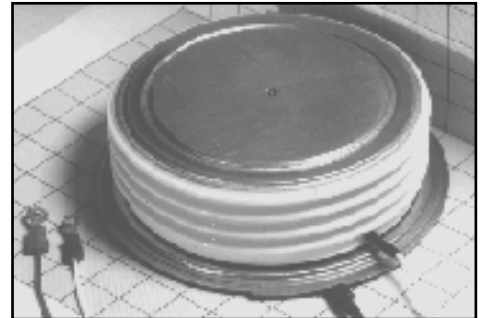


Description:

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 I²t 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 _{DRM} V _{RRM}	Current I _{T(av)}	Turn-Off t _q	Gate Current I _{GT}	Lead Code
TBS7	12	32	0	3	DH
	14				
	16				
	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/ μ s
Critical Rate-of-Rise of On-State Current (Repetitive)	di/dt	100 A/ μ s
I^2t for Fusing for One Cycle, 60 Hz	I^2t	8.07×10^6 A ² 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 Ω
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 Ω
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 Ω
	D				0.005836	-
Typical Delay Time	t_d	$I_{TM}=1000\text{A}$, $V_D=0.5V_{DRM}$		3		μs
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		μs
Minimum Critical dv/dt - Exponential to V_{DRM}	dv/dt	$T_J=125^\circ\text{C}$	300			V/ μs
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	$^\circ\text{C}/\text{W}$