuits (SLIC) that use both a positive and negative Ring voltage. It limits transient voltages with rise times of 100 V/ μ s to $V_{REF} \pm 10$ V.

Teccor's six-pin *Battrax* devices are constructed using four SCRs and four gate diodes. The SCRs conduct when a voltage that is more negative than $-V_{REF}$ (and/or more positive than $+V_{REF}$) is applied to the cathode (Pins 1 and 3) of the SCR. During conduction, the SCRs appear as a low-resistive path which forces all transients to be shorted to ground.

For a diagram of a *Battrax* application, see Figure 3.45.

Electrical Parameters

Part Number *	V_{DRM} Volts	V_S Volts	V_T Volts	I_{DRM} μ Amps	I_{GT} mAmps	I_T Amps	I_H mAmps	C_O pF
B3104U_	$ -V_{REF} + \pm 1.2V $	$ -V_{REF} + \pm 10V $	4	5	100	2.2	100	50
B3164U_	$ -V_{REF} + \pm 1.2V $	$ -V_{REF} + \pm 10V $	4	5	100	2.2	160	50
B3204U_	$ -V_{REF} + \pm 1.2V $	$ -V_{REF} + \pm 10V $	4	5	100	2.2	200	50

* For individual "UA" and "UC" surge ratings, see table below.

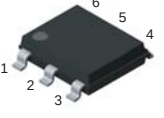
General Notes:

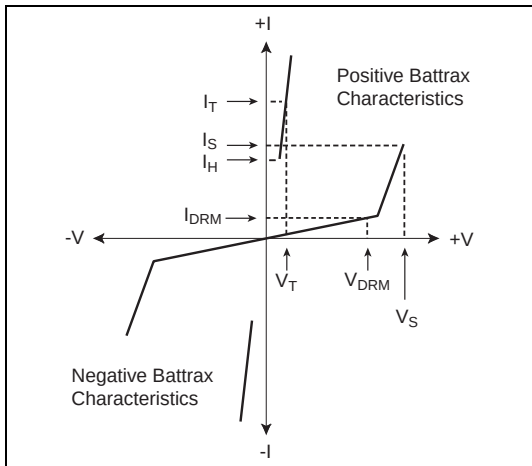
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- I_{PP} ratings assume a $V_{REF} = \pm 48$ V.
- V_{DRM} is measured at I_{DRM} .
- V_S is measured at 100 V/ μ s.
- Off-state capacitance is measured at 1 MHz with a 2 V bias and is a typical value. "UC" product is approximately 2x the listed value.
- Positive Battrax information is preliminary data.
- V_{REF} maximum value for the negative Battrax is -200 V.
- V_{REF} maximum value for the positive Battrax is 110 V.

Surge Ratings

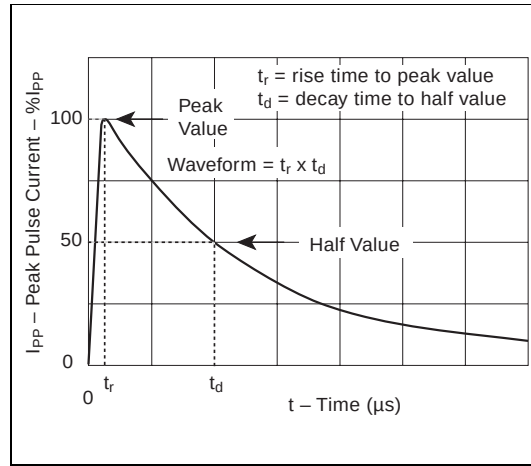
Series	I_{PP} 2x10 μ s Amps	I_{PP} 8x20 μ s Amps	I_{PP} 10x160 μ s Amps	I_{PP} 10x560 μ s Amps	I_{PP} 10x1000 μ s Amps	I_{TSM} 60 Hz Amps	di/dt Amps/ μ s
A	150	150	90	50	45	20	500
C	500	400	200	120	100	50	500

Thermal Considerations

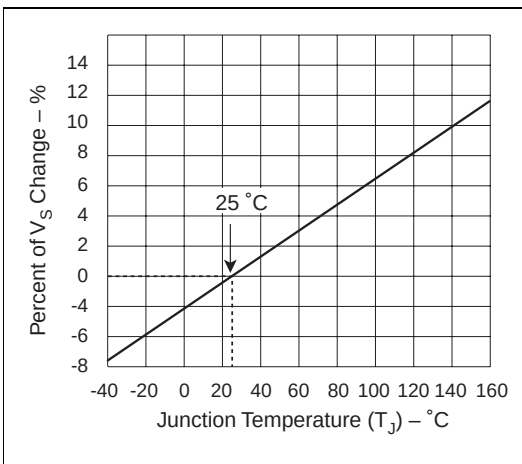
Package	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature Range	-40 to +125	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	60	°C/W



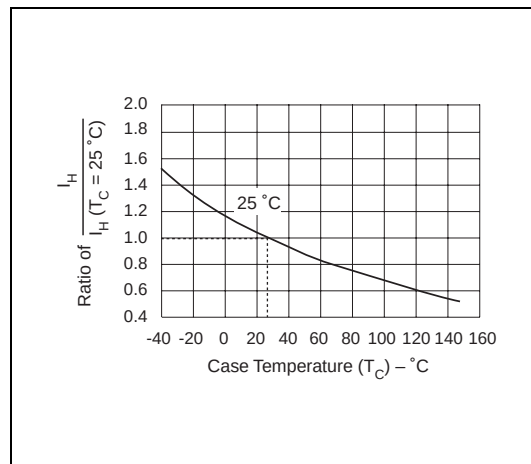
V-I Characteristics



$t_r \times t_d$ Pulse Wave-form

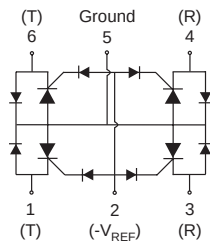


Normalized V_S Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature

Battrax Quad Negative SLIC Protector



This *Battrax* device is an integrated overvoltage protection solution for SLIC-based (Subscriber Line Interface Circuit) line cards. This six-pin device is constructed using four SCRs and four gate diodes.

