

SOLID STATE DEVICES INC

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SFT 8500

2 AMP

HIGH VOLTAGE NPN TRANSISTOR

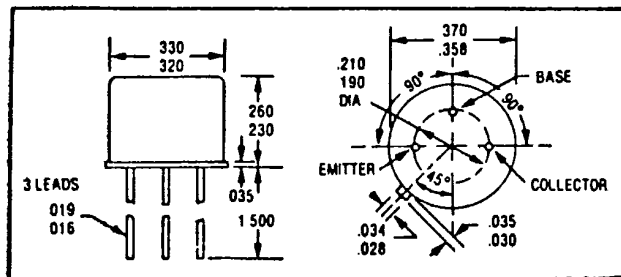
1000 VOLTS



14830 Valley View Avenue
La Mirada, California 90638
(213) 921-9660
TWX 910-583-4807
FAX 213-921-2396

CASE STYLE W

JEDEC TO-5



FEATURES

- BV_{CEO} 600 VOLTS MIN.
- LOW V_{CE} (SAT) 0.8V
- 175°C OPERATING, GOLD EUTECTIC DIE ATTACH
- LINEAR GAIN FROM 10mA TO 500mA
- HIGH SPEED
- GLASS PASSIVATED
- REPLACES PRODUCT PREVIOUSLY AVAILABLE IN TO-3 ONLY

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector - Emitter Voltage	V _{CEO}	600	Volts
R _{BE} - 1K Ohms	V _{CER}	1000	Volts
Collector - Base Voltage	V _{CBO}	1000	Volts
Emitter - Base Voltage	V _{EBO}	6	Volts
Collector Current	I _C	2	Amps
Base Current	I _B	.75	mAmps
Total Device Dissipation @ TC = 25°C @ TA = 25°C Unheatsunk	P _D	10 1.0	Watts Watts
Operating and Storage Temperature	T _J , T _{stg}	-65 to +175°	C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Value	Unit
Thermal Resistance, Junction to Case	R _{θJC} , (R _{θJA})	15, (150)	C W

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min.	Max.	Unit
Collector - Emitter Breakdown Voltage*	BV _{CEO}	600		Vdc
(I _C = 10 mA dc)	BV _{CER}	1000		Vdc
(I _C = 20 uA dc, R _{BE} = 1K ohms)				
Collector - Base Breakdown Voltage	BV _{CBO}	1000		Vdc
(I _C = 20 uA dc)				
Emitter - Base Breakdown Voltage	BV _{EBO}	6		Vdc
(I _E = 20 uA dc)				

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NOTE. All specifications subject to change without notice

