

GTR Module

Silicon N Channel IGBT

High Power Switching Applications

Motor Control Applications

Features

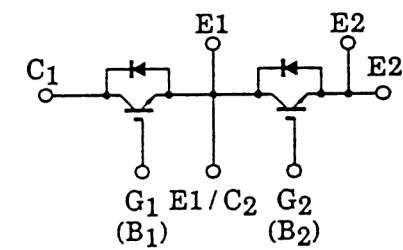
- High input impedance
- High speed:

$t_f = 0.30\mu s$ (Max.) ($I_C = 150A$)
 $t_{rr} = 0.15\mu s$ (Max.) ($I_F = 150A$)
- Low saturation voltage: $V_{CE} = 2.70V$ (Max.) ($I_C = 150A$)
- Enhancement mode
- The electrodes are isolated from case
- Includes a complete half bridge card in one package

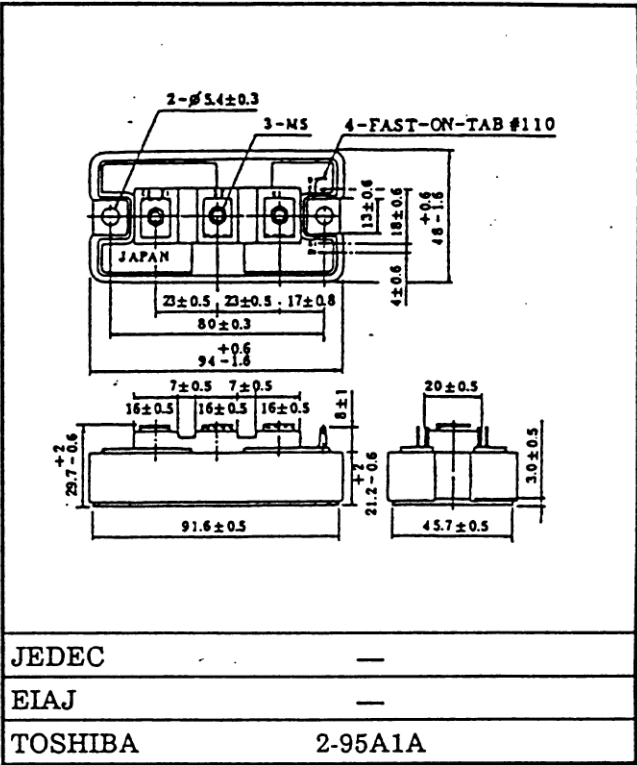
Maximum Ratings (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Emitter Voltage		V_{CES}	600	V
Gate-Emitter Voltage		V_{GES}	± 20	V
Collector Current	DC	I_C	150	A
	1ms	I_{CP}	300	
Forward Current	DC	I_F	150	A
	1ms	I_{FM}	300	
Collector Power Dissipation (Tc = 25°C)		P_C	780	W
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	-40 ~ 125	°C
Isolation Voltage		V_{Isol}	2500 (AC 1 min.)	V
Screw Torque (Terminal/Mounting)		—	3/3	N ¥ m

