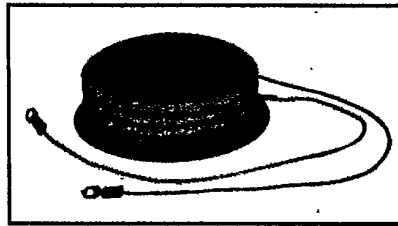
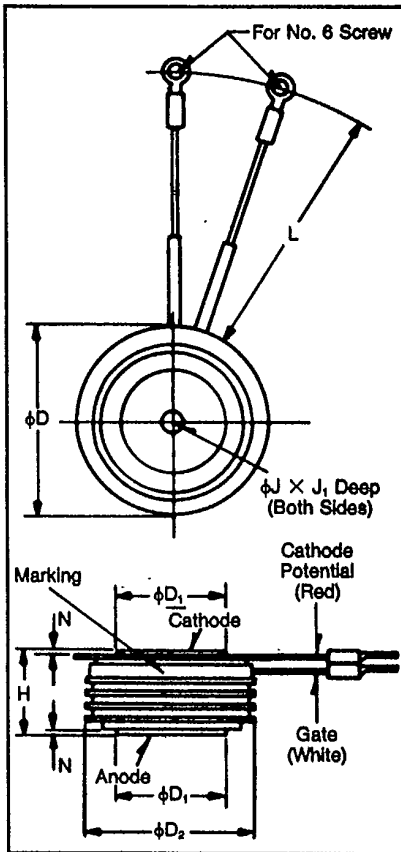




**TA20**

Powerex, Inc. Hillis Street, Youngwood, Pennsylvania 15897 (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/namic) gate.

**Features:**

- Low On-State Voltage
- High di/dt
- High dv/dt
- Hermetic Packaging
- Excellent Surge and I<sup>2</sup>t 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 <sub>1</sub>	2.470	2.480	62.74	63.00
φD <sub>2</sub>	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 <sub>1</sub>	.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 <sub>ORM</sub>	Code	I <sub>r</sub> (avg)	Code
TA20	2400	24	1200	12
	2600	26		
	2800	28		
	3000	30		
	3200	32		
	3400	34		
	3600	36		
	3800	38		
	4000	40	1400	14



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) <sup>①</sup>	$I_{TSM}$	23,500	25,000	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz) <sup>①</sup>	$I_{TSM}$	21,450	22,800	Amperes
Critical Rate-of-Rise of On-State Current (Non-Repetitive) <sup>② ③ ④</sup>	di/dt	400	400	Amperes/ $\mu$ s
Critical Rate-of-Rise of On-State Current (Repetitive)	di/dt	150	150	Amperes/ $\mu$ s
I <sup>2</sup> t (for Fusing), One Cycle at 60Hz	I <sup>2</sup> t	$1.67 \times 10^6$	$2.6 \times 10^6$	A <sup>2</sup> 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 <sup>⑤</sup>		9000 to 11,000	9000 to 11,000	lb.
Mounting Force <sup>⑤</sup>		4100 to 5000	4100 to 5000	kg

### Electrical and Thermal Characteristics

	Symbol	Test Conditions	TA20 _ _ 12	TA20 _ _ 14	Units
<b>Current—Conducting State Maximums</b>					
Peak On-State Voltage	$V_{TM}$	$I_{TM} = 3000A, T_J = 25^\circ C$	3.15	2.50	Volts
TA20					
<b>Voltage—Blocking State Maximums<sup>①</sup></b>					
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
<b>Switching</b>					
Typical Turn-Off Time	$t_t$	$I_T = 250A, T_J = 125^\circ C,$ $di_R/dt = 50A/\mu\text{sec, reapplied}$ $dv/dt = 20V/\mu\text{sec linear to } 0.8V_{DRM}$	400		$\mu\text{sec}$
Typical Turn-On Time <sup>②</sup>	$t_{on}$	$I_{TM} = 1000A, V_D = 1500V$	8.0		$\mu\text{sec}$
Min. Critical dv/dt exponential to $V_{DRM}$ <sup>③ ④</sup>	dv/dt	$T_J = 125^\circ C$	300		V/ $\mu\text{sec}$
<b>Thermal</b>					
Maximum Thermal Resistance, <sup>⑤</sup> double sided cooling					
Junction to Case	$R_{\theta JC}$		.015		°C/Watt
Case to Sink, Lubricated	$R_{\theta CS}$		.007		°C/Watt
<b>Gate—Maximum Parameters</b>					
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.

