MG50N2YS9

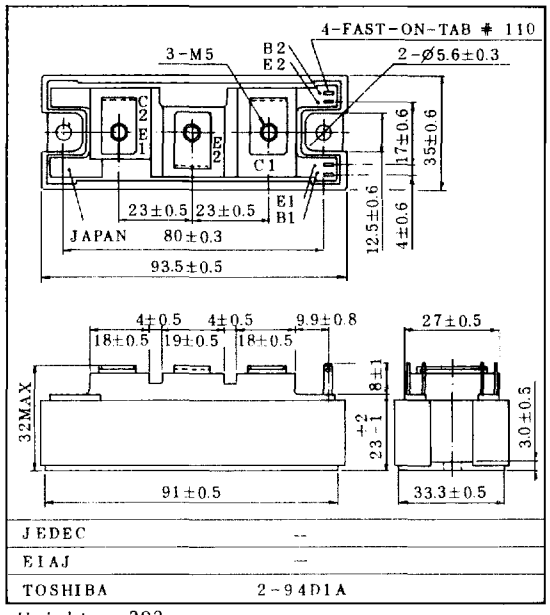
GTR MODULL
SILICON N CHANNEL IGBT

HIGH POWER SWITCHING APPLICATIONS.
MOTOR CONTROL APPLICATIONS.

FEATURES:

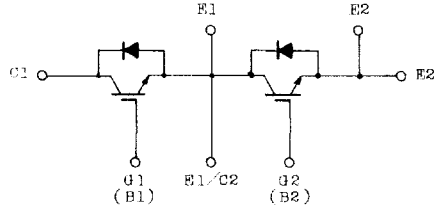
- High Input Impedance
- High Speed : t_f=1.0μs(Max.)
  t_{rr}=0.5μs(Max.)
- Low Saturation Voltage: $V_{CE(sat)}$=5.0V(Max.)
- Enhancement-Mode
- Includes a Complete Half Bridge in One Package.
- The Electrodes are Isolated from Case.

Unit in mm



Weight : 202g

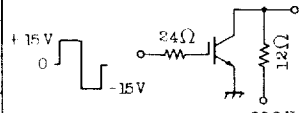
EQUIVALENT CIRCUIT

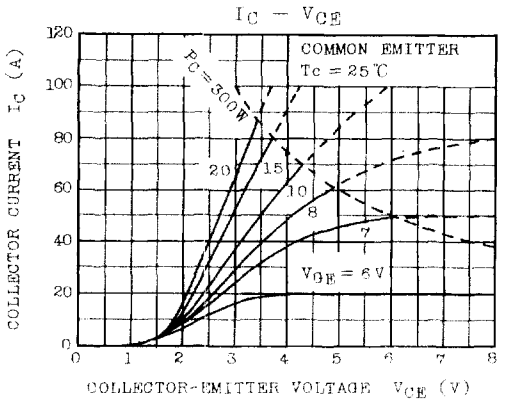


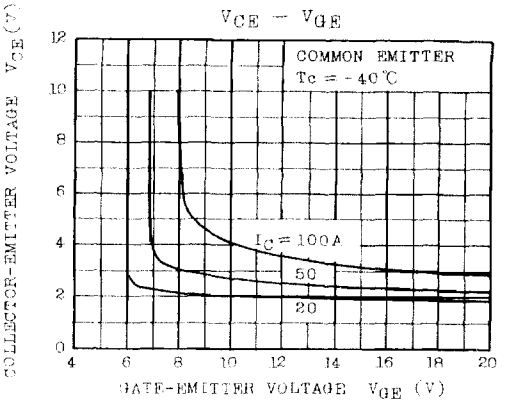
MAXIMUM RATINGS (Ta=25°C)

