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Find the *Toshiba MG50J2YS40* at our website: *Click HERE*

TOSHIBA GTR MODULE SILICON N CHANNEL IGBT

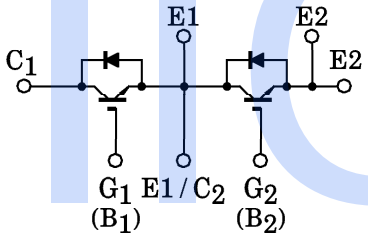
MG50J2YS50

HIGH POWER SWITCHING APPLICATIONS.

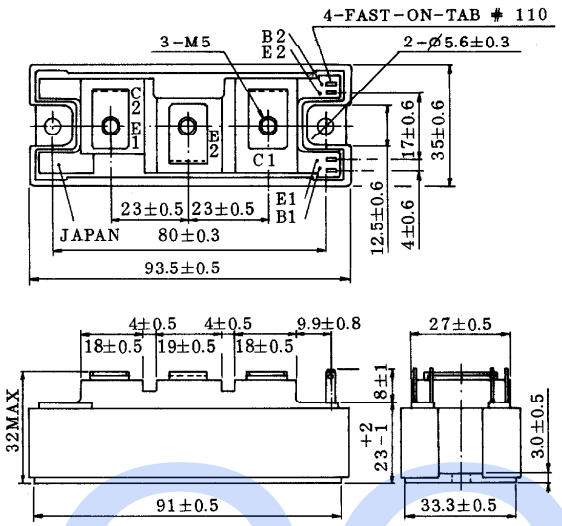
MOTOR CONTROL APPLICATIONS.

- The Electrodes are Isolated from Case.
- High Input Impedance
- Includes a Complete Half Bridge in One Package.
- Enhancement-Mode
- High Speed : $t_f = 0.30\mu s$ (Max.) ($I_C = 50A$)
  $t_{rr} = 0.15\mu s$ (Max.) ($I_F = 50A$)
- Low Saturation Voltage
  : $V_{CE\,(sat)} = 2.70V$ (Max.) ($I_C = 50A$)

EQUIVALENT CIRCUIT



Unit in mm



JEDEC	—
EIAJ	—
TOSHIBA	2-94D1A

Weight : 202g (Typ.)

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	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	280	W
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	−40~125	°C
Isolation Voltage		V_{Isol}	2500 (AC 1Min.)	V
Screw Torque (Terminal / Mounting)		—	3 / 3	N·m

961001EAA2

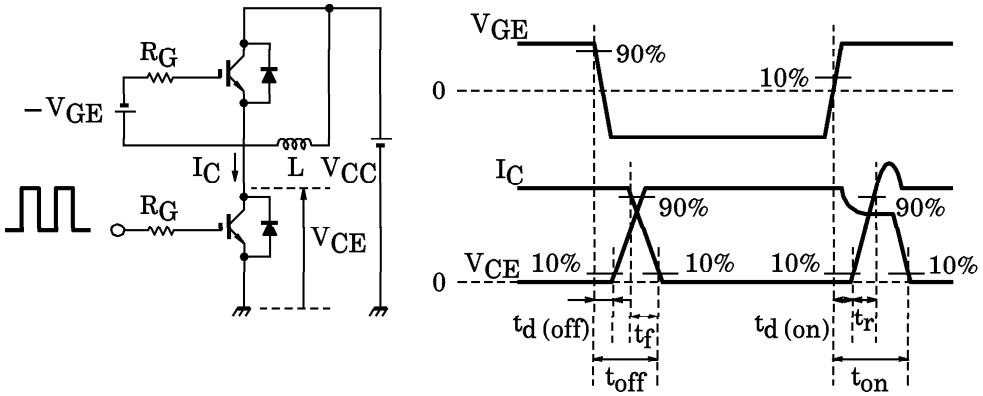
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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

