

POWEREX INC

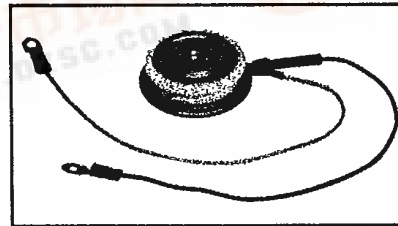
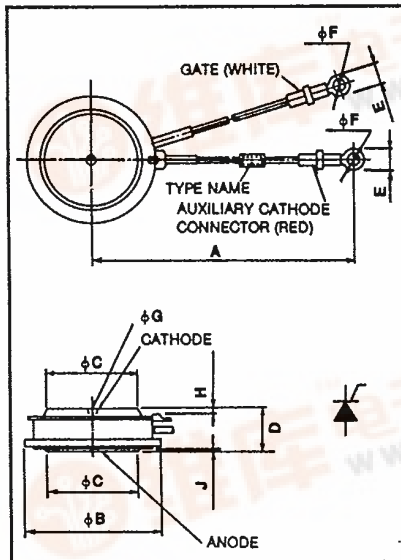
02 DE 7294621 0002944 0

T-25-19

POWEREX**FT300DL**

Powerex, Inc. Hills 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**300 Amperes Avg****200-1200 Volts**

FT300DL
Phase Control SCR
 300 Amperes/200-1200 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 I²t 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. FT300DL-16 is a 800 Volt, 300 Ampere Phase Control SCR.

FT300DL
Outline Drawing

Dimensions	Inches	Metric
A	12.60 ± .30	320 ± 8
φB	1.968 Max	50 Max
φC	1.220	31
D	.57 ± .02	14.5 ± 0.5
E	.30	7.5
φF	.169	4.3
φG ¹	.138	3.5
H	.04 Min	1.0 Min
J	.02 Min	.04 Min

¹Depth .04 in. or 1 mm

Type	Voltage*		Current
	V _{ORM} V _{RRM}	Code	
FT300DL	200	-4	300
	300	-6	
	400	-8	
	500	-10	
	600	-12	
	800	-16	
	1000	-20	
	1200	-24	

*Voltage classes 8, 12, 16, and 24 are standard; others are special products

POWEREX INC

02 DE 7294621 0002945 1



T-25-19

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

FT300DL

Phase Control SCR

300 Amperes Avg/200-1200 Volts

Absolute Maximum Ratings

	Symbol	FT300DL	Units
RMS On-State Current	$I_{T(RMS)}$	470	Amperes
Average On-State Current	$I_{T(av)}$	300	Amperes
Peak One-Cycle Surge (Non Repetitive) On-State Current (60Hz)	I_{TSM}	8000	Amperes
Peak One-Cycle Surge (Non-Repetitive) On-State Current (50Hz)	I_{TSM}	7300	Amperes
Critical Rate-of-Rise of On-State Current (Non-Repetitive)	di/dt	500	Amperes/ μs
Critical Rate-of-Rise of On-State Current (Repetitive)	di/dt	200	Amperes/ μs
I^2t (for Fusing), one cycle at 60Hz	I^2t	2.7×10^5	A^2sec
Peak Gate Power Dissipation	P_{GM}	10	Watts
Average Gate Power Dissipation	$P_{G(av)}$	5	Watts
Storage Temperature	T_{STG}	-40 to 150	$^{\circ}C$
Operating Temperature	T_J	-40 to 125	$^{\circ}C$
Mounting Force [Ⓢ]		800 to 1000	lb.
Mounting Force [Ⓢ]		360 to 450	kg