ELECTRICAL CHARACTERISTICS

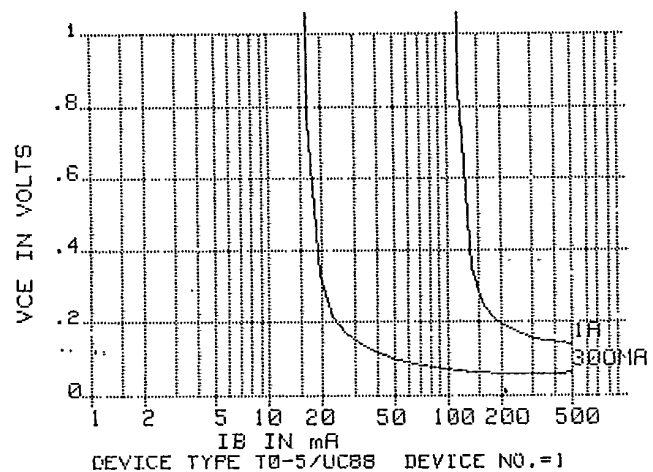
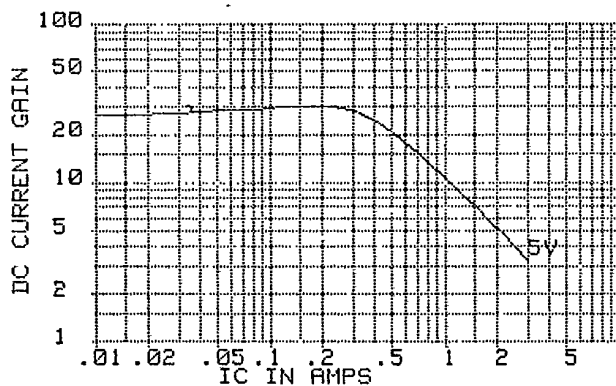
Characteristics	Symbol	Min.	Max.	Unit
Collector Cutoff Current ($V_{CE} = 800V$)	I_{CES}		10	μA_{dc}
Collector Cutoff Current ($V_{CB} = 800V$)	I_{CBO}		10	μA_{dc}
Emitter Cutoff Current ($V_{EB} = 4V$)	I_{EBO}		10	μA_{dc}
DC Current Gain* ($I_C = 20\text{ m}$ Adc. $V_{CE} = 5\text{ Vdc}$) ($I_C = 100\text{ m}$ Adc. $V_{CE} = 5\text{ Vdc}$) ($I_C = 500\text{ m}$ Adc. $V_{CE} = 5\text{ Vdc}$)	h_{FE}	20 20 15	100 100 100	
Collector - Emitter Saturation Voltage* ($I_C = 300\text{ m}$ Adc. $I_B = 30\text{ m}$ Adc) ($I_C = 1\text{ A}$ Adc. $I_B = 300\text{ m}$ Adc)	$V_{CE (SAT)}$		0.8 1.0	V_{dc} V_{dc}
Base - Emitter Saturation Voltage* $I_C = 1\text{ A}$ Adc, $I_B = 200\text{ mA}$ Adc)	$V_{BE (SAT)}$		1.1	V_{dc}
Current - Gain - Bandwidth Product ($I_C = 100\text{ m}$ Adc. $V_{CE} = 5\text{ Vdc}$, $f = 1\text{ MHz}$)	f_T	30		MHz
Output Capacitance ($V_{CB} = 20\text{ Vdc}$, $I_E = 0$, $f = 1\text{ MHz}$)	C_{ob}		25	

SWITCHING TIMES

Delay Time	$(V_{CC} = 125\text{ Vdc}$ $I_C = 2\text{ A}$ Adc, $I_{B1} = I_{B2} = .2\text{ A}$)	t_d		150	ns
Rise Time		t_r		200	ns
Storage Time		t_s		3000	ns
Fall Time		t_f		300	ns

*Pulse Test: Pulse width = 300 μs , DutyCycle = 2%

TYPICAL OPERATING CURVES



SOLID STATE DEVICES, INC.

SFT6800

3 AMP

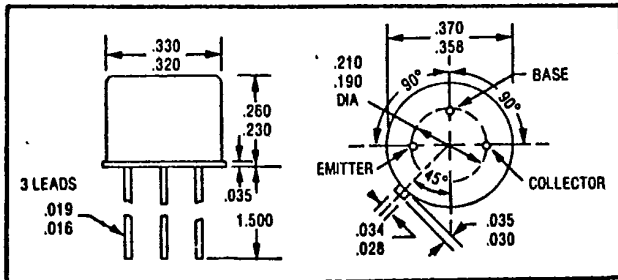
HIGH VOLTAGE NPN TRANSISTOR

800 VOLTS



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CASE STYLE W JEDEC TO-5



FEATURES

- BV_{CEO} TO 400 VOLTS
- LOW SATURATION VOLTAGE
- VERY LOW LEAKAGE
- 200°C OPERATING, GOLD EUTECTIC DIE ATTACH
- HIGH LINEAR GAIN FROM 1 mA TO 1 AMP
- SUPERIOR PERFORMANCE OVER THE POPULAR 2N5662 AND 2N5663 SERIES
- DESIGNED FOR COMPLEMENTARY USE WITH SFT6900 (PNP)