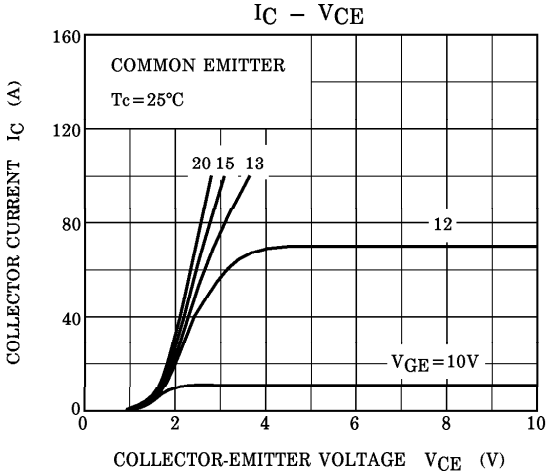
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I_{GES}	$V_{GE}=\pm20V$, $V_{CE}=0$	—	—	±500	nA
Collector Cut-off Current		I_{CES}	$V_{CE}=600V$, $V_{GE}=0$	—	—	1.0	mA
Gate-Emitter Cut-off Voltage		$V_{GE\ (off)}$	$I_C=5mA$, $V_{CE}=5V$	5.0	7.0	8.0	V
Collector-Emitter Saturation Voltage		$V_{CE\ (sat)}$	$I_C=50A$, $V_{GE}=15V$	—	2.10	2.70	V
Input Capacitance		C_{ies}	$V_{CE}=10V$, $V_{GE}=0$, f=1MHz	—	4950	—	pF
Switching Time	Turn-on Delay Time	$t_{d\ (on)}$	Inductive Load $V_{CC}=300V$ $I_C=50A$ $V_{GE}=\pm15V$ $R_G=24\Omega$ (Note 1)	—	0.08	0.16	μs
	Rise Time	t_r		—	0.12	0.24	
	Turn-on Time	t_{on}		—	0.40	0.80	
	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	$I_F=50A$, $V_{GE}=0$	—	2.30	3.00	V
Reverse Recovery Time		t_{rr}	$I_F=50A$, $V_{GE}=-10V$ $di/dt=100A/\mu s$	—	0.08	0.15	μs
Thermal Resistance		$R_{th\ (j-c)}$	Transistor Stage	—	—	0.45	°C / W
			Diode Stage	—	—	0.90	

Note 1 Switching Time Test Circuit & Timing Chart

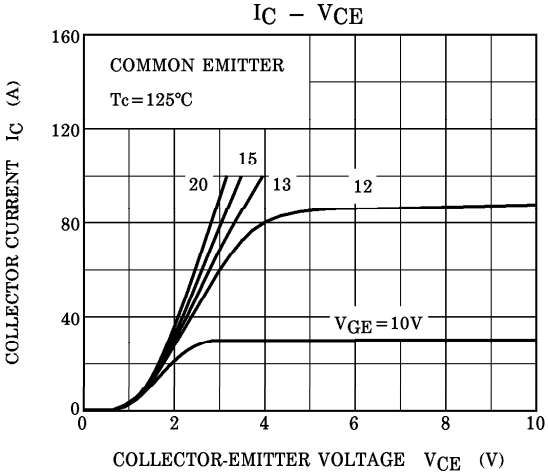


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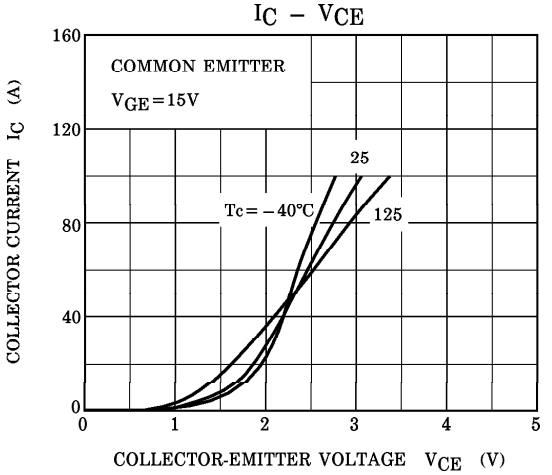
I_C – V_{CE}



