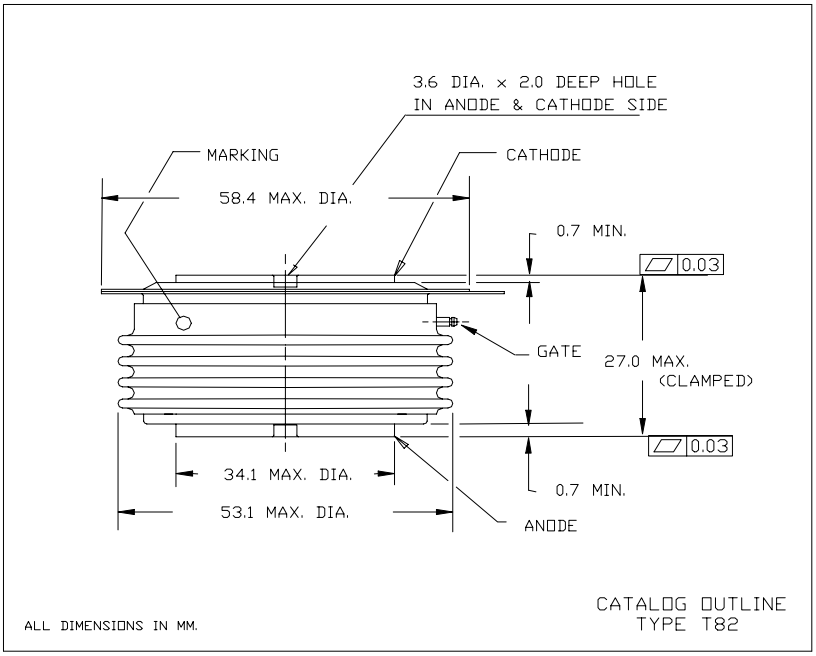
T8KC__3203

Phase Control Thyristor

325 Amperes 6500 Volts

Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (724)925-7272



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^2t 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	Voltage Code	Current Rating	Current Code	Turn-Off	Gate	Leads
	V_{DRM}-V_{RRM}		I_{tavg}		t_q	I_{GT}	
T8KC	6500	**65**	325	**32**	**0**	**3**	**DH**
	6200	**62**					
	6000	**60**			500us	200ma	12"
					(typ.)	(max)	

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°C	$I_{T(Avg.)}$	325	A
RMS On-State Current, T_C=70°C	$I_{T(RMS)}$	511	A
Average On-State Current, T_C=55°C	$I_{T(Avg.)}$	375	A
RMS On-State Current, T_C=55°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^2s
Fuse Coordination I^2t, 50Hz	I^2t	9.00E+04	A^2s
Critical Rate-of-Rise of On-State Current	di/dt	100	A/us
Repetitive .67•VDRM			
Critical Rate-of-Rise of On-State Current	di/dt	200	A/us
Non-Repetitive .67•VDRM			
Peak Gate Power, 100us	P_{GM}	16	Watts
Average Gate Power	$P_{G(avg)}$	5	Watts
Operating Temperature	Tj	-40 to+125	°C
Storage Temperature	$T_{Stg.}$	-50 to+150	°C
Approximate Weight		0.6	lb
		0.27	Kg
Mounting Force		3000-3500	lbs
		13.3 - 15.5	Knewtons

Electrical Characteristics, Tj=25°C unless otherwise specified

Characteristic	Symbol	Test Conditions	Rating min	Rating typ	Rating max	Units
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}-I_{RRM}	Tj=125°C, Voltage=Rated	5% 30	50% 45	95% 65	ma
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
VTM = V_O + r•I_{TM}	r	15% I_{TM} - π•I_{TM}			3.26E-03	Ω
V_{TM} Model, High Level	V_0	Tj=125°C			1.8617225	V
VTM = V_O + r•I_{TM}	r	π•I_{TM} - I_{TSM}			2.68E-03	Ω
V_{TM} Model, 4-Term	A	Tj=125°C			0.246	
V_{TM}= A + B•Ln(I_{TM}) +	B	15%I_{TM} - I_{TSM}			0.170	
C•(I_{TM}) + D•(I_{TM})^{½}	C				2.56E-03	
	D				1.27E-02	
Turn-On Delay Time	t_d	V_D = 0.5•V_{DRM} Gate Drive: 40V - 20Ω		2.0	2.5	us
Turn-Off Time	tq	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% 75	50% 85	95% 95	A
$dv/dt_{(Crit)}$	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