Equivalent Circuit



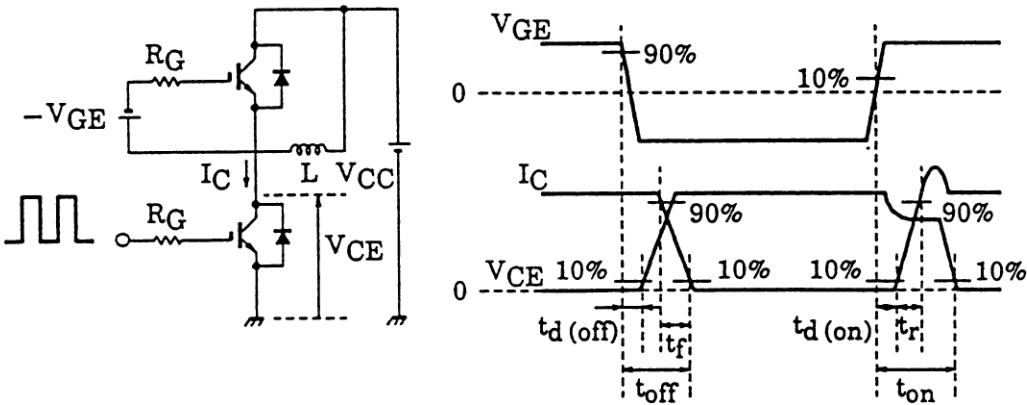
Unit in mm



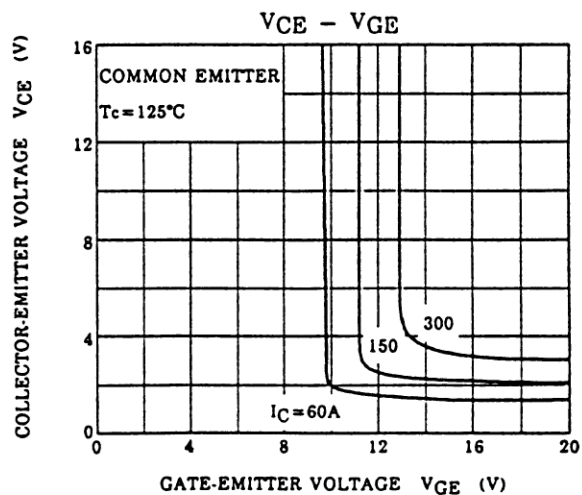
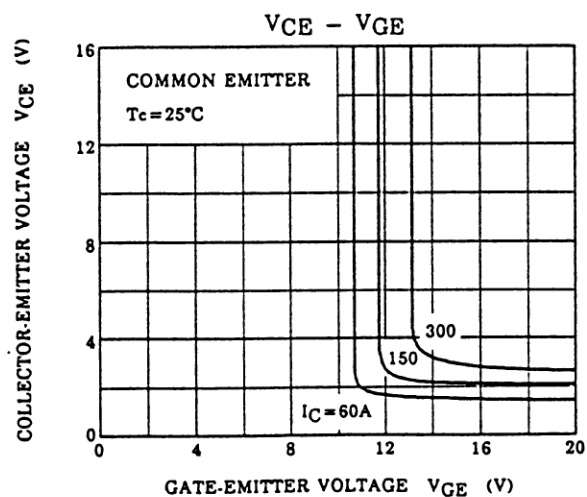
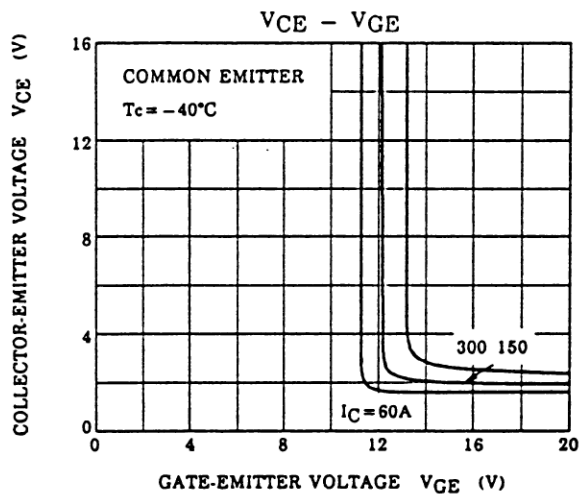