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector - Emitter Voltage	V _{CEO}	400	Volts
R _{BE} = 1 K Ohms	V _{CER}	800	
Collector - Base Voltage	V _{CBO}	800	Volts
Emitter - Base Voltage	V _{EBO}	10	Volts
Collector Current	I _C	3.0	Amps
Base Current	I _B	1.0	Amps
Total Device Dissipation @ TC = 25 °C	P _D	5.0	Watts
Derate above 25 °C		160	mW/°C
Operating and Storage Temperature	T _j , T _{stg}	-65 to +200	°C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Value	Unit
Thermal Resistance, Junction to Case	R _{θJC}	6	°C/W

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min.	Max.	Unit
Collector - Emitter Breakdown Voltage*				
(I _C = 50 mA Adc) T _p = 300 uSec	BV _{CEO} *	400		Vdc
(I _C = 100 u Adc, R _{BE} = 1 K ohms)	BV _{CER} *	800		
Collector - Base Breakdown Voltage				Vdc
(I _C = 100 u Adc)	BV _{CBO}	800		
Emitter - Base Breakdown Voltage				Vdc
(I _E = 20 u Adc)	BV _{EBO}	10		

NOTE: All specifications subject to change without notice.

ELECTRICAL CHARACTERISTICS

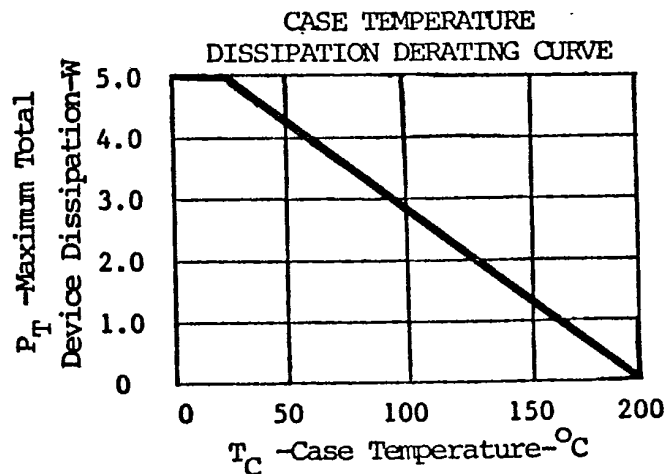
Characteristics	Symbol	Min.	Max.	Unit
Collector Cutoff Current ($V_{CE} = 400 \text{ Vdc}$, $V_{BE} = -1.5 \text{ Vdc}$)	$I_{CE} V$		200	nAdc
Collector Cutoff Current ($V_{CB} = 400 \text{ Vdc}$)	I_{CBO}		200	nAdc
Emitter Cutoff Current ($V_{EB} = 6 \text{ Vdc}$)	I_{EBO}		200	nAdc
DC Current Gain* ($I_C = 50 \text{ mAdc}$, $V_{CE} = 5 \text{ Vdc}$) ($I_C = 500 \text{ mAdc}$, $V_{CE} = 5 \text{ Vdc}$) ($I_C = 1.0 \text{ Adc}$, $V_{CE} = 5 \text{ Vdc}$)	h_{FE}	50 40 25	250 200	
Collector - Emitter Saturation Voltage* ($I_C = 500 \text{ mAdc}$, $I_B = 50 \text{ mAdc}$) ($I_C = 1.0 \text{ Adc}$, $I_B = 100 \text{ mAdc}$)	$V_{CE (SAT)}$		500 600	mVdc
Base - Emitter Saturation Voltage* ($I_C = 500 \text{ mAdc}$, $I_B = 50 \text{ mAdc}$) ($I_C = 1.0 \text{ Adc}$, $I_B = 100 \text{ mAdc}$)	$V_{BE (SAT)}$		1.0 1.2	Vdc
Current - Gain - Bandwidth Product ($I_C = 50 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$, $f = 20 \text{ MHz}$)	f_T	25		MHz
Output Capacitance ($V_{CB} = 30 \text{ Vdc}$, $I_E = 0$, $f = 2 \text{ MHz}$)	C_{ob}		40	pf

