

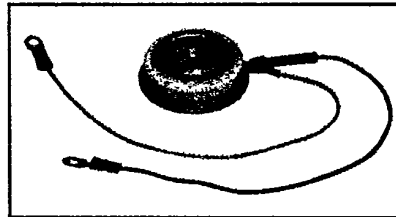
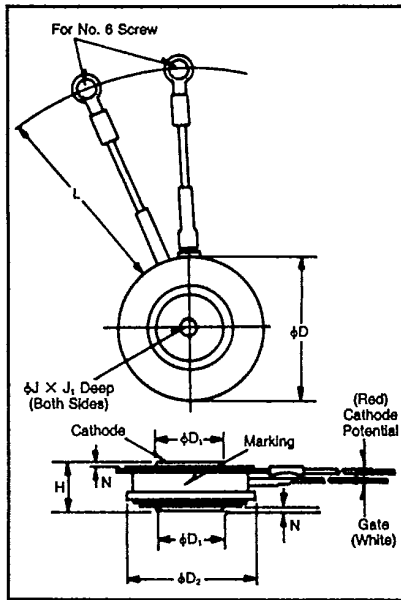
# POWEREX

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

## T620/T630

### Phase Control SCR

150-300 Amperes Avg  
 100-1600 Volts



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

#### T62 Outline Drawing

Dimensions	Inches		Millimeters	
	Min.	Max.	Min.	Max.
φD	1.610	1.650	40.89	41.91
φD <sub>1</sub>	.745	.755	18.92	19.18
φD <sub>2</sub>	1.420	1.460	36.07	37.08
H	.500	.560	12.70	14.22
φJ	.135	.145	3.43	3.68
J <sub>1</sub>	.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.

#### 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. T6200820 is a 800 Volt, 200 Ampere Phase Control SCR.

Type	Voltage		Current	
	V <sub>ORM</sub>	Code	I <sub>r</sub> (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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### 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) <sup>①</sup>	$I_{TSM}$	3300	4000	5500	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz) <sup>①</sup>	$I_{TSM}$	3000	3650	5000	Amperes
Critical Rate-of-Rise of On-State Current (Non-Repetitive) <sup>① ② ③</sup>	$di/dt$	800	800	800	Amperes/ $\mu s$
Critical Rate-of-Rise of On-State Current (Repetitive)	$di/dt$	150	150	150	Amperes/ $\mu s$
$I^2t$ (for Fusing), 8.3 milliseconds	$I^2t$	45,000	64,400	120,000	A <sup>2</sup> sec
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 Force <sup>④</sup>		1000 to 1400	1000 to 1400	1000 to 1400	lb.
Mounting Force <sup>⑤</sup>		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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### Electrical and Thermal Characteristics

