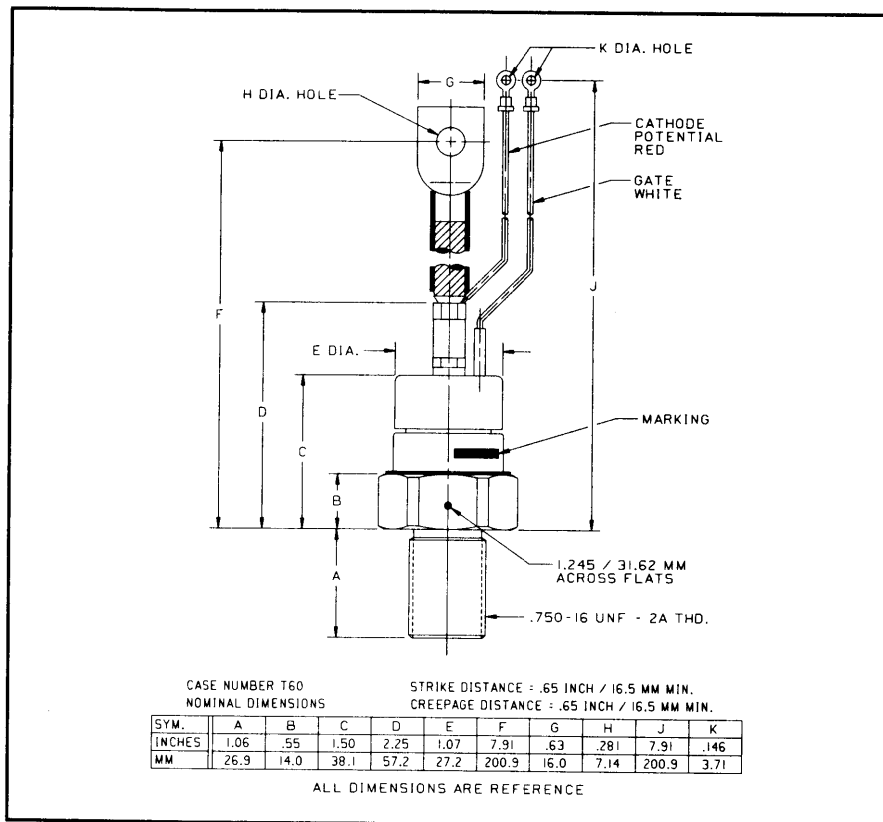


Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (412) 925-7272
Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

Phase Control SCR
175 Amperes Average
1200 Volts

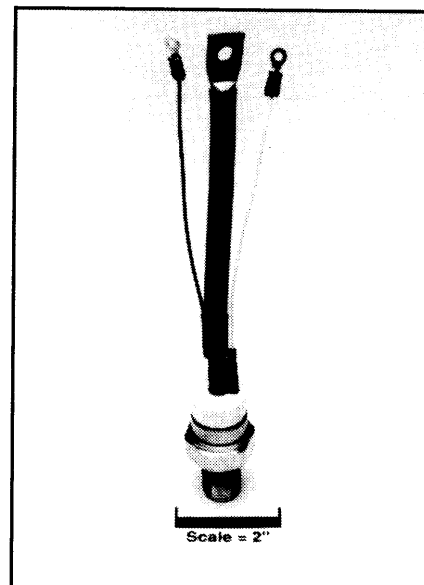


2N3884-2N3895 (Outline Drawing)

Ordering Information:

Select the complete six digit part number you desire from the table, i.e. 2N3895 is a 1200 Volt, 175 Ampere Phase Control SCR.

