TOSHIBA SEMICONDUCTOR
TECHNICAL DATA

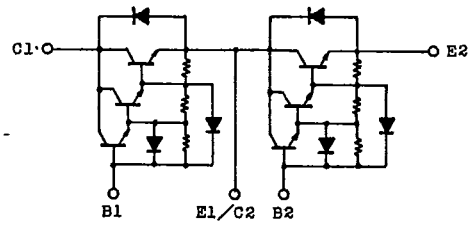
TOSHIBA GTR MODULE
MG50N2CK1
SILICON NPN TRIPLE DIFFUSED TYPE

HIGH POWER SWITCHING APPLICATIONS.
MOTOR CONTROL APPLICATIONS.

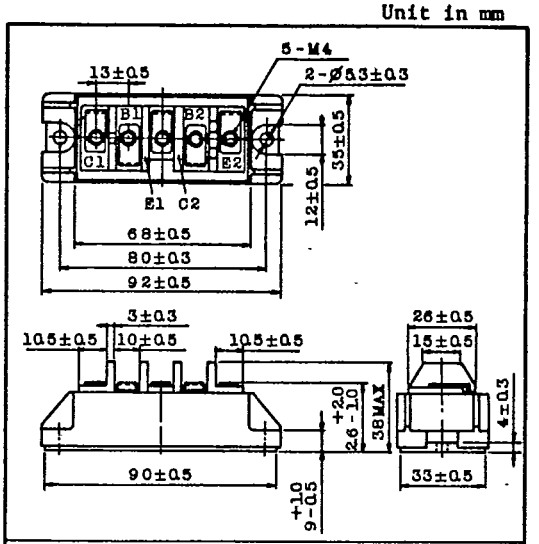
FEATURES:

- The Collector is Isolated from Case.
- 2 Power Transistors and 2 Free Wheeling Diodes are Built Into 1 Package.
- High DC Current Gain
  : h_{FE}=100(Min.) (I_C=50A)
- Low Saturation Voltage
  : $V_{CE(sat)}$=2.5V(Max.) (I_C=50A)
- High Speed

EQUIVALENT CIRCUIT



Unit in mm



JEDEC	—
EIAJ	—
TOSHIBA	2-68B1A

Weight : 215g

MAXIMUM RATINGS (Tc=25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	1100	V
Collector-Emitter Sustaining Voltage		$V_{CEX(SUS)}$	1100	V
		$V_{CEO(SUS)}$	900	
Emitter-Base Voltage		V_{EBO}	7	V
Collector Current	DC	I_C	50	A
	1ms	I_{CP}	100	
Forward Current	DC	I_F	50	A
	1ms	I_{FM}	100	
Base Current		I_B	5	A
Collector Power Dissipation (Tc=25°C)		P_C	350	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	-	20/30	kg·cm

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1986-6-5
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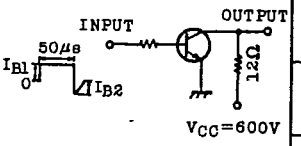
ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	V_{CB}=1100V, I_E=0	-	-	1.0	mA
Emitter Cut-off Current		I_{EBO}	V_{EB}=7V, I_C=0	-	-	200	mA
Collector-Emitter Sustaining Voltage		$V_{CEO(SUS)}$	I_C=1A, L=40mH	900	-	-	V
DC Current Gain		h_{FE}	V_{CE}=5V, I_C=50A	100	-	-	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	I_C=50A, I_B=1A	-	-	2.5	V
Base-Emitter Saturation Voltage		$V_{BE(sat)}$		-	-	3.0	V
Switching Time	Turn-on Time	t_{on}		-	-	2	μs
	Storage Time	t_{stg}		-	-	15	
	Fall Time	t_f	I_{B1}=1A, I_{B2}=-3A DUTY CYCLE=0.5%	-	-	5	
Forward Voltage		V_F	I_F=50A, I_B=0	-	-	1.8	V
Reverse Recovery Time		t_{rr}	I_F=50A, V_{BE}=-3V di/dt=100A/μs	-	-	1.0	μs
Thermal Resistance		$R_{th(j-c)}$	Transistor	-	-	0.35	°C/W
			Diode	-	-	1.3	

