

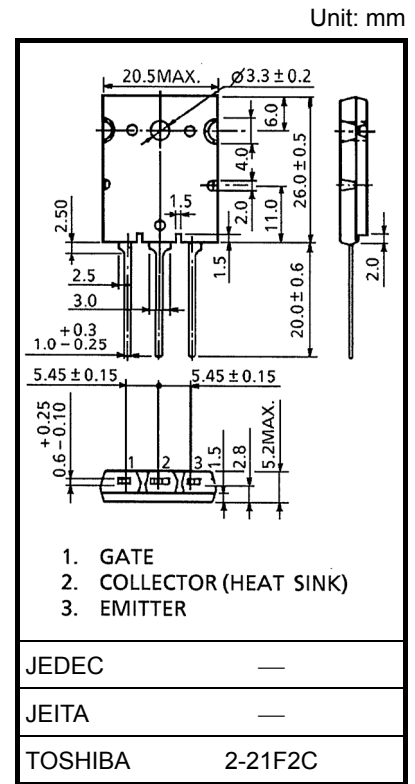
# GT60M303

## HIGH POWER SWITCHING APPLICATIONS

- Fourth generation IGBT
- FRD included between emitter and collector
- Enhancement mode type
- High speed IGBT :  $t_f = 0.25\mu s$  (TYP.)  
FRD :  $t_{rr} = 0.7\mu s$  (TYP.)
- Low saturation voltage :  $V_{CE(sat)} = 2.1V$  (TYP.)

## ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Emitter Voltage		$V_{CES}$	900	V
Gate-Emitter Voltage		$V_{GES}$	±25	V
Collector Current	DC	$I_C$	60	A
	1ms	$I_{CP}$	120	
Emitter-Collector Forward Current	DC	$I_{ECF}$	15	A
	1ms	$I_{ECFP}$	120	
Collector Power Dissipation (Tc = 25°C)		$P_C$	170	W
Junction Temperature		$T_j$	150	°C
Storage Temperature Range		$T_{stg}$	-55~150	°C
Screw Torque		—	0.8	N·m

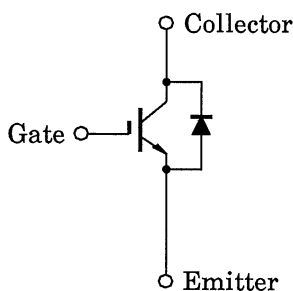


Weight: 9.75 g (typ.)

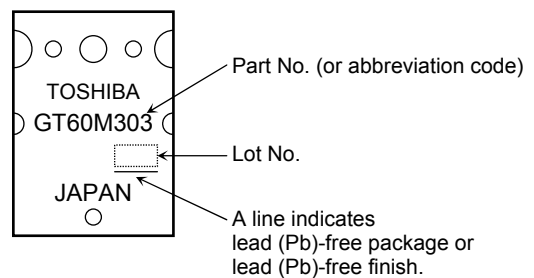
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

