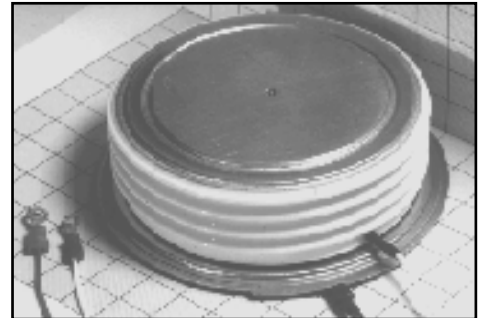


### Description:

Powerex Silicon Controlled Rectifiers (SCR) are designed for phase control applications. These are all-diffused, hermetic Pow-R-Disc devices employing the field-proven amplifying gate.



### Features:

- Low On-State Voltage
- High di/dt Capability
- High dv/dt Capability
- Excellent Surge and I<sup>2</sup>t Ratings

### Applications:

- Power Supplies
- Battery Chargers
- Motor Controllers

### Ordering Information

Select the complete 12 digit device part number from the table below.

Type	Voltage V <sub>DRM</sub> V <sub>RRM</sub>	Current I <sub>T(av)</sub>	Turn-Off t <sub>q</sub>	Gate Current I <sub>GT</sub>	Lead Code
<b>TBS7</b>	<b>12</b>	<b>32</b>	<b>0</b>	<b>3</b>	<b>DH</b>
	<b>14</b>				
	<b>16</b>				
	1200 V 1400 V 1600 V	3200 A	350 μs typical	200 mA	12"

**Absolute Maximum Ratings**

Characteristics	Symbol	Units
Non-repetitive Transient Peak Reverse Voltage	$V_{RSM}$ $V_{RRM}+100V$	V
RMS On-State Current	$I_{T(RMS)}$	5025 A
Average Current 180° Sine Wave, $T_C=76^\circ C$	$I_{T(AV)}$	3200 A
Peak One Cycle Surge On-State Current (Non-Repetitive) 60Hz	$I_{TSM}$	44,000 A
Peak One Cycle Surge On-State Current (Non-Repetitive) 50Hz	$I_{TSM}$	40500 A
Critical Rate-of-Rise of On-State Current (Non-Repetitive)	di/dt	300 A/ $\mu s$
Critical Rate-of-Rise of On-State Current (Repetitive)	di/dt	100 A/ $\mu s$
$I^2t$ for Fusing for One Cycle, 60 Hz	$I^2t$	$8.07 \times 10^6$ A <sup>2</sup> s
Peak Gate Power Dissipation	$P_{GM}$	250 W
Average Gate Power Dissipation	$P_{G(av)}$	35 W
Operating Temperature	$T_J$	-40 to 125°C
Storage Temperature	$T_{STG}$	-40 to 150°C
Mounting Force		6000 to 10000 lb. 26.6 to 44.4 kN

**Electrical Characteristics,  $T_J=25^\circ\text{C}$  unless otherwise specified**

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Repetitive Peak Reverse Leakage Current	$I_{RRM}$	$T_J=125^\circ\text{C}$ , $V_R=V_{RRM}$			150	mA
Repetitive Peak Forward Leakage Current	$I_{DRM}$	$T_J=125^\circ\text{C}$ , $V_D=V_{DRM}$			150	mA
Peak On-State Voltage	$V_{TM}$	$T_J=25^\circ\text{C}$ , $I_{TM}=3000\text{A}$ Duty Cycle < 0.01%			1.25	V
Threshold Voltage, Low-level	$V_{(TO)1}$	$T_J=125^\circ\text{C}$ , for $500\text{A} \leq I_{TM} < 10,000\text{A}$			0.776	V
Slope Resistance, Low-level	$r_{T1}$				0.0889	m $\Omega$
Threshold Voltage, High-level	$V_{(TO)2}$	$T_J=125^\circ\text{C}$ , for $I_{TM} < 10,000\text{A}$			1.032	V
Slope Resistance, High-level	$r_{T2}$				0.0735	m $\Omega$
ABCD $V_{TM}$ Modeling Coefficients	A	$T_J=125^\circ\text{C}$ , for $500\text{A} \leq I_{TM} < 60,000\text{A}$			0.7393	V
	B				-0.01883	-
	C				0.05747	m $\Omega$
	D				0.005836	-
Typical Delay Time	$t_d$	$I_{TM}=1000\text{A}$ , $V_D=0.5V_{DRM}$		3		$\mu\text{s}$
Maximum Turn-Off Time	$t_q$	$T_J=125^\circ\text{C}$ , $I_T=1000\text{A}$ , $di_R/dt=25\text{A}/\mu\text{s}$ $dv/dt=20\text{V}/\mu\text{s}$ linear to 80% $V_{DRM}$		350		$\mu\text{s}$
Minimum Critical $dv/dt$ - Exponential to $V_{DRM}$	$dv/dt$	$T_J=125^\circ\text{C}$	300			V/ $\mu\text{s}$
Gate Trigger Current	$I_{GT}$	$T_J=25^\circ\text{C}$ , $V_D=12\text{V}$			200	mA
Gate Trigger Voltage	$V_{GT}$	$T_J=25^\circ\text{C}$ , $V_D=12\text{V}$			4.0	V
Non-Triggering Gate Voltage	$V_{GDM}$	$T_J=125^\circ\text{C}$ , $V_D=V_{DRM}$			0.5	V
Peak Forward Gate Current	$I_{GTM}$				4	A
Peak Reverse Gate Voltage	$V_{GRM}$				10	V

**Thermal Characteristics**

Characteristics	Symbol	Min.	Typ.	Max.	Units
Maximum Thermal Resistance, Double Sided Cooling					
Junction to Case	$R_{\theta JC}$			.010	$^\circ\text{C}/\text{W}$
Case to Sink	$R_{\theta CS}$			.002	$^\circ\text{C}/\text{W}$