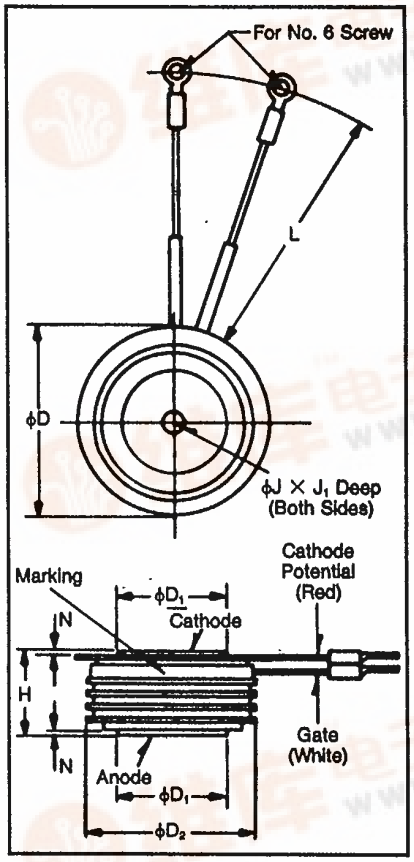
POWEREX

TA20

Powerex, Inc. Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272
Powerex Europe, S.A., 428 Ave. G. Durand, BP107, 72003 LeMans, France (43) 72.75.15

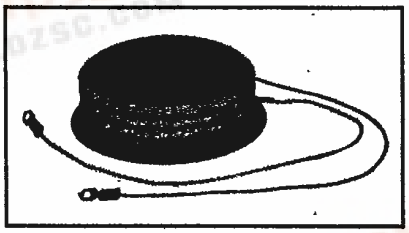
Phase Control SCR
1200-1400 Amperes Avg
2400-4000 Volts



TA2
Outline Drawing

Dimensions	Inches		Millimeters	
	Min.	Max.	Min.	Max.
ϕD	3.910	3.950	99.31	100.33
ϕD_1	2.470	2.480	62.74	63.00
ϕD_2	3.440	3.560	87.38	90.42
H	1.260	1.300	32.00	33.02
ϕJ	.135	.145	3.43	3.68
J_1	.075	.090	1.91	2.29
L	11.50	12.50	292.10	317.50
N	.050	—	1.27	—

Creep Distance—1.40 in. min. (35.56 mm)
Strike Distance—.98 in. min. (24.89 mm).
(In accordance with NEMA standards.)
Finish—Nickel Plate.
Approx. Weight—2.1 lb. (950 g).
1. Dimension "H" is a clamped dimension.



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Description
Powerex Silicon Controlled Rectifiers (SCR) are designed for phase control applications. These are all-diffused, Press-Pak (Pow-R-Disc) devices employing the field-proven amplifying (di/namic) gate.

Features:
- ☐ Low On-State Voltage
- ☐ High di/dt
- ☐ High dv/dt
- ☐ Hermetic Packaging
- ☐ Excellent Surge and I^2t Ratings

Applications:
- ☐ Power Supplies
- ☐ Battery Chargers
- ☐ Motor Control
- ☐ Light Dimmers
- ☐ VAR Generators

Ordering Information
Example: Select the complete eight digit part number you desire from the table – i.e. TA202412 is a 2400 Volt, 1200 Ampere Phase Control SCR.

Type	Voltage		Current	
	V_{DRM} V_{RRM}	Code	I_T (avg)	Code
TA20	2400	24	1200	12
	2600	26	1400	14
	2800	28		
	3000	30		
	3200	32		
	3400	34		
	3600	36		
	3800	38		
	4000	40		

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Absolute Maximum Ratings

	Symbol	TA20 _ _ 12	TA20 _ _ 14	Units
RMS On-State Current	$I_{T(RMS)}$	1800	2200	Amperes
Average On-State Current	$I_{T(av)}$	1200	1400	Amperes
Peak One-Cycle Surge (Non Repetitive) On-State Current (60Hz)⑤	I_{TSM}	23,500	25,000	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz)⑤	I_{TSM}	21,450	22,800	Amperes
Critical Rate-of-Rise of On-State Current (Non-Repetitive) ①④⑥	dI/dt	400	400	Amperes/μs
Critical Rate-of-Rise of On-State Current (Repetitive)	dI/dt	150	150	Amperes/μs
I^2t (for Fusing), One Cycle at 60Hz	I^2t	1.67×10^6	2.6×10^6	A^2sec
Peak Gate Power Dissipation	P_{GM}	16	16	Watts
Average Gate Power Dissipation	$P_{G(av)}$	3	3	Watts
Storage Temperature	T_{STG}	−40 to 150	−40 to 150	°C
Operating Temperature	T_J	−40 to 125	−40 to 125	°C
Mounting Force①		9000 to 11,000	9000 to 11,000	lb.
Mounting Force①		4100 to 5000	4100 to 5000	kg