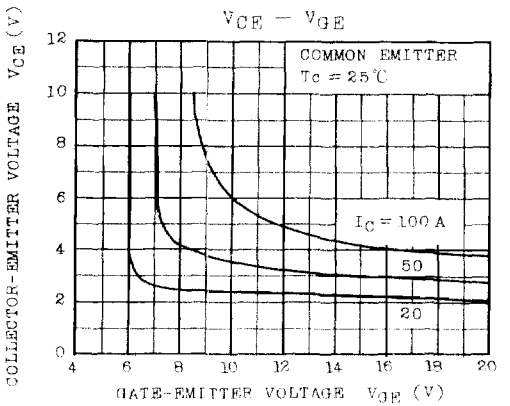
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Emitter Voltage		V_{CES}	1000	V
Gate-Emitter Voltage		V_{GES}	±20	V
Collector Current	DC	I_C	50	A
	1ms	I_{CP}	100	
Forward Current	DC	I_F	50	A
	1ms	I_{FM}	100	
Collector Power Dissipation (Tc=25°C)		P_C	300	W
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	-40~125	°C
Isolation Voltage		V_{Isol}	2500 (AC 1 minute)	V
Screw Torque (Terminal/Mounting)		-	30/30	kg·cm

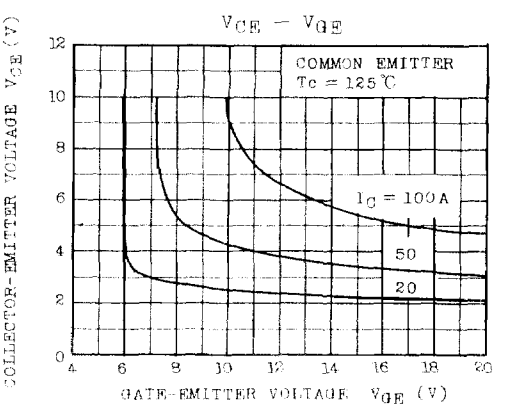
ELECTRICAL CHARACTERISTICS (Ta=25°C)

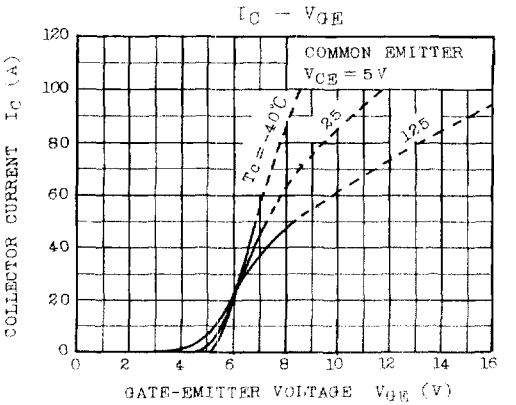
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GES}	V_{GE}=±20V, V_{CE}=0	-	-	±500	nA
Collector Cut-off Current		I_{CES}	V_{CE}=1000V, V_{GE}=0	-	-	1.0	mA
Collector-Emitter Breakdown Voltage		$V_{(BR)CES}$	I_C=2mA, V_{GE}=0	1000	-	-	V
Gate-Emitter Cut-off Voltage		$V_{GE(OFF)}$	I_C=50mA, V_{CE}=5V	3.0	-	6.0	V
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	I_C=50A, V_{GE}=15V	-	3.0	5.0	V
Input Capacitance		C_{ies}	V_{CE}=10V, V_{GE}=o, f=1MHz	-	7200	-	pF
Switching Time	Rise Time	t_r		-	0.35	1.0	μs
	Turn-on Time	t_{on}		-	0.45	1.0	
	Fall Time	t_f		-	0.6	1.0	
	Turn-off Time	t_{off}		-	1.1	1.5	
Forward Voltage		V_F	I_F=50A, V_{GE}=0	-	2.0	2.5	V
Reverse Recovery Time		t_{rr}	I_F=50A, V_{GE}=-10V di/dt=100A/μs	-	0.25	0.5	μs
Thermal Resistance		$R_{th(j-c)}$	Transistor	-	-	0.41	°C/W
			Diode	-	-	1.0	

