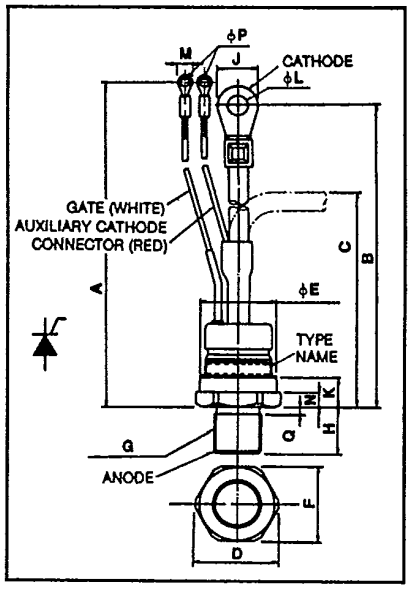
CR150DM

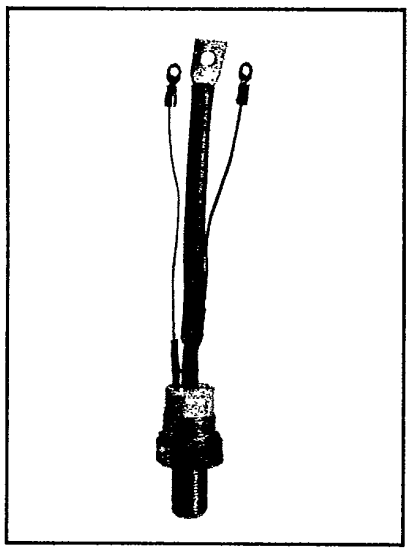
Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272
Powerex Europe, S.A., 428 Ave. G. Durand, BP107, 72003 LeMans, France (43) 72.75.15

Phase Control SCR
175 Amperes Avg
200-1800 Volts



CR150DM
Outline Drawing

Dimensions	Inches	Metric
A	7.87 ± .30	200 ± 8
B	6.50 ± .30	165 ± 8
C	3.62 Max	92 Max
D	1.42	36
ϕE	1.260 Max	32 Max
F	1.26	32
G	M20	M20 × 1.5
H	.79	20
J	.65	16.5
K	.55	14
ϕL	.331	8.4
M	.26	6.6
N	.24	6
ϕP	.169	4.3
Q	.13	3.3



CR150DM
Phase Control SCR
175 Amperes/200-1800 Volts

Description
Powerex Silicon Controlled Rectifiers (SCR) are designed for phase control applications. These are all-diffused, compression bonded encapsulated (CBE) devices employing center-fired 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 or nine digit part number you desire from the table – i.e. CR150DM-28 is a 1400 Volt, 175 Ampere Phase Control SCR.

Type	Voltage		Current
	V_{DRM} V_{RRM}	Code	I_T (avg)
CR150DM	200	-4	175
	300	-6	
	400	-8	
	500	-10	
	600	-12	
	800	-16	
	1000	-20	
	1200	-24	
	1400	-28	
	1600	-32	
	1800	-36	

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Absolute Maximum Ratings

	Symbol	CR150DM	Units
RMS On-State Current	$I_{T(RMS)}$	275	Amperes
Average On-State Current	$I_{T(av)}$	175	Amperes
Peak One-Cycle Surge (Non Repetitive) On-State Current (60Hz)	I_{TSM}	4000	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz)	I_{TSM}	3650	Amperes
Critical Rate-of-Rise of On-State Current (Non-Repetitive)	di/dt	400	Amperes/μs
Critical Rate-of-Rise of On-State Current (Repetitive)	di/dt	100	Amperes/μs
I^2t (for Fusing), one cycle at 60Hz	I^2t	6.7×10^4	A^2sec
Peak Gate Power Dissipation	P_{GM}	10	Watts
Average Gate Power Dissipation	$P_{G(av)}$	3	Watts
Storage Temperature	T_{STG}	−40 to 150	°C
Operating Temperature	T_J	−40 to 125	°C
Mounting Torque①		225 to 300	in.-lb.
Mounting Torque①		270 to 360	kg-cm

① Consult recommended mounting procedures.

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Electrical and Thermal Characteristics

