

POWEREX

T760

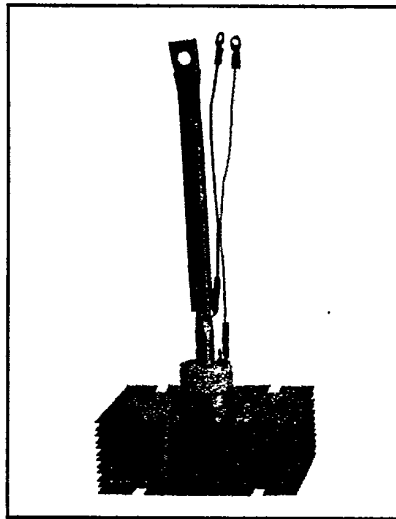
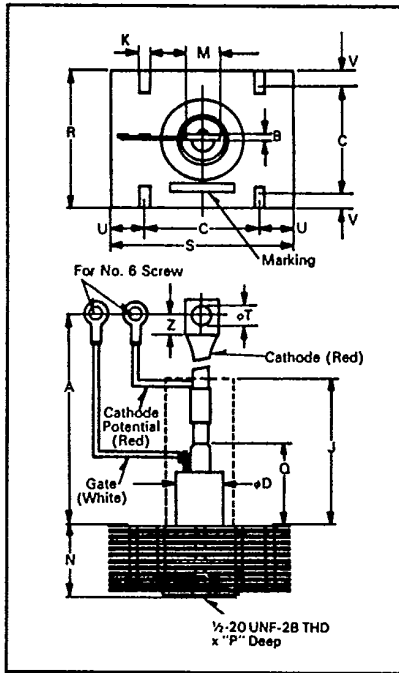
T-25-19

Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272

Powerex Europe, S.A., 428 Ave. G. Durand, BP107, 72003 LeMans, France (43) 72.75.15

Phase Control SCR

300 Amperes Avg
100-2000 Volts



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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 I²t Ratings
- ☐ Integral Heat Sink

Applications:

- ☐ Power Supplies
- ☐ Battery Chargers
- ☐ Motor Control
- ☐ Light Dimmers
- ☐ VAR Generators

Ordering Information

Example: Select the complete eight digit part number you desire from the table – i.e. T7601030 is a 1000 Volt, 300 Ampere Phase Control SCR.

T76 Outline Drawing

Dimensions	Inches		Millimeters	
	Min.	Max.	Min.	Max.
A	9.00	10.00	228.60	254.00
B	.063	.172	1.60	4.37
C	2.980	3.020	75.69	76.71
φD	—	1.490	—	37.85
J	3.750	—	95.25	—
K	.272	.292	6.91	7.42
M	.530	.755	13.46	19.18
N	2.030	2.150	51.56	54.61
P	.500	—	12.70	—
Q	—	2.670	—	67.81
R	3.937	4.063	100.00	103.20
S	4.937	5.063	125.40	128.60
φT	.330	.350	8.38	8.89
U	.970	1.030	24.64	26.16
V	.470	.530	11.94	13.46
Z	.440	—	11.18	—

Creep Distance—1.76 in. min. (44.91 mm)

Strike Distance—.81 in. min. (20.70 mm).

(In accordance with NEMA standards.)

Finish—Nickel Plate.

Approx. Weight—5 lb. (2.3 kg.).

1. Angular orientation of terminals are undefined.

2. Pitch diameter of 1/2-20 UNF-2A (coated) threads (ASA B1.1-1960).

3. Dimension "J" denotes seated height with leads bent at right angles.

Type	Voltage		Current	
	V _{ORM} V _{RRM}	Code	I _T (avg)	Code
T760	100	01	300	30
	200	02		
	400	04		
	600	06		
	800	08		
	1000	10		
	1200	12		
	1300	13		
	1400	14		
	1500	15		
	1600	16		
	1700	17		
	1800	18		
	2000	20		



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Absolute Maximum Ratings

	Symbol	T760	Units
RMS On-State Current	$I_{T(RMS)}$	470	Amperes
Average On-State Current	$I_{T(av)}$	300	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (60Hz) ^①	I_{TSM}	8400	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz) ^①	I_{TSM}	7650	Amperes
Critical Rate-of-Rise of On-State Current (Non-Repetitive) ^{② ③ ④}	di/dt	600	Amperes/ μ s
Critical Rate-of-Rise of On-State Current (Repetitive)	di/dt	150	Amperes/ μ s
I^2t (for Fusing), 8.3 milliseconds	I^2t	295,000	A ² sec
Peak Gate Power Dissipation	P_{GM}	16	Watts
Average Gate Power Dissipation	$P_{G(av)}$	3	Watts
Storage Temperature	T_{STG}	-40 to 150	°C
Operating Temperature	T_J	-40 to 125	°C

① Consult recommended mounting procedures.

② Applies for zero or negative gate bias.

③ Per JEDEC RS-397, 5.2.2.1.

④ With recommended gate drive.

⑤ Higher dv/dt ratings available, consult factory.

⑥ Per JEDEC standard RS-397, 5.2.2.6.



