

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

Powerex Europe, S.A., 428 Avenue G. Durand, BP107, 72003 Le Mans, France(43) 72.75.15

Asymmetric De-Alloy Gate-Turn-Off Thyristors

2200 Amperes/ 2000 & 2500 Volts

Description:

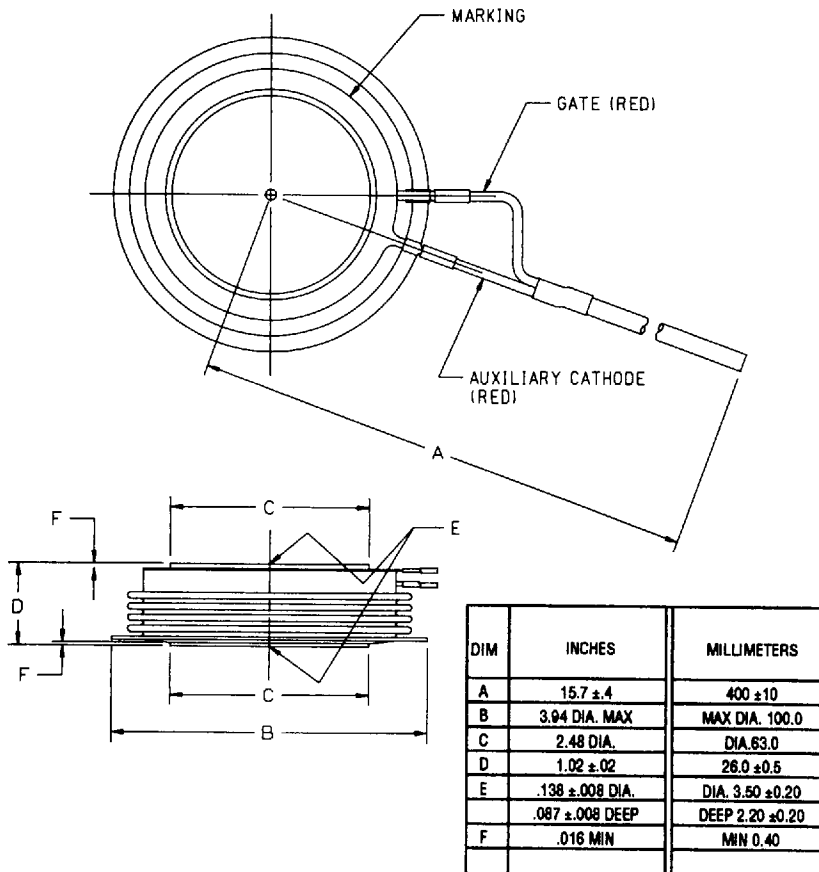
Powerex GTOs are designed for use in voltage-source inverter applications requiring fast switching GTOs with low snubber capacitances.

Features:

- Low Snubber Capacitance
(4.0 μ F for 2200A switch)
- Low On-State Voltage
- Low Switching Losses
- Fast Switching Time
(t_{on} = 30 μ S maximum)

Applications:

- Motor Control Inverters (VVVF)
- Traction (Main Motor)
- UPS Inverters
- Choppers
- Thyristor Switch
- Power Supply



Ordering Information

Example: Select the complete eleven digit device part number from the table below.

DEVICE	CURRENT RATING	MANU. NUMBER	TYPE	VOLTAGE RATING
FG	2200	A	H	- 40D* - 50D*
PRESS PACK GTO	I_{FORM} 2200 A		ASYMMETRIC High-Voltage	V_{DRM} 40D=2000V 50D=2500V

*"D" indicates De-Alloy Manufacturing Process

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FG2200AH-40D,50D
 Asymmetric De-Alloy
Gate-Turn-Off Thyristors
 2200 Amperes/2000 & 2500 Volts

