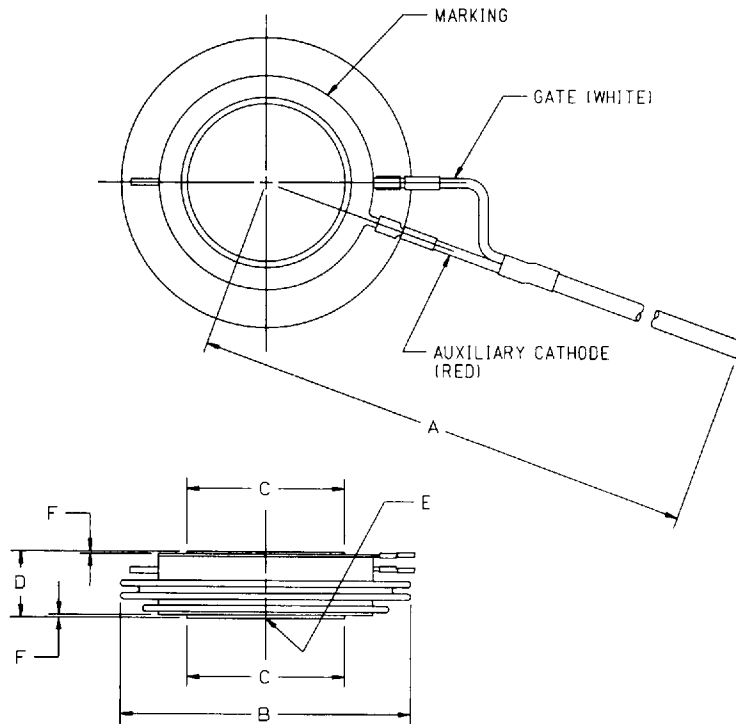


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DIM	INCHES	MILLIMETERS
A	15.7 ±.4	400 ±10
B	3.62 DIA. MAX	DIA. 92.0 MAX
C	1.97 DIA.	DIA. 50.0
D	.83 ±.02	21.0 ±0.5
E	M5 X 0.8	M5 X 0.8
	.098 DEEP	DEEP 2.50
F	.016 MIN	MIN 0.40

Ordering Information

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

DEVICE	CURRENT RATING	MANU. NUMBER	TYPE	VOLTAGE RATING
FG	1000	A	H	- 40 - 50
PRESS PACK GTO	I_{TORM} 1000 A		ASYMMETRIC High-Voltage	V_{DRM} 40=2000V 50=2500V

Asymmetric Gate-Turn-Off Thyristors

1000 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 (2.0 μ F for 1000A switch)
- Low On-State Voltage
- Low Switching Losses
- Fast Switching Time (t_{rr} = 20 μ S maximum)

Applications:

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

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FG1000AH-40,50

POWEREX INC

Asymmetric

Gate-Turn-Off Thyristors

1000 Amperes/2000 & 2500 Volts

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

Characteristic	Symbol	FG1000AH-40	FG1000AH-50	Units
Repetitive Peak Reverse Voltage	V_{RRM}	15	15	Volts
Non-Repetitive Peak Reverse Voltage	V_{FSM}	15	15	Volts
DC Reverse Voltage	$V_{R(DC)}$	15	15	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	$V_{D(DC)}$	1600	2000	Volts
Controllable On-State Current	$V_G=1/2V_{DRM}, T_J=125^{\circ}\text{C}, C_S=2.0\mu\text{F}$ $L_S=0.3\mu\text{H}, I_{GO}=-200\text{A}$		I_{TQRM} 1000	A
RMS On-State Current			$I_{T(RMS)}$ 440	A
Average On-State Current	Sine-wave $\Theta=180^{\circ}, T_C=93^{\circ}\text{C}, f=60\text{ Hz}$		$I_{T(AV)}$ 280	A
Surge On-State Current	NON-REP, One half cycle at 60Hz		I_{TSM} 7000	A
I^2t for Fusing	One half cycle at 60 Hz		I^2t 200,000	$\text{A}^2\text{-sec}$
Critical Rate of Rise of On-State Current	$V_G=1/2 V_{DRM}, I_{GM}=15\text{A}, T_J=125^{\circ}\text{C}$		di/dt 300	$\text{A}/\mu\text{S}$
Peak Gate Forward Current			I_{FGM} 30	A
Peak Gate Reverse Current			I_{RGM} 350	A
Peak Gate Forward Voltage			V_{FGM} 10	V
Peak Gate Reverse Voltage			V_{RGM} 15	V
Peak Gate Forward Power Dissipation			P_{FGM} 200	W
Peak Gate Reverse Power Dissipation			P_{RGM} 4000	W
Average Gate Forward Power Dissipation			$P_{FG(AV)}$ 40	W
Average Gate Reverse Power Dissipation			$P_{RG(AV)}$ 75	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 11.76 kN or 2640 lbs.		9.8 TO 14.70 2200 TO 3300	kN lbs.
Weight (typical)			450	grams

