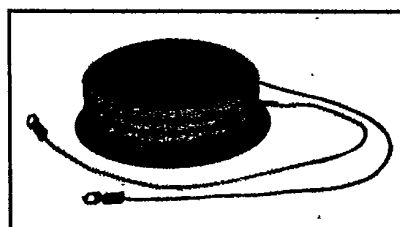
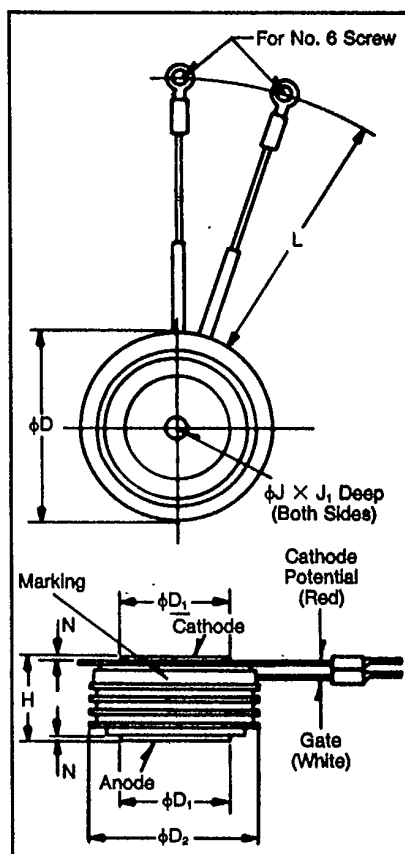


POWEREX**TA20**

Powerex, Inc. Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272

Powerex Europe, S.A., 428 Ave. G. Durand, BP107, 72003 LeMans, France (49) 72.75.15

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

TA20
Phase Control SCR
1200-1400 Amperes/2400-4000 Volts

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/dt) gate.

Features:

- ☐ Low On-State Voltage
- ☐ High di/dt
- ☐ High dv/dt
- ☐ Hermetic Packaging
- ☐ Excellent Surge and I²t 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.

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.

Type	Voltage		Current	
	V _{ORM} 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		



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

TA20

Phase Control SCR

1200-1400 Amperes Avg/2400-4000 Volts

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) ^①	I_{TSM}	23,500	25,000	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz) ^①	I_{TSM}	21,450	22,800	Amperes
Critical Rate-of-Rise of On-State Current (Non-Repetitive) ^② ^③	di/dt	400	400	Amperes/ μ s
Critical Rate-of-Rise of On-State Current (Repetitive)	di/dt	150	150	Amperes/ μ s
I^2t (for Fusing), One Cycle at 60Hz	I^2t	1.67×10^6	2.6×10^6	A ² sec
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 Force ^④		9000 to 11,000	9000 to 11,000	lb.
Mounting Force ^⑤		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}	$I_{TM} = 3000A, T_J = 25^\circ C$	3.15	2.50	Volts
Voltage—Blocking State Maximums^①					
Forward Leakage, Peak	I_{DRM}	$T_J = 125^\circ C, V_{DRM} = \text{rated}$	250		mA
Reverse Leakage, Peak	I_{RRM}	$T_J = 125^\circ C, V_{RRM} = \text{rated}$	250		mA
Switching					
Typical Turn-Off Time	t_t	$I_T = 250A, T_J = 125^\circ C,$ $di/dt = 50A/\mu\text{sec}, \text{reapplied}$ $dv/dt = 20V/\mu\text{sec linear to } 0.8V_{DRM}$	400		μsec
Typical Turn-On Time ^②	t_{on}	$I_{TM} = 1000A, V_D = 1500V$	8.0		μsec
Min. Critical dv/dt exponential to V_{DRM} ^③	dv/dt	$T_J = 125^\circ C$	300		V/ μsec
Thermal					
Maximum Thermal Resistance, ^④ 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}	$T_J = 25^\circ C, V_D = 12V$	200		mA
Gate Voltage to Trigger	V_{GT}	$T_J = 25^\circ C, V_D = 12V$	3.0		Volts
Non-Triggering Gate Voltage	V_{GDM}	$T_J = 125^\circ C, \text{rated } V_{DRM}$	.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.



Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272

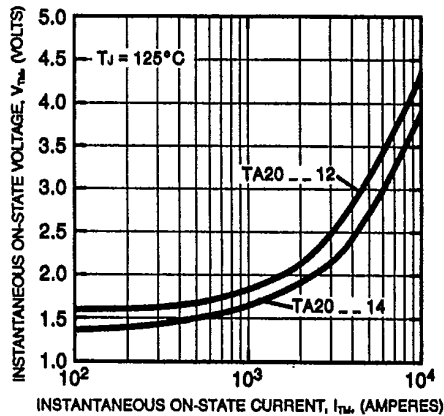
Powerex Europe, S.A., 428 Ave. G. Durand, BP107, 72003 LeMans, France (43) 72.75.15

TA20

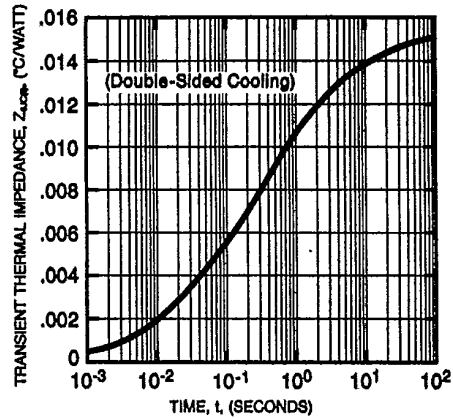
Phase Control SCR

1200-1400 Amperes Avg/2400-4000 Volts

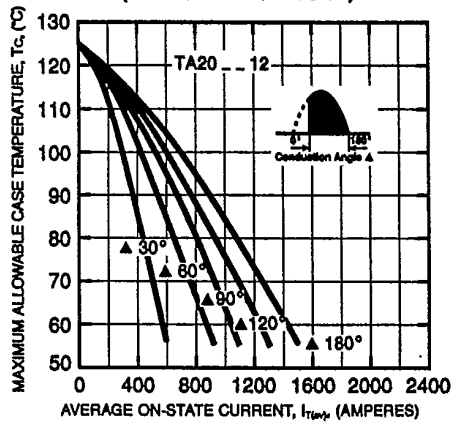
MAXIMUM ON-STATE CHARACTERISTICS



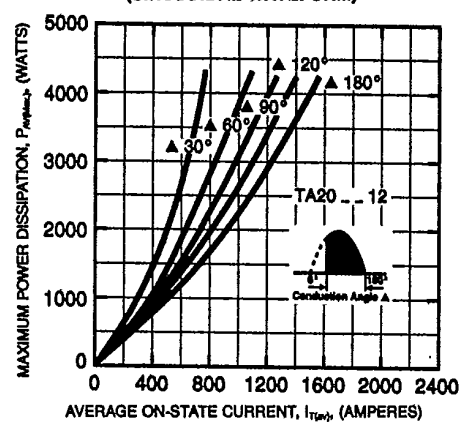
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)



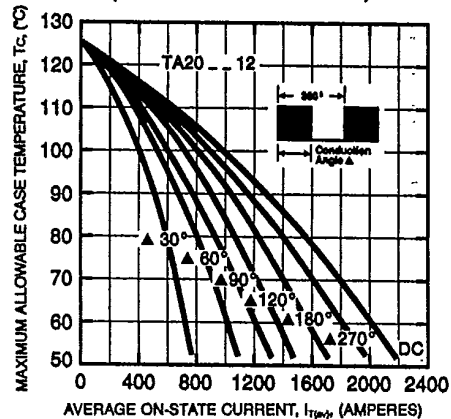
MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)



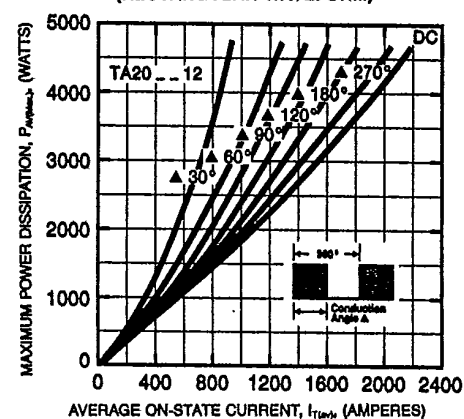
MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)



MAXIMUM ALLOWABLE CASE TEMPERATURE (RECTANGULAR WAVEFORM)



MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)





Powerex, Inc., Hills Street, Youngwood, Pennsylvania 15697 (412) 925-7272

Powerex Europe, S.A., 428 Ave. G. Durand, BP107, 72003 LeMans, France (43) 72.75.15

TA20

Phase Control SCR

1200-1400 Amperes Avg/2400-4000 Volts