The device is referenced to V_{BAT} and conducts when a voltage that is more negative than $-V_{REF}$ is applied to the cathode (pins 1, 3, 4, or 6) of the SCR. During conduction, all negative transients are shorted to Ground. All positive transients are passed to Ground by steering diodes.

For specific diagrams showing these *Battrax* applications, see Figure 3.43.

Electrical Parameters

Part Number *	V_{DRM} Volts	V_S Volts	V_T Volts	I_{DRM} μ Amps	I_{GT} mAmps	I_T Amps	I_H mAmps	C_O pF
B1101U_4 **	$ -V_{REF} + -1.2V $	$ -V_{REF} + -10V $	4	5	100	2.2	100	50
B1161U_4 **	$ -V_{REF} + -1.2V $	$ -V_{REF} + -10V $	4	5	100	2.2	160	50
B1201U_4 **	$ -V_{REF} + -1.2V $	$ -V_{REF} + -10V $	4	5	100	2.2	200	50

* For individual "UA" and "UC" surge ratings, see table below.

** Contact factory for release date.

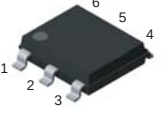
General Notes:

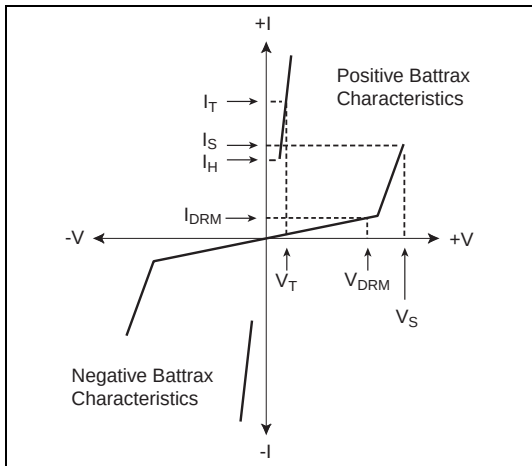
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- I_{PP} ratings assume a $V_{REF} = \pm 48$ V.
- V_{DRM} is measured at I_{DRM} .
- V_S is measured at 100 V/ μ s.
- Off-state capacitance is measured at 1 MHz with a 2 V bias and is a typical value. "UC" product is approximately 2x the listed value.
- V_{REF} maximum value for the negative Battrax is -200 V.

Surge Ratings

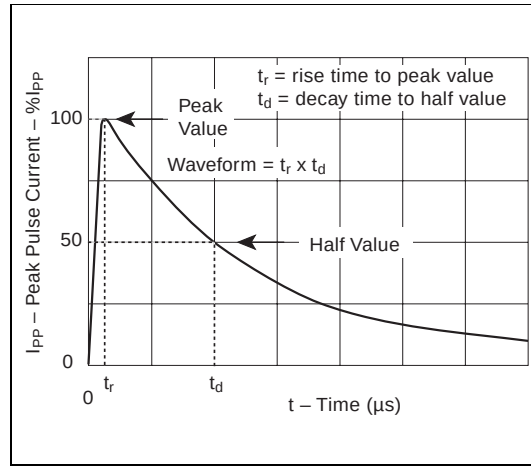
Series	I_{PP} 2x10 μ s Amps	I_{PP} 8x20 μ s Amps	I_{PP} 10x160 μ s Amps	I_{PP} 10x560 μ s Amps	I_{PP} 10x1000 μ s Amps	I_{TSM} 60 Hz Amps	di/dt Amps/ μ s
A	150	150	90	50	45	20	500
C	500	400	200	120	100	50	500

Thermal Considerations

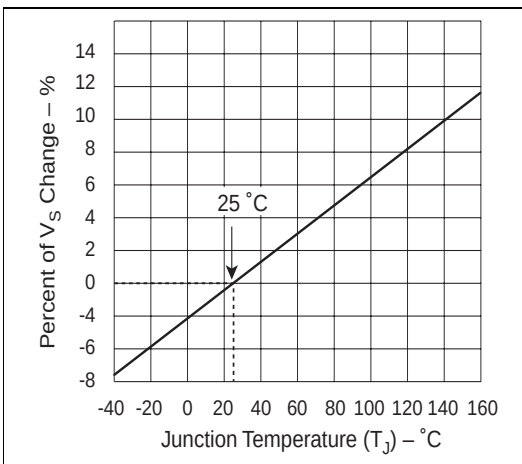
Package	Symbol	Parameter	Value	Unit
	T_J	Operating Junction Temperature Range	-40 to +125	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	60	°C/W



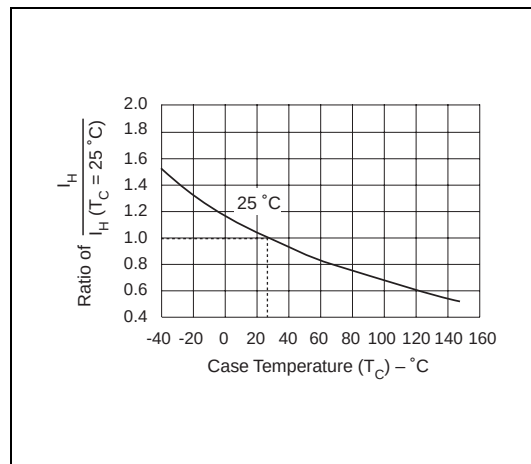
V-I Characteristics



$t_r \times t_d$ Pulse Wave-form



Normalized V_S Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature

CATV and HFC SIDACtor Device



This *SIDACtor* device is a 1000 A solid state protection device offered in a TO-220 package. It protects equipment located in the severe surge environment of Community Antenna TV (CATV) applications.

Used in Hybrid Fiber Coax (HFC) applications, this device replaces the gas tube traditionally used for station protection, because a *SIDACtor* device has a much tighter voltage tolerance.

Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μAmps	I _S mAmps	I _T Amps	I _H mAmps	C _O pF
								Pins 1-3
P1400AD	120	160	3	5	800	2.2	50	200
P1800AD	170	220	3	5	800	2.2	50	150

* For surge ratings, see table below.

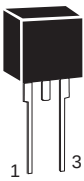
General Notes:

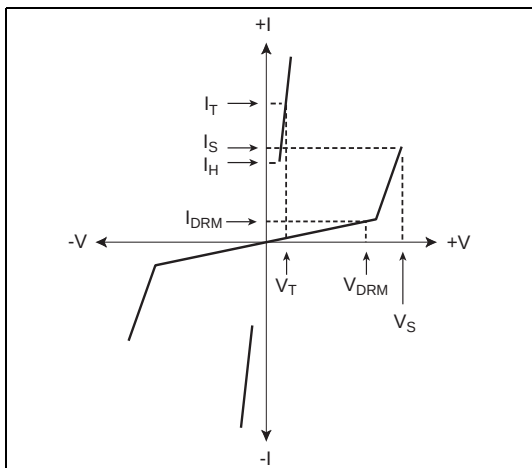
- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed *SIDACtor* devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM}.
- V_S is measured at 100 V/μs.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured at 1 MHz with a 2 V bias and is a typical value.

Surge Ratings

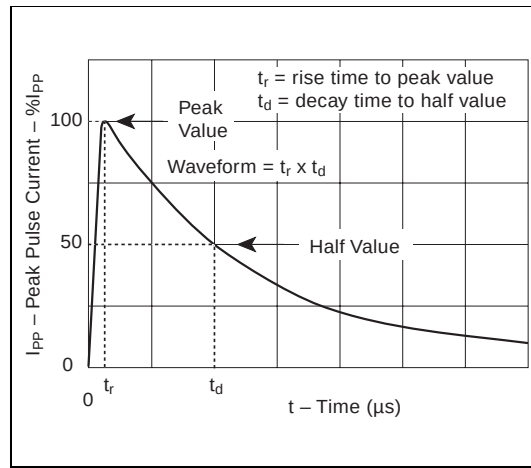
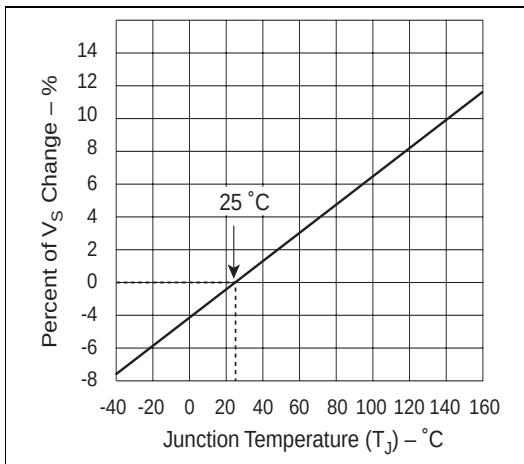
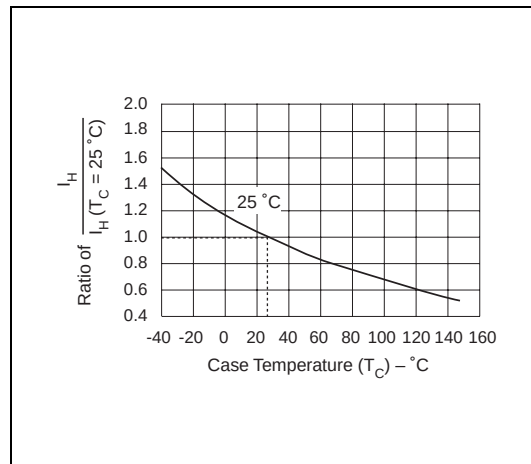
Series	I _{PP} 8x20 μs Amps	I _{PP} 10x1000 μs Amps	I _{TSM} 60 Hz Amps	di/dt Amps/μs
D	1000	250	120	500

Thermal Considerations

Package	Symbol	Parameter	Value	Unit
Modified TO-220 	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	60	°C/W

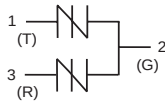


V-I Characteristics

 $t_r \times t_d$ Pulse Wave-formNormalized V_S Change versus Junction Temperature

Normalized DC Holding Current versus Case Temperature

High Surge Current *SIDACtor* Device



This *SIDACtor* device is a 1000 A solid state protection device offered in a TO-220 package. It protects equipment located in the severe surge environment of Community Antenna TV (CATV) applications.

This device can replace the gas tubes traditionally used for station protection because *SIDACtor* devices have much tighter voltage tolerances.

Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μAmps	I _S mAmps	I _T Amps	I _H mAmps	Co pF
								Pins 1-3
P6002AD	550	700	5.5	5	800	2.2	50	60

* For surge ratings, see table below.



Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μAmps	I _S mAmps	I _T Amps	I _H mAmps	Co pF
								Pins 1-3
P3100AD	280	360	5.5	5	800	2.2	120	115

* For surge ratings, see table below.

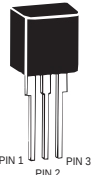
General Notes:

- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed *SIDACtor* devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM}.
- V_S is measured at 100 V/μs.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured at 1 MHz with a 2 V bias and is a typical value.

