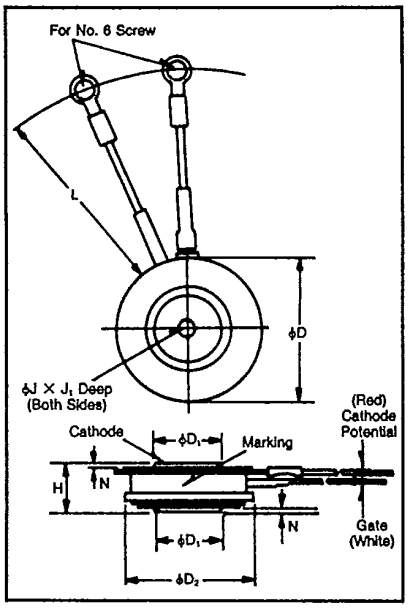
Powerex, Inc. Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272
Powerex Europe, S.A., 428 Ave. G. Durand, BP107, 72003 LeMans, France (43) 72.75.15

Phase Control SCR

150-300 Amperes Avg
100-1600 Volts

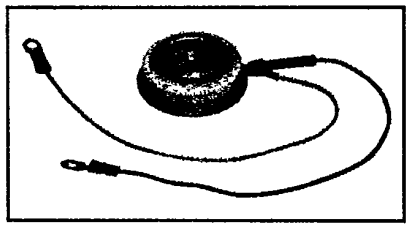


T62
Outline Drawing

Dimensions	Inches		Millimeters	
	Min.	Max.	Min.	Max.
ϕD	1.610	1.650	40.89	41.91
ϕD₁	.745	.755	18.92	19.18
ϕD₂	1.420	1.460	36.07	37.08
H	.500	.560	12.70	14.22
ϕJ	.135	.145	3.43	3.68
J₁	.072	.082	1.83	2.08
L	7.75	8.50	196.85	215.90
N	.030	—	.76	—

Creep Distance—.34 in. min. (8.64 mm)
Strike Distance—.26 in. min. (6.60 mm).
(In accordance with NEMA standards.)
Finish—Nickel Plate.
Approx. Weight—2.3 oz. (66 g).

1. Dimension "H" is clamped dimension.



T620/T630
Phase Control SCR
150-300 Amperes/100-1600 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. T6200820 is a 800 Volt, 200 Ampere Phase Control SCR.

Type	Voltage		Current	
	V_{DRM} V_{RRM}	Code	I_T (avg)	Code
T630	100	01	150	15
	200	02	200	20
	300	03	300	30
	400	04		
	500	05		
	600	06		
T620	700	07		
	800	08		
	900	09		
	1000	10		
	1100	11		
	1200	12		
	1300	13		
	1400	14		
	1500	15		
	1600	16		

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T620/T630
Phase Control SCR
150-300 Amperes Avg/100-1600 Volts

Absolute Maximum Ratings

	Symbol	T620_ _15 T630_ _15	T620_ _20 T630_ _20	T620_ _30 T630_ _30	Units
RMS On-State Current	$I_{T(RMS)}$	235	315	470	Amperes
Average On-State Current	$I_{T(av)}$	150	200	300	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (60Hz)③	I_{TSM}	3300	4000	5500	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz)③	I_{TSM}	3000	3650	5000	Amperes
Critical Rate-of-Rise of On-State Current (Non-Repetitive)①④⑥	dI/dt	800	800	800	Amperes/μs
Critical Rate-of-Rise of On-State Current (Repetitive)	dI/dt	150	150	150	Amperes/μs
I^2t (for Fusing), 8.3 milliseconds	I^2t	45,000	64,400	120,000	A^2sec
Peak Gate Power Dissipation	P_{GM}	16	16	16	Watts
Average Gate Power Dissipation	$P_{G(av)}$	3	3	3	Watts
Storage Temperature	T_{STG}	−40 to 150	−40 to 150	−40 to 150	°C
Operating Temperature	T_J	−40 to 125	−40 to 125	−40 to 125	°C
Mounting Force①		1000 to 1400	1000 to 1400	1000 to 1400	lb.
Mounting Force①		450 to 635	450 to 635	450 to 635	kg

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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Phase Control SCR
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Electrical and Thermal Characteristics