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Asymmetric
Gate-Turn-Off Thyristors
1000 Amperes/2000 & 2500 Volts

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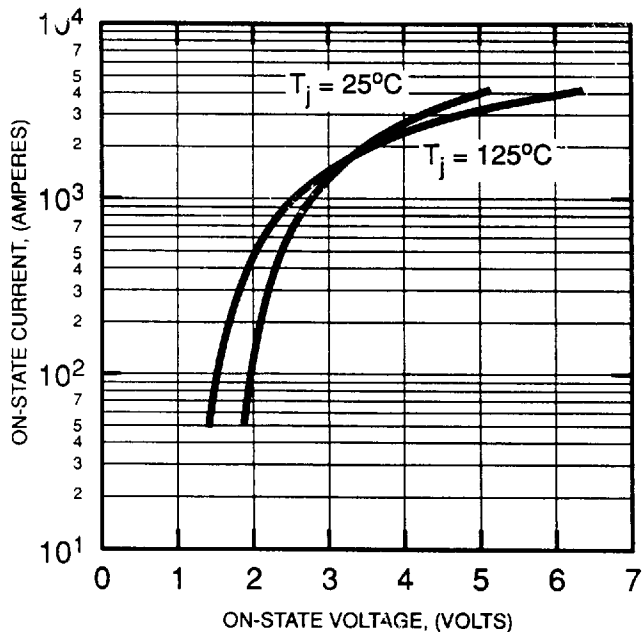
Electrical Characteristics, $T_j=25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Repetitive Peak Reverse Leakage Current	I_{RRM}	$T_j=125^\circ\text{C}$, $V_R=V_{RRM}$	-----	-----	100	mA
Repetitive Peak Forward Leakage Current	I_{DRM}	$T_j=125^\circ\text{C}$, $V_D=V_{DRM}$, $V_{GK}=-2\text{V}$	-----	-----	50	mA
Gate Reverse Blocking Current	I_{RG}	$T_j=125^\circ\text{C}$, $V_{RG}=-15\text{V}$	-----	-----	100	mA
Peak On-State Voltage	V_{TM}	$T_j=125^\circ\text{C}$, $I_T=1000\text{A}$	-----	-----	2.5	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_{rr}	$I_{TM}=1000\text{A}$, $T_j=125^\circ\text{C}$, $V_{RG}=15\text{V}$, $C_s=2.0\mu\text{F}$, $L_s=0.3\mu\text{H}$, $di_g/dt=20\text{A}/\mu\text{s}$, $V_D=50\%$ V_{DRM}	-----	-----	20	μs
Turn-On Time	t_{tr}	$I_{TM}=1000\text{A}$, $T_j=125^\circ\text{C}$, $I_{GK}=15\text{A}$, $V_G=1/2 V_{DRM}$	-----	-----	10	μs
Gate Trigger Current	I_{GT}	$V_D=5\text{V TO } 20\text{V}$, $I_T=25\text{A TO } 200\text{A}$	-----	-----	2.0	A
Gate Trigger Voltage	V_{GT}	$V_D=5\text{V TO } 20\text{V}$, $I_T=25\text{A TO } 200\text{A}$	-----	-----	1.5	V