## EQUIVALENT CIRCUIT

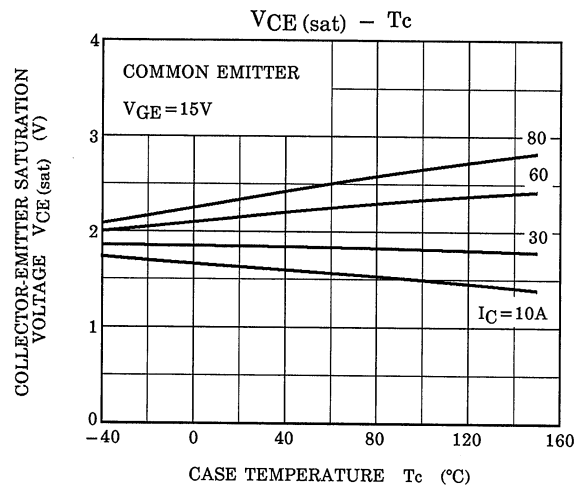
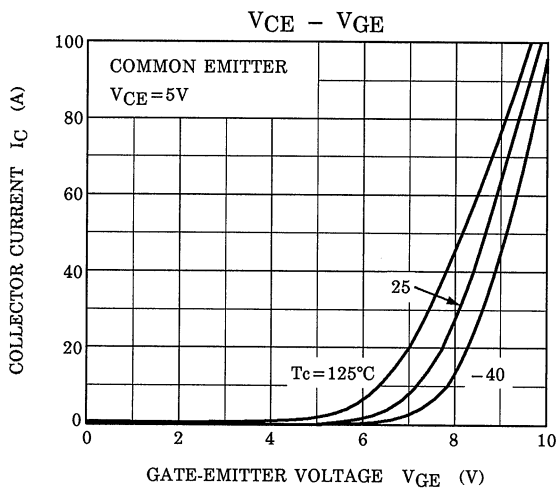
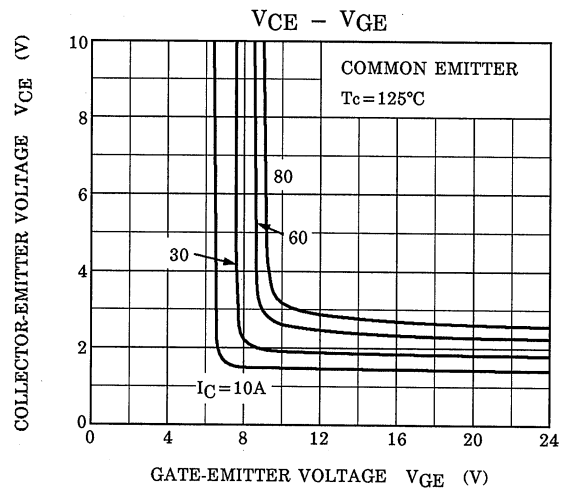
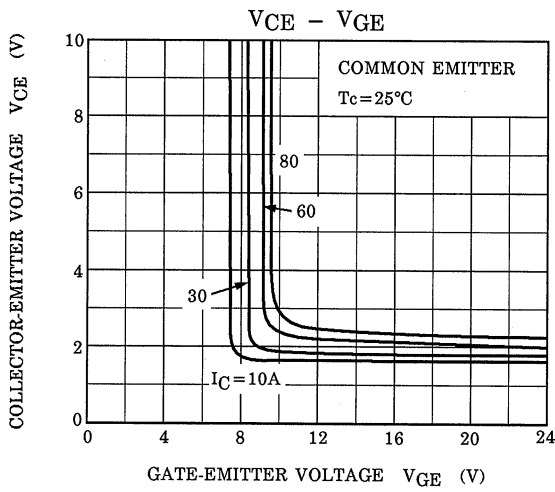
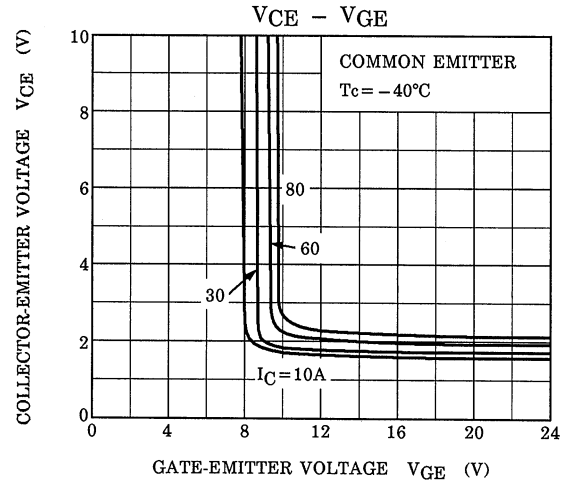
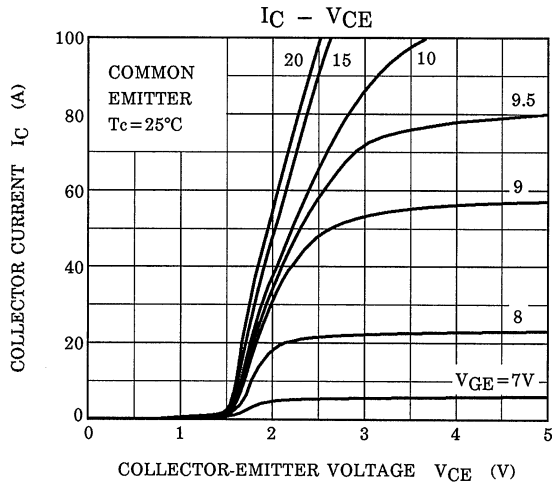


