

The T9KC 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 I²t Ratings

APPLICATIONS:

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

ORDERING INFORMATION

Select the complete 12 digit Part Number using the table below.
EXAMPLE: T9KC650603DH is a 6500V-600A SCR with 200ma IGT and 12 inch gate and cathode potential leads.

PART	Voltage Rating $V_{DRM}-V_{RRM}$	Voltage Code	Current Rating I_{TAVG}	Current Code	Turn-Off I_q	Gate I_{GT}	Leads
T9KC	6500	65	600	06	0	3	DH
	6200	62					
	6000	60			600us (typ.)	200ma (max)	12"

Revised: 5/28/2010

Absolute Maximum Ratings

Characteristic	Symbol	Rating	Units
Repetitive Peak Voltage	$V_{DRM}-V_{RRM}$	6500	Volts
Average On-State Current, $T_C= 73\text{ }^\circ\text{C}$	$I_{T(Avg.)}$	600	A
RMS On-State Current, $T_C= 73\text{ }^\circ\text{C}$	$I_{T(RMS)}$	942	A
Average On-State Current, $T_C= 56\text{ }^\circ\text{C}$	$I_{T(Avg.)}$	700	A
RMS On-State Current, $T_C= 56\text{ }^\circ\text{C}$	$I_{T(RMS)}$	1100	A
Peak One Cycle Surge Current, 60Hz, $V_R=0V$	I_{TSM}	7,750	A
Peak One Cycle Surge Current, 50Hz, $V_R=0V$	I_{TSM}	7,307	A
Fuse Coordination I^2t , 60Hz	I^2t	2.50E+05	A ² s
Fuse Coordination I^2t , 50Hz	I^2t	2.67E+05	A ² s
Critical Rate-of-Rise of On-State Current	di/dt -- Rep.	150	A/us
$.67 \cdot V_{DRM}$ $I_{TM} = 600A$	di/dt -- Non-Rep.	300	A/us
Gate Drive: 20V 10Ω Tr=0.5us			
Peak Gate Power, 100us	P_{GM}	16	Watts
Average Gate Power	$P_{G(avg)}$	5	Watts
Operating Temperature	T_j	-40 to+125	°C
Storage Temperature	$T_{Stg.}$	-50 to+150	°C
Approximate Weight		1	lb
		0.45	Kg
Mounting Force		5500-6000	lbs
		24.5 - 26.7	Knewtons

Information presented is correct to the knowledge and capabilities of the manufacturer. This information is subject to change without notice. The manufacturer makes no claim as to suitability for use, reliability, capability or future availability of this product.

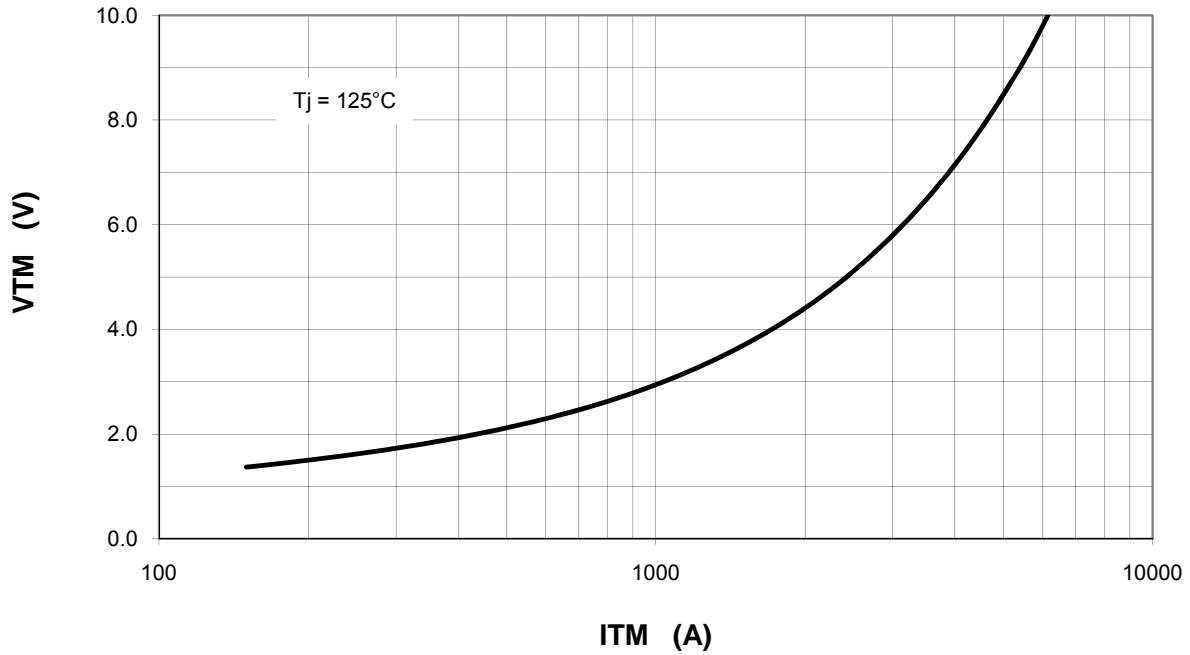
Electrical Characteristics, Tj=25°C unless otherwise specified