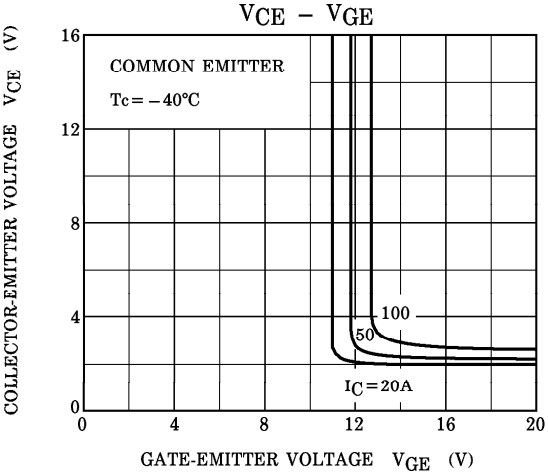
I_C – V_{CE}



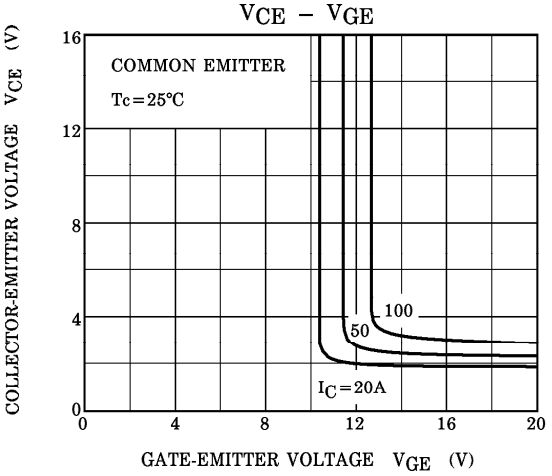
I_C – V_{CE}



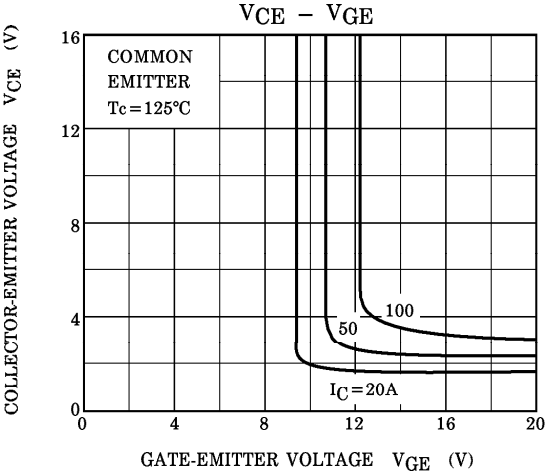
V_{CE} – V_{GE}



V_{CE} – V_{GE}

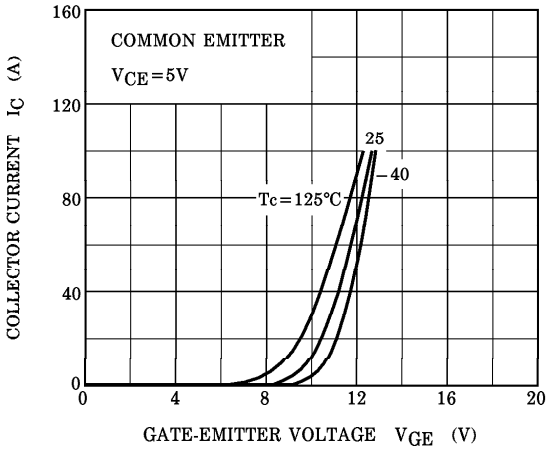


V_{CE} – V_{GE}

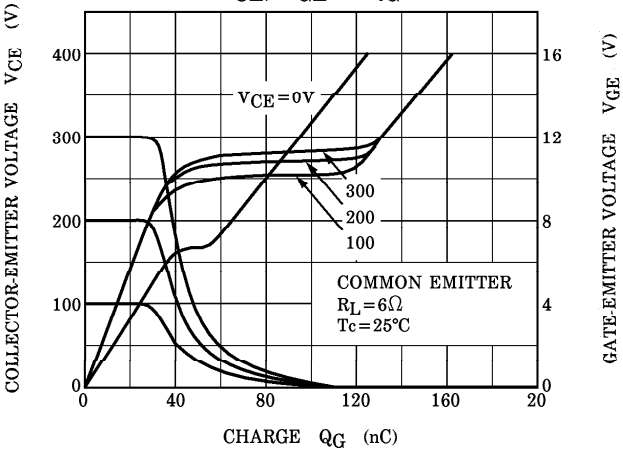


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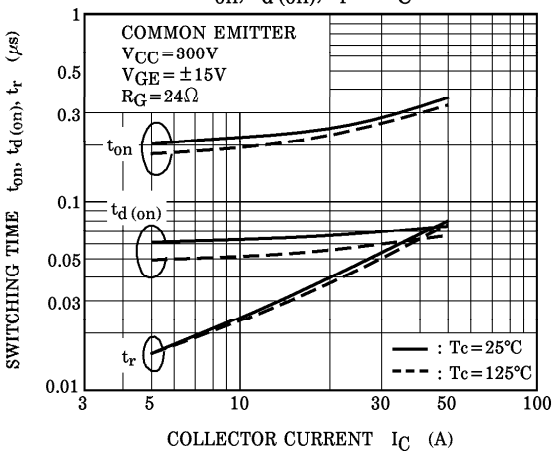
I_C – V_{GE}