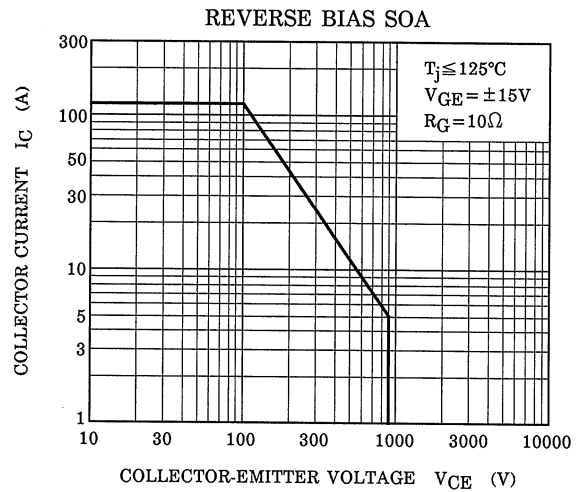
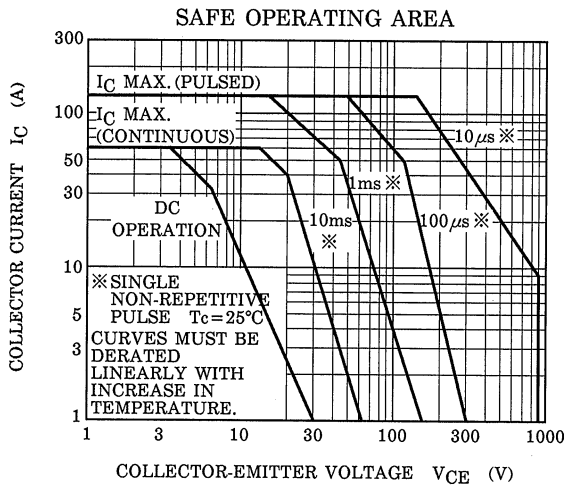
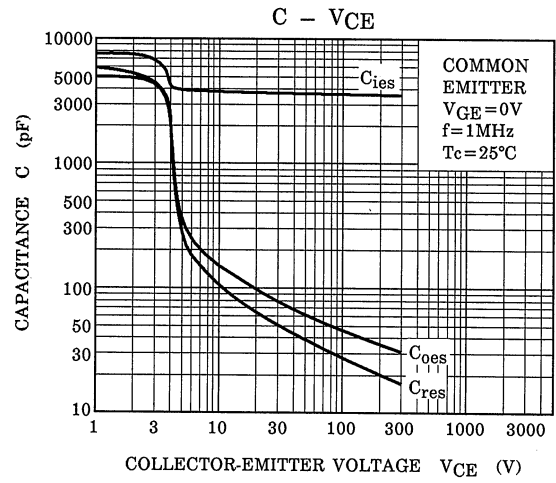
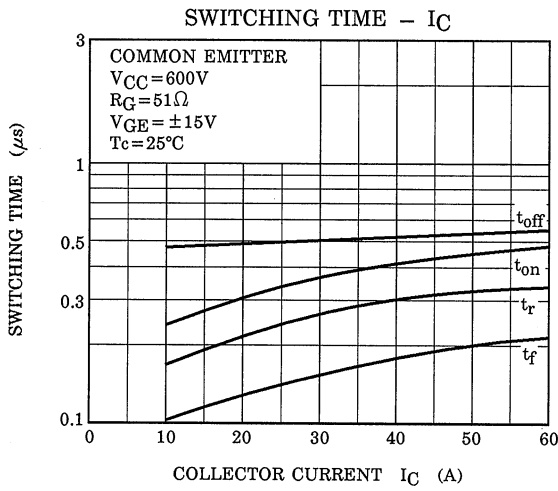
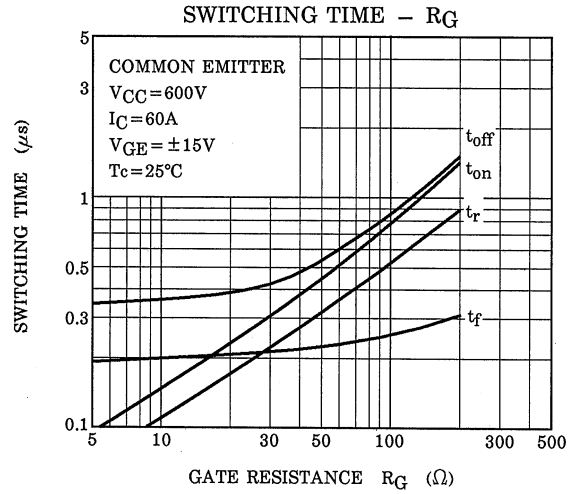
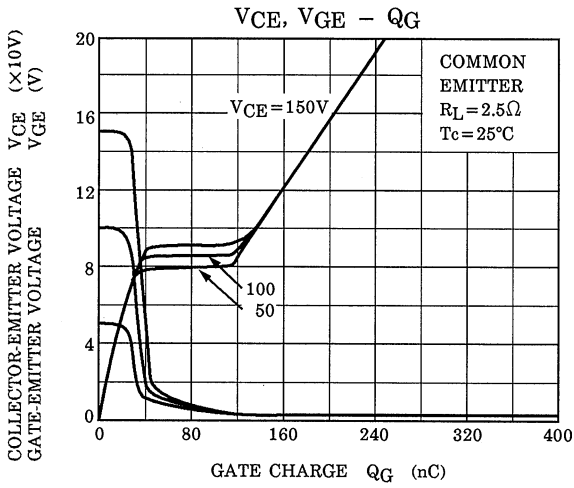
## MARKING

