

GE-SPCOStatic Power Component Operation
Malvern, PA USA

GE CO/ STATIC PWR CMPNT

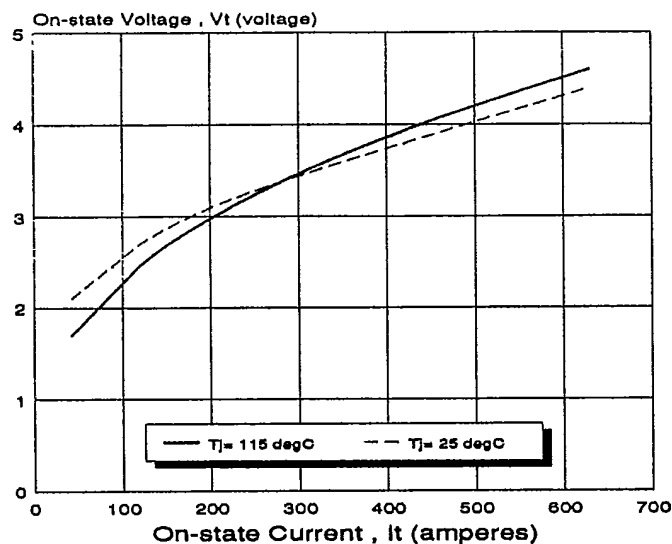
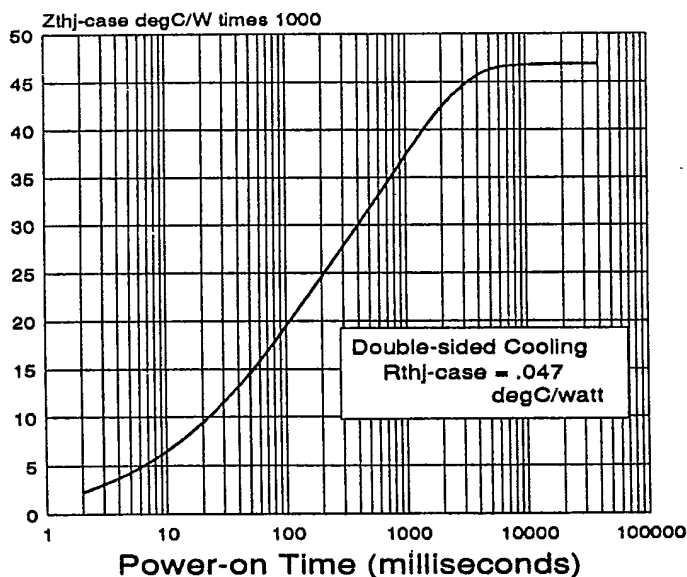
X6RT413*
40mm GTO PRESSPAK
4500V / 500A

* made in USA

The GE type 6RT413 reverse blocking gate turn-off thyristor, GTO, is manufactured by the proven multi-diffusion process and incorporates a unique emitter design (patent applied for) which offers distinct advantages for improving the gate turn-off conditions. It is supplied in an industry accepted disc-type package, ready for mounting to a heat dissipator using commercially available hardware.

Prefix 'X' indicates that this product is in the final stage of design and that samples are available.

ON-STATE CHARACTERISTIC

THERMAL IMPEDANCE / RESISTANCE
Junction to Case (DC)

* add interface R_{thc-s} of .006 for double or .012 for single sided cooling

Static Power Component Operation, GE Co., 205 Great Valley Pkwy.
Malvern, PA 19355 USA

REPETITIVE PEAK REVERSE
AND OFF-STATE BLOCKING
VOLTAGE $T_j = 0 \text{ to } 115^\circ\text{C}$

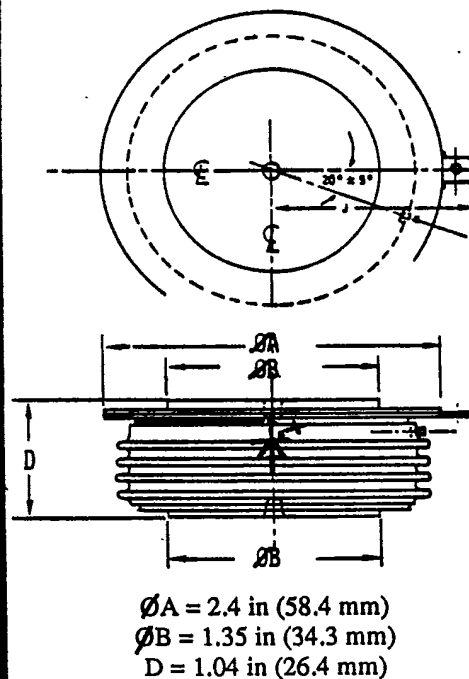
MODEL	V_{DRM} (volts)	V_{RRM}
6RT413HK	4500	4500
6RT413HH	4400	4400
6RT413HF	4300	4300
6RT413HD	4200	4200
6RT413HB	4100	4100
6RT413FT	4000	4000