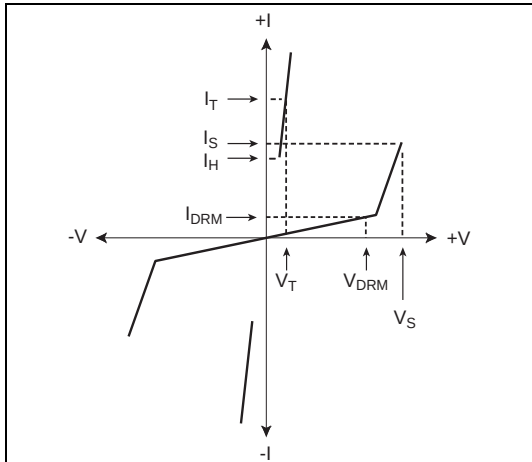
Surge Ratings

Series	I _{PP} 8x20 μs Amps	I _{PP} 10x1000 μs Amps	I _{TSM} 60 Hz Amps	di/dt Amps/μs
D	1000	250	120	500

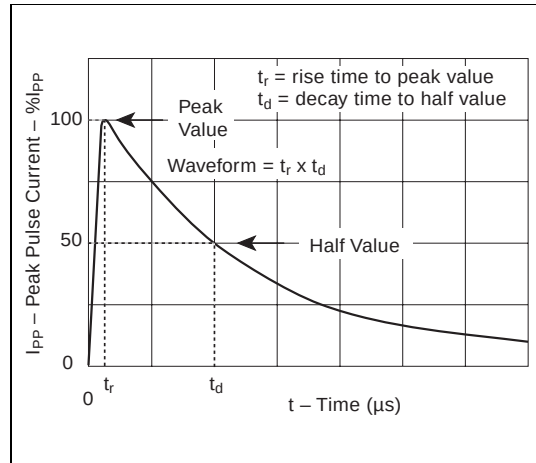
Thermal Considerations

Package	Symbol	Parameter	Value	Unit
Modified TO-220 	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	60	°C/W

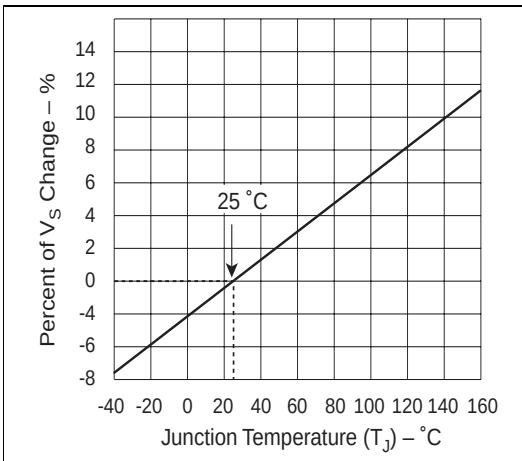
Note: P6002AD is shown. P3100AD has no center lead.



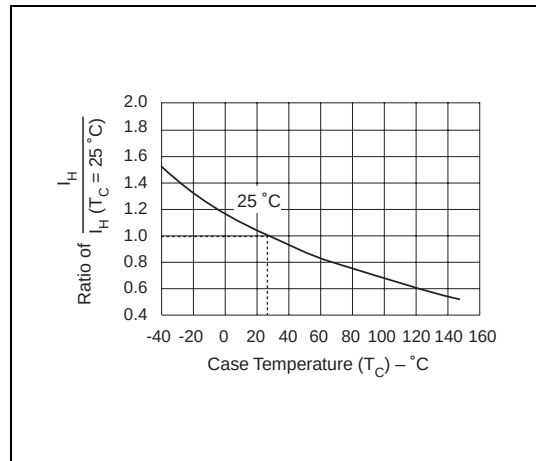
V-I Characteristics



$t_r \times t_d$ Pulse Wave-form



Normalized V_S Change versus Junction Temperature



Normalized DC Holding Current versus Case Temperature

CATV Line Amplifiers/Power Inserters ME SIDACtor Device



This *SIDACtor* device is a 5000 A solid state protection device offered in a non-isolated TO-218 package. It protects equipment located in the severe surge environment of CATV (Community Antenna TV) applications.

In CATV line amplifiers and power inserters, this device can replace the gas tubes traditionally used for station protection because *SIDACtor* devices have much tighter voltage tolerances.

Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μ Amps	I _S mAmps	I _T Amps **	I _H mAmps	C _O pF
P1500ME	140	180	4	5	800	2.2/25	50	750
P1900ME	140	220	4	5	800	2.2/25	50	750
P2300ME	180	260	4	5	800	2.2/25	50	750

* For surge ratings, see table below.

** I_T is a free air rating; heat sink I_T rating is 25 A.

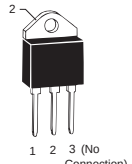
General Notes:

- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed *SIDACtor* devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM}.
- V_S is measured at 100 V/ μ s.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured at 1 MHz with a 2 V bias and is a typical value.