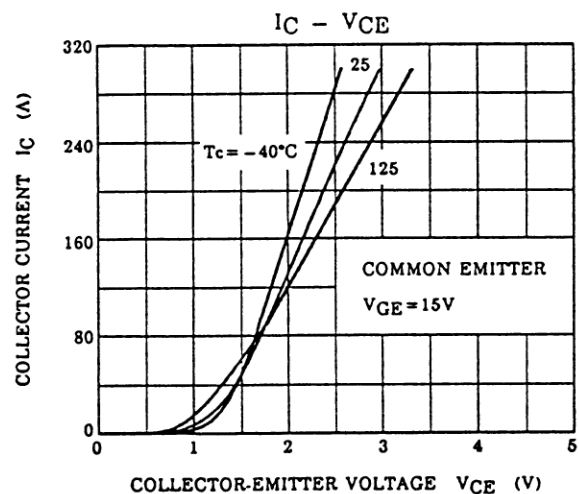
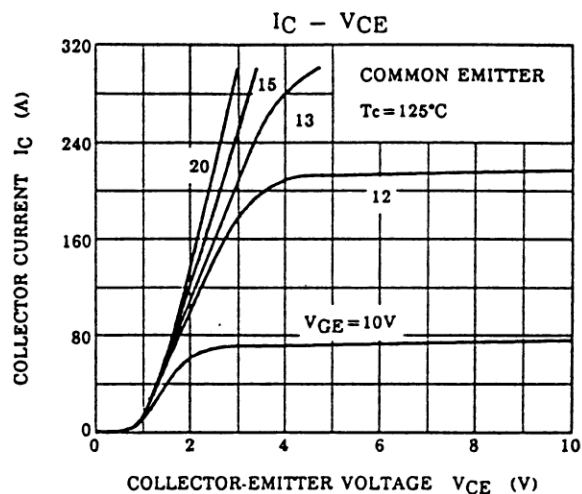
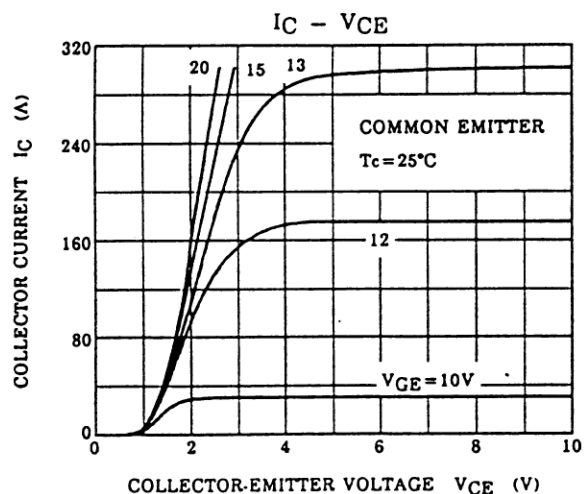
Electrical Characteristics (Ta = 25°C)