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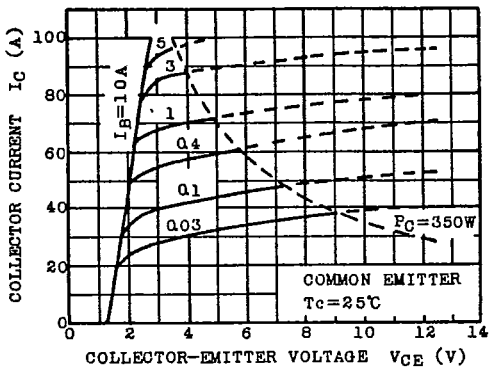
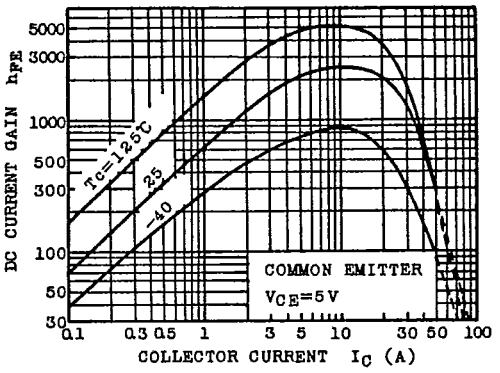
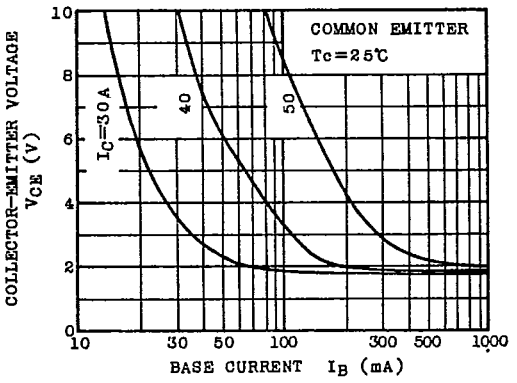
$I_C - V_{CE}$