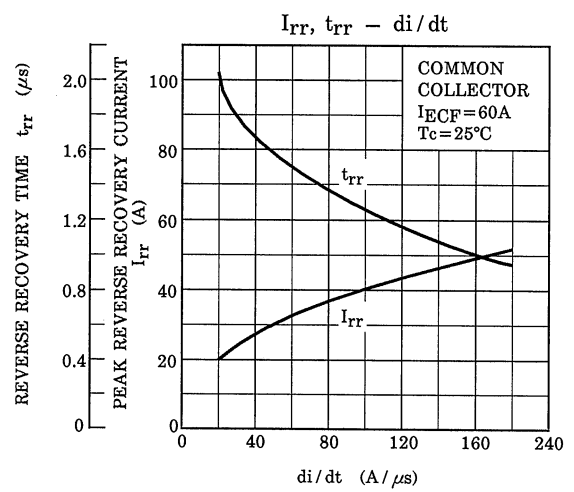
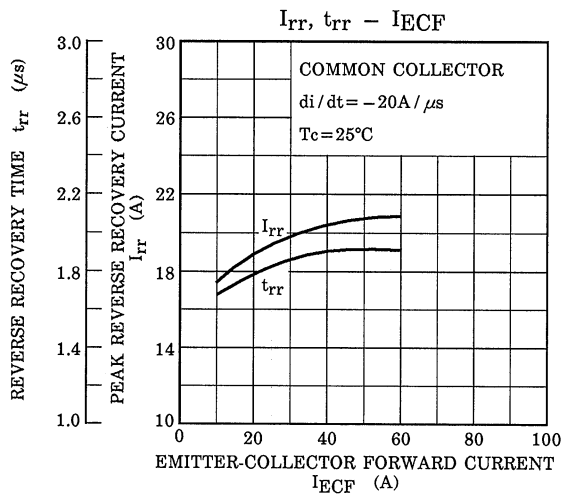
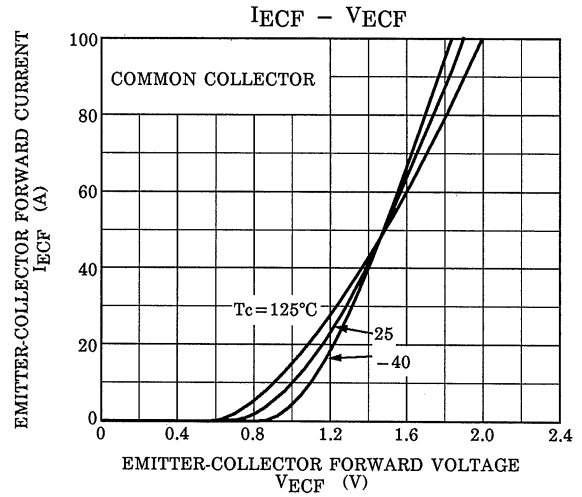
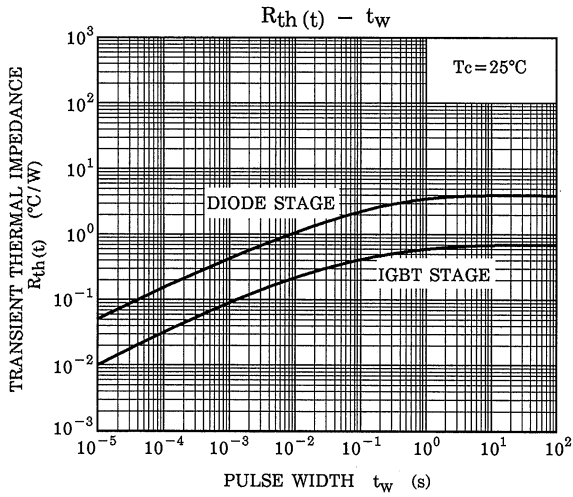


## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Gate Leakage Current		$I_{GES}$	$V_{GE} = \pm 25V, V_{CE} = 0$	—	—	$\pm 500$	nA
Collector Cut-off Current		$I_{CES}$	$V_{CE} = 900V, V_{GE} = 0$	—	—	1.0	mA
Gate-Emitter Cut-off Voltage		$V_{GE (OFF)}$	$I_C = 60mA, V_{CE} = 5V$	3.0	—	6.0	V
Collector-Emitter Saturation Voltage		$V_{CE (sat) (1)}$	$I_C = 10A, V_{GE} = 15V$	—	1.6	2.2	V
Collector-Emitter Saturation Voltage		$V_{CE (sat) (2)}$	$I_C = 60A, V_{GE} = 15V$	—	2.1	2.7	V
Input Capacitance		$C_{ies}$	$V_{CE} = 10V, V_{GE} = 0, f = 1MHz$	—	3800	—	pF
Switching Time	Rise Time	$t_r$		—	0.35	0.60	μs
	Turn-On Time	$t_{on}$		—	0.46	0.75	
	Fall Time	$t_f$		—	0.25	0.40	
	Turn-Off Time	$t_{off}$		—	0.60	0.70	
Emitter-Collector Forward Voltage		$V_{ECF}$	$I_{EC} = 15A, V_{GE} = 0$	—	1.5	2.0	V
Reverse Recovery Time		$t_{rr}$	$I_F = 15A, V_{GE} = 0$ $di / dt = -20A / \mu s$	—	0.7	2.5	μs
Thermal Resistance		$R_{th (j-c)}$	IGBT	—	—	0.74	°C / W
Thermal Resistance		$R_{th (j-c)}$	Diode	—	—	4.0	°C / W







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20070701-EN

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