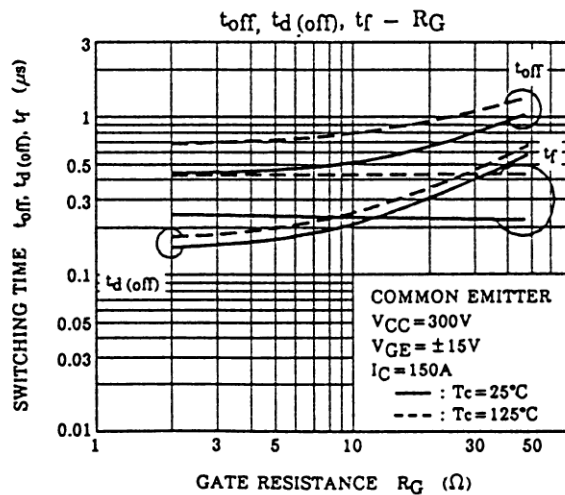
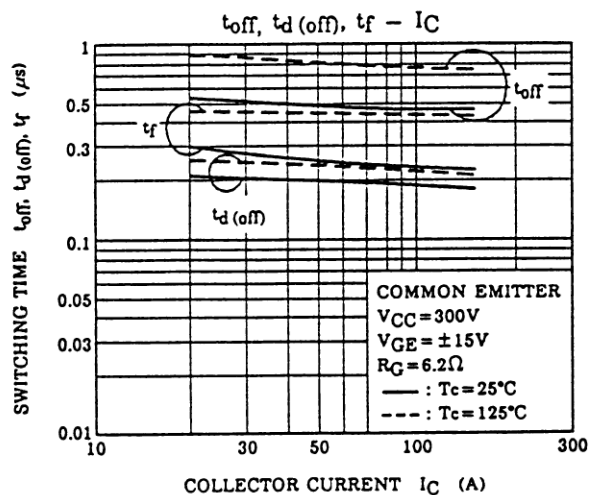
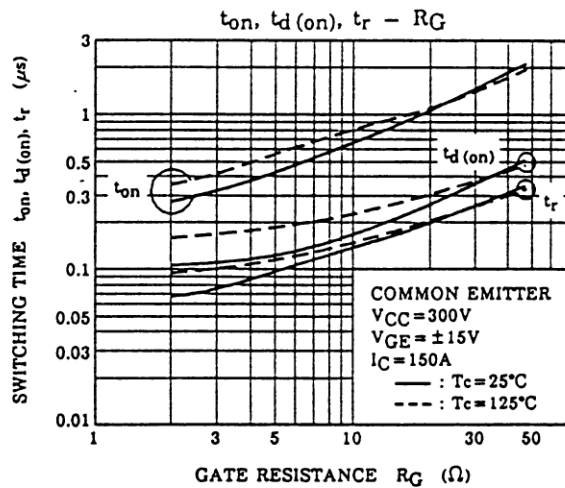
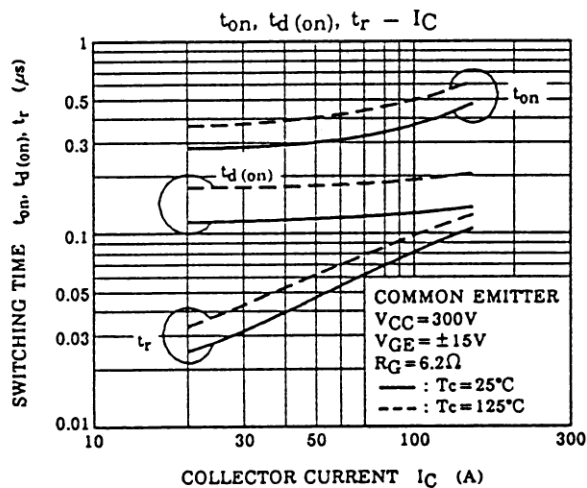
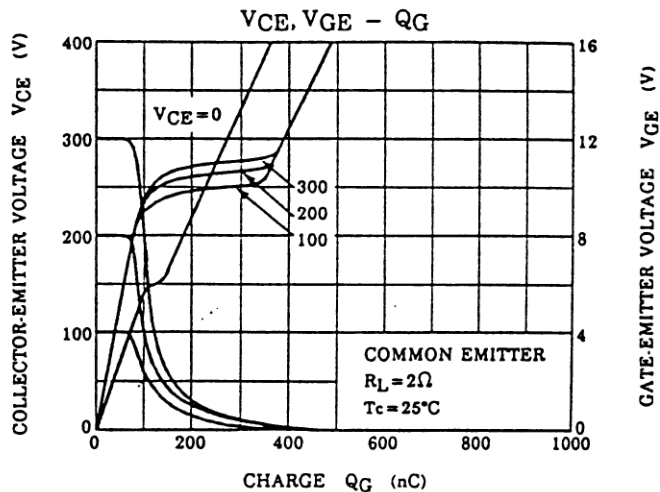
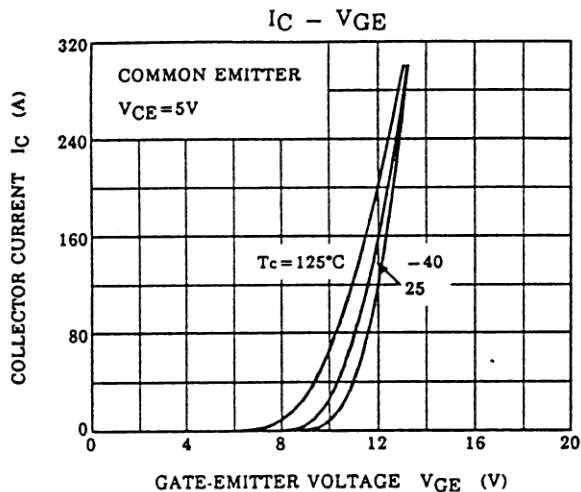
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GES}	$V_{GE} = \pm 20V, V_{CE} = 0$	—	—	± 500	nA
Collector Cut-off Current		I_{CES}	$V_{CE} = 600V, V_{GE} = 0$	—	—	2.0	mA
Gate-Emitter Cut-off Voltage		$V_{GE (off)}$	$I_C = 15mA, V_{CE} = 5V$	5.0	7.0	8.0	V
Collector-Emitter Saturation Voltage		$V_{CE (sat)}$	$I_C = 150A, V_{GE} = 15V$	—	2.10	2.70	V
Input Capacitance		C_{ies}	$V_{CE} = 10V, V_{GE} = 0, f = 1MHz$	—	14200	—	pF
Switching Time	Turn-on Delay Time	$t_{d (on)}$	Inductive Load $V_{CC} = 300V$ $I_C = 150A$ $V_{GE} = \pm 15V$ $R_G = 6.2\Omega$ (Note 1)	—	0.15	0.30	μs
	Rise Time	t_r		—	0.15	0.30	
	Turn-on Time	t_{on}		—	0.50	1.00	
	Turn-off Delay Time	$t_{d (off)}$		—	0.20	0.40	
	Fall Time	t_f		—	0.15	0.30	
	Turn-off Time	t_{off}		—	0.50	1.00	
Forward Voltage		V_F	$I_F = 150A, V_{GE} = 0$	—	2.30	3.00	V
Reverse Recovery Time		t_{rr}	$I_F = 150A, V_{GE} = -10V$ $di/dt = 200A/\mu s$	—	0.08	0.15	μs
Thermal Resistance		$R_{th (j - c)}$	Transistor	—	—	0.16	$^{\circ}C/W$
			Diode	—	—	0.35	

