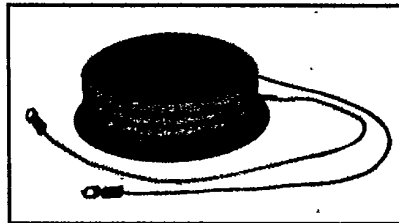
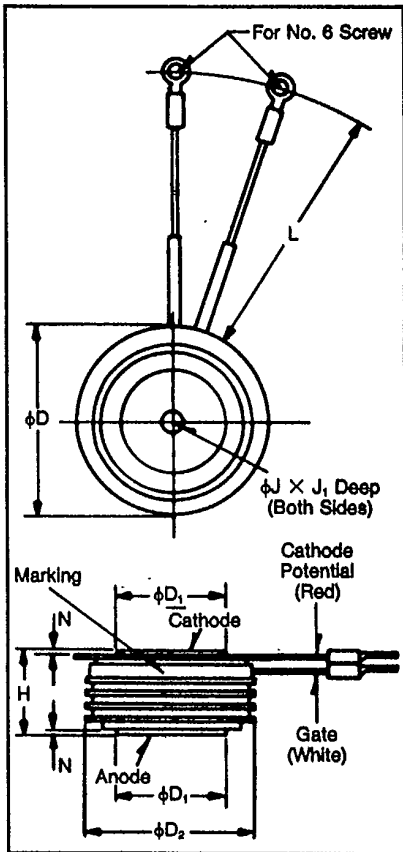




**TA20**

Powerex, Inc. Hillis Street, Youngwood, Pennsylvania 15897 (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**



**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



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### TA20

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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) <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.

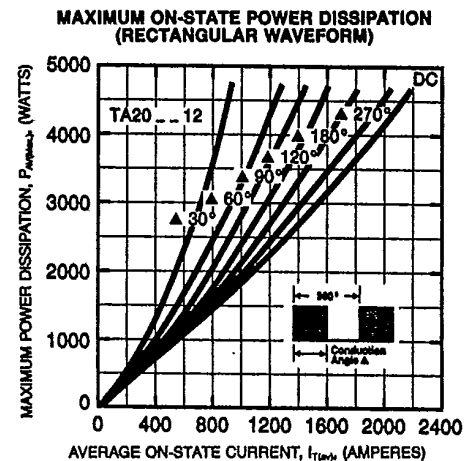
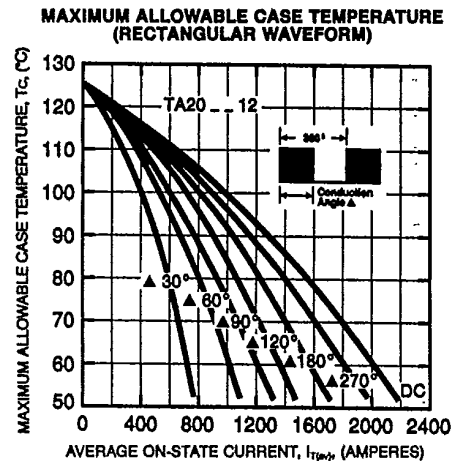
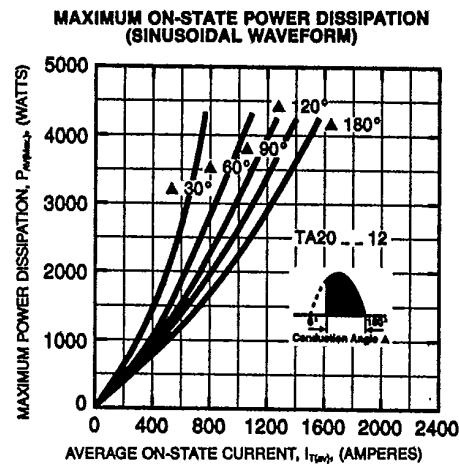
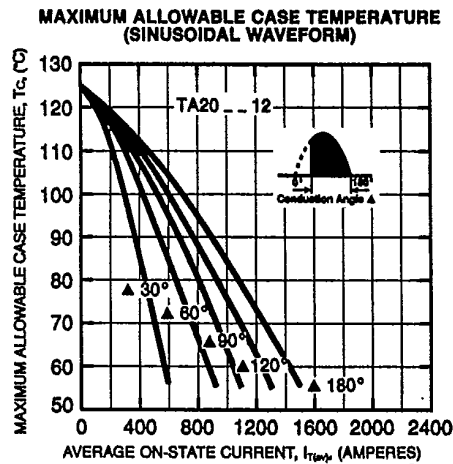
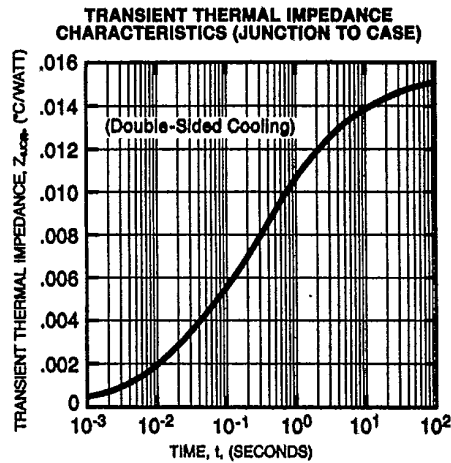
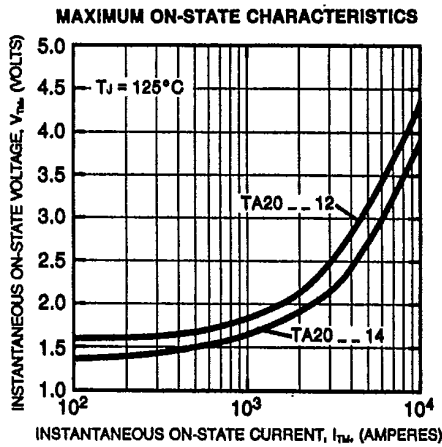
⑤ Higher dv/dt ratings available, consult factory.

⑥ Per JEDEC standard RS-397, 5.2.2.6.



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