Type	Voltage	Current
	V_{DRM} V_{RRM}	$I_{T(av)}$
2N3884	50	175
2N3885	100	
2N3886	200	
2N3887	300	
2N3888	400	
2N3889	500	
2N3890	600	
2N3891	700	
2N3892	800	
2N3893	900	
2N3894	1000	
2N3895	1200	



2N3884-2N3895
Phase Control SCR
175 Amperes Average, 1200 Volts

Description:

Powerex Silicon Controlled Rectifiers (SCR) are designed for phase control applications. These are all-diffused, compression bonded encapsulated (CBE) devices employing the field-proven amplifying (di/namic) gate.

Features:

- ☐ Low On-State Voltage
- ☐ High di/dt
- ☐ High dv/dt
- ☐ Hermetic Packaging
- ☐ Excellent Surge and I^2t Ratings

Applications:

- ☐ Power Supplies
- ☐ Battery Chargers
- ☐ Motor Control



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2N3884-2N3895

Phase Control SCR

175Amperes Average, 1200 Volts

Absolute Maximum Ratings

	Symbol	2N3884-3895	Units
RMS On-State Current	$I_{T(RMS)}$	275	Amperes
Average On-State Current	$I_{T(av)}$	175	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (60Hz)	I_{TSM}	4500	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz)	I_{TSM}	4100	Amperes
Critical Rate-of-Rise of On-State Current (Non-Repetitive)	di/dt	800	Amperes/ μs
Critical Rate-of-Rise of On-State Current (Repetitive)	di/dt	150	Amperes/ μs
I^2t (for Fusing), 8.3 milliseconds	I^2t	84,000	A^2sec
Peak Gate Power Dissipation	P_{GM}	15	Watts
Average Gate Power Dissipation	$P_{G(av)}$	3	Watts
Storage Temperature	T_{STG}	-40 to 150	$^{\circ}C$
Operating Temperature	T_J	-40 to 125	$^{\circ}C$
Mounting Torque		300	in.-lb.
Mounting Torque		340	kg-cm



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2N3884-2N3895

Phase Control SCR

175 Amperes Average, 1200 Volts

Electrical and Thermal Characteristics

Characteristics	Symbol	Test Conditions	2N3884-3895	Units
Voltage—Blocking State Maximums				
Forward Leakage, Peak	I_{ORM}	$T_J = 125^\circ\text{C}$, $V_{DRM} = \text{rated}$	25	mA
Reverse Leakage, Peak	I_{RRM}	$T_J = 125^\circ\text{C}$, $V_{RRM} = \text{rated}$	25	mA
Current—Conducting State Maximums				
Peak On-State Voltage	V_{TM}	$I_{TM} = 625\text{A}$, $T_J = 25^\circ\text{C}$	1.55	Volts
Switching				
Typical Turn-Off Time	t_q	$I_T = 150\text{A}$, $T_J = 125^\circ\text{C}$, $di_R/dt = 12.5\text{A}/\mu\text{sec}$, reapplied $dv/dt = 20\text{V}/\mu\text{sec}$ linear to $0.8 V_{DRM}$	100	μsec
Typical Turn-On Time	t_{on}	$I_T = 100\text{A}$, $V_D = 100\text{V}$	5	μsec
Min. Critical dv/dt exponential to V_{DRM}	dv/dt	$T_J = 125^\circ\text{C}$	300	$\text{V}/\mu\text{sec}$
Thermal				
Maximum Thermal Resistance, Junction to Case	$R_{\theta JC}$		.13	$^\circ\text{C}/\text{Watt}$
Case to Sink, Lubricated	$R_{\theta CS}$		.075	$^\circ\text{C}/\text{Watt}$
Gate—Maximum Parameters				
Gate Current to Trigger	I_{GT}	$T_J = 25^\circ\text{C}$, $V_D = 12\text{V}$	150	mA
Gate Voltage to Trigger	V_{GT}	$T_J = 25^\circ\text{C}$, $V_D = 12\text{V}$	3	Volts
Non-Triggering Gate Voltage	V_{GDM}	$T_J = 125^\circ\text{C}$, $V = \text{rated } V_{DRM}$	.15	Volts
Peak Forward Gate Current	I_{GTM}		4	Amperes
Peak Reverse Gate Voltage	V_{GRM}		5	Volts