Characteristics	Symbol	Test Conditions	T620_ _15 T630_ _15	T620_ _20 T630_ _20	T620_ _30 T630_ _30	Units
Current—Conducting State Maximums						
Peak On-State Voltage	V_{TM}	I_{TM} = 625A, T_J = 25°C	2.6	2.05	1.55	Volts
				T620/T630		
Voltage—Blocking State Maximums②						
Forward Leakage, Peak	I_{DRM}	T_J = 125°C, V_{DRM} = rated		25		mA
Reverse Leakage, Peak	I_{RRM}	T_J = 125°C, V_{RRM} = rated		25		mA
Switching						
Typical Turn-Off Time	t_q	I_T = 150A, T_J = 125°C, di_R/dt = 12.5A/µsec, reapplied dv/dt = 20V/µsec linear to 0.8V_{DRM}		100		µsec
Typical Turn-On Time④	t_{on}	I_T = 100A, V_D = 100V		5		µsec
Min. Critical dv/dt exponential to V_{DRM}②⑤	dv/dt	T_J = 125°C		300		V/µsec
Thermal						
Maximum Thermal Resistance,① double sided cooling						
Junction to Case	$R_{\theta JC}$			.08		°C/Watt
Case to Sink, Lubricated	$R_{\theta CS}$			.02		°C/Watt
Gate—Maximum Parameters						
Gate Current to Trigger	I_{GT}	T_J = 25°C, V_D = 12V		150		mA
Gate Voltage to Trigger	V_{GT}	T_J = 25°C, V_D = 12V		3		Volts
Non-Triggering Gate Voltage	V_{GDM}	T_J = 125°C, 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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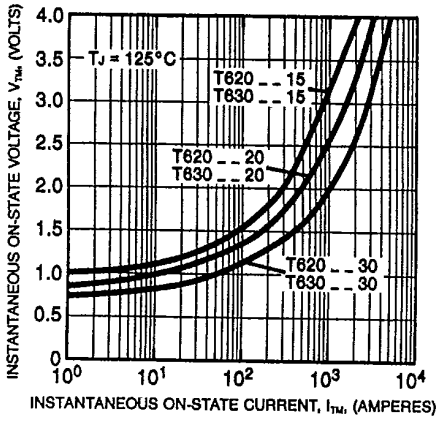
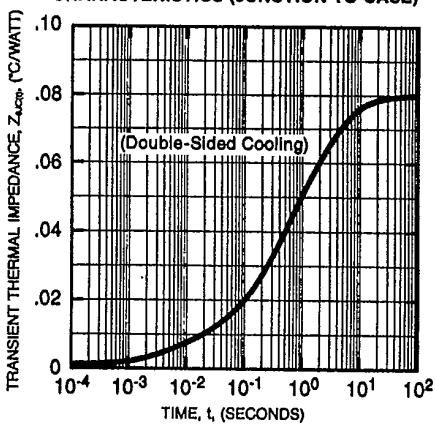
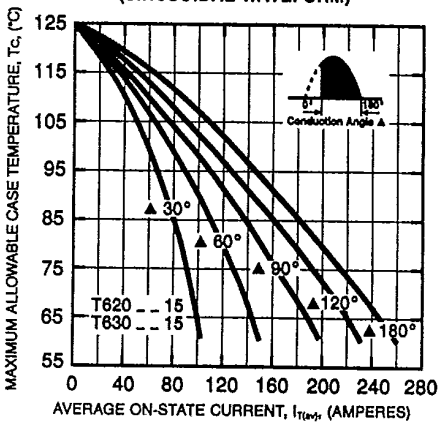
MAXIMUM ON-STATE CHARACTERISTICS



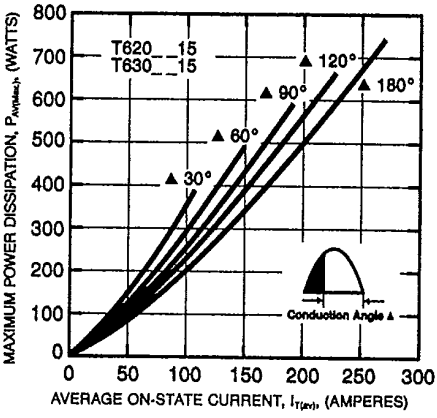
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)



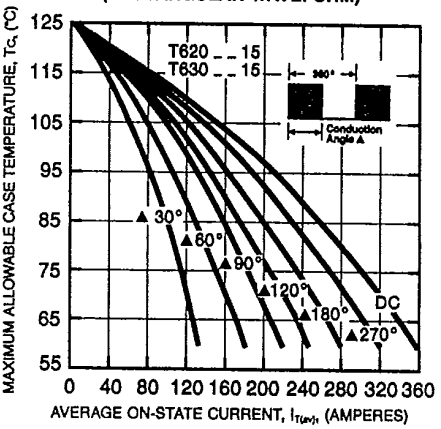
MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)



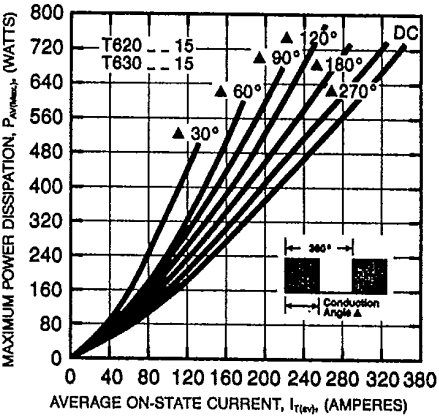
MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)