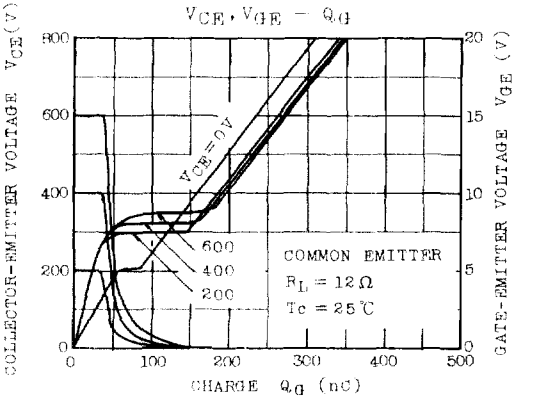

I_C – V_{CE}
COMMON EMITTER
Tc = 25°C
Pc = 300W
20
15
10
8
7
V_{GE} = 6V
COLLECTOR CURRENT I_C (A)
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)


V_{CE} – V_{GE}
COMMON EMITTER
Tc = -40°C
I_C = 100A
50
20
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)
GATE-EMITTER VOLTAGE V_{GE} (V)

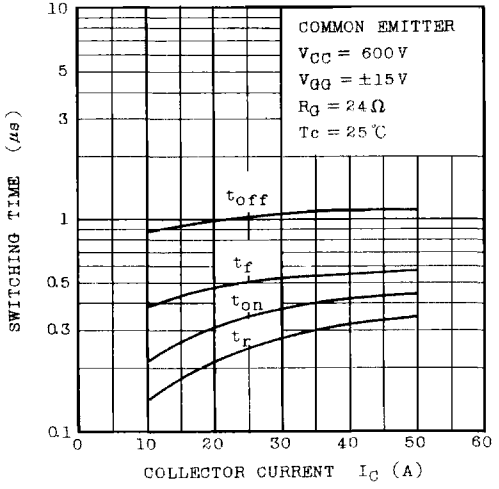

V_{CE} – V_{GE}
COMMON EMITTER
Tc = 25°C
I_C = 100A
50
20
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)
GATE-EMITTER VOLTAGE V_{GE} (V)


V_{CE} – V_{GE}
COMMON EMITTER
Tc = 125°C
I_C = 100A
50
20
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)
GATE-EMITTER VOLTAGE V_{GE} (V)

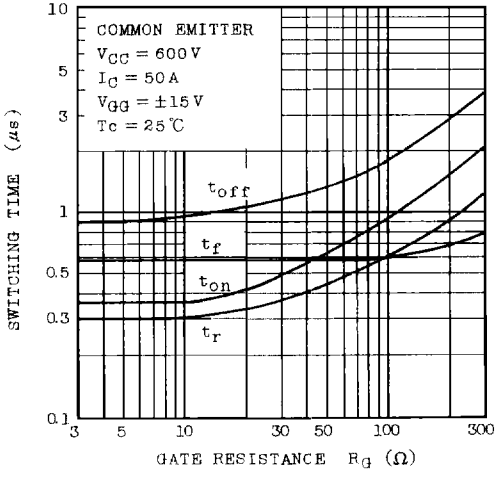

I_C – V_{GE}
COMMON EMITTER
V_{CE} = 5V
Tc = -40°C
25
125
COLLECTOR CURRENT I_C (A)
GATE-EMITTER VOLTAGE V_{GE} (V)


V_{CE}, V_{GE} – Q_G
V_{CE} = 0V
600
400
200
COMMON EMITTER
R_L = 12Ω
Tc = 25°C
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)
GATE-EMITTER VOLTAGE V_{GE} (V)
CHARGE Q_G (nC)