Characteristic	Symbol	Test Conditions	Rating			Units
			min	typ	max	
Repetitive Peak Forward Leakage Current	I_{DRM}	Tj=125°C, V_{DRM} =Rated		110	180	ma
Repetitive Peak Reverse Leakage Current	I_{RRM}	Tj=125°C, V_{RRM} =Rated		70	180	ma
Repetitive Peak Leakage Current Distribution	I_{DRM} - I_{RRM}	Tj=125°C, Voltage=Rated	5% 70	50% 95	95% 165	ma
Peak On-State Voltage	V_{TM}	Tj=125°C, I_{TM} =1500A			3.70	V
V_{TM} Model, Low Level	V_0	Tj=125°C			1.32	V
$V_{TM} = V_0 + r \cdot I_{TM}$	r	15% $I_{TM} - \pi \cdot I_{TM}$			1.58E-03	Ω
V_{TM} Model, High Level	V_0	Tj=125°C			1.73	V
$V_{TM} = V_0 + r \cdot I_{TM}$	r	$\pi \cdot I_{TM} - I_{TSM}$			1.32E-03	Ω
V_{TM} Model, 4-Term	A	Tj=125°C			0.140	
$V_{TM} = A + B \cdot \ln(I_{TM}) +$	B	15% $I_{TM} - I_{TSM}$			0.185	
$C \cdot (I_{TM}) + D \cdot (I_{TM})^{1/2}$	C				0.00121	
	D				0.0100	
Turn-On Delay Time	t_d	$V_D = 0.5 \cdot V_{DRM}$ Gate Drive: 40V - 20 Ω		2.0		us
Turn-Off Time	t_q	Tj=125°C $dv/dt = 20V/us$ to 67% V_{DRM}		600		us
Reverse Recovery Current	$I_{R(Rec)}$	Tj=125°C 1000A -10A/us VR= 50V		160		A
Reverse Recovery Charge	Q_{RR}			2200		uCoul
Reverse Recovery Current Distribution	$I_{R(Rec)}$	Tj=125°C 1000A -10A/us VR = 50V	5% 100	50% 112	95% 125	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

