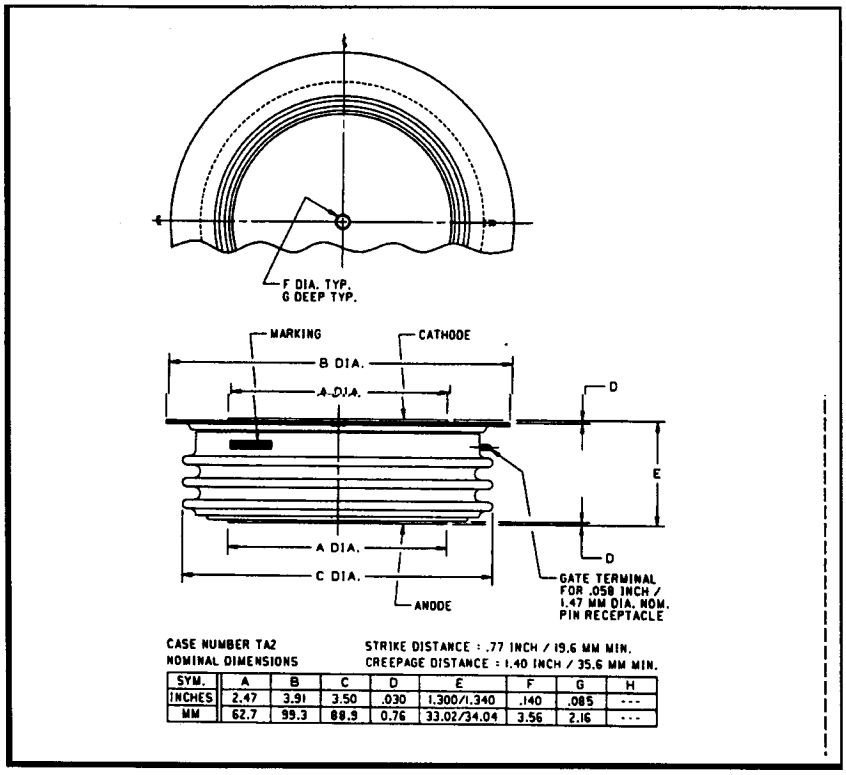
Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (724)925-7272



CASE NUMBER TA2
NOMINAL DIMENSIONS

STRIKE DISTANCE : .77 INCH / 19.6 MM MIN.
CREEPAGE DISTANCE : 1.40 INCH / 35.6 MM MIN.

SYM.	A	B	C	D	E	F	G	H
INCHES	2.47	3.91	3.50	.030	1.300/1.340	.140	.085	---
MM	62.7	99.3	88.9	0.76	33.02/34.04	3.56	2.16	---

Description:

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

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
TAK7	36 40 44	12	0	2	DH
	3600 V 4000 V 4400 V	1200 A	500 µs typical	300 mA	12"

Features:

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

Applications:

- Power Supplies
- Battery Chargers
- Static VAR

Absolute Maximum Ratings

Characteristics		Symbol		Units
Non-repetitive Transient Peak Reverse Voltage		V_{RSM}	V_{RRM}+100V	V
Non-repetitive Transient Peak Forward Voltage		V_{DSM}	V_{RSM}	V
RMS On-State Current		$I_{T(RMS)}$	1700	A
Average Current 180° Sine Wave, T_C= 82°C		$I_{T(AV)}$	1200	A
Average Current 180° Sine Wave, T_C=55°C		$I_{T(AV)}$		A
Peak One Cycle Surge On-State Current (Non-Repetitive) 60Hz	(60 Hz)	I_{TSM}	40,000	A
Peak One Cycle Surge On-State Current (Non-Repetitive) 50Hz	(50 Hz)	I_{TSM}	36,500	A
Critical Rate-of-Rise of On-State Current (Non-Repetitive) $V_{...}$ > 30V		di/dt	400	A/µs
Critical Rate-of-Rise of On-State Current (Repetitive) $V_{...}$ > 30V		di/dt	150	A/µs
I^2t for Fusing for One Cycle, 60 Hz		I^2t	$6.67x10^6$	A^2s
Peak Gate Power Dissipation		P_{GM}	16	W
Average Gate Power Dissipation		$P_{G(av)}$	3	W
Operating Temperature		T_J	-40 to 125	°C
Storage Temperature		T_{STG}	-40 to 150	°C
Approximate Weight			2.2 1000	lb. g
Mounting Force			9000 to 11000 4100 to 5000	lb. kg

