

The T8KC is a high voltage, high current disc pack SCR employing a high di/dt gate structure. This gate design allows the SCR to be reliably operated at high di/dt and dv/dt conditions in various phase control applications.

**FEATURES:**

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

**APPLICATIONS:**

- DC Power Supplies
- Motor Controls
- AC Soft-Starters

**ORDERING INFORMATION**

Select the complete 12 digit Part Number using the table below.  
 EXAMPLE: T8K7653203DH is a 6500V-325A SCR with 200ma IGT and 12 inch gate and cathode potential leads.

PART	Voltage Rating V <sub>DRM</sub> -V <sub>RRM</sub>	Voltage Code	Current Rating I <sub>avg</sub>	Current Code	Turn-Off I <sub>q</sub>	Gate I <sub>GT</sub>	Leads
<b>T8KC</b>	6500	<b>65</b>	325	<b>32</b>	<b>0</b>	<b>3</b>	<b>DH</b>
	6200	<b>62</b>					
	6000	<b>60</b>			500us (typ.)	200ma (max)	12"

Revised: 7/20/2004

**Absolute Maximum Ratings**

Characteristic	Symbol	Rating	Units
Repetitive Peak Voltage	$V_{DRM}-V_{RRM}$	6500	Volts
Average On-State Current, $T_C=70^{\circ}C$	$I_{T(Avg.)}$	325	A
RMS On-State Current, $T_C=70^{\circ}C$	$I_{T(RMS)}$	511	A
Average On-State Current, $T_C=55^{\circ}C$	$I_{T(Avg.)}$	375	A
RMS On-State Current, $T_C=55^{\circ}C$	$I_{T(RMS)}$	589	A
Peak One Cycle Surge Current, 60Hz, $V_R=0V$	$I_{TSM}$	4,500	A
Peak One Cycle Surge Current, 50Hz, $V_R=0V$	$I_{TSM}$	4,243	A
Fuse Coordination $I^2t$ , 60Hz	$I^2t$	8.44E+04	A <sup>2</sup> s
Fuse Coordination $I^2t$ , 50Hz	$I^2t$	9.00E+04	A <sup>2</sup> s
Critical Rate-of-Rise of On-State Current Repetitive $.67 \cdot V_{DRM}$	di/dt	100	A/us
Critical Rate-of-Rise of On-State Current Non-Repetitive $.67 \cdot V_{DRM}$	di/dt	200	A/us
Peak Gate Power, 100us	$P_{GM}$	16	Watts
Average Gate Power	$P_{G(avg)}$	5	Watts
Operating Temperature	$T_j$	-40 to+125	$^{\circ}C$
Storage Temperature	$T_{Stg.}$	-50 to+150	$^{\circ}C$
Approximate Weight		0.6	lb
		0.27	Kg
Mounting Force		3000-3500	lbs
		13.3 - 15.5	Knewtons

The information on this datasheet is based upon Powerex testing and projected ratings and is subject to change without notice. Powerex makes no implicit or explicit claim to reliability, capability, performance or suitability of this product for a users application. Powerex makes no guarantee of future availability of this product.

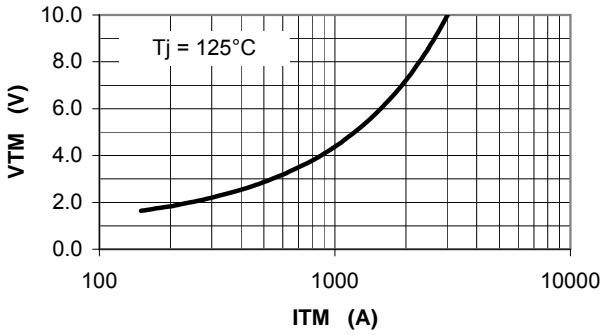
**Electrical Characteristics, Tj=25°C unless otherwise specified**

Characteristic	Symbol	Test Conditions	Rating			Units
			min	typ	max	
Repetitive Peak Forward Leakage Current	$I_{DRM}$	Tj=125°C, $V_{DRM}$ =Rated		70	100	ma
Repetitive Peak Reverse Leakage Current	$I_{RRM}$	Tj=125°C, $V_{RRM}$ =Rated		70	100	ma
Repetitive Peak Leakage Current Distribution	$I_{DRM}$	Tj=125°C, Voltage=Rated	5%	50%	95%	ma
	$I_{RRM}$		30	45	65	
Peak On-State Voltage	$V_{TM}$	Tj=125°C, $I_{TM}$ =1000A			4.40	V
$V_{TM}$ Model, Low Level	$V_0$	Tj=125°C			1.1698667	V
	$r$	$15\% I_{TM} - \pi \cdot I_{TM}$			3.26E-03	$\Omega$
$V_{TM}$ Model, High Level	$V_0$	Tj=125°C			1.8617225	V
	$r$	$\pi \cdot I_{TM} - I_{TSM}$			2.68E-03	$\Omega$
$V_{TM}$ Model, 4-Term	A	Tj=125°C			0.246	
	B	$15\% I_{TM} - I_{TSM}$			0.170	
	C				2.56E-03	
	D				1.27E-02	
Turn-On Delay Time	$t_d$	$V_D = 0.5 \cdot V_{DRM}$		2.0	2.5	us
		Gate Drive: 40V - 20 $\Omega$				
Turn-Off Time	$t_q$	Tj=125°C $dv/dt = 20V/us$ to 67% $V_{DRM}$		450	600	us
Reverse Recovery Current	$I_{R(Rec)}$	Tj=125°C 600A -10A/us		90		A
Reverse Recovery Charge	$Q_{RR}$			1230		uCoul
Reverse Recovery Current Distribution	$I_{R(Rec)}$	Tj=125°C 600A -10A/us	5%	50%	95%	A
			75	85	95	
$dv/dt_{(Crit)}$	$dv/dt$	Tj=125°C Exp. Waveform $V_D = 67\%$ Rated	1000	>2000		V/us
Gate Trigger Current	$I_{GT}$	Tj=25°C $V_D = 12V$	30	100	200	ma
Gate Trigger Voltage	$V_{GT}$		0.8	1.5	3.0	V
Peak Reverse Gate Voltage	$V_{GRM}$			5		V