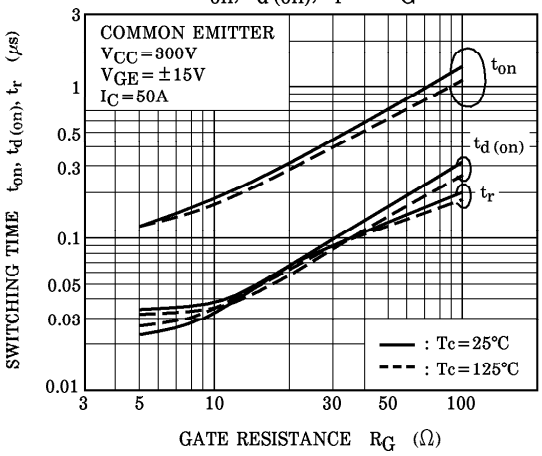
V_{CE}, V_{GE} – Q_G



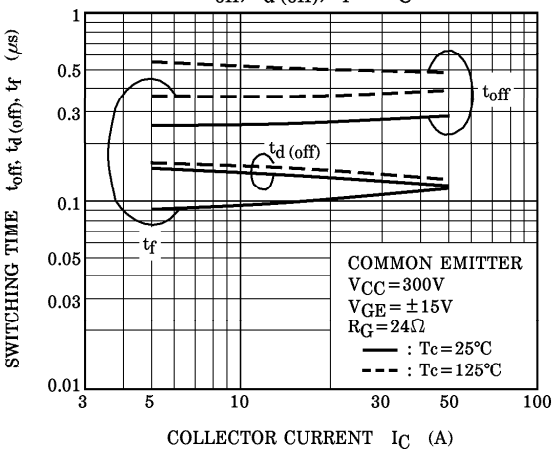
t_{on}, $t_{d\,(on)}$, t_r – I_C



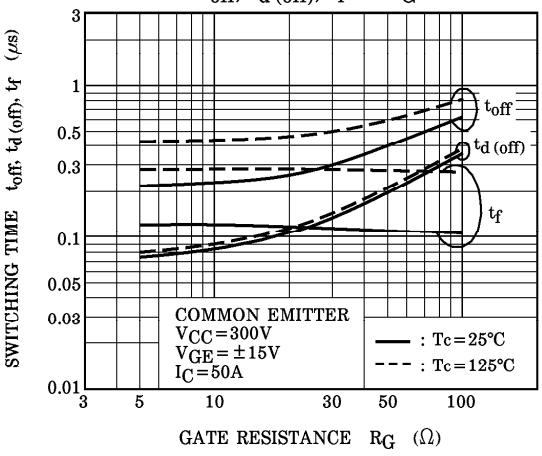
t_{on}, $t_{d\,(on)}$, t_r – R_G



t_{off}, $t_{d\,(off)}$, t_f – I_C

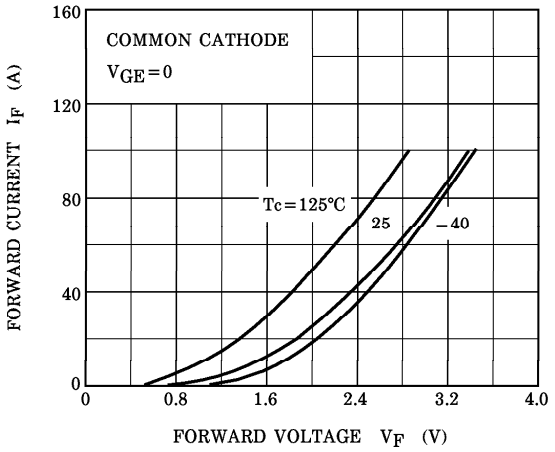


t_{off}, $t_{d\,(off)}$, t_f – R_G

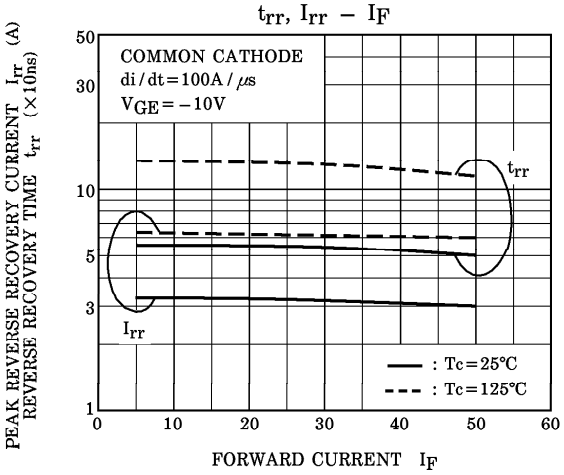