MAXIMUM ALLOWABLE CASE TEMPERATURE (RECTANGULAR WAVEFORM)



MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)



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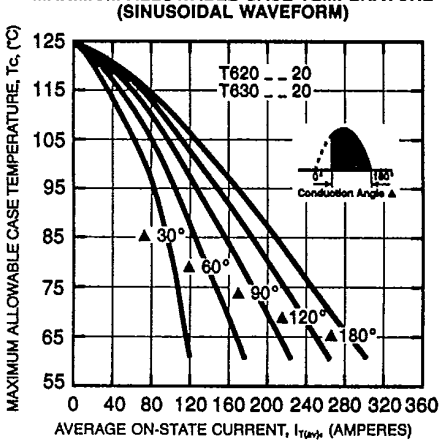

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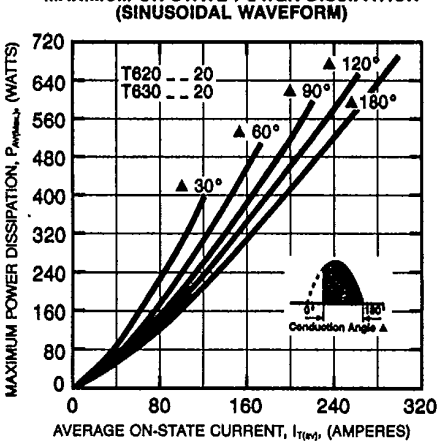

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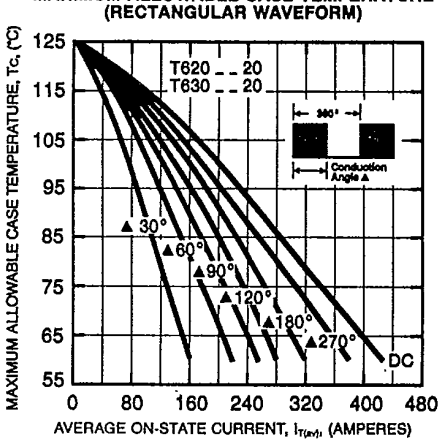

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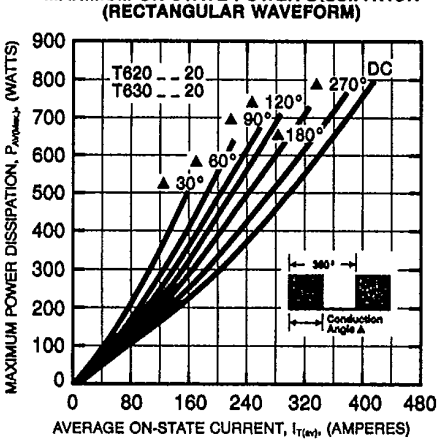

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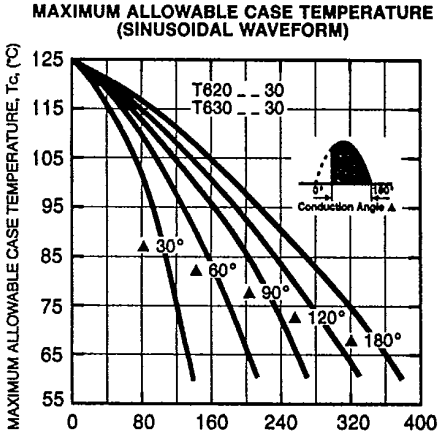

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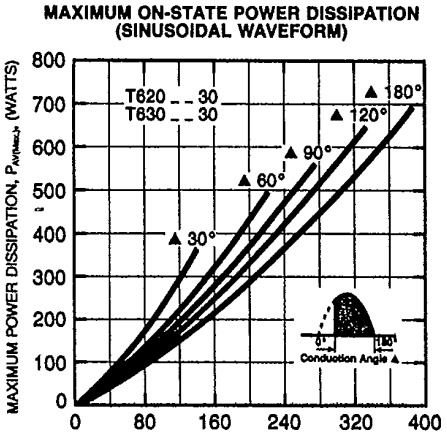

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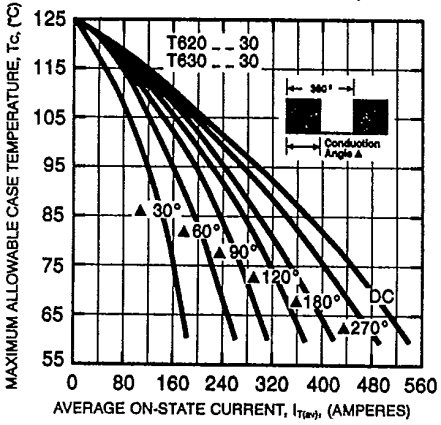

MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)