Characteristics	Symbol	Test Conditions	T620 _ _ 15 T630 _ _ 15	T620 _ _ 20 T630 _ _ 20	T620 _ _ 30 T630 _ _ 30	Units
<b>Current—Conducting State Maximums</b>						
Peak On-State Voltage	V <sub>TM</sub>	I <sub>TM</sub> = 625A, T <sub>J</sub> = 25°C	2.6	2.05	1.55	Volts
T620/T630						
<b>Voltage—Blocking State Maxlimums<sup>⓪</sup></b>						
Forward Leakage, Peak	I <sub>DRM</sub>	T <sub>J</sub> = 125°C, V <sub>DRM</sub> = rated		25		mA
Reverse Leakage, Peak	I <sub>RRM</sub>	T <sub>J</sub> = 125°C, V <sub>RRM</sub> = rated		25		mA
<b>Switching</b>						
Typical Turn-Off Time	t <sub>q</sub>	I <sub>T</sub> = 150A, T <sub>J</sub> = 125°C, di <sub>R</sub> /dt = 12.5A/μsec, reapplied dv/dt = 20V/μsec linear to 0.8V <sub>DRM</sub>		100		μsec
Typical Turn-On Time <sup>⓪</sup>	t <sub>on</sub>	I <sub>T</sub> = 100A, V <sub>D</sub> = 100V		5		μsec
Min. Critical dv/dt exponential to V <sub>DRM</sub> <sup>⓪</sup> ⓪	dv/dt	T <sub>J</sub> = 125°C		300		V/μsec
<b>Thermal</b>						
Maximum Thermal Resistance, <sup>⓪</sup> double sided cooling						
Junction to Case	R <sub>θJC</sub>			.08		°C/Watt
Case to Sink, Lubricated	R <sub>θCS</sub>			.02		°C/Watt
<b>Gate—Maximum Parameters</b>						
Gate Current to Trigger	I <sub>GT</sub>	T <sub>J</sub> = 25°C, V <sub>D</sub> = 12V		150		mA
Gate Voltage to Trigger	V <sub>GT</sub>	T <sub>J</sub> = 25°C, V <sub>D</sub> = 12V		3		Volts
Non-Triggering Gate Voltage	V <sub>GDM</sub>	T <sub>J</sub> = 125°C, rated V <sub>DRM</sub>		.15		Volts
Peak Forward Gate Current	I <sub>GTM</sub>			4		Amperes
Peak Reverse Gate Voltage	V <sub>GRM</sub>			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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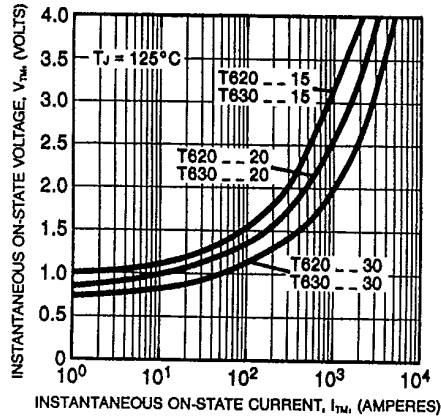
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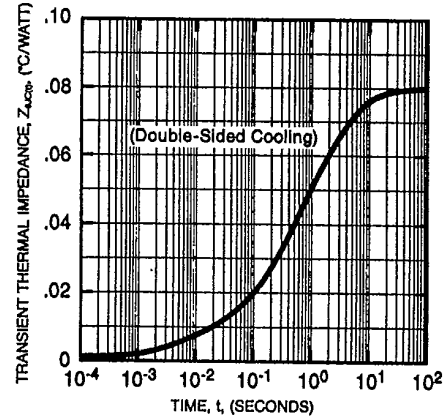
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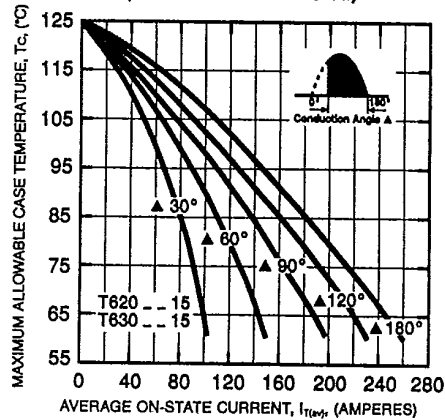
MAXIMUM ON-STATE CHARACTERISTICS



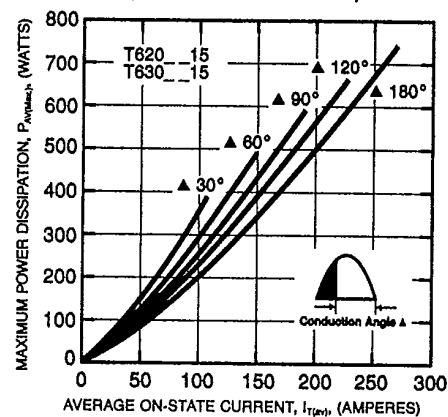
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO CASE)



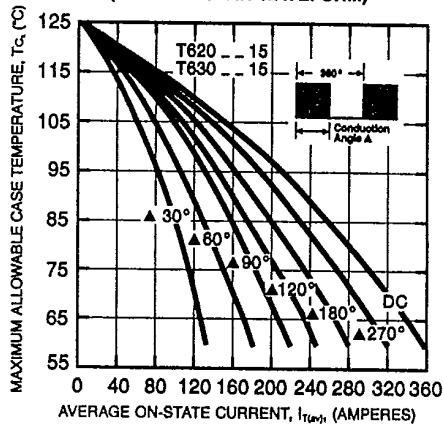
MAXIMUM ALLOWABLE CASE TEMPERATURE (SINUSOIDAL WAVEFORM)



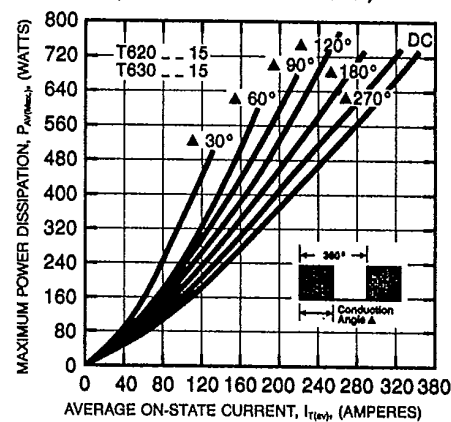
MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)