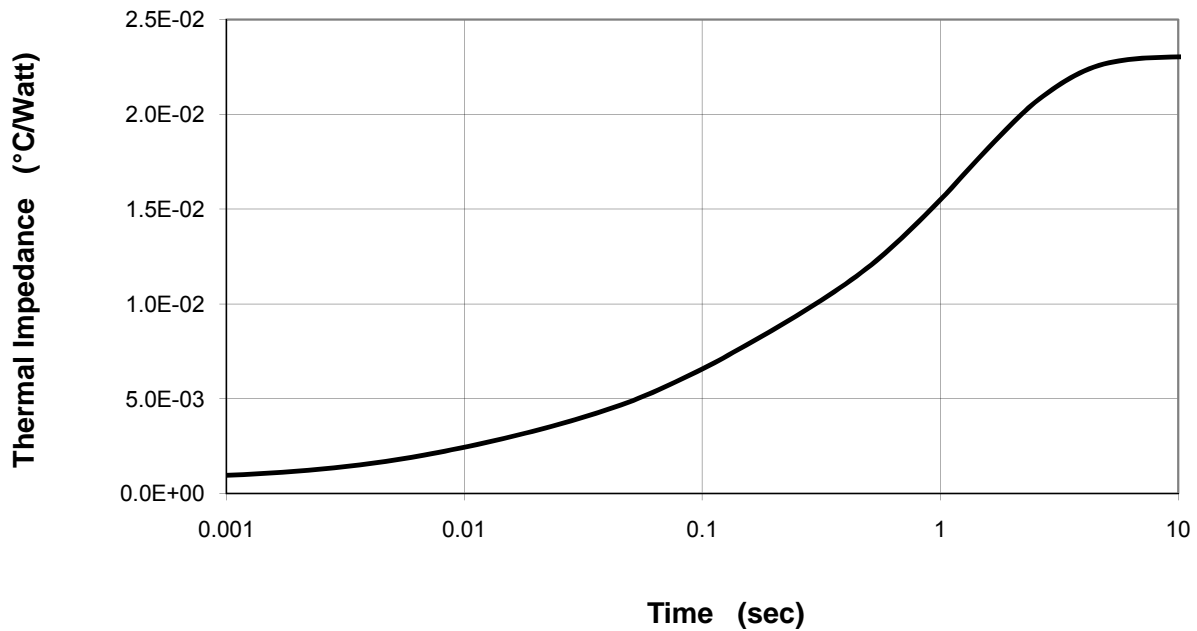
Thermal Characteristics

Characteristic	Symbol	Test Conditions	Rating				
			max			Units	
Thermal Resistance							
Junction to Case	$R\theta_{jc}$	Double side cooled			0.023	°C/Watt	
Case to Sink	$R\theta_{cs}$	Double side cooled			0.006	°C/Watt	
Thermal Impedance Model	$Z\theta_{jc}$	Double side cooled					
$Z\theta_{jc}(t) = \Sigma(A(N) \cdot (1 - \exp(-t/\text{Tau}(N))))$		where:	N =	1	2	3	4
			A(N) =	7.26E-04	1.58E-03	4.55E-03	1.62E-02
			Tau(N) =	4.49E-05	8.21E-03	8.84E-02	1.31E+00