Electrical and Thermal Characteristics

	Symbol	Test Conditions	TA20 _ _ 12	TA20 _ _ 14	Units
Current—Conducting State Maximums					
Peak On-State Voltage	V_{TM}	I_{TM} = 3000A, T_J = 25°C	3.15	2.50	Volts
			TA20		
Voltage—Blocking State Maximums②					
Forward Leakage, Peak	I_{DRM}	T_J = 125°C, V_{DRM} = rated	250		mA
Reverse Leakage, Peak	I_{RRM}	T_J = 125°C, V_{RRM} = rated	250		mA
Switching					
Typical Turn-Off Time	t_q	I_T = 250A, T_J = 125°C, di_R/dt = 50A/μsec, reapplied dv/dt = 20V/μsec linear to $0.8V_{DRM}$	400		μsec
Typical Turn-On Time④	t_{on}	I_{TM} = 1000A, V_D = 1500V	8.0		μsec
Min. Critical dv/dt exponential to V_{DRM}⑤⑥	dv/dt	T_J = 125°C	300		V/μsec
Thermal					
Maximum Thermal Resistance,① double sided cooling					
Junction to Case	$R_{\theta JC}$		.015		°C/Watt
Case to Sink, Lubricated	$R_{\theta CS}$		.007		°C/Watt
Gate—Maximum Parameters					
Gate Current to Trigger	I_{GT}	T_J = 25°C, V_D = 12V	200		mA
Gate Voltage to Trigger	V_{GT}	T_J = 25°C, V_D = 12V	3.0		Volts
Non-Triggering Gate Voltage	V_{GDM}	T_J = 125°C, rated V_{DRM}	.15		Volts
Peak Forward Gate Current	I_{GTM}		4		Amperes
Peak Reverse Gate Voltage	V_{GRM}		5		Volts

① Consult recommended mounting procedures.
② Applies for zero or negative gate bias.
③ Per JEDEC RS-397, 5.2.2.1.
④ With recommended gate drive.
⑤ Higher dv/dt ratings available, consult factory.
⑥ Per JEDEC standard RS-397, 5.2.2.6.

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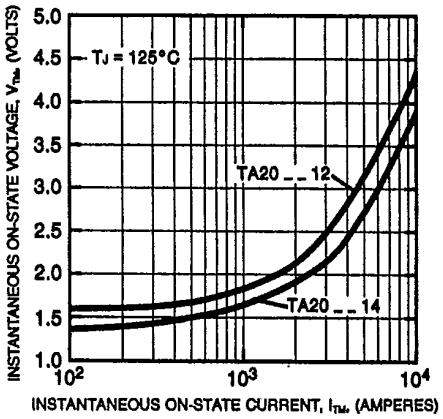
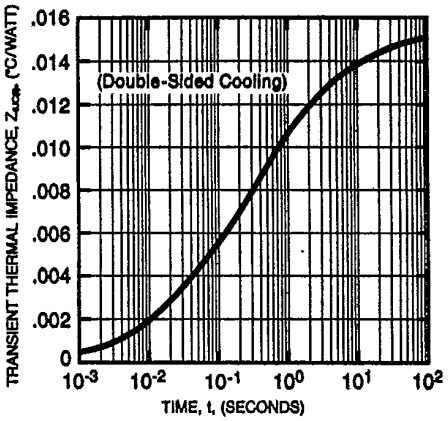
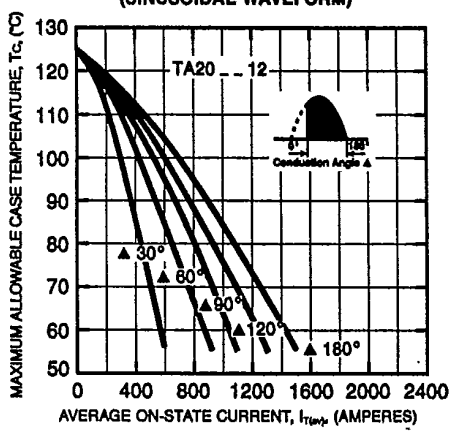
MAXIMUM ON-STATE CHARACTERISTICS