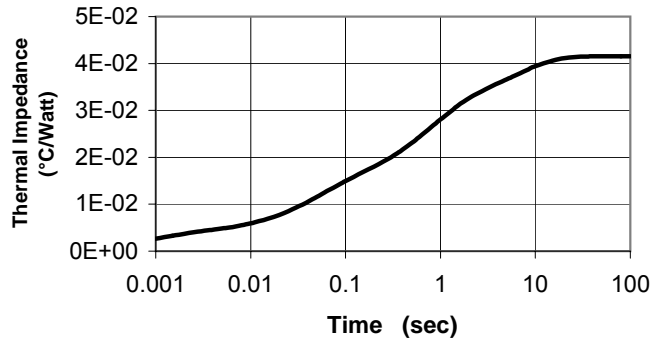
**Thermal Characteristics**

Characteristic	Symbol	Test Conditions	Rating			Units
			min	typ	max	
Thermal Resistance						
Junction to Case	$R\theta_{jc}$	Double side cooled		0.038	0.042	°C/Watt
Case to Sink	$R\theta_{cs}$	Double side cooled		0.007	0.0085	°C/Watt
Thermal Impedance Model						
$Z\theta_{jc}(t) = \sum(A(N) \cdot (1 - \exp(-t/\tau(N))))$	$Z\theta_{jc}$	Double side cooled				
		where: N =	1	2	3	4
		A(N) =	3.68E-03	9.85E-03	1.68E-02	1.12E-02
		Tau(N) =	9.55E-04	4.49E-02	6.87E-01	6.00E+00

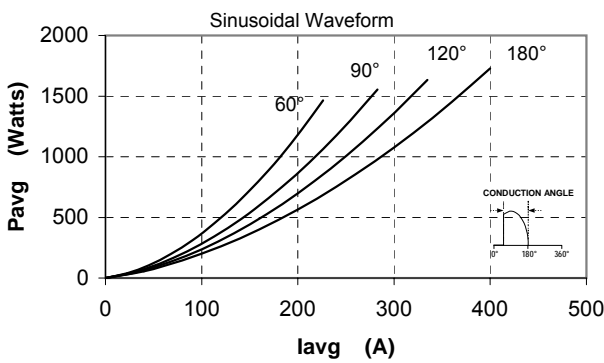
**Maximum On-State Voltage Drop**



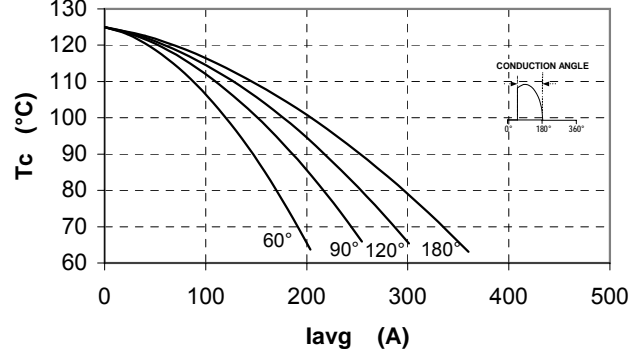
**MAXIMUM TRANSIENT THERMAL IMPEDANCE**



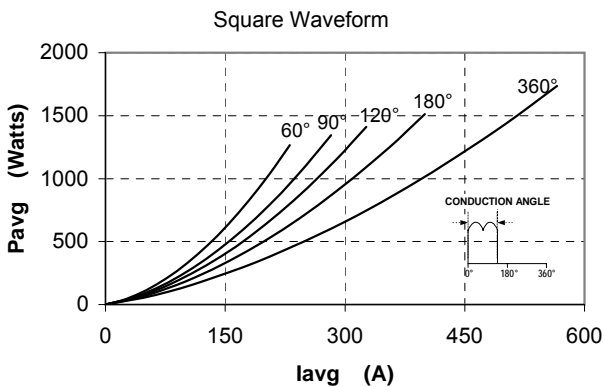
**Maximum On-State Power Dissipation**



**Maximum Allowable Case Temperature**



**Maximum On-State Power Dissipation**



**Maximum Allowable Case Temperature**