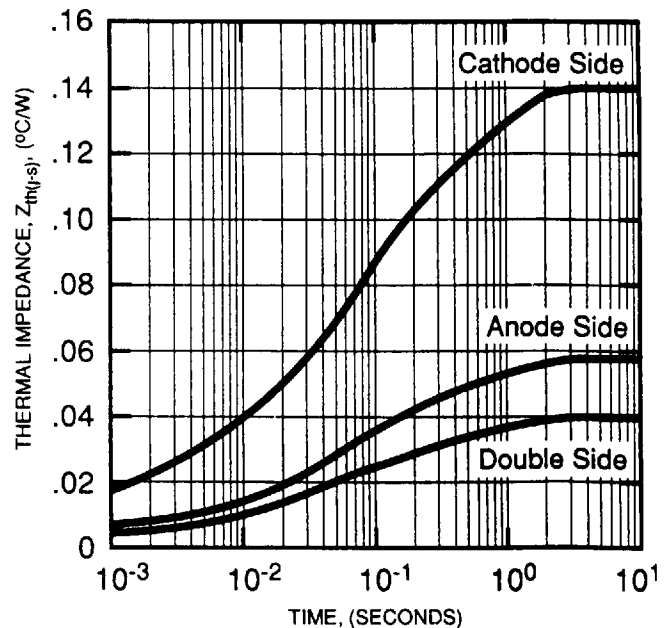
Thermal Characteristics

Characteristics	Symbol	Min.	Typ.	Max.	Units
Thermal Resistance Junction to Sink	$R_{\theta JS}$	-----	-----	0.040	$^\circ\text{C/W}$

MAXIMUM ON-STATE CHARACTERISTIC



TRANSIENT THERMAL IMPEDANCE CHARACTERISTIC, (JUNCTION TO SINK)



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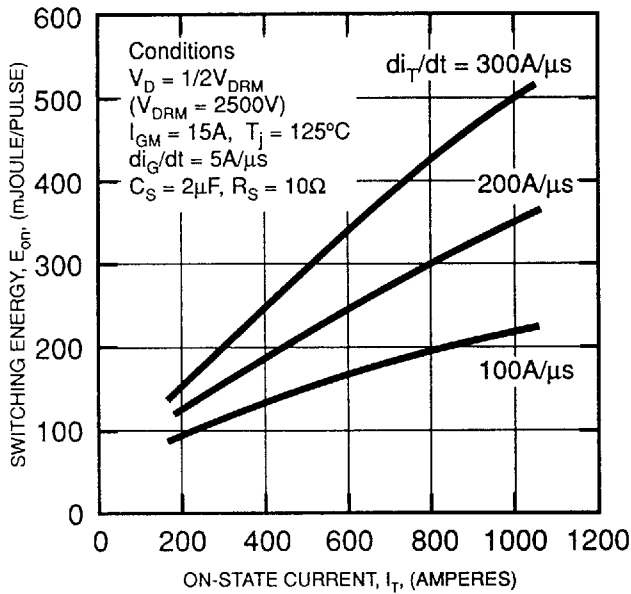
Asymmetric