MAXIMUM ALLOWABLE CASE TEMPERATURE (RECTANGULAR WAVEFORM)



MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)





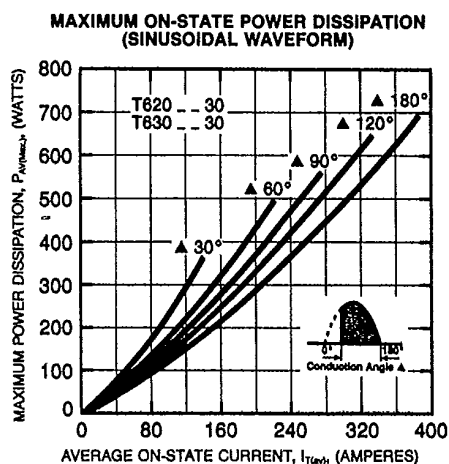
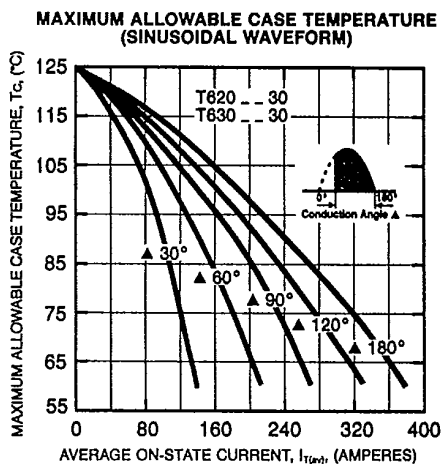
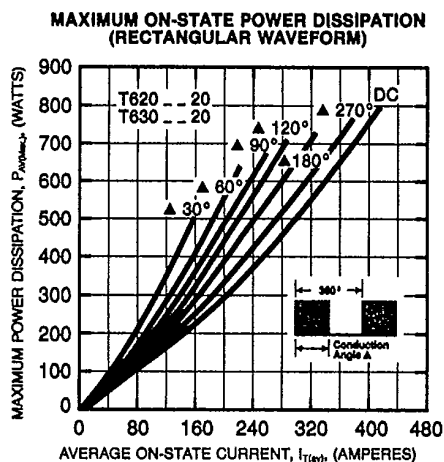
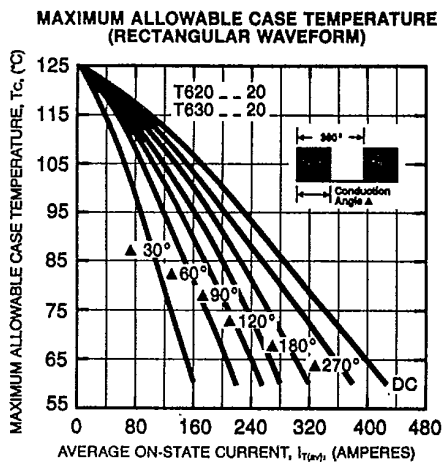
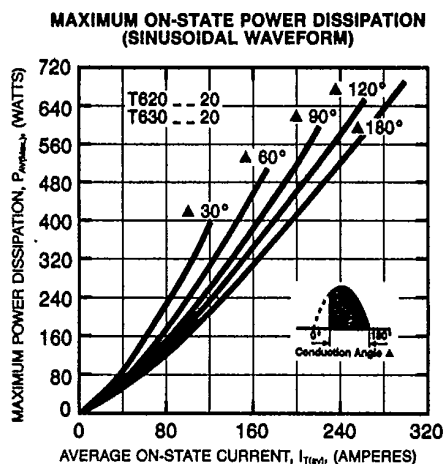
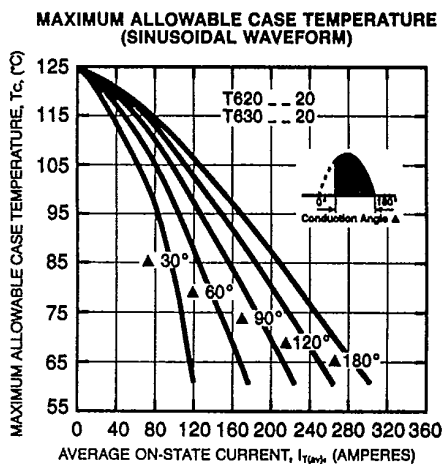
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