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Electrical and Thermal Characteristics

Characteristics	Symbol	Test Conditions	T760	Units
Voltage—Blocking State Maximums^①				
Forward Leakage, Peak	I_{DRM}	$T_J = 125^\circ\text{C}$, $V_{DRM} = \text{rated}$	30	mA
Reverse Leakage, Peak	I_{RRM}	$T_J = 125^\circ\text{C}$, $V_{RRM} = \text{rated}$	30	mA
Current—Conducting State Maximums				
Peak On-State Voltage	V_{TM}	$I_{TM} = 3000\text{A}$, $T_J = 25^\circ\text{C}$	3.30	Volts
Switching				
Typical Turn-Off Time	t_q	$I_T = 250\text{A}$, $T_J = 125^\circ\text{C}$, $di_r/dt = 25\text{A}/\mu\text{sec}$, reapplied $dv/dt = 20\text{V}/\mu\text{sec}$ linear to $0.8 V_{DRM}$	150	μsec
Typical Turn-On Time ^②	t_{on}	$I_T = 100\text{A}$, $V_D = 100\text{V}$	7	μsec
Min. Critical dv/dt exponential to V_{DRM} ^{③ ④}	dv/dt	$T_J = 125^\circ\text{C}$	300	$\text{V}/\mu\text{sec}$
Thermal				
Maximum Thermal Resistance, ^⑤ Junction to Ambient	$R_{\theta JA}$	1500 LFM Airflow	0.18	$^\circ\text{C}/\text{Watt}$
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}	$T_J = 125^\circ\text{C}$, rated V_{DRM}	0.15	Volts
Peak Forward Gate Current	I_{GTM}		4	Amperes
Peak Reverse Gate Voltage	V_{GRM}		5	Volts

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② Applies for zero or negative gate bias.

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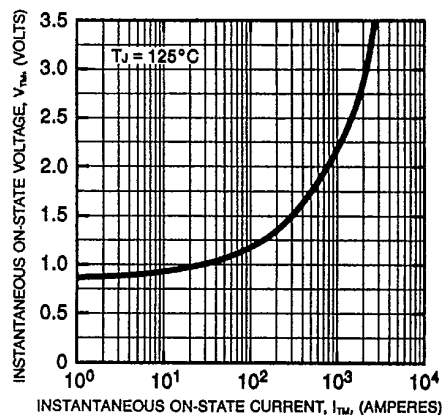
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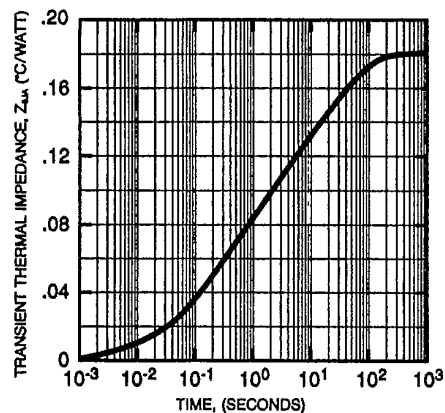
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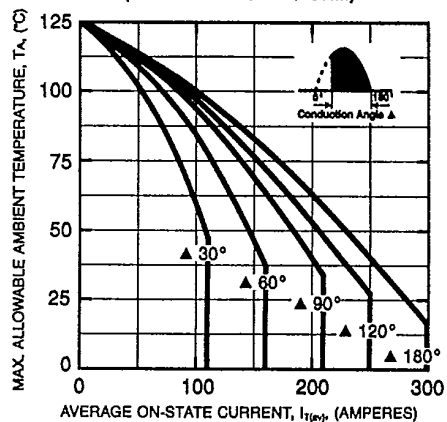
MAXIMUM ON-STATE CHARACTERISTICS



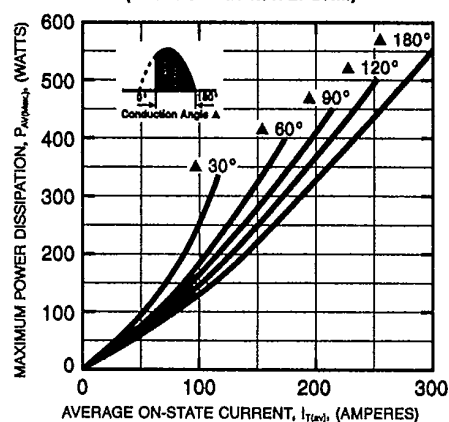
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO AMBIENT)



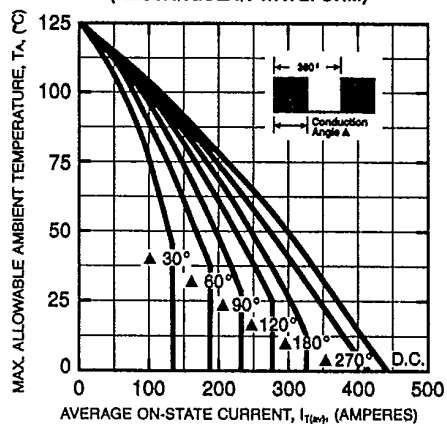
MAXIMUM ALLOWABLE AMBIENT TEMPERATURE (SINUSOIDAL WAVEFORM)



MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)



MAXIMUM ALLOWABLE AMBIENT TEMPERATURE (RECTANGULAR WAVEFORM)



MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)