POWEREX INC

Absolute Maximum Ratings, $T_J=25^{\circ}\text{C}$ unless otherwise specified

Characteristic	Symbol	FG2200AH-40D	FG2200AH-50D	Units
Repetitive Peak Reverse Voltage	V_{RRM}	17	17	Volts
Non-Repetitive Peak Reverse Voltage	V_{RSM}	17	17	Volts
DC Reverse Voltage	$V_{R(DC)}$	17	17	Volts
Repetitive Peak Off-State Voltage	V_{ORM}	2000	2500	Volts
Non-Repetitive Peak Off-State Voltage	V_{OSM}	2100	2500	Volts
DC Off-State Voltage	$V_{O(DC)}$	1600	2000	Volts
Controllable On-State Current	$V_D=1/2V_{DRM}, T_J=125^{\circ}\text{C}, C_s=4.0\mu\text{F}, L_s=0.2\mu\text{H}$	I_{TORM}	2200	A
RMS On-State Current		$I_{T(RMS)}$	860	A
Average On-State Current	Single phase, half sine-wave $\Theta=180^{\circ}$	$I_{T(AV)}$	550	A
Surge On-State Current	NON-REP, One half cycle at 60Hz	I_{TSM}	16,000	A
I^2t for Fusing	One cycle at 60 Hz	I^2t	1,100,000	$\text{A}^2\text{-sec}$
Critical Rate of Rise of On-State Current	$V_D=1/2 V_{DRM}, I_{GM}=30\text{A}, T_J=125^{\circ}\text{C}$	di/dt	300	$\text{A}/\mu\text{S}$
Peak Gate Forward Current		I_{FGM}	50	A
Peak Gate Reverse Current		I_{RGM}	700	A
Peak Gate Forward Voltage		V_{FGM}	10	V
Peak Gate Reverse Voltage		V_{RGM}	17	V
Peak Gate Forward Power Dissipation		P_{FGM}	250	W
Peak Gate Reverse Power Dissipation		P_{RGM}	17000	W
Average Gate Forward Power Dissipation		$P_{FG(AV)}$	50	W
Average Gate Reverse Power Dissipation		$P_{RG(AV)}$	150	W
Junction Temperature		T_J	-40 TO +125	$^{\circ}\text{C}$
Storage Temperature		T_{stg}	-40 TO +150	$^{\circ}\text{C}$
Mounting Force	RECOMMENDED VALUE 2000 kg		1800 TO 2400	kg
Weight (typical)			---	grams

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64E D

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Electrical Characteristics, $T_J=25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Repetitive Peak Reverse Leakage Current	I_{RRM}	$T_J=125^\circ\text{C}$, $V_R=V_{RRM}$	-----	-----	300	mA
Repetitive Peak Forward Leakage Current	I_{FRM}	$T_J=125^\circ\text{C}$, $V_D=V_{DRM}$, $V_{GK}=-2\text{V}$	-----	-----	150	mA
Gate Reverse Blocking Current	I_{RG}	$T_J=125^\circ\text{C}$, $V_{RG}=-17\text{V}$	-----	-----	300	mA
Peak On-State Voltage	V_{TM}	$T_J=125^\circ\text{C}$, $I_{TM}=2200\text{A}$	-----	-----	3.2	V
Critical Rate of Rise of Off-State Voltage	dv/dt	$T_J=125^\circ\text{C}$, $V_D=50\%$ V_{DRM} , $V_{GK}=-2\text{V}$	1000	-----	-----	V/ μS
Turn-Off Time	t_{qf}	$I_{TM}=2200\text{A}$, $T_J=125^\circ\text{C}$, $V_{RG}=17\text{V}$, $C_s=4.0\mu\text{F}$, $L_s=0.2\mu\text{H}$, $di_G/dt=30\text{A}/\mu\text{s}$, $V_D=50\%$ V_{DRM}	-----	-----	30	μs
Turn-On Time	t_{vf}	$I_{TM}=2200\text{A}$, $T_J=125^\circ\text{C}$, $I_{GM}=30\text{A}$, $V_D=1/2$ V_{DRM}	-----	-----	10	μs
Gate Trigger Current	I_{GT}	$V_D=5\text{V}$ TO 20V , $I_T=25\text{A}$ TO 200A	-----	-----	3.0	A
Gate Trigger Voltage	V_{GT}	$V_D=5\text{V}$ TO 20V , $I_T=25\text{A}$ TO 200A	-----	-----	1.5	V