Gate-Turn-Off Thyristors

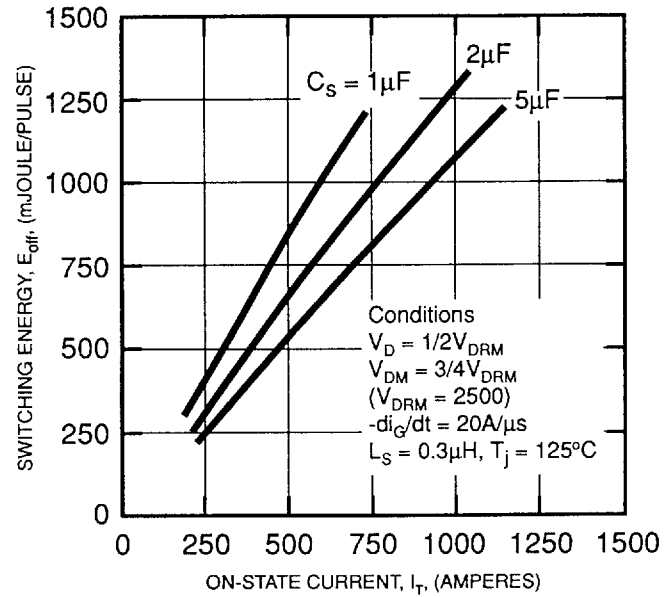
1000 Amperes/2000 & 2500 Volts

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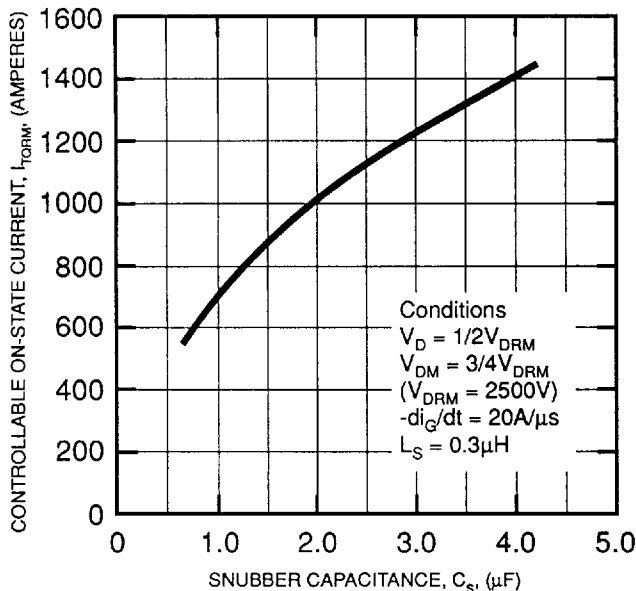
MAXIMUM TURN-ON SWITCHING ENERGY DISSIPATION PER PULSE



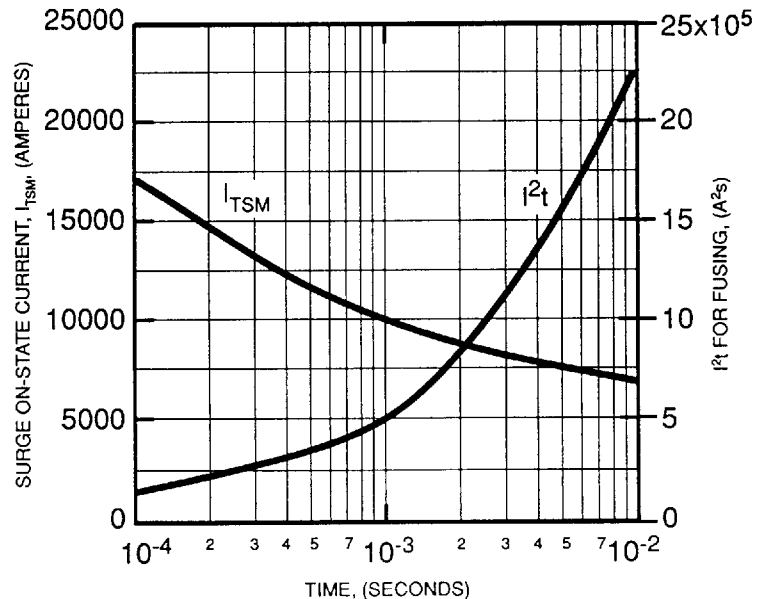
MAXIMUM TURN-OFF SWITCHING ENERGY DISSIPATION PER PULSE



MAXIMUM CONTROLLABLE ON-STATE CURRENT VS. SNUBBER CAPACITANCE



PEAK ONE-CYCLE ON-STATE SURGE CURRENT AND i^2t



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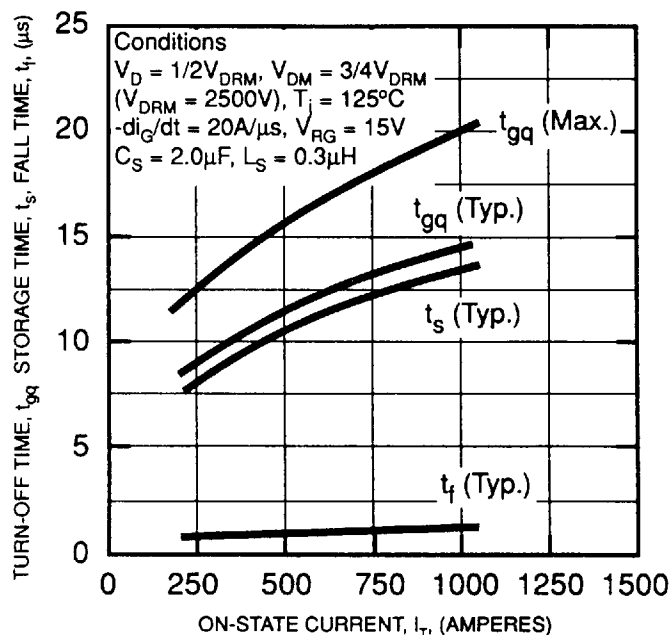
Asymmetric

