Toshiba

SEMICONDUCTOR

TECHNICAL DATA

TOSHIBA GTR MODULE

MG15H6EL1

SILICON NPN TRIPLE DIFFUSED TYPE

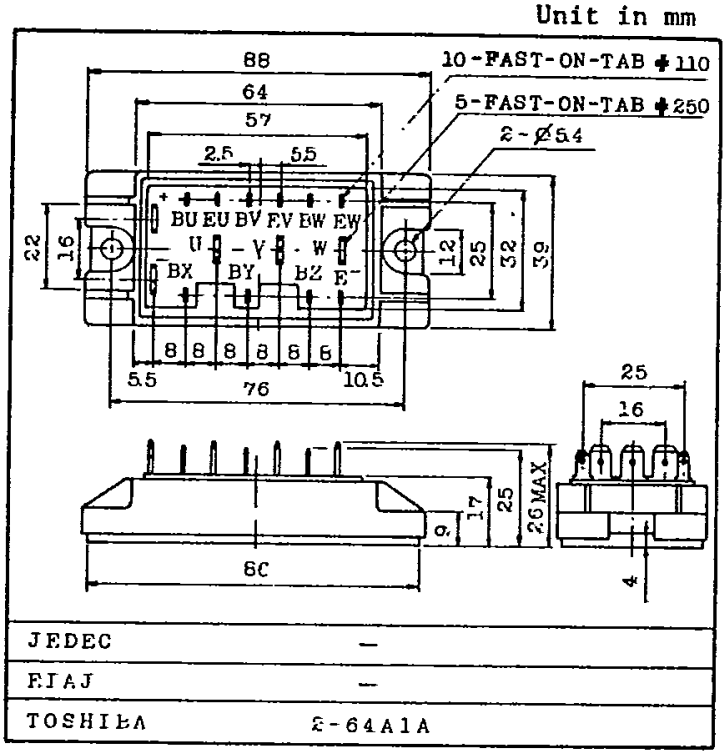
HIGH POWER SWITCHING APPLICATIONS.

MOTOR CONTROL APPLICATIONS.

FEATURES:

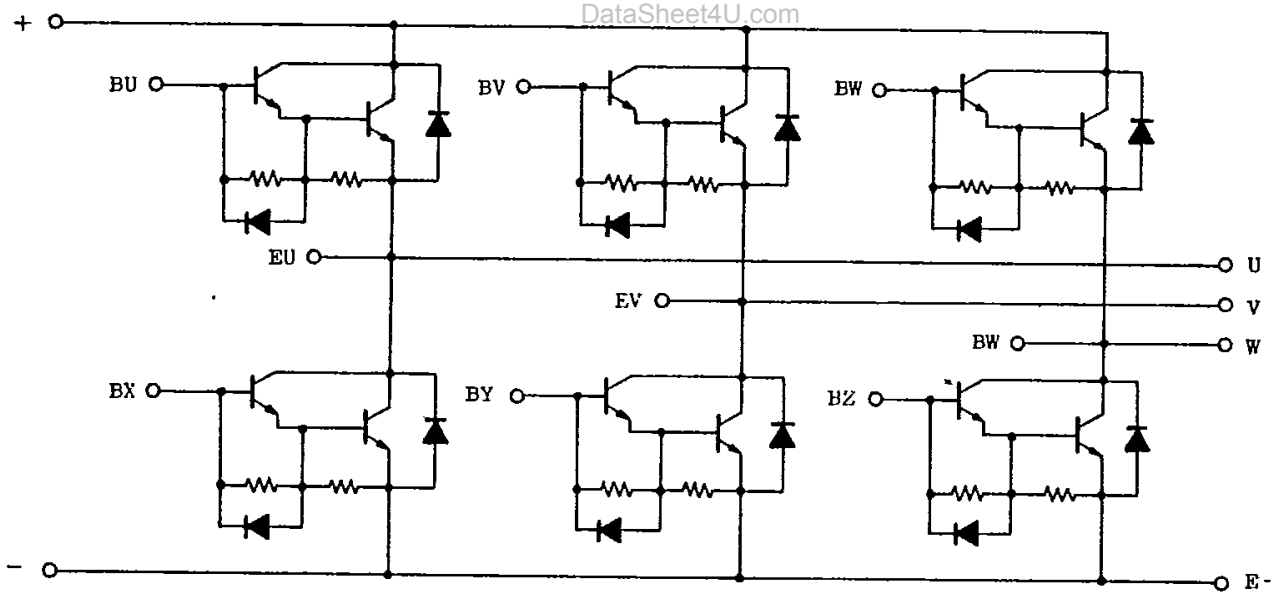
- The Collector is Isolation from Case.
- 6 Power Transistors and 6 Free Wheeling Diodes are Built Into 1 Package.
- High DC Current Gain
  : h_{FE}=100(Min.) (I_C=15A)
- Low Saturation Voltage
  : $V_{CE(sat)}$=2.0V(Max.) (I_C=15A)