Characteristics	Symbol	Test Conditions	CR150DM	Units
Voltage—Blocking State Maximums				
Forward Leakage, Peak	I_{DRM}	T_J = 125°C, V_{DRM} applied	15	mA
Reverse Leakage, Peak	I_{RRM}	T_J = 125°C, V_{RRM} applied	15	mA
Current—Conducting State Maximums				
Peak On-State Voltage	V_{TM}	T_J = 125°C, I_{TM} = 500A	1.75	Volts
Switching				
Min. Critical dv/dt exponential to V_{DRM}	dv/dt	T_J = 125°C, V_D = 1/2V_{DRM}	100	V/μsec
Thermal				
Maximum Thermal Resistance①				
Junction to Case	$R_{\theta JC}$		.15	°C/Watt
Case to Sink, Lubricated	$R_{\theta CS}$		.06	°C/Watt
Gate—Maximum Parameters				
Gate Current to Trigger	I_{GT}	T_J = 25°C, V_D = 6V, R_L = 2Ω	200	mA
Gate Voltage to Trigger	V_{GT}	T_J = 25°C, V_D = 6V, R_L = 2Ω	1.5	Volts
Non-Triggering Gate Voltage	V_{GDM}	T_J = 125°C, V_D = ½V_{DRM}	.25	Volts
Peak Forward Gate Current	I_{GTM}		4.0	Amperes
Peak Reverse Gate Voltage	V_{GRM}		5.0	Volts

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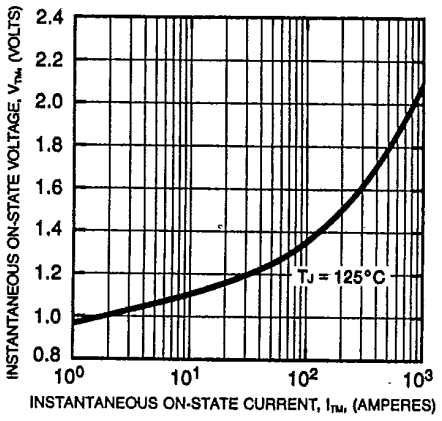
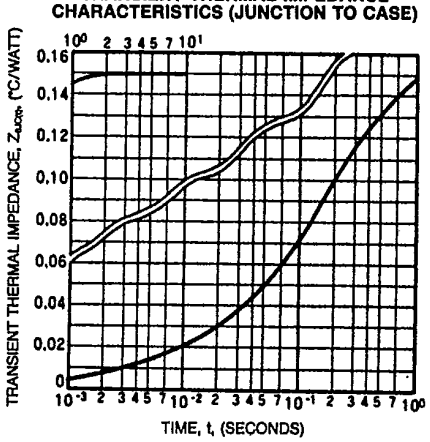
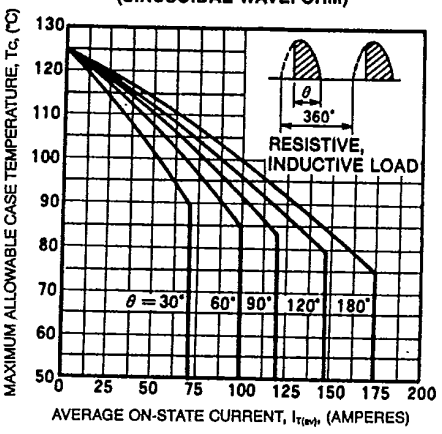
MAXIMUM ON-STATE CHARACTERISTICS



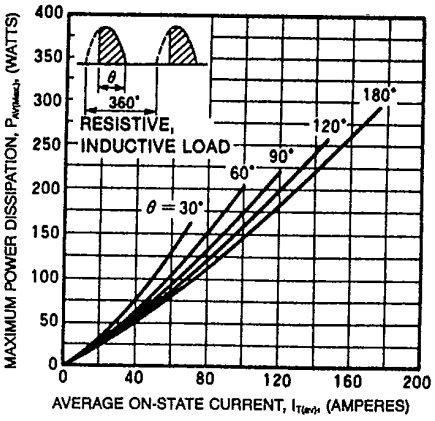
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)



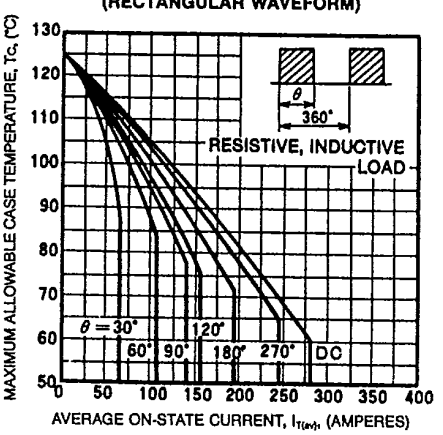
MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)



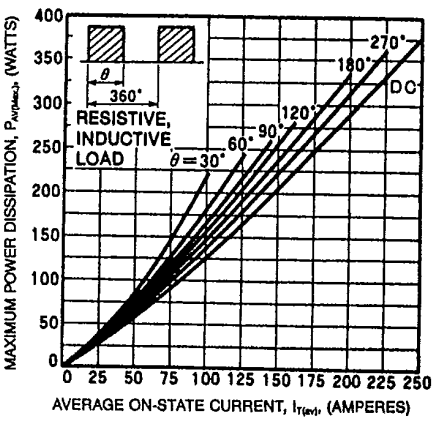
MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)



MAXIMUM ALLOWABLE CASE TEMPERATURE (RECTANGULAR WAVEFORM)



MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)



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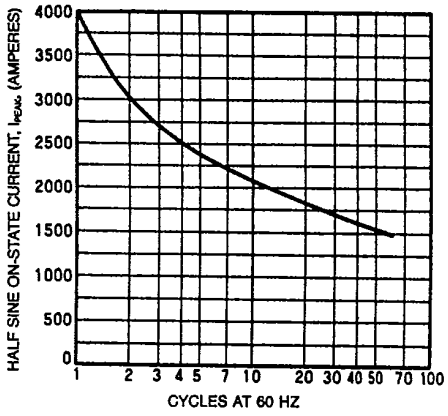
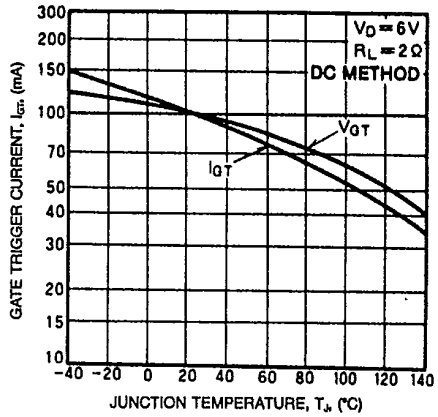
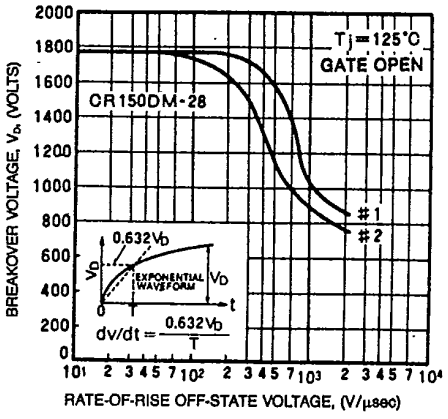
MAXIMUM ALLOWABLE SURGE ON-STATE CURRENT (NON-REPETITIVE)



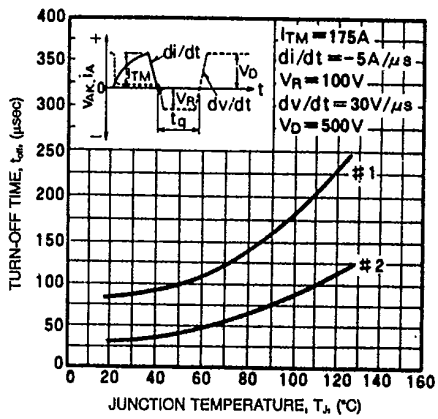
GATE TRIGGER CURRENT (TYPICAL)



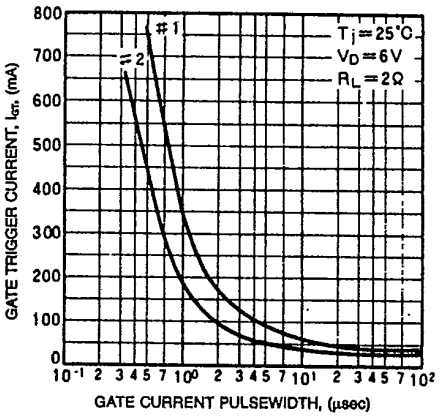
BREAKOVER VOLTAGE (TYPICAL)



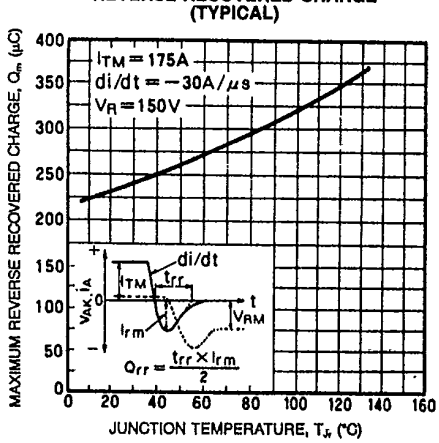
TURN-OFF TIME VS. JUNCTION TEMPERATURE (TYPICAL)



GATE TRIGGER CURRENT VS. PULSEWIDTH (TYPICAL)



REVERSE RECOVERED CHARGE (TYPICAL)



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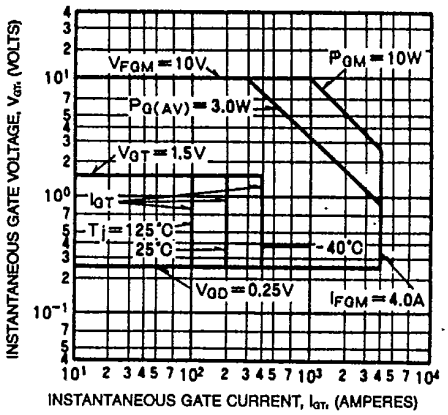
GATE CHARACTERISTICS