CONTROLLABLE CURRENTS
(instantaneous)

Repetitive

 $I_{TQRM} = 400 \text{ A}$

Non-repetitive

 $I_{TQSM} = 500 \text{ A}$ MECHANICAL OUTLINE

PG:6.023 sh 1

Date:2/19/90

G E C0/ STATIC PWR CMPNT 53E D ■ 3874584 0000156 463 ■ GESP

LIMITING CHARACTERISTICS AND RATINGS

T-25-19

PARAMETER	SYMBOL	TEST CONDITIONS	MAXIMUM VALUES	UNIT S
Repetitive peak off-state and rev. current	I_{DRM} I_{RRM}	$T_j=115^\circ\text{C}$ $T_j=25^\circ\text{C}$ $R_{\text{GK}}=10\text{ohms}$	40 10	ma
Repetitive RMS on-state current	$I_{\text{T(RMS)}}$	note 1	200	A
Non-repetitive peak surge current	I_{TSM}	10.0 ms 8.3 ms	3000 3300	A
On-state voltage	V_{TM}	$I_{\text{TM}}=500\text{ A}$ $T_j=115^\circ\text{C}$ $t_p=8.3\text{ms}$	4.0	V
Critical rate of rise of on-state current	di/dt_{CR}	$V_d=.5V_{\text{DRM}}$ freq=50/60 Hz see gating req'd	200	A/us
Peak rev.recovery current/charge	$I_{\text{RM(REC)}}$ Q_{RR}	$di/dt=300\text{A/us}$ $T_j=115^\circ\text{C}$	----- -----	A uC
Critical rate of rise of off-state voltage	dv/dt_{CR}	$V_D=.7V_{\text{DRM}}$ exponential $V_{\text{RGO}}=-4\text{V}$	1000	V/us

EXTERNAL GATE DRIVE

Nominal Requirements

Turning on	I_{FG}	di_{FG}/dt of 40A/us	20	A
Hold on gate current	I_{FGL}	(back porch)	2.5	A
Turning off	I_{RG}	di_{RG}/dt of 50A/us	200	A
Holding off gate bias	V_{RGO}	continuous	4	V
Reverse crest working gate voltage	V_{RGW}		25-30	V
Turn-off energy	sig-off		.02	joule

PG:6.023 sh 2
Date:2/19/90

SWITCHING CHARACTERISTICS AND RATINGS

T-25-19

<u>PARAMETER</u>	<u>SYMBOL</u>	<u>TEST CONDITIONS</u>	<u>MAXIMUM VALUES</u>	<u>UNIT S</u>
Turn on energy	sig-on	note 2	1.35	ws/p
Gate controlled delay time	t_{GD}	note 2	2	us
Integral latching current	I_{LI}		—	A
Integral holding current	I_{HI}		—	A
Turn-off energy	sig-off	note 3	2.25	ws/p
Forward spike at turn-off	V_{DP}		750	V
Turn off gate current	I_{RGM}	note 3	200	A
Storage time	t_{DQ}	note 3	6	us
Gate controlled recovery charge and time	Q_{GQ} t_{GQ}		850 6.5	uC us
Tail time	t_z		50	us
<u>THERMAL AND MECHANICAL</u>				
Operating and storage temps.	T_J T_{STG}		-40 to +115	°C
Thermal resistance	R_{TH-C}		.047	C/W
Mounting force			3500 +/- 10%	lb

Notes:

1. Half-wave rectification ; $I_t=400A$ with required gating.
2. $V_d=0.5V_{drn}$, $I_t=500A$, $di/dt=50A/us$, $I_{fg}=20A$ @ $difg/dt=50A/us$, $f=60Hz$, $T_j=115$ C.
3. $I_t=500$ A, $V_{dp}=750V_{max}$, $V_{dm}= .67V_{drn}$, $V_d=0.5V_{drn}$, $I_{rg}=200A$, $dirg/dt=50A/us$, $60Hz$, $T_j=115$ C, polarized snubber $R=5$ ohm, $C=2\mu F$

 PG:6.023sh 3
 Date:2/19/90