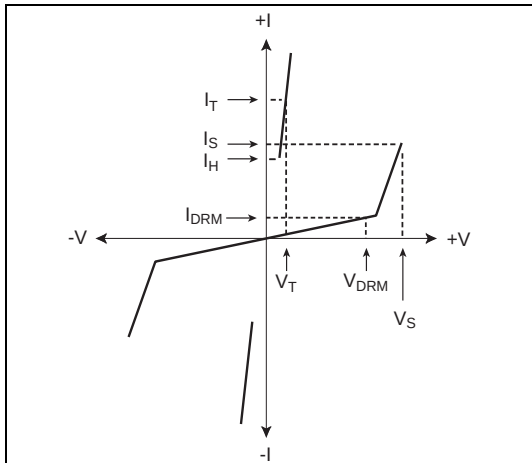
Surge Ratings

Series	I _{PP} 8x20 μ s Amps	I _{TSM} 60 Hz Amps	di/dt Amps/ μ s
E	5000	400	630

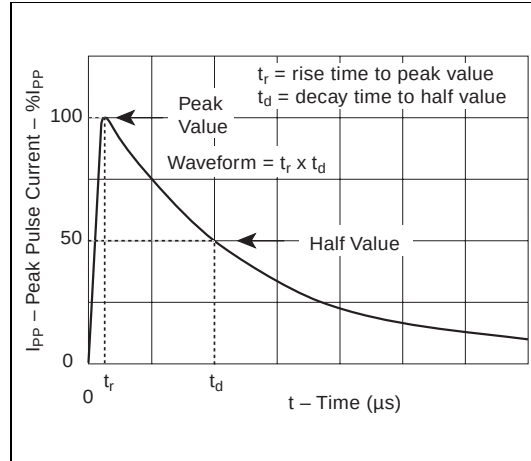
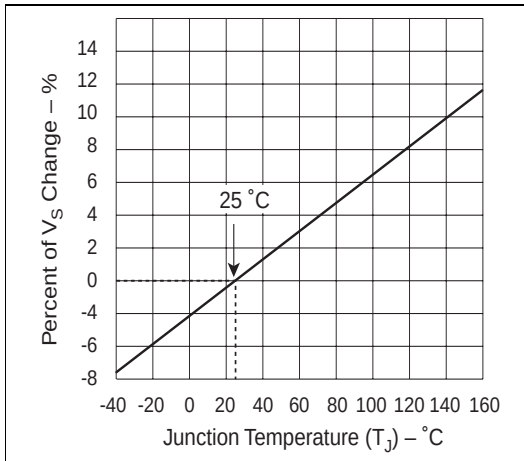
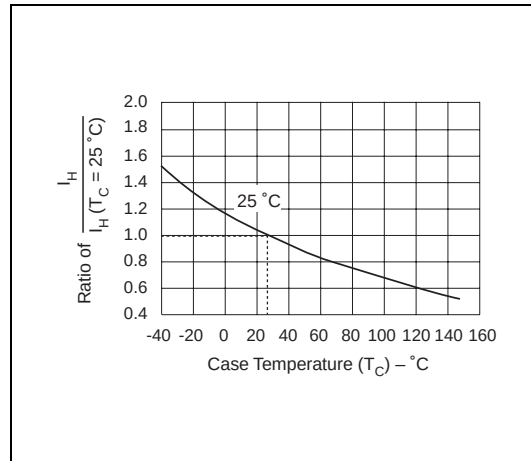
Thermal Considerations

Package	Symbol	Parameter	Value	Unit
TO-218 	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	T_C	Maximum Case Temperature	100	°C
	$R_{\theta JC}^*$	Thermal Resistance: Junction to Case	1.7	°C/W
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	56	°C/W

* $R_{\theta JC}$ rating assumes the use of a heat sink and on state mode for extended time at 25 A, with average power dissipation of 29.125 W.



V-I Characteristics

 $t_r \times t_d$ Pulse Wave-formNormalized V_S Change versus Junction Temperature

Normalized DC Holding Current versus Case Temperature

CATV Line Amplifiers/Power Inserters NE SIDACtor Device



This *SIDACtor* device is a 3000 A solid state protection device offered in a non-isolated TO-263 (D²) package. It protects equipment located in the severe surge environment of CATV (Community Antenna TV) applications.

In CATV line amplifiers and power inserters, this device can replace the gas tubes traditionally used for station protection because *SIDACtor* devices have much tighter voltage tolerances.

Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μ Amps	I _S mAmps	I _T Amps **	I _H mAmps	C _O pF
P1900NE	140	220	4	5	800	2.2/25	50	260

* For surge ratings, see table below.

** I_T is a free air rating; heat sink I_T rating is 25 A.

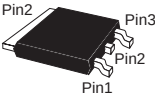
General Notes:

- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed *SIDACtor* devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM}.
- V_S is measured at 100 V/ μ s.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured at 1 MHz with a 2 V bias and is a typical value.

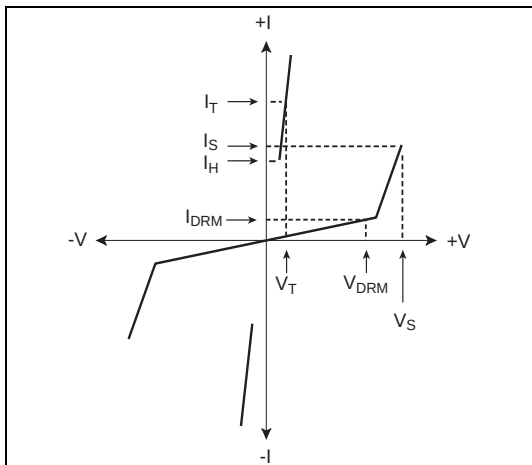
Surge Ratings

Series	I _{PP} 8x20 μ s Amps	I _{TSM} 60 Hz Amps	di/dt Amps/ μ s
E	3000	400	500

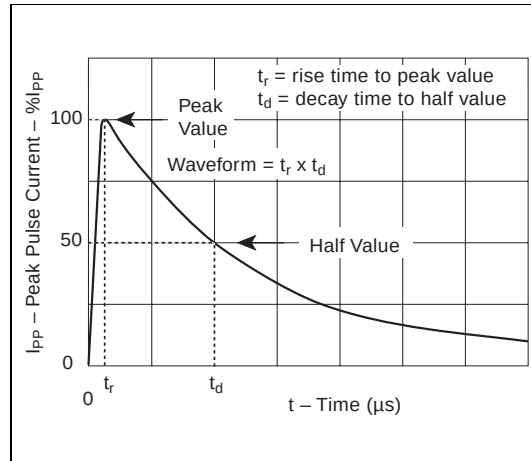
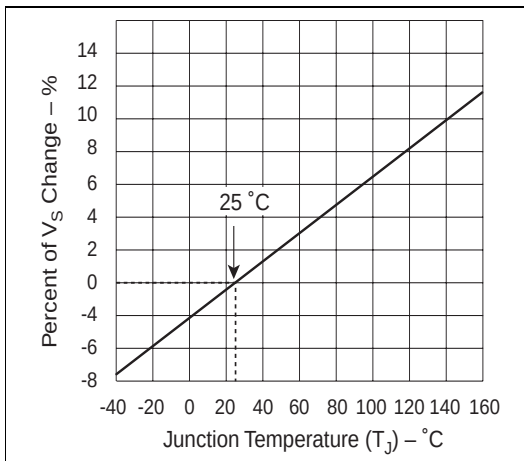
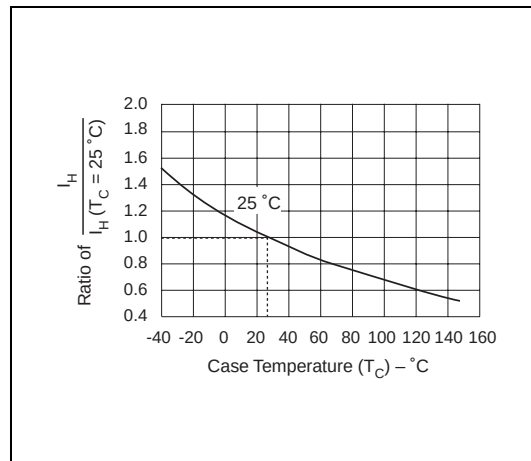
Thermal Considerations