Note 1 Switching Time Test Circuit & Timing Chart.

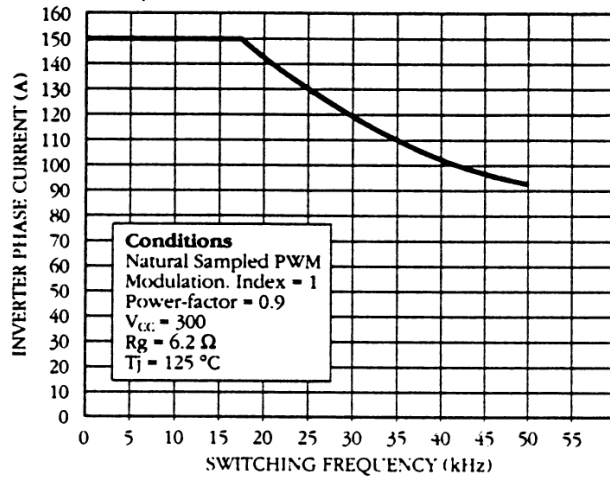


Note 2 Silicone Grease is Applied.

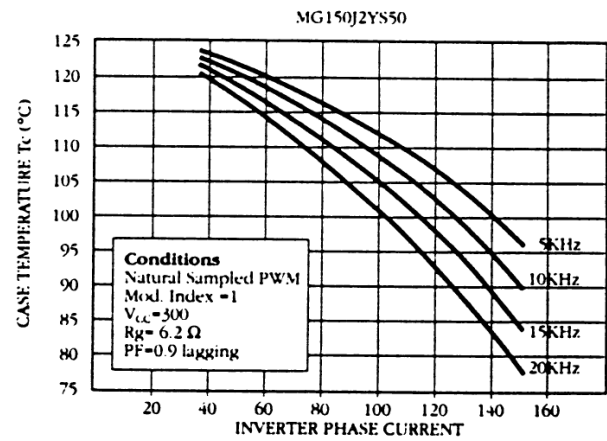
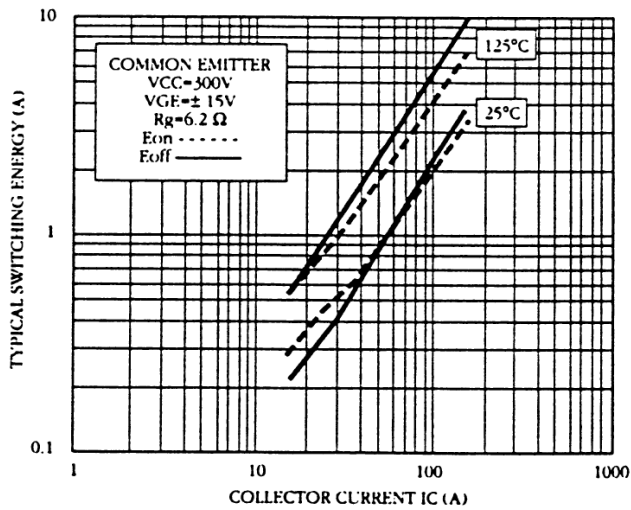


