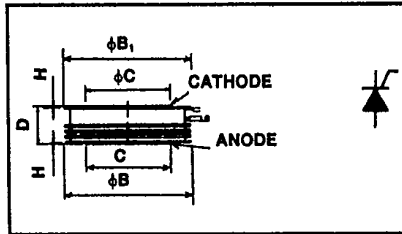




**TD20**

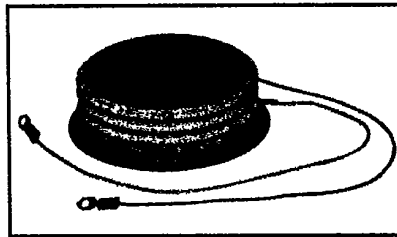
Powerex, Inc. Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272  
 Powerex Europe, S.A., 428 Ave. G. Durand, BP107, 72003 LeMans, France (43) 72.75.15

**Phase Control SCR**  
**2800-3600 Amperes Avg**  
**3000-4500 Volts**



**TD20**  
**Outline Drawing**

Dimensions	Inches	Metric
φB	5.906	150
φC	3.937	100
D	1.41 ± .02	36 ± 0.5
H	.019 Min	0.5 Min
φB <sub>1</sub>	5.197	132



**TD20**  
**Phase Control SCR**  
 2800-3600 Amperes/3000-4500 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. TD204528 is a 4500 Volt, 2800 Ampere Phase Control SCR.

Type	Voltage*		Current	
	V <sub>ORM</sub> V <sub>RRM</sub>	Code	I <sub>r</sub> (avg)	Code
TD20	3000	30	2800	28
	3200	32		
	3400	34		
	3600	36		
	4000	40		
	4200	42		
	4400	44		
	4500	45		

\*All voltages not available in all current ratings.



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TD20

Phase Control SCR

2800-3600 Amperes Avg/3000-4500 Volts

### Absolute Maximum Ratings

	Symbol	TD20 - 28	TD20 - 36	Units
Maximum Blocking Voltage	$V_{DRM}, V_{RRM}$	4500	3600	Volts
RMS On-State Current	$I_{T(RMS)}$	4400	5600	Amperes
Average On-State Current	$I_{T(av)}$	2800	3600	Amperes
Peak One-Cycle Surge (Non Repetitive) On-State Current (60Hz)	$I_{TSM}$	45,800	55,600	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz)	$I_{TSM}$	42,000	51,000	Amperes
Critical Rate-of-Rise of On-State Current (Repetitive)	$di/dt$	170	170	Amperes/ $\mu$ s
$I^2t$ (for Fusing), one cycle at 60Hz	$I^2t$	$8.7 \times 10^6$	$1.28 \times 10^7$	A <sup>2</sup> sec
Peak Gate Power Dissipation	$P_{GM}$	250	250	Watts
Average Gate Power Dissipation	$P_{G(av)}$	35	35	Watts
Storage Temperature	$T_{STG}$	-40 to 125	-40 to 125	°C
Operating Temperature	$T_J$	-40 to 125	-40 to 125	°C
Mounting Force <sup>ⓐ</sup>		16,000 to 20,000	16,000 to 20,000	lb.
Mounting Force <sup>ⓐ</sup>		72 to 88	72 to 88	kN

<sup>ⓐ</sup> Consult recommended mounting procedures.



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**TD20**  
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### Electrical and Thermal Characteristics

Characteristics	Symbol	Test Conditions	TD20 - 28	TD20 - 36	Units
<b>Current—Conducting State Maximums</b>					
Peak On-State Voltage	$V_{TM}$	$I_{TM} = 4000A, T_J = 125^\circ C$	1.9	1.55	Volts
Threshold Voltage	$V_{(TO)}$	$T_J = 125^\circ C$	1.16	1.00	Volts
Slope Resistance	$r_T$	$T_J = 125^\circ C$	.18	.137	mOhm
<b>TD20</b>					
<b>Voltage—Blocking State Maximums</b>					
Forward Leakage, Peak	$I_{DRM}$	$T_J = 125^\circ C, V_{DRM}$ applied	550		mA
Reverse Leakage, Peak	$I_{RRM}$	$T_J = 125^\circ C, V_{RRM}$ applied	550		mA
<b>Switching</b>					
Min. Critical dv/dt exponential to $V_{DRM}$	dv/dt	Gate open, $T_J = 125^\circ C, V_D = .7V_{DRM}$	2000		V/ $\mu$ sec
<b>Thermal</b>					
Maximum Thermal Resistance, <sup>ⓐ</sup> double sided cooling Junction to Sink	$R_{\theta JS}$		.009		$^\circ C/Watt$
<b>Gate—Maximum Parameters</b>					
Gate Current to Trigger	$I_{GT}$	$V_D = 12V, T_J = 25^\circ C, R_L = 3\Omega$	300		mA
Gate Voltage to Trigger	$V_{GT}$	$V_D = 12V, T_J = 25^\circ C, R_L = 3\Omega$	4.5		Volts
Non-Triggering Gate Voltage	$V_{GDM}$	$T_J = 125^\circ C, V_D = \frac{1}{2}V_{DRM}$	.25		Volts
Peak Forward Gate Current	$I_{GTM}$		6		Amperes
Peak Reverse Gate Voltage	$V_{GRM}$		20		Volts

<sup>ⓐ</sup> Consult recommended mounting procedures.



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