Unit in mm



JEDEC	—
EIAJ	—
TOSHIBA	2-64A1A

EQUIVALENT CIRCUIT



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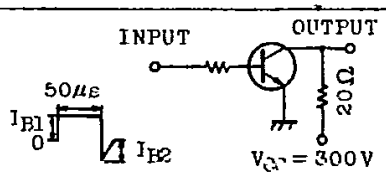
MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	600	V
Collector-Emitter Sustaining Voltage		$V_{CEX(SUS)}$	600	V
Collector-Emitter Sustaining Voltage		$V_{CEO(SUS)}$	500	V
Emitter-Base Voltage		V_{EBO}	6	V
Collector Current	DC	I_C	15	A
	1ms	I_{CP}	30	
Forward Current	DC	I_F	15	A
	1ms	I_{FM}	30	
Base Current		I_B	1.0	A
Collector Power Dissipation (Tc=25°C)		P_C	100	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		-	30	kg·cm

ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	V_{CB}=600V, I_E=0	-	-	1.0	mA
Emitter Cut-off Current		I_{EBO}	V_{EB}=6V, I_C=0	-	-	100	mA
Collector-Emitter Sustaining Voltage		$V_{CEO(SUS)}$	I_C=0.5A, L=40mH	500	-	-	V
DC Current Gain		h_{FE}	V_{CE}=5V, I_C=15A	100	-	-	-
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	I_C=15A, I_B=0.4A	-	-	2.0	V
Base-Emitter Saturation Voltage		$V_{BE(sat)}$		-	-	2.5	
Switching Time	Turn-on Time	t_{on}		-	-	1.0	μs
	Storage Time	t_{stg}		-	-	12	
	Fall Time	t_f		-	-	2.0	
Forward Voltage		V_F	I_F=15A, I_B=0	-	-	1.7	V
Reverse Recovery Time		t_{rr}	I_F=15A, V_{BE}=-2V di/dt=60A/μs	-	-	0.7	μs
Thermal Resistance		$R_{th(j-c)}$	Transistor	-	-	1.25	°C/W
			Diode	-	-	2.8	