Package	Symbol	Parameter	Value	Unit
TO-263 D ² PAK 	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	T_C	Maximum Case Temperature	100	°C
	$R_{\theta JC}^*$	Thermal Resistance: Junction to Case	1.7	°C/W
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	56	°C/W

* $R_{\theta JC}$ rating assumes the use of a heat sink and on state mode for extended time at 25 A, with average power dissipation of 29.125 W.



V-I Characteristics

 $t_r \times t_d$ Pulse Wave-formNormalized V_S Change versus Junction Temperature

Normalized DC Holding Current versus Case Temperature

CATV Line Amplifiers/Power Inserters RE SIDACtor Device



This *SIDACtor* device is a 3000 A solid state protection device offered in a non-isolated TO-220 package. It protects equipment located in the severe surge environment of CATV (Community Antenna TV) applications.

In CATV line amplifiers and power inserters, this device can replace the gas tubes traditionally used for station protection because *SIDACtor* devices have much tighter voltage tolerances.

Electrical Parameters

Part Number *	V _{DRM} Volts	V _S Volts	V _T Volts	I _{DRM} μ Amps	I _S mAmps	I _T Amps **	I _H mAmps	C _O pF
P1900RE	140	220	4	5	800	2.2/25	50	260

* For surge ratings, see table below.

** I_T is a free air rating; heat sink I_T rating is 25 A.

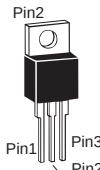
General Notes:

- All measurements are made at an ambient temperature of 25 °C. I_{PP} applies to -40 °C through +85 °C temperature range.
- I_{PP} is a repetitive surge rating and is guaranteed for the life of the product.
- Listed *SIDACtor* devices are bi-directional. All electrical parameters and surge ratings apply to forward and reverse polarities.
- V_{DRM} is measured at I_{DRM}.
- V_S is measured at 100 V/ μ s.
- Special voltage (V_S and V_{DRM}) and holding current (I_H) requirements are available upon request.
- Off-state capacitance is measured at 1 MHz with a 2 V bias and is a typical value.

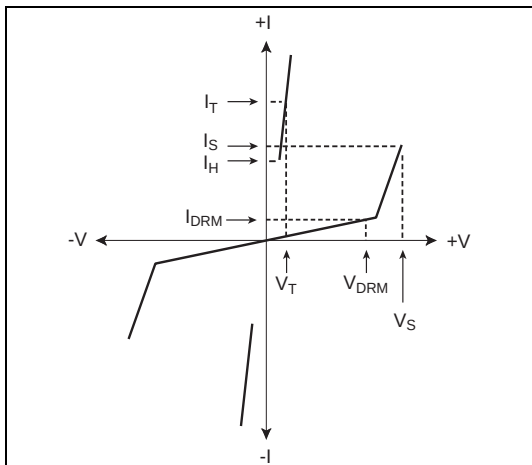
Surge Ratings

Series	I _{PP} 8x20 μ s Amps	I _{TSM} 60 Hz Amps	di/dt Amps/ μ s
E	3000	400	500

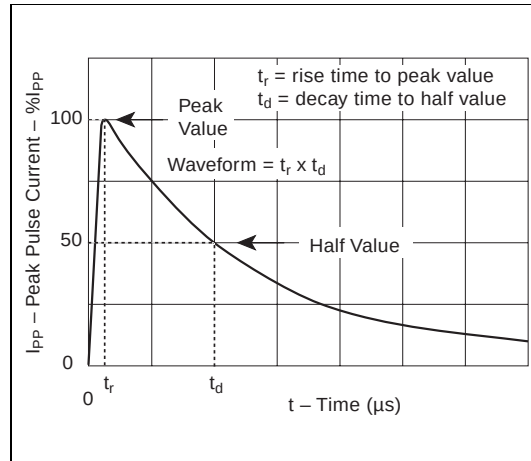
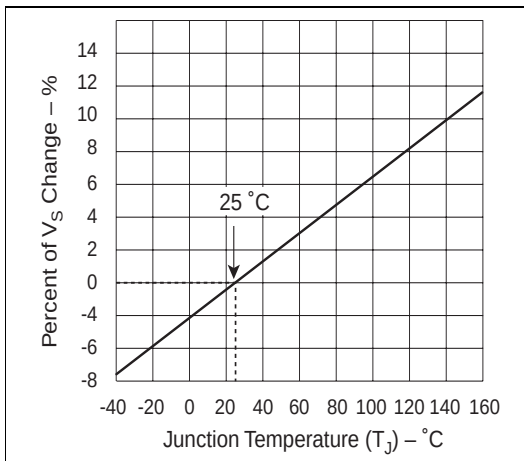
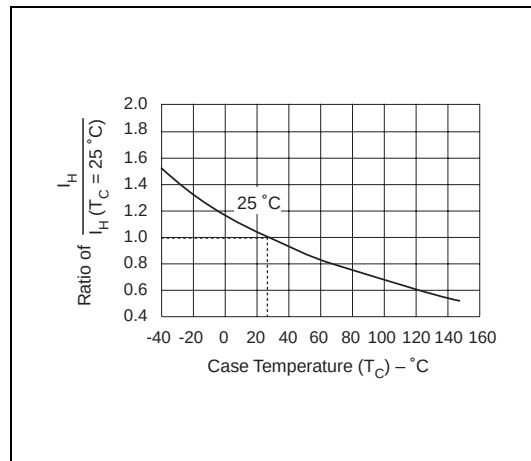
Thermal Considerations