Electrical Characteristics, T_J=25°C unless otherwise specified

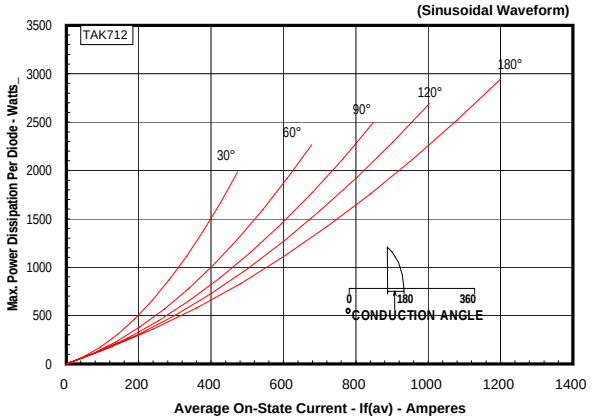
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Repetitive Peak Reverse Leakage Current	I_{RRM}	T_J=125°C, V_R=V_{RRM}			200	mA
Repetitive Peak Forward Leakage Current	I_{DRM}	T_J=125°C, V_D=V_{DRM}			200	mA
Peak On-State Voltage	V_{TM}	T_J=25°C, I_{TM}=1500A Duty Cycle < 0.01%			1.90	V
Threshold Voltage, Low-level	$V_{(TO)1}$	T_J=125°C, 250A ≤I_{TM} < 4000A			1.262	V
Slope Resistance, Low-level	r_{T1}				0.397	mΩ
Threshold Voltage, High-level	$V_{(TO)2}$	T_J=125°C, ≥ 4000A			1.412	V
Slope Resistance, High-level	r_{T2}				0.368	mΩ
ABCD Coefficients $V_{FM} = A + B \bullet Ln(I_{TM}) + C \bullet I_{TM} + D \bullet I_{TM}^{½}$	ABCD	T_J=125°C		A = 2.53 B = -0.294 C = 2.47E-4 D = 0.0284		
Typical Delay Time	t_d	I_{TM}=1000A, V_D=1500V		4		µs
Maximum Turn-Off Time	T_q	T_J=125°C, I_T=250A, di_R/dt=50A/µs dv/dt=20V/µs linear to 80% V_{DRM}		500		µs
Minimum Critical dv/dt - Exponential to V_{DRM}	dv/dt	T_J=125°C	1000			V/µs
Gate Trigger Current	I_{GT}	T_J=25°C, V_D=12V			300	mA
Gate Trigger Voltage	V_{GT}	T_J=25°C, V_D=12V			5.0	V
Non-Triggering Gate Voltage	V_{GDM}	T_J=125°C, V_D=V_{DRM}			0.45	V
Peak Forward Gate Current	I_{GTM}				4	A
Peak Reverse Gate Voltage	V_{GRM}				5	V

Thermal Characteristics

Characteristics	Symbol	Min.	Typ.	Max.	Units
Maximum Thermal Resistance, Double Sided Cooling					
Junction to Case	$R_{\Theta JC}$			.015	°C/W
Case to Sink	$R_{\Theta CS}$			.007	°C/W

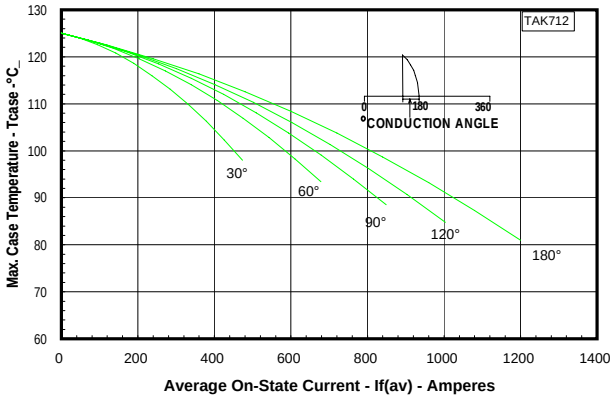
Maximum On-State Power Dissipation

(Sinusoidal Waveform)



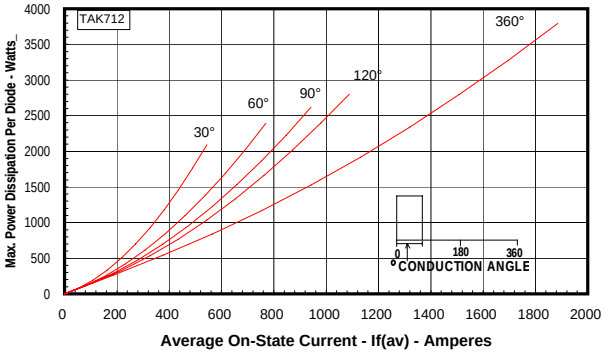
Maximum Allowable Case Temperature

(Sinusoidal Waveform)



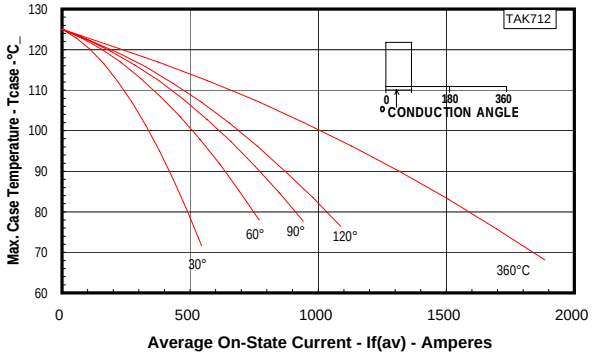
Maximum On-State Power Dissipation

(Rectangular Waveform)

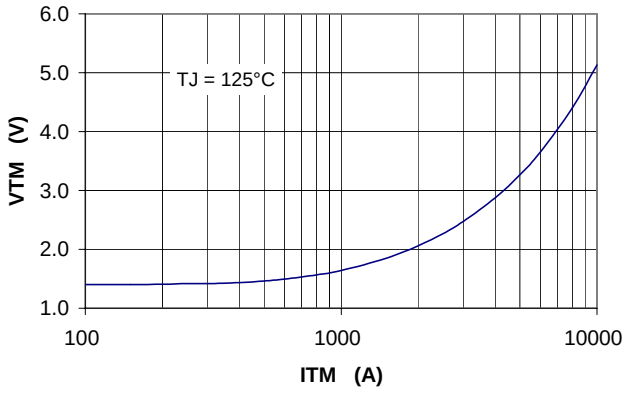


Maximum Allowable Case Temperature

(Rectangular Waveform)



FORWARD VOLTAGE DROP



TRANSIENT THERMAL IMPEDANCE