I_{B1} = 0.4 A, I_{B2} = -0.4 A
DUTY CYCLE = 0.5 %

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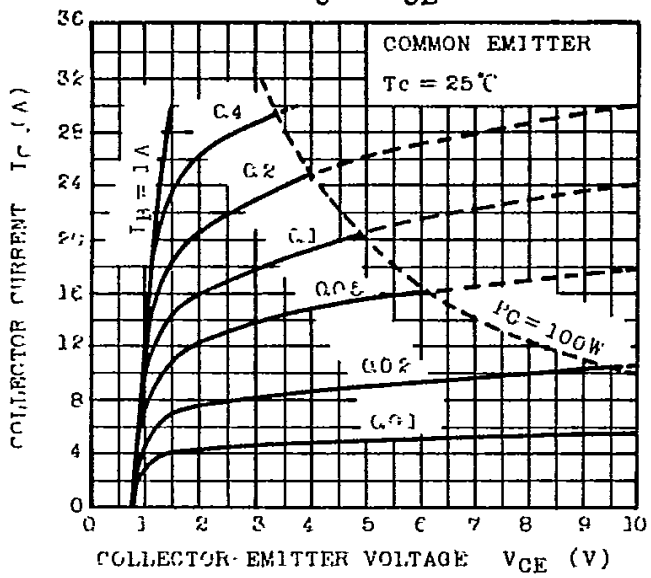
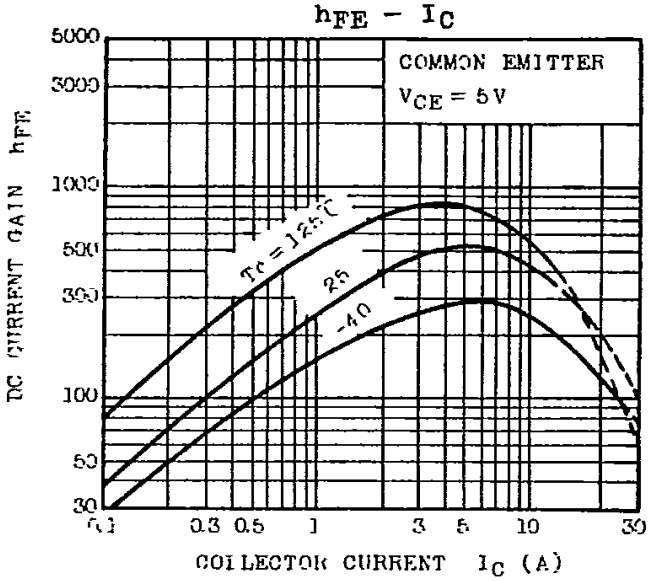
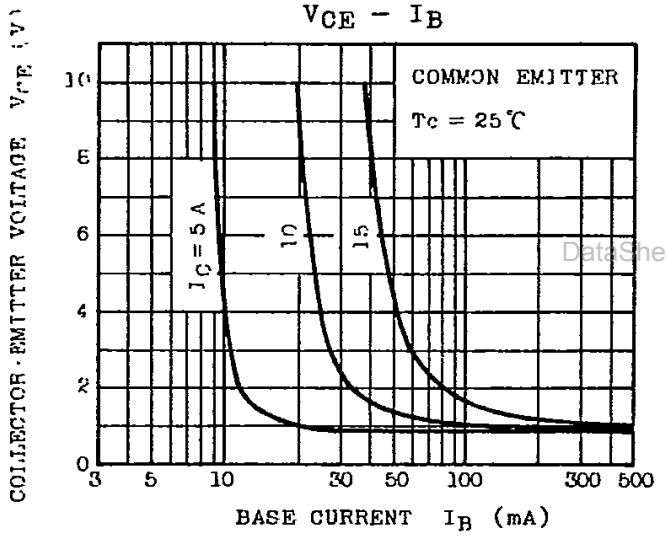
$I_C - V_{CE}$