Gate-Turn-Off Thyristors

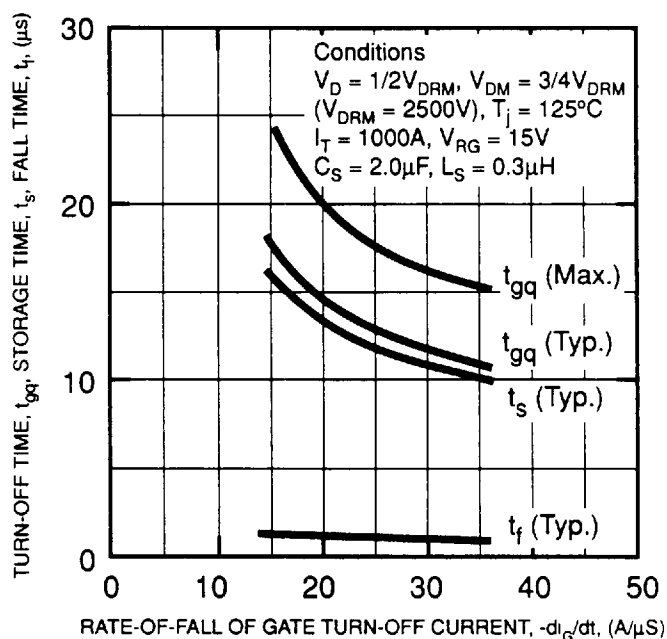
1000 Amperes/2000 & 2500 Volts

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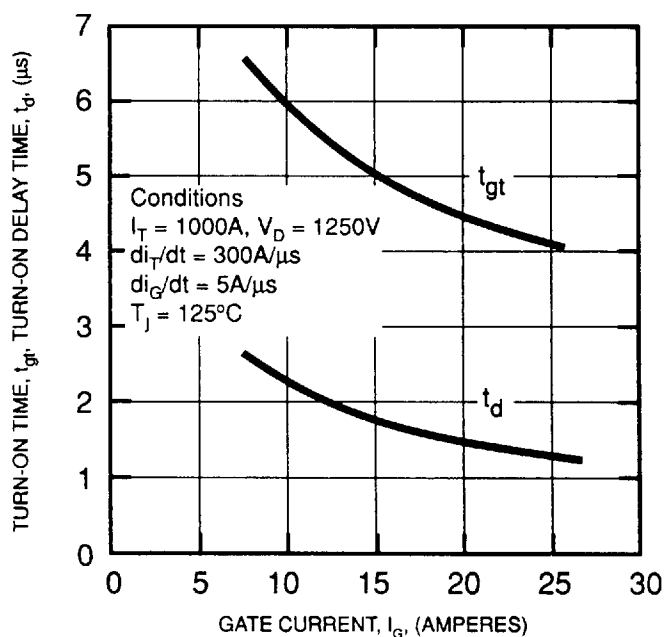
TURN-OFF TIME, STORAGE TIME, FALL TIME
VS. ON-STATE CURRENT



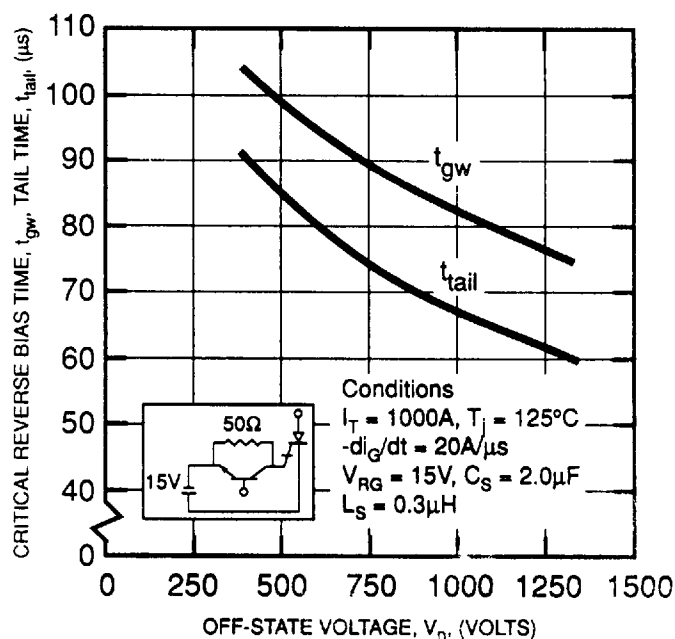
TURN-OFF TIME, STORAGE TIME, FALL TIME VS.
RATE-OF-FALL OF GATE TURN-OFF CURRENT