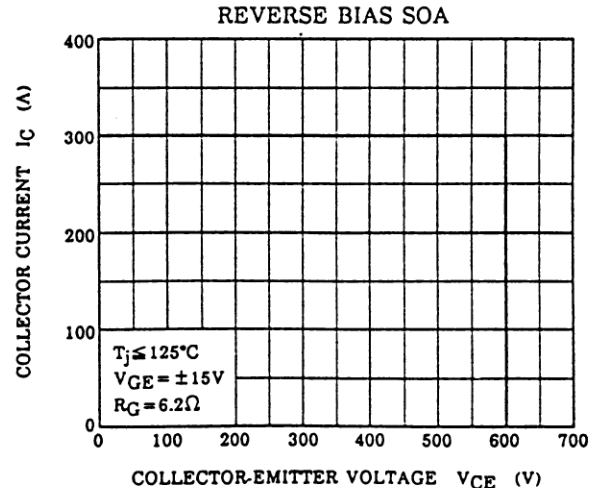
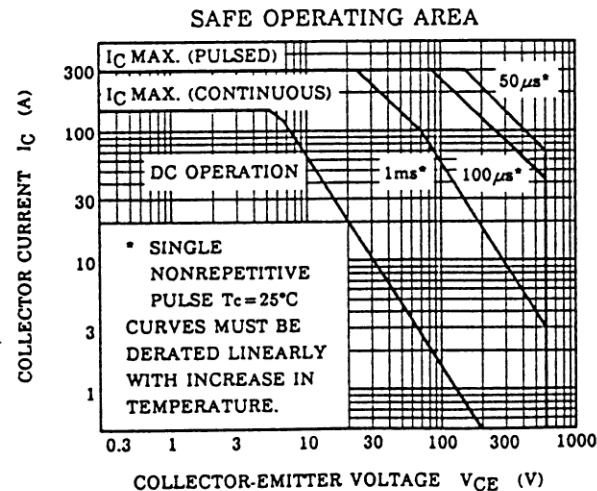
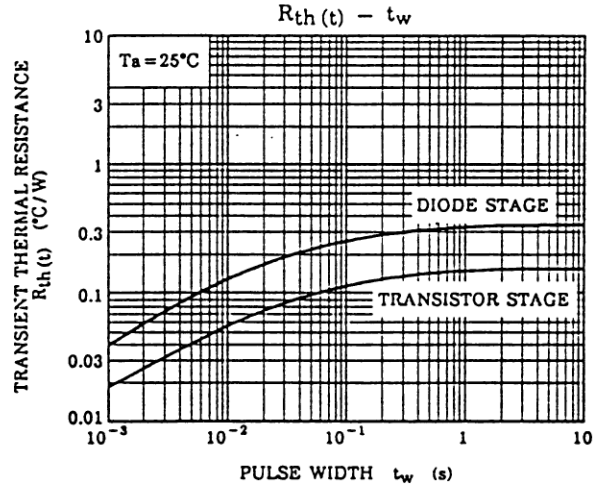
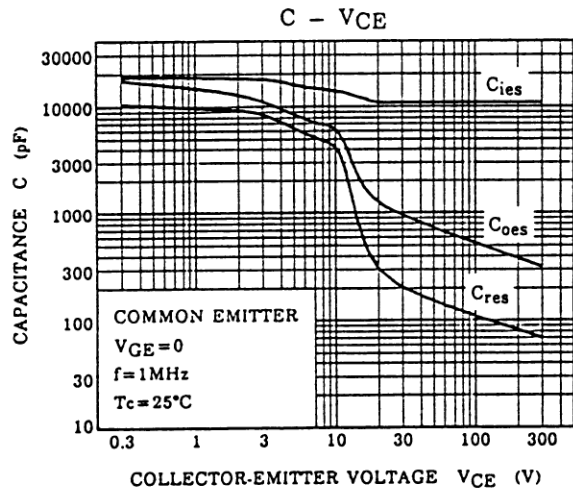
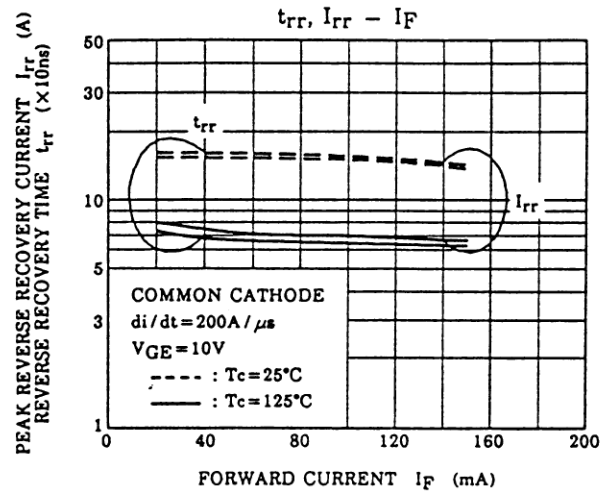
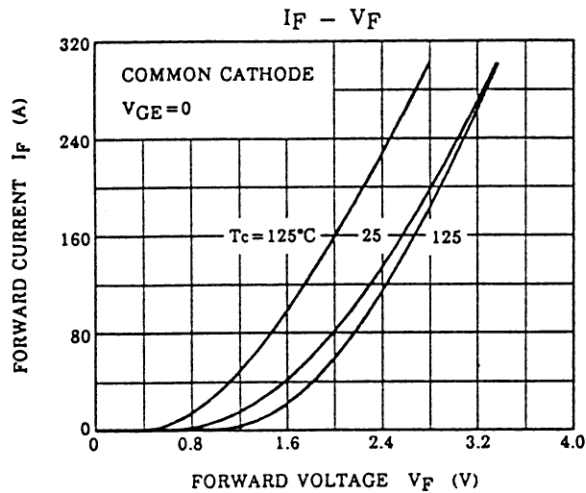


TYPICAL INVERTER PHASE CURRENT AT TCASE = 80 °C



TYPICAL SWITCHING ENERGY (IC)





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