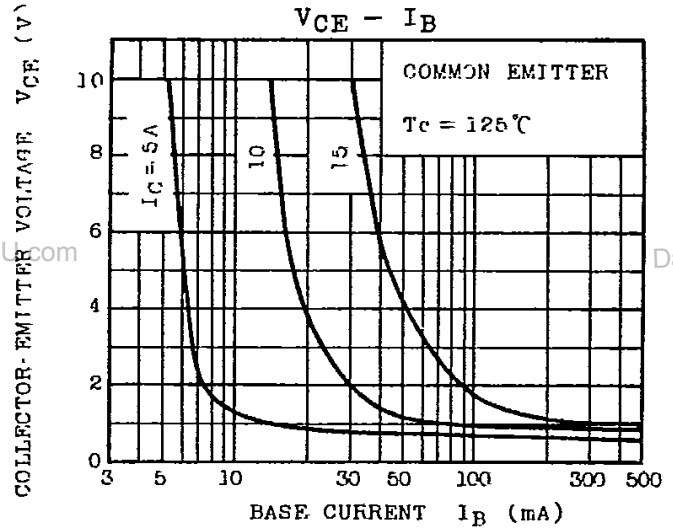
$h_{FE} - I_C$



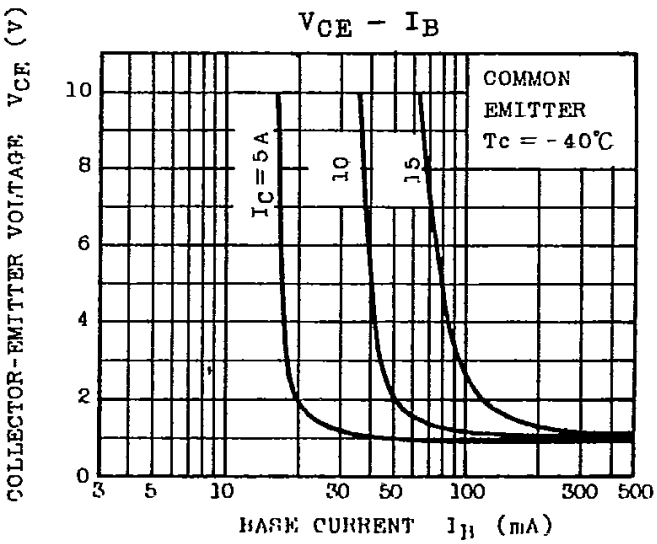
$V_{CE} - I_B$



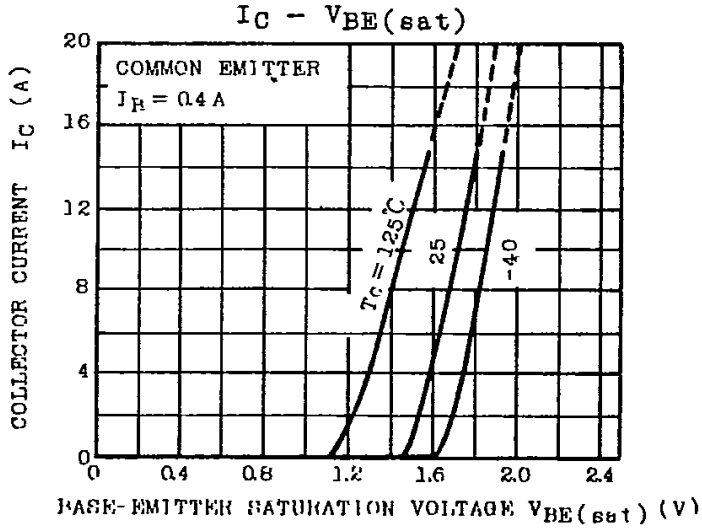
$V_{CE} - I_B$



$V_{CE} - I_B$



$I_C - V_{BE(sat)}$



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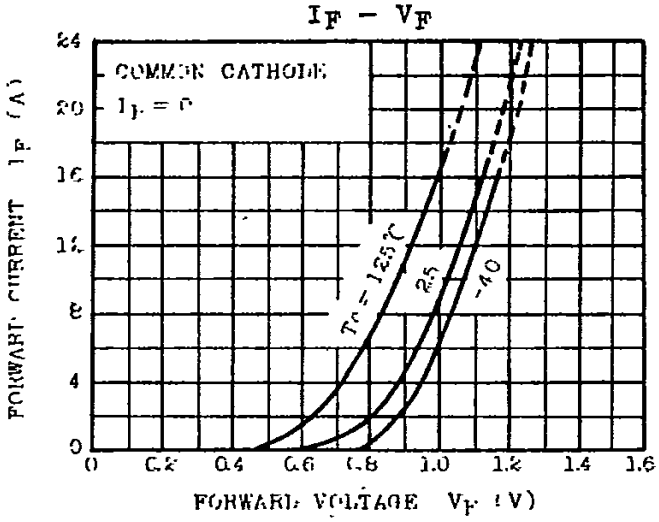
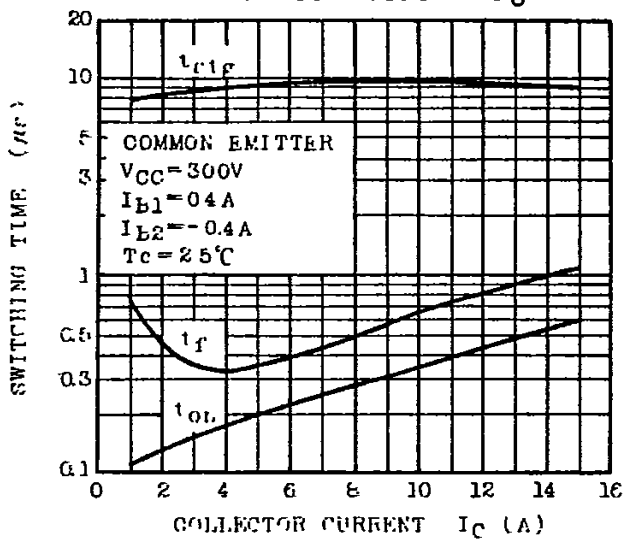
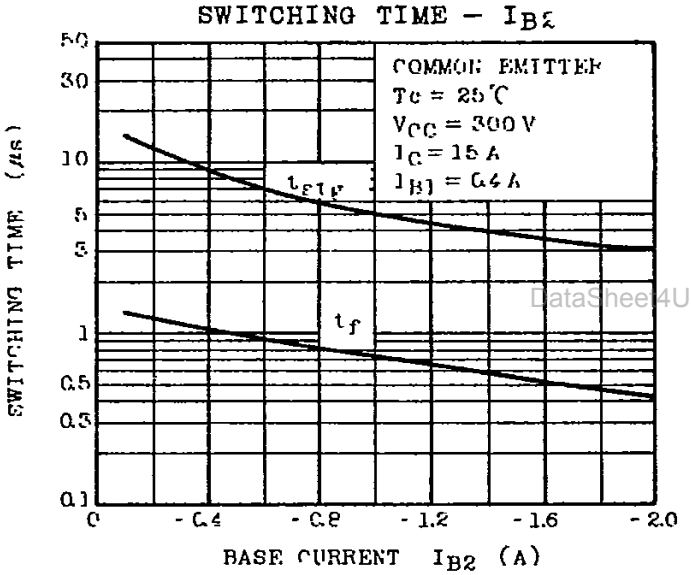
$I_F - V_F$