TYPICAL TURN-ON TIME, TURN-ON DELAY
TIME VS. GATE CURRENT



MAXIMUM CRITICAL REVERSE BIAS TIME,
TAIL TIME VS. OFF-STATE VOLTAGE



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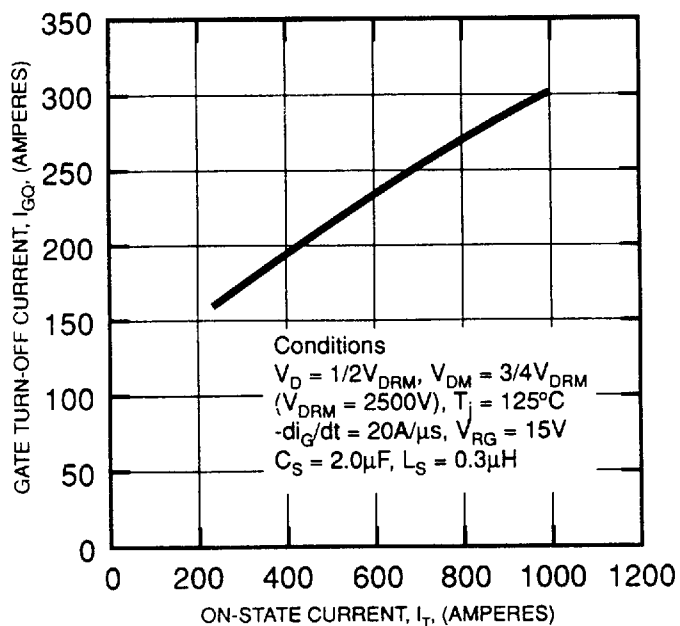
Asymmetric

Gate-Turn-Off Thyristors

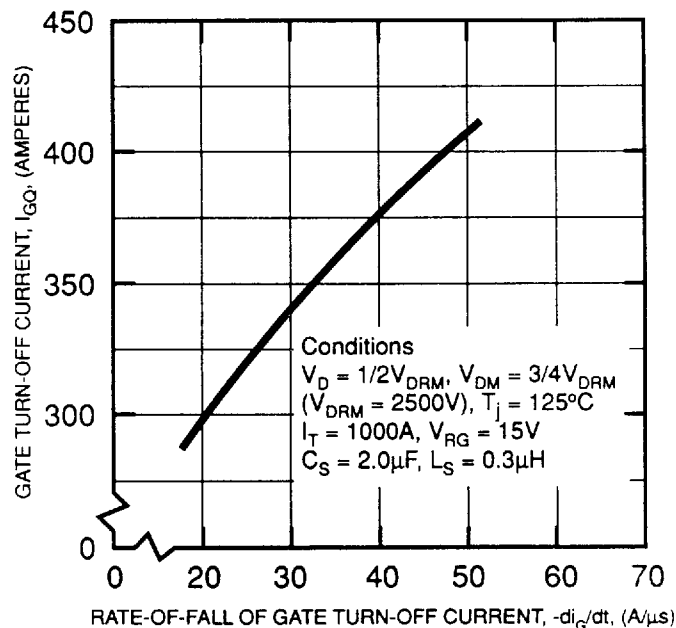
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MAXIMUM GATE TURN-OFF CURRENT VS.
ON-STATE CURRENT



MAXIMUM GATE TURN-OFF CURRENT VS.
RATE-OF-FALL OF GATE TURN-OFF CURRENT



MAXIMUM GATE TRIGGER VOLTAGE,
GATE TRIGGER CURRENT
VS. JUNCTION TEMPERATURE