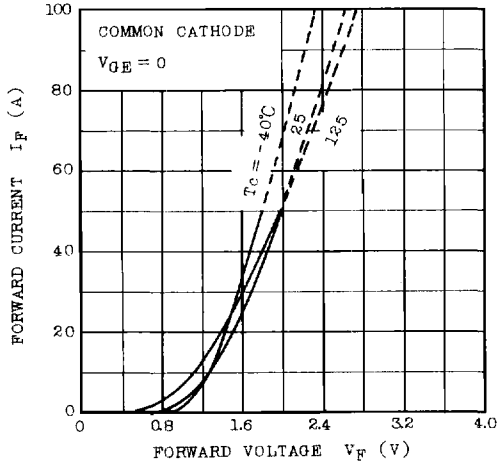
SWITCHING TIME — I_C



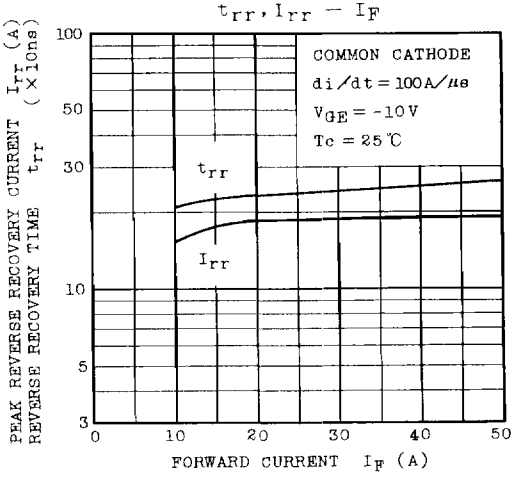
SWITCHING TIME — R_G



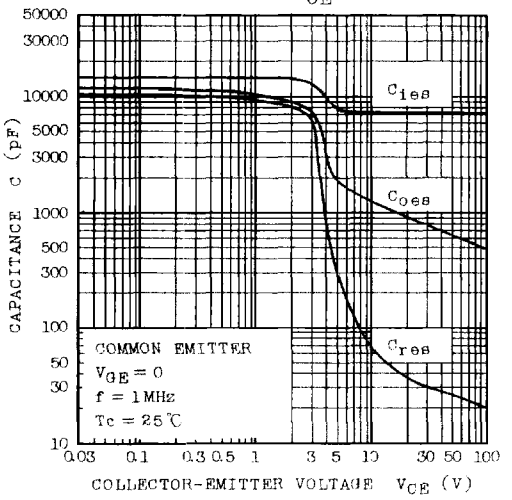
I_F — V_F



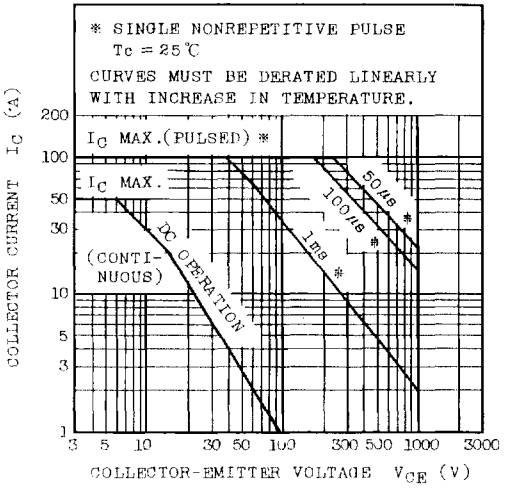
t_{rr}, I_{rr} — I_F



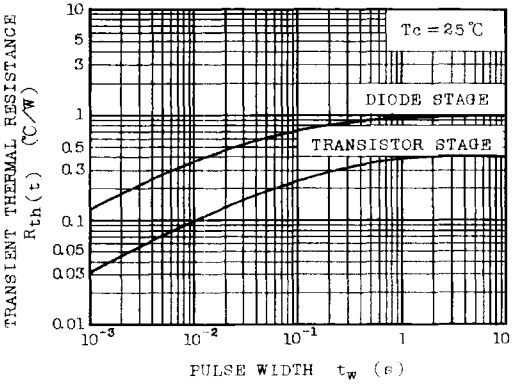
C – V_{CE}



SAFE OPERATING AREA



$R_{th(t)}$ – t_w



REVERSE BIAS SOA