Electrical and Thermal Characteristics

Characteristics	Symbol	Test Conditions	FT300DL	Units
Voltage—Blocking State Maximums				
Forward Leakage, Peak	I_{DRM}	$T_J = 125^{\circ}C$, V_{DRM} applied	30	mA
Reverse Leakage, Peak	I_{RRM}	$T_J = 125^{\circ}C$, V_{RRM} applied	30	mA
Current—Conducting State Maximums				
Peak On-State Voltage	V_{TM}	$I_{TM} = 940A$, $T_J = 125^{\circ}C$	1.50	Volts
Switching				
Min. Critical dv/dt exponential to V_{DRM}	dv/dt	$T_J = 125^{\circ}C$, $V_D = \frac{1}{2}V_{DRM}$	200	V/ μsec
Thermal				
Maximum Thermal Resistance, [Ⓢ] double sided cooling Junction to Sink	$R_{\theta JS}$		.09	$^{\circ}C/Watt$
Gate—Maximum Parameters				
Gate Current to Trigger	I_{GT}	$V_D = 6V$, $T_J = 25^{\circ}C$, $R_L = 2\Omega$	200	mA
Gate Voltage to Trigger	V_{GT}	$V_D = 6V$, $T_J = 25^{\circ}C$, $R_L = 2\Omega$	2.5	Volts
Non-Triggering Gate Voltage	V_{GDM}	$T_J = 125^{\circ}C$, $V_D = \frac{1}{2}V_{DRM}$	.20	Volts
Peak Forward Gate Current	I_{GTM}		4	Amperes
Peak Reverse Gate Voltage	V_{GRM}		5	Volts

Ⓢ Consult recommended mounting procedures.



Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272

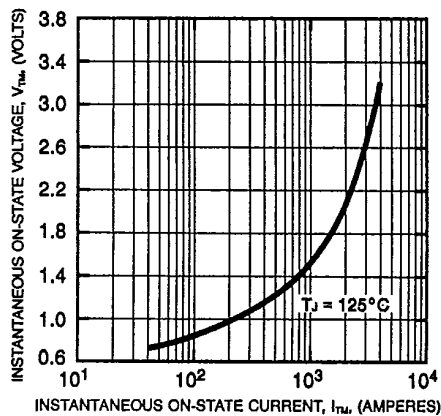
Powerex Europe, S.A., 428 Ave. G. Durand, BP107, 72003 LeMans, France (43) 72.75.15

FT300DL

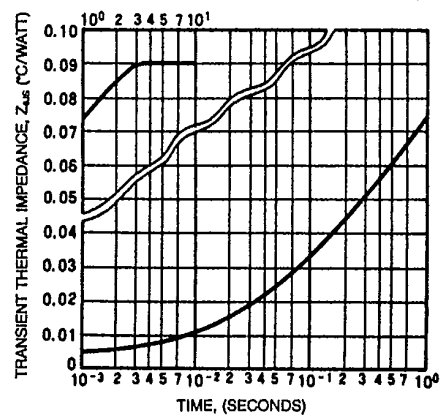
Phase Control SCR

300 Amperes Avg/200-1200 Volts

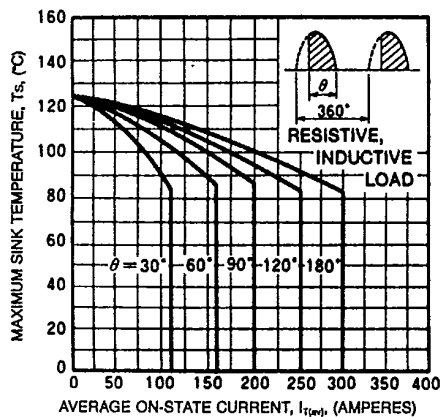
MAXIMUM ON-STATE CHARACTERISTICS



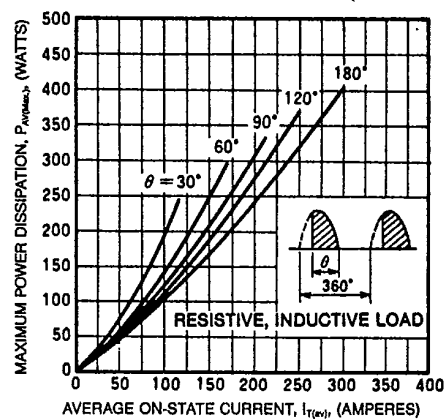
TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (JUNCTION TO SINK)