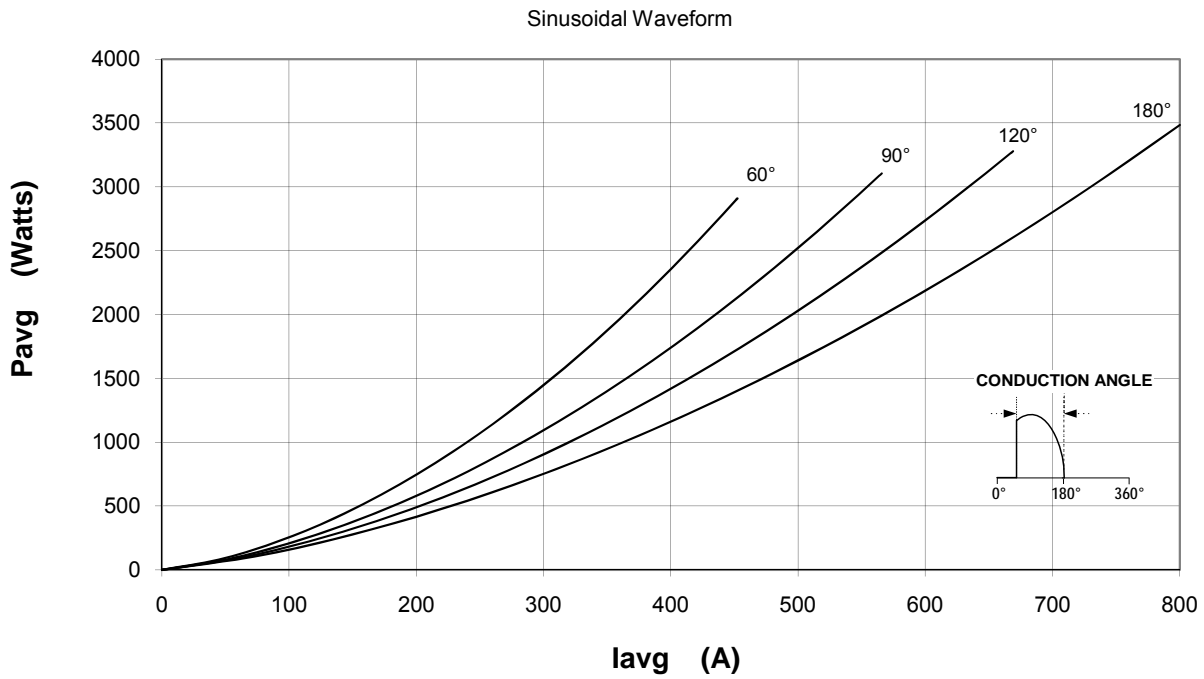
Maximum On-State Voltage Drop



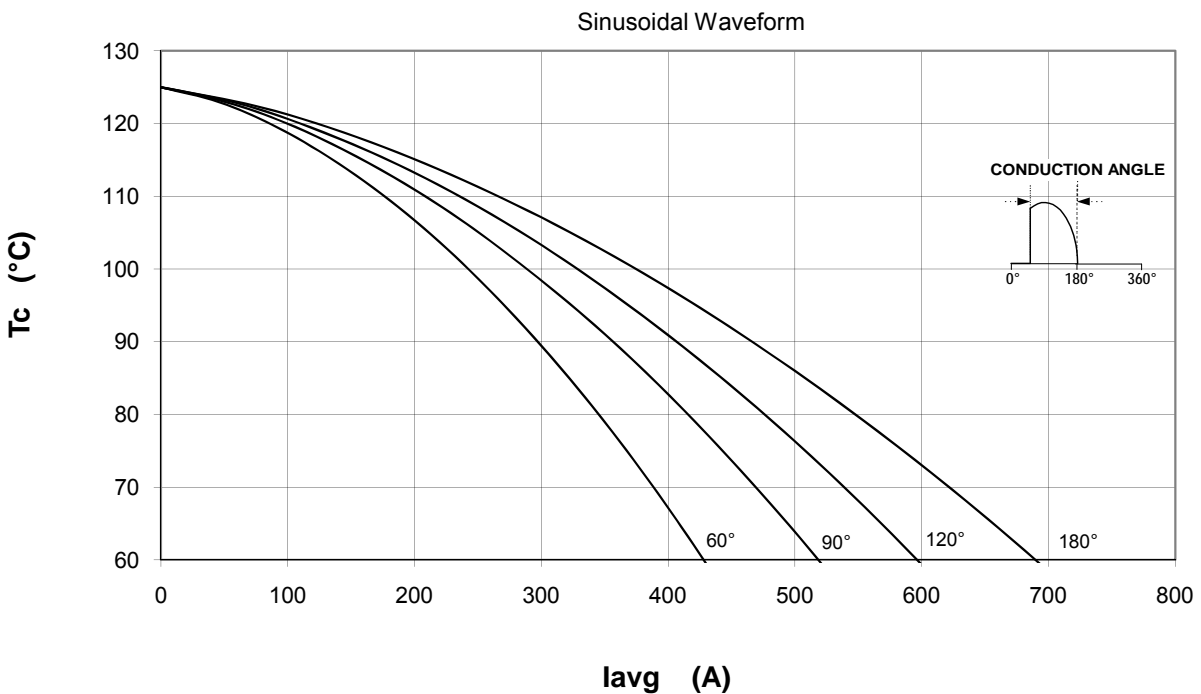
MAXIMUM TRANSIENT THERMAL IMPEDANCE



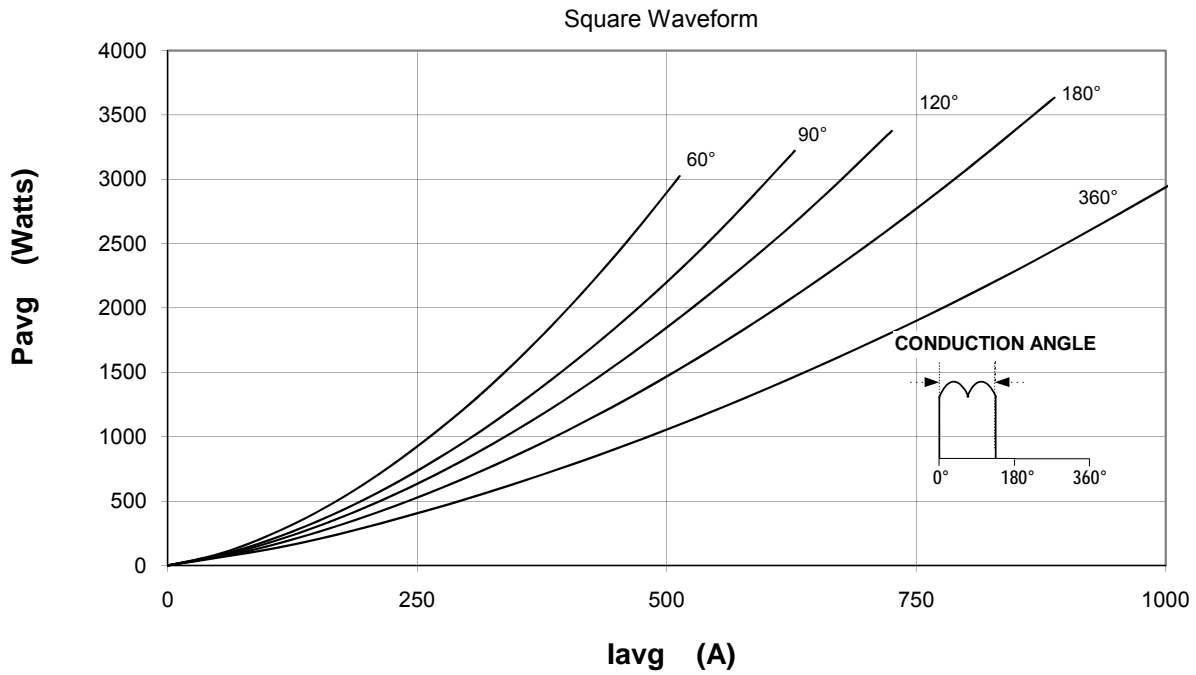
Maximum On-State Power Dissipation



Maximum Allowable Case Temperature



Maximum On-State Power Dissipation



Maximum Allowable Case Temperature