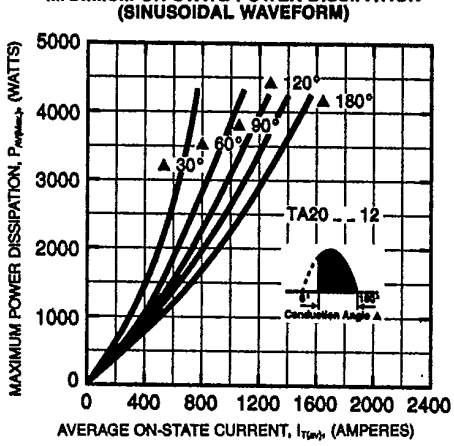
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)



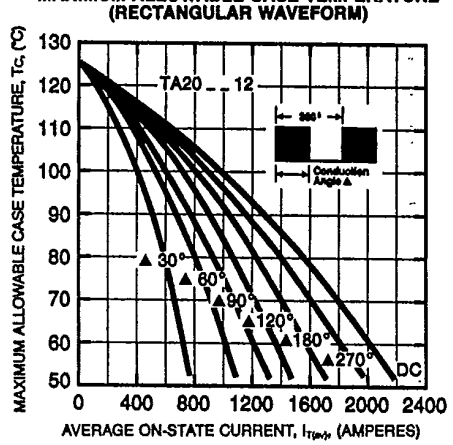
MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)



MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)



MAXIMUM ALLOWABLE CASE TEMPERATURE (RECTANGULAR WAVEFORM)



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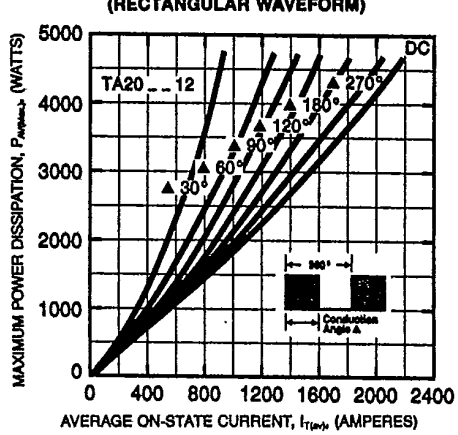

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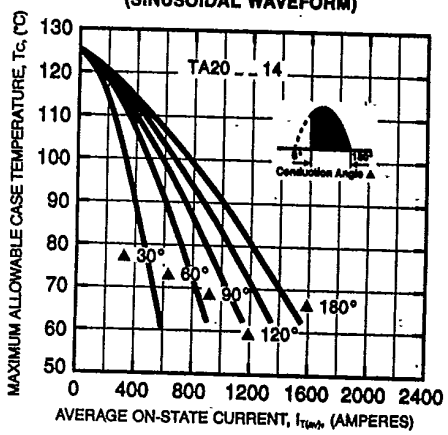

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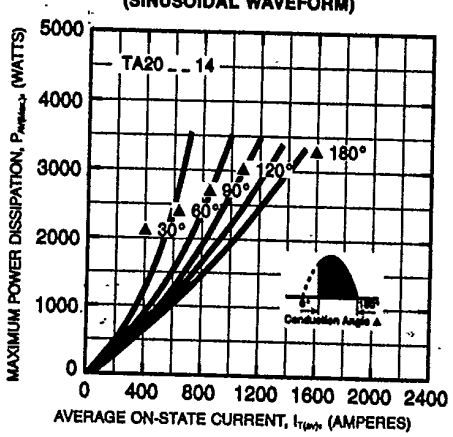

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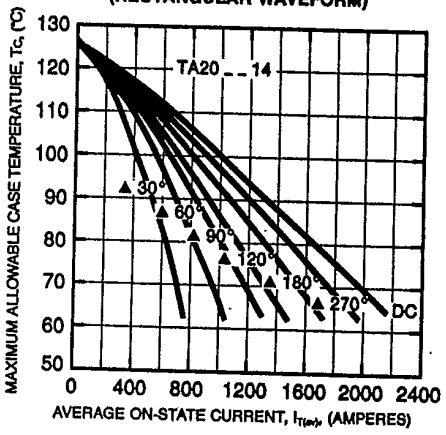

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