Package	Symbol	Parameter	Value	Unit
TO-220 	T_J	Operating Junction Temperature Range	-40 to +150	°C
	T_S	Storage Temperature Range	-65 to +150	°C
	T_C	Maximum Case Temperature	100	°C
	$R_{\theta JC}^*$	Thermal Resistance: Junction to Case	1.7	°C/W
	$R_{\theta JA}$	Thermal Resistance: Junction to Ambient	56	°C/W

* $R_{\theta JC}$ rating assumes the use of a heat sink and on state mode for extended time at 25 A, with average power dissipation of 29.125 W.

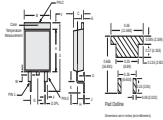


V-I Characteristics

 $t_r \times t_d$ Pulse Wave-formNormalized V_S Change versus Junction Temperature

Normalized DC Holding Current versus Case Temperature

TeleLink Fuse



The *TeleLink* Surface Mount (SM) surge resistant fuse offers circuit protection without requiring a series resistor. When used in conjunction with the *SIDACtor* Transient Voltage Suppressor (TVS), the *TeleLink* SM fuse and the *SIDACtor* TVS provide a complete regulatory-compliant solution for standards such as GR 1089, TIA-968 (formerly known as FCC Part 68), UL 60950, and ITU K.20 and K.21. No series resistor is required for the F1250T and F1251T to comply with these standards.

Contact factory for enhanced K.20 and K.21 details.

Surge Ratings

<i>TeleLink</i> SM Fuse	I _{pp} 2x10 μs Amps	I _{pp} 10x160 μs Amps	I _{pp} 10x560 μs Amps	I _{pp} 10x1000 μs Amps
F0500T	100	65	45	35
F1250T	500	160	115	100
F1251T	500	160	115	100

Interrupting Values

<i>TeleLink</i> SM Fuse	Voltage Rating	Current Rating	I ² t Measured at DC Rated Voltage	Interrupting Rating			
				Voltage, Current	MIN	TYP	MAX
F0500T	250 V	500 mA	1.3 A ² s	600 V, 40 A	1 ms	2 ms	60 ms
F1250T	250 V	1.25 A	22.2 A ² s	600 V, 60 A *	1 ms	2 ms	60 ms
F1251T	250 V	2 A	30 A ² s	600 V, 60 A *	1 ms	2 ms	60 ms

* Interrupt test characterized at 50° to 70° phase angle. Phase angles approximating 90° may result in damage to the body of the fuse.

Notes:

- The *TeleLink* SM fuse is designed to carry 100% of its rated current for four hours and 250% of its rated current for one second minimum and 120 seconds maximum. Typical time is four to 10 seconds. For optimal performance, an operating current of 80% or less is recommended.
- I²t is a non-repetitive RMS surge current rating for a period of 16.7 ms.

Resistance Ratings

<i>TeleLink</i> SM Fuse	Typical Voltage Drop @ Rated Current	DC Cold Resistance	
		MIN	MAX
F0500T	0.471 V	0.420 Ω	0.640 Ω
F1250T	0.205 V	0.107 Ω	0.150 Ω
F1251T	0.110 V	0.050 Ω	0.100 Ω

Notes:

- Typical inductance < 40 nH up to 500 MHz.
- Resistance changes 0.5% for every °C.
- Resistance is measured at 10% rated current.

Qualification Data

The F1250T and F1251T meet the following test conditions per GR 1089 **without** additional series resistance. However, in-circuit test verification is required. Note that considerable heating may occur during Test 4 of the Second Level AC Power Fault Test.

First Level Lightning Surge Test

Test	Surge Voltage Volts	Wave-form μ s	Surge Current Amps	Repetitions Each Polarity
1	± 600	10x1000	100	25
2	± 1000	10x360	100	25
3	± 1000	10x1000	100	25
4	± 2500	2x10	500	10
5	± 1000	10x360	25	5

Second Level Lightning Surge Test

Test	Surge Voltage Volts	Wave-form μ s	Surge Current Amps	Repetitions Each Polarity
1	± 5000	2x10	500	1

First Level AC Power Fault Test

Test	Applied Voltage, 60 Hz V_{RMS}	Short Circuit Current Amps	Duration
1	50	0.33	15 min
2	100	0.17	15 min
3	200, 400, 600	1 at 600 V	60 applications, 1 s each
4	1000	1	60 applications, 1 s each
5	*	*	60 applications, 5 s each
6	600	0.5	30 s each
7	600	2.2	2 s each
8	600	3	1 s each
9	1000	5	0.5 s each