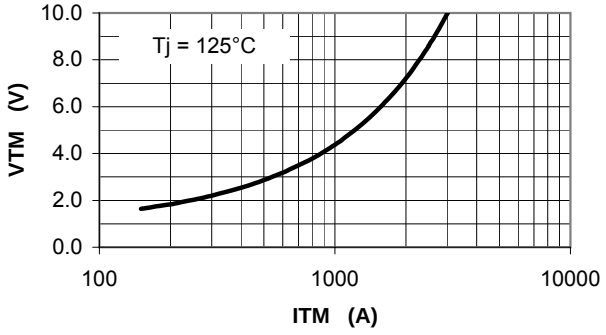
Thermal Characteristics

Characteristic	Symbol	Test Conditions	Rating min	Rating typ	Rating max	Units
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	$Z\Theta_{jc}$	Double side cooled				

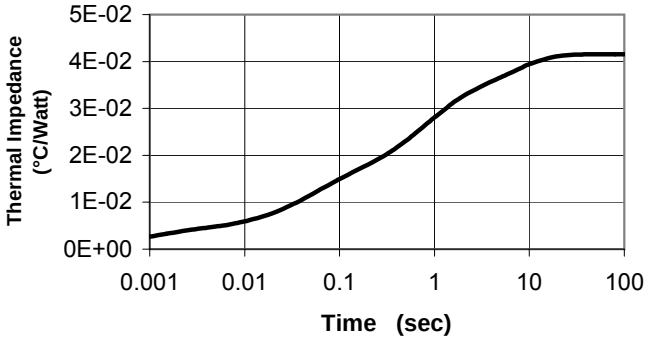
$Z\Theta_{jc}(t) = \Sigma(A(N)\bullet(1-\exp(-t/Tau(N))))$ where:

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

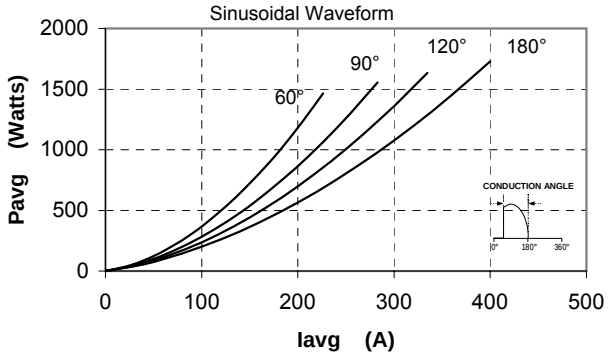
Maximum On-State Voltage Drop



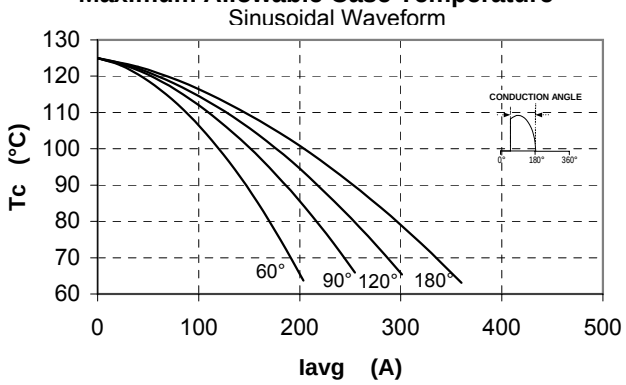
MAXIMUM TRANSIENT THERMAL IMPEDANCE



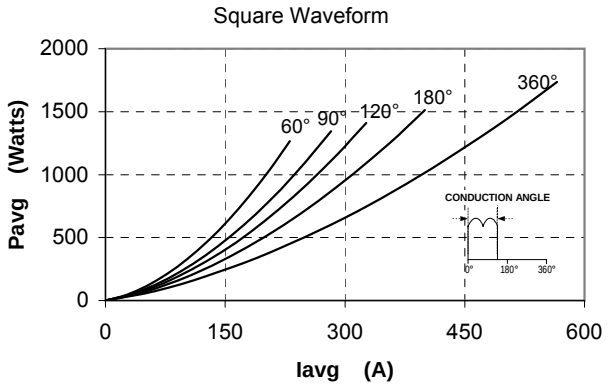
Maximum On-State Power Dissipation



Maximum Allowable Case Temperature



Maximum On-State Power Dissipation



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