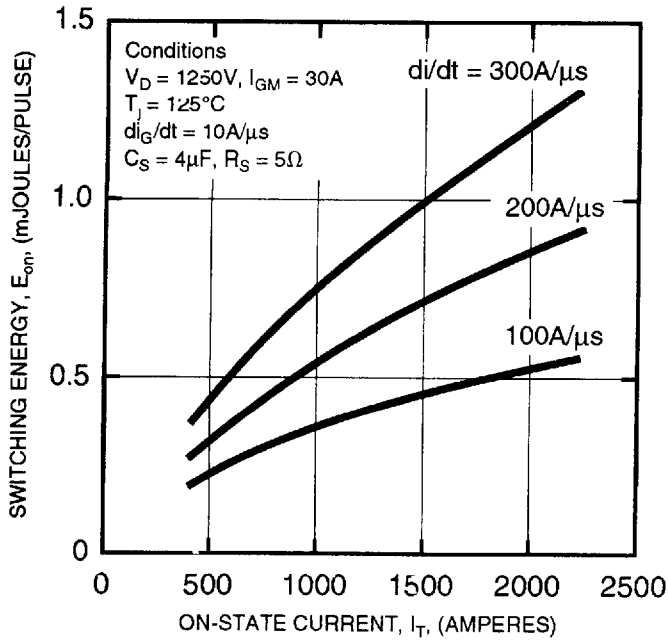
Thermal Characteristics

Characteristics	Symbol	Min.	Typ.	Max.	Units
Thermal Resistance Junction to Fin	$R_{\theta J-F}$	-----	-----	0.020	$^\circ\text{C}/\text{W}$

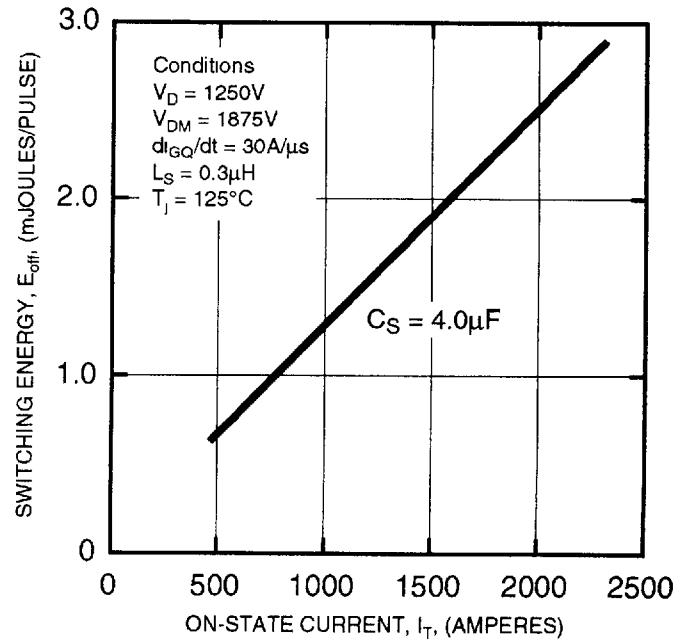
Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272
 Powerex, Europe, S.A. 428 Avenue G. Durand, BP107, 72003 Le Mans, France (43) 41.14.14

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MAXIMUM TURN-ON SWITCHING ENERGY DISSIPATION PER PULSE



MAXIMUM TURN-OFF SWITCHING ENERGY DISSIPATION PER PULSE



MAXIMUM ON-STATE CHARACTERISTIC