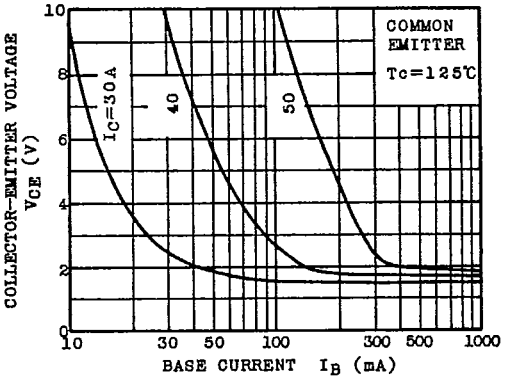
$h_{FE} - I_C$



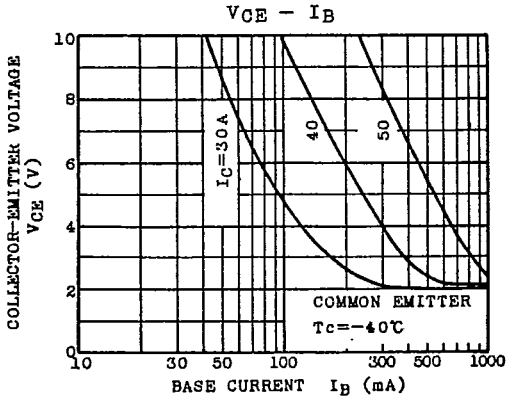
$V_{CE} - I_B$



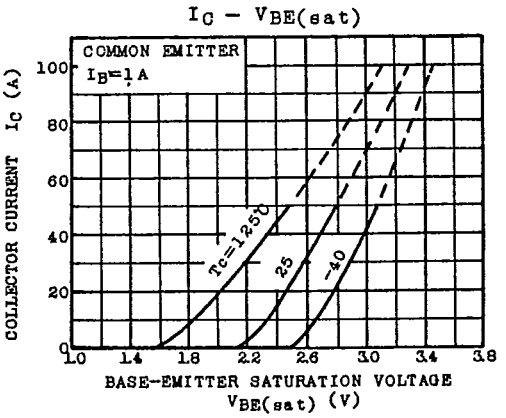
$V_{CE} - I_B$



$V_{CE} - I_B$



$I_C - V_{BE(sat)}$



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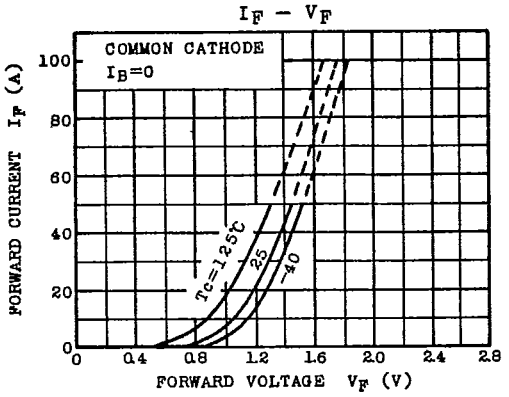
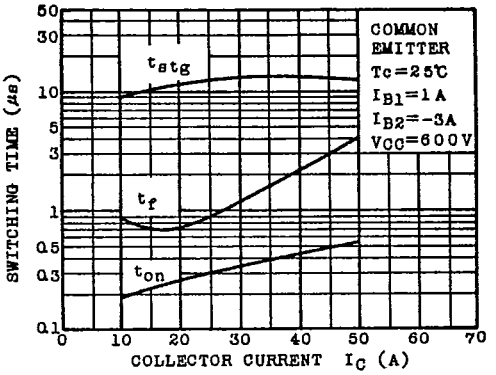
MG50N2CK1

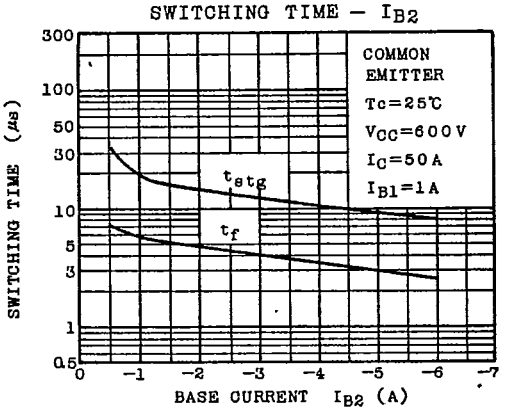
$I_F - V_F$



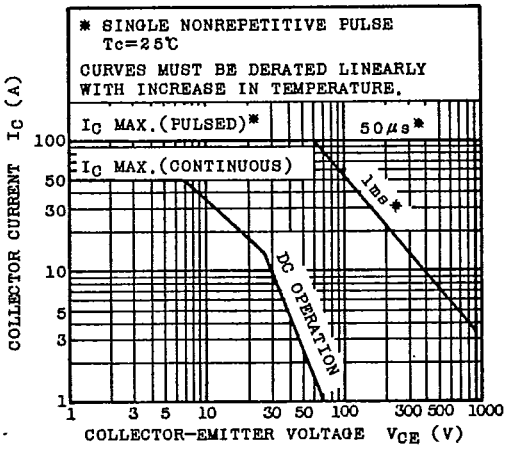
SWITCHING TIME — I_C



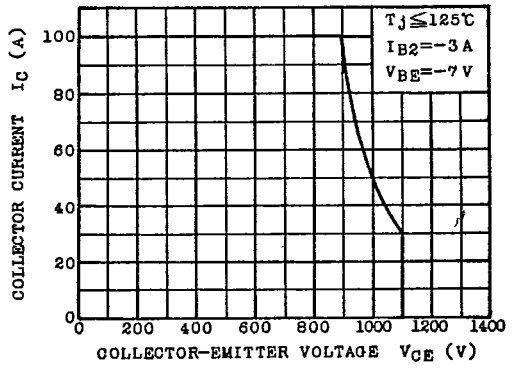
SWITCHING TIME — I_{B2}



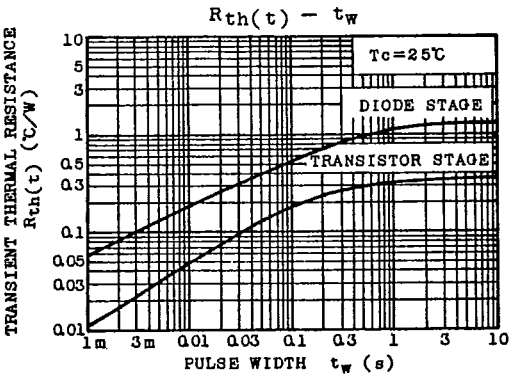
SAFE OPERATING AREA



REVERSE BIAS SOA



$R_{th(t)} - t_w$



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