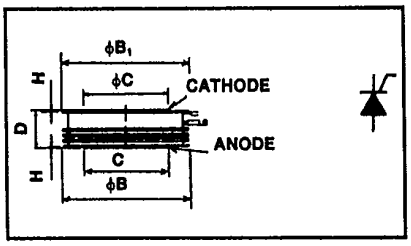
POWEREX

TD20

Phase Control SCR

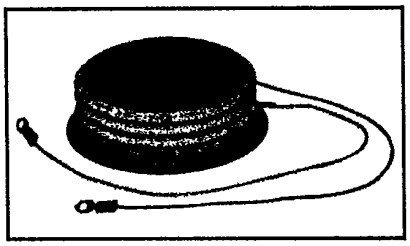
2800-3600 Amperes Avg
3000-4500 Volts

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



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_1	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^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. TD204528 is a 4500 Volt, 2800 Ampere Phase Control SCR.

Type	Voltage*		Current	
	V_{DRM} V_{RRM}	Code	I_T (avg)	Code
TD20	3000	30	2800	28
	3200	32	3600	36
	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/μs
I^2t (for Fusing), one cycle at 60Hz	I^2t	8.7×10^6	1.28×10^7	A^2sec
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 Force①		16,000 to 20,000	16,000 to 20,000	lb.
Mounting Force①		72 to 88	72 to 88	kN

① Consult recommended mounting procedures.

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TD20
Phase Control SCR
2800-3600 Amperes Avg/3000-4500 Volts

Electrical and Thermal Characteristics

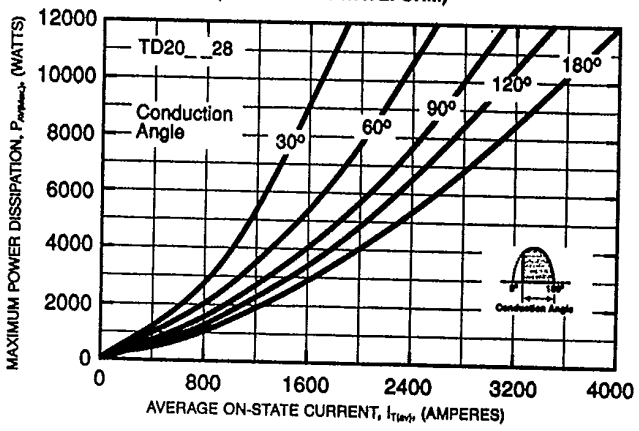
Characteristics	Symbol	Test Conditions	TD20_ _28	TD20_ _36	Units
Current—Conducting State Maximums					
Peak On-State Voltage	V_{TM}	I_{TM} = 4000A, T_J = 125°C	1.9	1.55	Volts
Threshold Voltage	$V_{(TO)}$	T_J = 125°C	1.16	1.00	Volts
Slope Resistance	r_T	T_J = 125°C	.18	.137	mOhm
			TD20		
Voltage—Blocking State Maximums					
Forward Leakage, Peak	I_{DRM}	T_J = 125°C, V_{DRM} applied	550		mA
Reverse Leakage, Peak	I_{RRM}	T_J = 125°C, V_{RRM} applied	550		mA
Switching					
Min. Critical dv/dt exponential to V_{DRM}	dv/dt	Gate open, T_J = 125°C, V_D = .7V_{DRM}	2000		V/μsec
Thermal					
Maximum Thermal Resistance,① double sided cooling Junction to Sink	$R_{\theta JS}$		.009		°C/Watt
Gate—Maximum Parameters					
Gate Current to Trigger	I_{GT}	V_D = 12V, T_J = 25°C, R_L = 3Ω	300		mA
Gate Voltage to Trigger	V_{GT}	V_D = 12V, T_J = 25°C, R_L = 3Ω	4.5		Volts
Non-Triggering Gate Voltage	V_{GDM}	T_J = 125°C, V_D = ½V_{DRM}	.25		Volts
Peak Forward Gate Current	I_{GTM}		6		Amperes
Peak Reverse Gate Voltage	V_{GRM}		20		Volts

① Consult recommended mounting procedures.

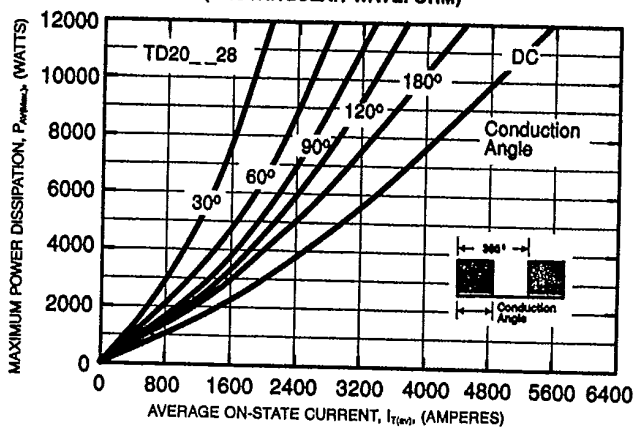
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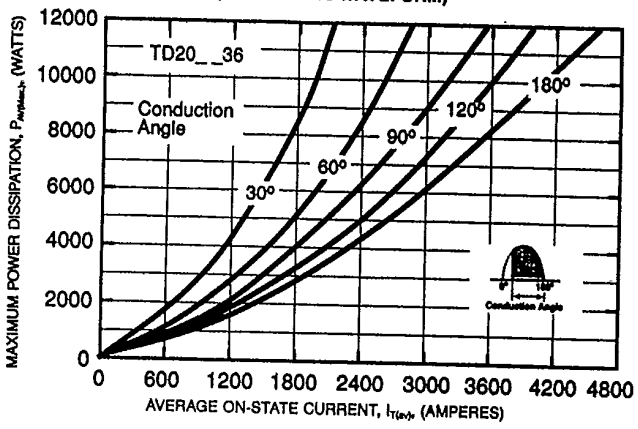
MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)



MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)



MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)



MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)