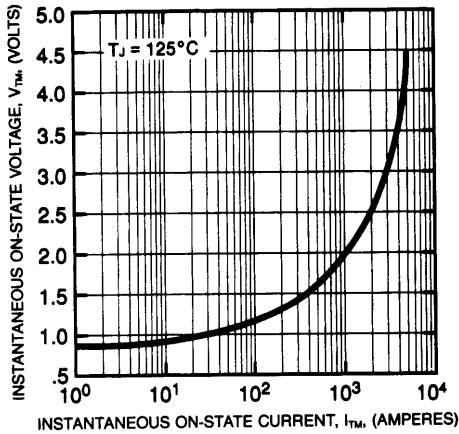
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2N3884-2N3895

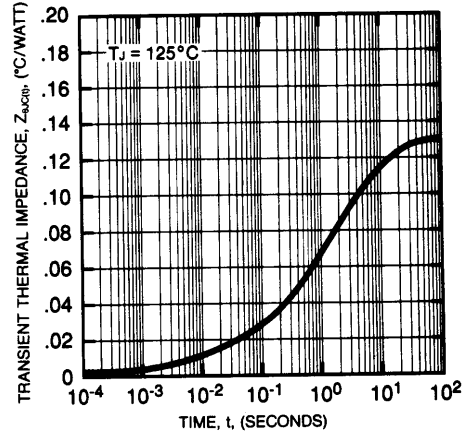
Phase Control SCR

175 Ampere Averages, 1200 Volts

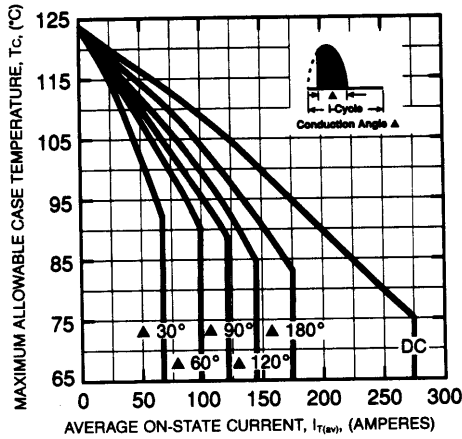
MAXIMUM ON-STATE CHARACTERISTICS



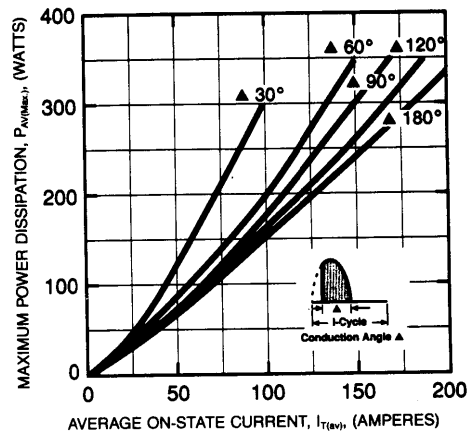
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)



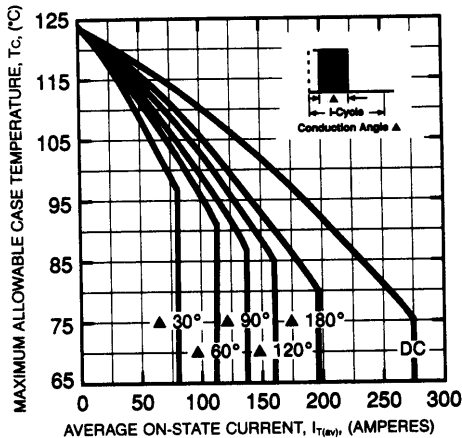
MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)



MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)



MAXIMUM ALLOWABLE CASE TEMPERATURE (RECTANGULAR WAVEFORM)



MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)