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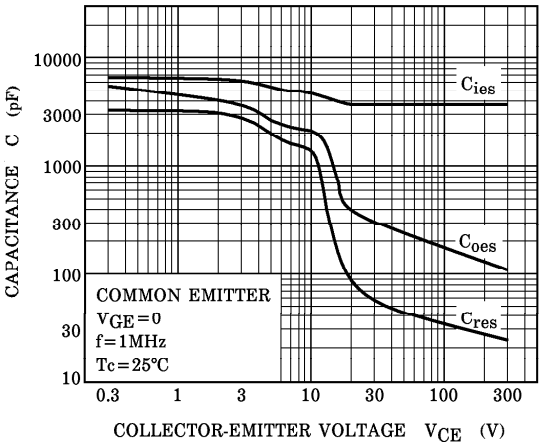
I_F – V_F



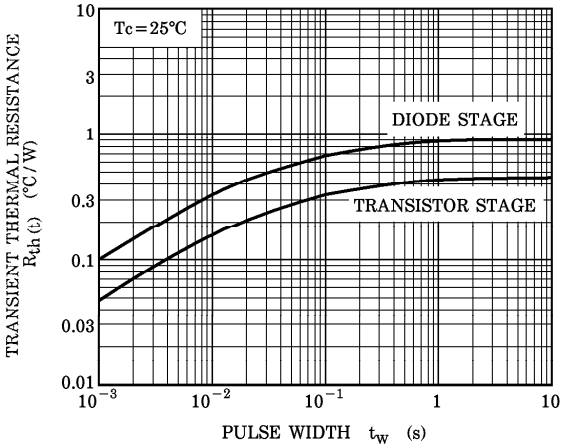
t_{rr}, I_{rr} – I_F



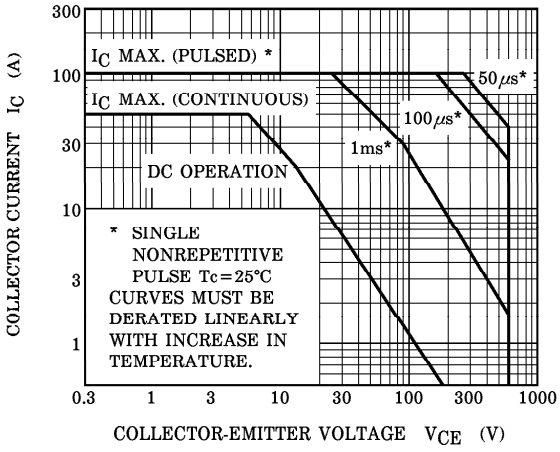
C – V_{CE}



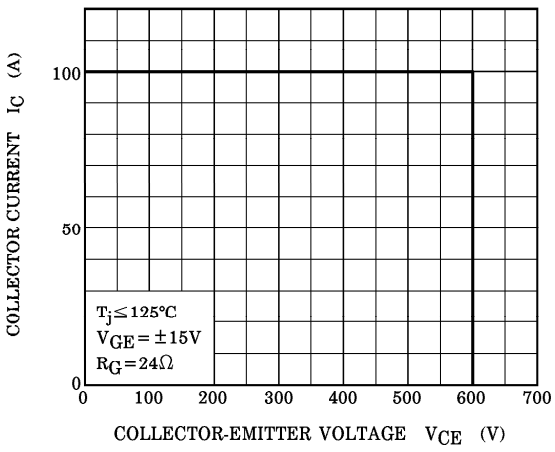
$R_{th\,(t)}$ – t_w



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