SWITCHING TIMES

Delay Time	(V _{CC} = 150 Vdc, I _C = 1.0 Adc, I _{B1} = I _{B2} = 100 mAdc)	t_d			
Rise Time		t_r +		350	ns
Storage Time		t_s			
Fall Time		t_f +		2.0	us

*Pulse Test: Pulse width = 300 us, DutyCycle = 2%

TYPICAL OPERATING CURVES



SOLID STATE DEVICES, INC.

2N5152 AND 2N5154

5 AMP

HIGH SPEED NPN TRANSISTOR

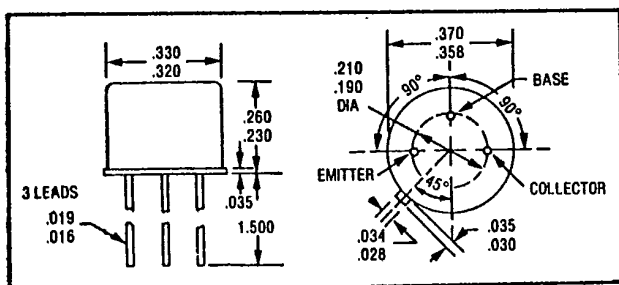
100 VOLTS



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CASE STYLE W

JEDEC TO-5



FEATURES

- RADIATION TOLERANT
- FAST SWITCHING, 500 NSEC MAX t_{on}
- HIGH FREQUENCY, TYPICAL f_T 100 MHZ
- V_{CE0} 80 VOLTS MIN
- HIGH LINEAR GAIN, LOW SATURATION VOLTAGE
- 200°C OPERATING, GOLD EUTECTIC DIE ATTACH
- DESIGNED FOR COMPLEMENTARY USE WITH 2N5151 AND 2N5153

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector - Emitter Voltage	V_{CE0}	80	Volts
Collector - Base Voltage	V_{CBO}	100	Volts
Emitter - Base Voltage	V_{EBO}	5.5	Volts
Collector Current	I_C	5	Amps
Base Current	I_B	2.5	Amps
Total Device Dissipation @ $T_C = 50^\circ C$	P_D	10	Watts
Derate above 50 °C		66.6	mW/°C
Operating and Storage Temperature	T_j, T_{stg}	-65 to +200	°C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Value	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	15	°C/W

ELECTRICAL CHARACTERISTICS

Characteristics	Symbol	Min.	Max.	Unit
Collector - Emitter Breakdown Voltage* ($I_C = 100$ mAdc)	BV_{CE0}^*	80		Vdc
Collector - Base Breakdown Voltage ($I_C = 200$ uAdc)	BV_{CBO}	100		Vdc
Emitter - Base Breakdown Voltage ($I_E = 200$ uAdc)	BV_{EBO}	5.5		Vdc

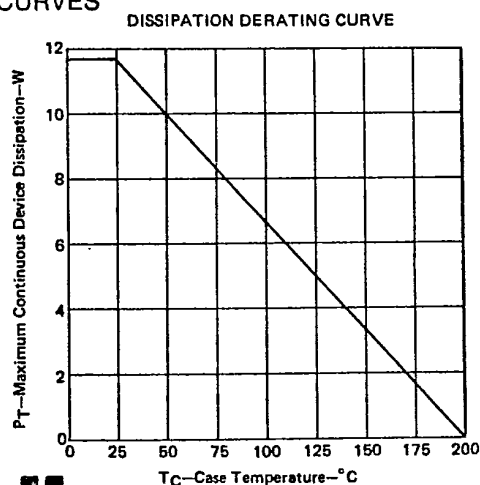
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ELECTRICAL CHARACTERISTICS