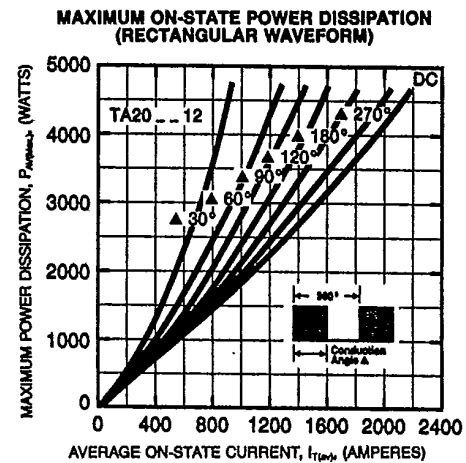
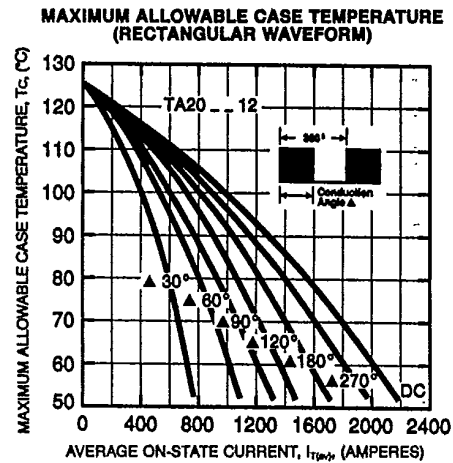
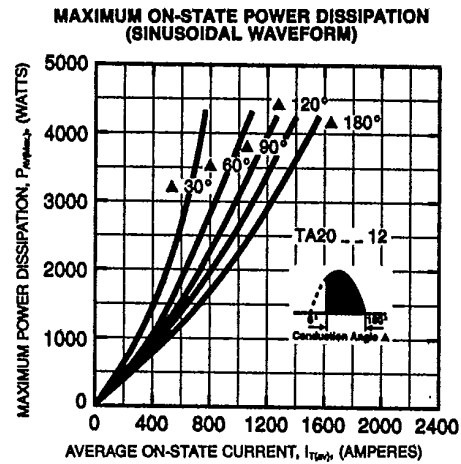
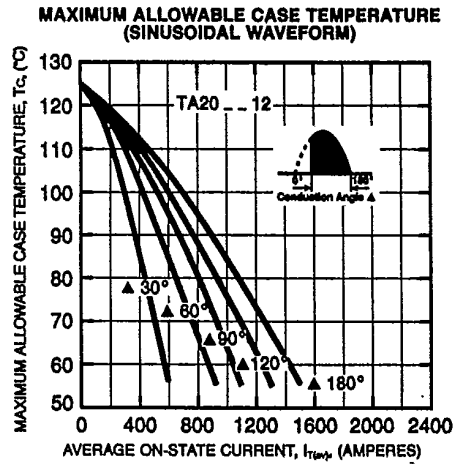
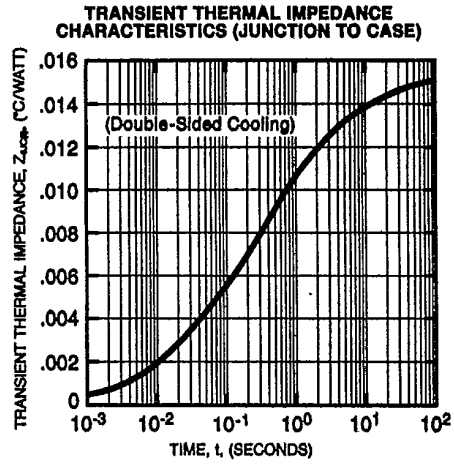
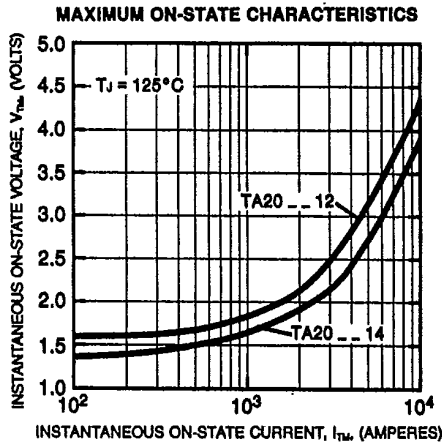
⑤ Higher dv/dt ratings available, consult factory.

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





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