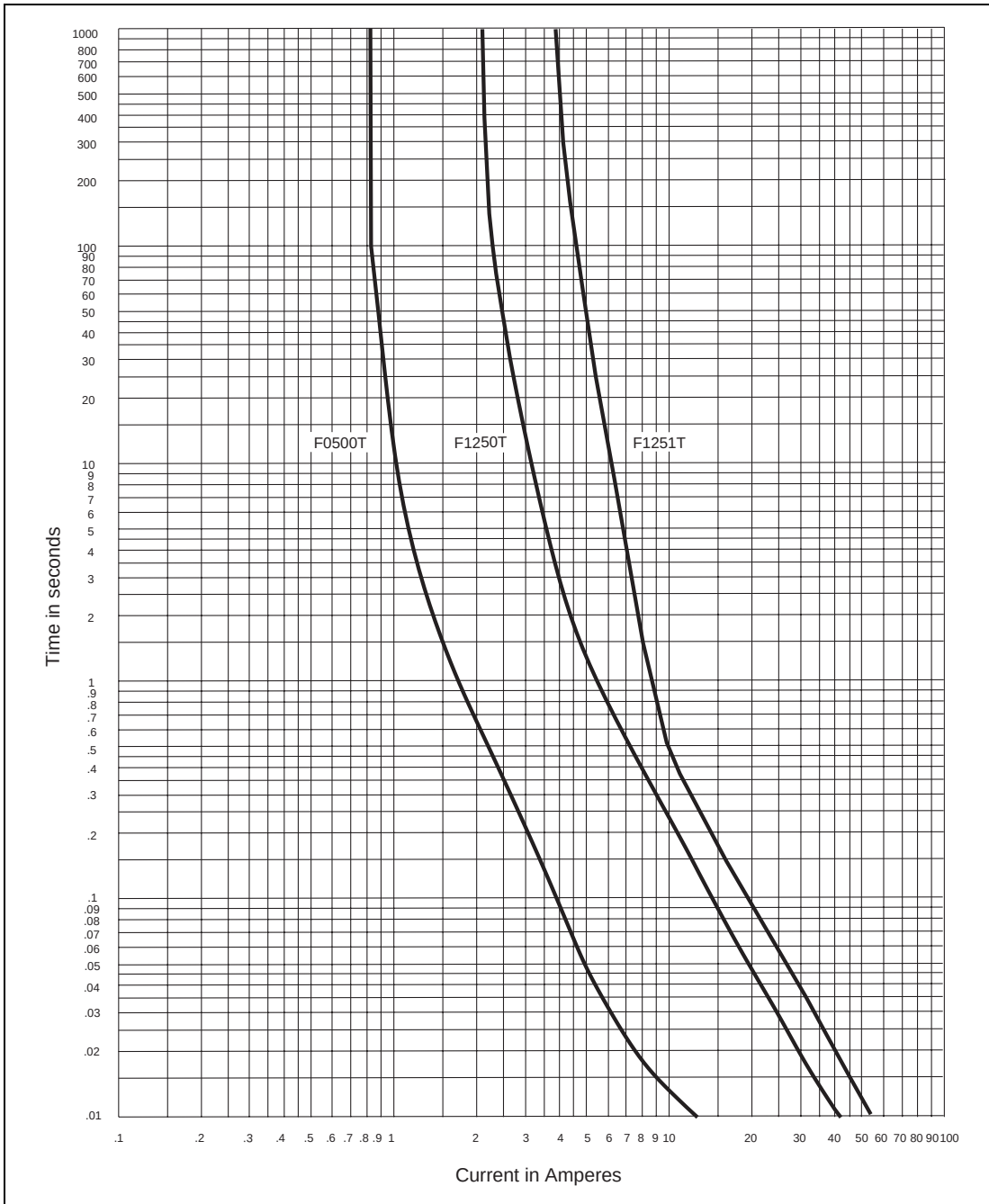
* Test 5 simulates a high impedance induction fault. For specific information, please contact Teccor Electronics.

Second Level AC Power Fault Test for Non-Customer Premises Equipment

Test	Applied Voltage, 60 Hz V_{RMS}	Short Circuit Current Amps	Duration
1	120, 277	30	30 min
2	600	60	5 s
3	600	7	5 s
4	100-600	2.2 at 600 V	30 min

Notes:

- Power fault tests equal or exceed the requirements of UL 60950 3rd edition.
- Test 4 is intended to produce a maximum heating effect. Temperature readings can exceed 150 °C.
- Test 2 may be dependent on the closing angle of the voltage source. Fuse is characterized at 50° to 70°. Closing angles approximating 90° may result in damage to the body of the fuse.
- Use caution when routing internal traces adjacent to the F1250T and F1251T.



Time Current Curve

Temperature Derating Curve

Operating temperature is -55 °C to +125 °C with proper correction factor applied.

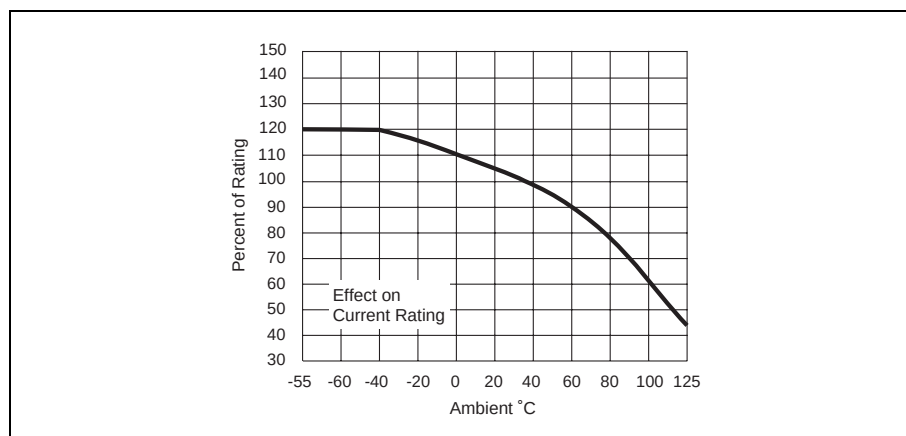


Chart of Correction Factor

Maximum Temperature Rise

TeleLink Fuse	Temperature Reading
F0500T	≤75 °C (167 °F) *
F1250T	≤75 °C (167 °F) *
F1251T	≤75 °C (167 °F) *

* Higher currents and PCB layout designs can affect this parameter.

Notes:

- Readings are measured at rated current after temperature stabilizes
- The F1250T meets the requirements of UL 248-14. However, board layout, board trace widths, and ambient temperature values can cause higher than expected rises in temperature. During UL testing, the typical recorded heat rise for the F1250T at 2.2 A was 120 °C.

Package Symbolization

Marking	F0500T	F1250T	F1251T	Manufactured in USA	Manufactured in Taiwan
FU	F			U	
FT	F				T
JU		J		U	
JT		J			T
NU			N	U	
NT			N		T