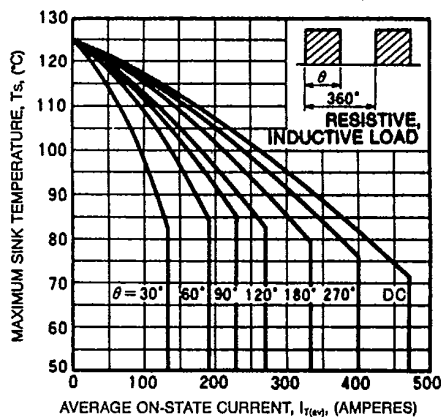
MAXIMUM ALLOWABLE SINK TEMPERATURE (SINUSOIDAL WAVEFORM)



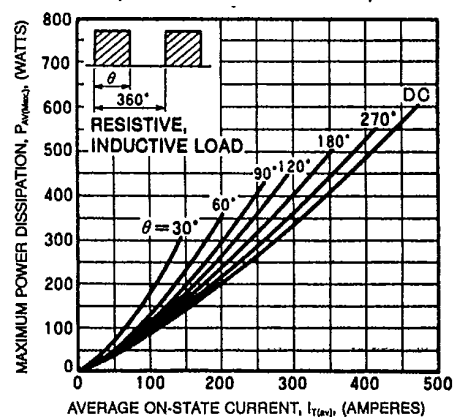
MAXIMUM ON-STATE POWER DISSIPATION (SINUSOIDAL WAVEFORM)



MAXIMUM ALLOWABLE SINK TEMPERATURE (RECTANGULAR WAVEFORM)



MAXIMUM ON-STATE POWER DISSIPATION (RECTANGULAR WAVEFORM)





Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272

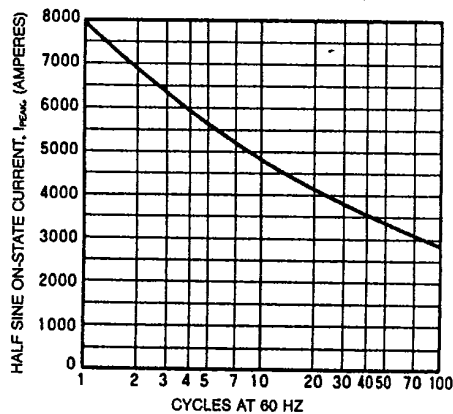
Powerex Europe, S.A., 428 Ave. G. Durand, BP107, 72003 LeMans, France (43) 72.75.15

FT300DL

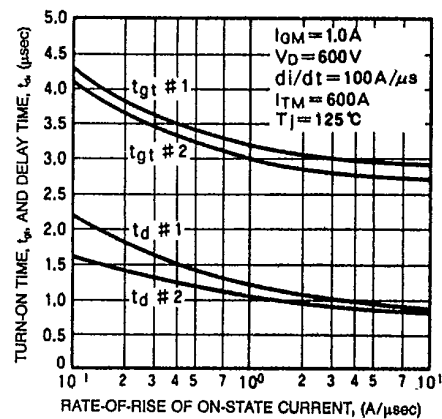
Phase Control SCR

300 Amperes Avg/200-1200 Volts

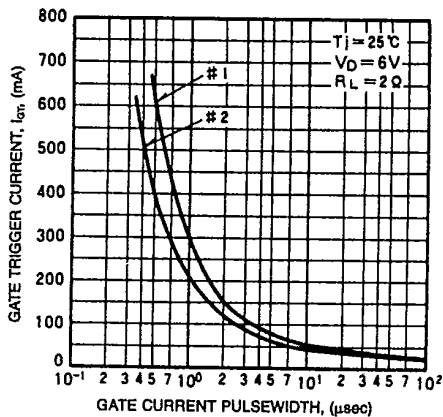
MAXIMUM ALLOWABLE SURGE ON-STATE CURRENT (NON-REPETITIVE)



TURN-ON AND DELAY TIME



GATE TRIGGER CURRENT VS. PULSEWIDTH (TYPICAL)



GATE CHARACTERISTICS