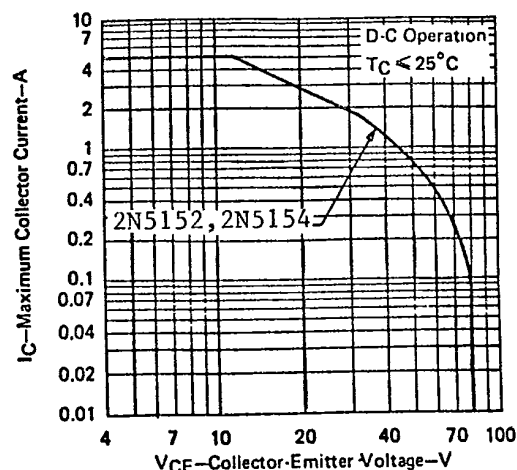
Characteristics	Symbol	Min.	Max.	Unit
Collector Cutoff Current ($V_{CE} = 40 \text{ Vdc}$)	I_{CEO}		50	μAdc
($V_{CE} = 60 \text{ Vdc}$, $V_{BE} = 2 \text{ Vdc}$, $T_C = 150^\circ\text{C}$)	I_{CEV}		500	μAdc
Collector Cutoff Current ($V_{CE} = 60 \text{ Vdc}$)	I_{CES}		1.0	μAdc
($V_{CE} = 100 \text{ Vdc}$)			1.0	mAdc
Emitter Cutoff Current ($V_{EB} = 4 \text{ Vdc}$)	I_{EBO}		1.0	μAdc
($V_{EB} = 5.5 \text{ Vdc}$)			1.0	mAdc
DC Current Gain*	h_{FE}			
($I_C = 50 \text{ mAdc}$, $V_{CE} = 5 \text{ Vdc}$)		20		
($I_C = 2.5 \text{ Adc}$, $V_{CE} = 5 \text{ Vdc}$)		50		
($I_C = 5 \text{ Adc}$, $V_{CE} = 5 \text{ Vdc}$)		30	90	
		70	200	
		20		
		40		
Collector - Emitter Saturation Voltage*	$V_{CE(SAT)}$			Vdc
($I_C = 2.5 \text{ Adc}$, $I_B = 250 \text{ mAdc}$)			0.75	
($I_C = 5 \text{ Adc}$, $I_B = 500 \text{ mAdc}$)			1.5	
Base - Emitter Saturation Voltage*	$V_{BE(SAT)}$			Vdc
($I_C = 2.5 \text{ Adc}$, $I_B = 250 \text{ mAdc}$)			1.45	
($I_C = 5 \text{ Adc}$, $I_B = 500 \text{ mAdc}$)			2.2	
Current - Gain - Bandwidth Product ($I_C = 500 \text{ mAdc}$, $V_{CE} = 5 \text{ Vdc}$, $f = 20 \text{ MHz}$)	f_T	60		MHz
		70		
Output Capacitance ($V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $f = 1 \text{ MHz}$)	C_{ob}		250	pf
Base - Emitter Voltage * ($V_{CE} = 5 \text{ Vdc}$, $I_C = 2.5 \text{ Adc}$)	$V_{BE(ON)}$		1.45	Vdc
Delay Time ($V_{CC} = 30 \text{ Vdc}$, $I_C = 5 \text{ Adc}$, (t_{on})	t_d			
Rise Time	t_r		500	ns
Storage Time ($V_{EB}(\text{off}) = 3.7 \text{ Vdc}$, (t_{off})	t_s			
Fall Time ($I_{B1} = I_{B2} = 500 \text{ mAdc}$, $R_L = 6 \text{ Ohms}$)	t_f		1.3	μs

*Pulse Test: Pulse width = 300 μs , DutyCycle = 2%

TYPICAL OPERATING CURVES



FORWARD BIAS DC SAFE OPERATION AREA (S.O.A. CURVE)
CURVES APPLY BELOW RATED V_{CEO} $T_C = 25^\circ\text{C}$



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