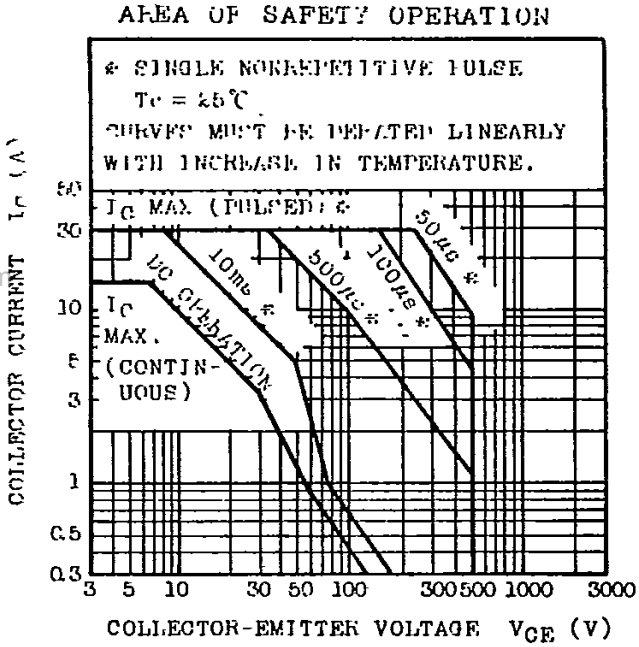
SWITCHING TIME – I_C



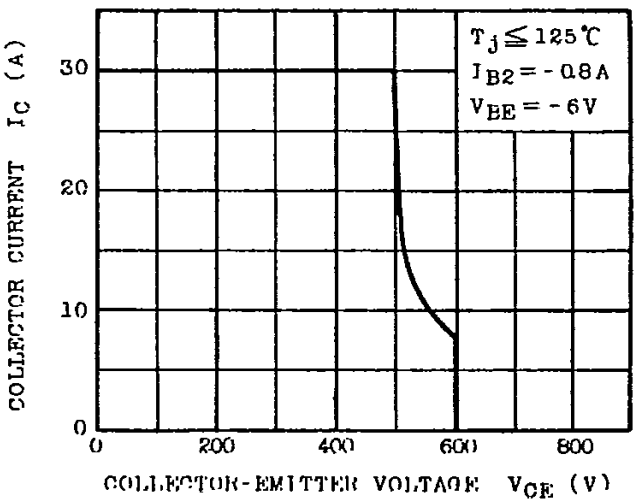
SWITCHING TIME – I_{B2}



AREA OF SAFETY OPERATION



REVERSE BIAS ASO



$R_{th}(t) - t_w$