

TOSHIBA INSULATED GATE BIPOLAR TRANSISTOR SILICON N CHANNEL MOS TYPE

# GT60M302

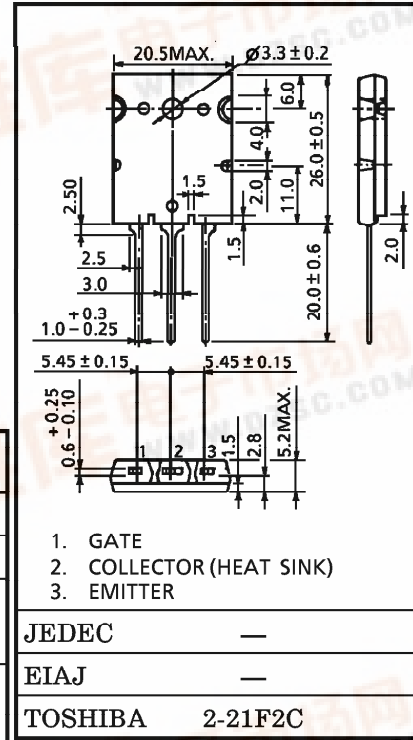
HIGH POWER SWITCHING APPLICATIONS

Unit in mm

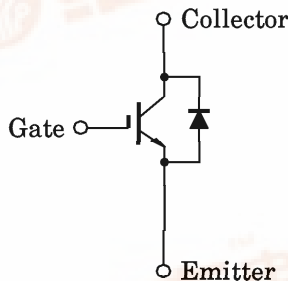
- The 3rd Generation
- FRD Included Between Emitter and Collector
- Enhancement-Mode
- High Speed IGBT :  $t_f = 0.22 \mu s$  (TYP.)  
FRD :  $t_{rr} = 0.7 \mu s$  (TYP.)
- Low Saturation Voltage :  $V_{CE(sat)} = 3.3V$  (MAX.)

MAXIMUM RATINGS (Ta = 25°C)

CARACTERISTICS	SYMBOL	RATINGS	UNIT
Collector-Emitter Voltage	$V_{CES}$	900	V
Gate-Emitter Voltage	$V_{GES}$	$\pm 25$	V
Collector Current	DC	$I_C$	60
	1ms	$I_{CP}$	120
Emitter-Collector Foward Current	DC	$I_{ECF}$	15
	1ms	$I_{ECFP}$	120
Collector Power Dissipation (Tc = 25°C)	$P_C$	200	W
Junction Temperature	$T_j$	150	°C
Storage Temperature Range	$T_{stg}$	-55~150	°C
Screw Torque	—	0.8	N·m



EQUIVALENT CIRCUIT



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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Gate Leakage Current		I <sub>GES</sub>	V <sub>GE</sub> = ±25V, V <sub>CE</sub> = 0	—	—	±500	nA
Collector Cut-off Current		I <sub>CES</sub>	V <sub>CE</sub> = 900V, V <sub>GE</sub> = 0	—	—	1.0	mA
Gate-Emitter Cut-off Voltage		V <sub>GE (OFF)</sub>	I <sub>C</sub> = 60mA, V <sub>CE</sub> = 5V	3.0	—	6.0	V
Collector-Emitter Saturation Voltage		V <sub>CE (sat) (1)</sub>	I <sub>C</sub> = 10A, V <sub>GE</sub> = 15V	—	1.6	2.4	V
Collector-Emitter Saturation Voltage		V <sub>CE (sat) (2)</sub>	I <sub>C</sub> = 60A, V <sub>GE</sub> = 15V	—	2.2	3.3	V
Input Capacitance		C <sub>ies</sub>	V <sub>CE</sub> = 30V, V <sub>GE</sub> = 0 f = 1MHz	—	4400	—	pF
Switching Time	Rise Time	t <sub>r</sub>		—	0.25	0.60	μs
	Turn-on Time	t <sub>on</sub>		—	0.35	0.80	
	Fall Time	t <sub>f</sub>		—	0.22	0.37	
	Turn-off Time	t <sub>off</sub>		—	0.50	1.00	
Emitter-Collector Forward Voltage		V <sub>ECF</sub>	I <sub>ECF</sub> = 15A, V <sub>GE</sub> = 0	—	1.5	2.0	V
Reverse Recovery Time		t <sub>rr</sub>	I <sub>ECF</sub> = 15A, V <sub>GE</sub> = 0 di / dt = -20A / μs	—	0.7	2.5	μs
Thermal Resistance		R <sub>th (j-c)</sub>	IGBT	—	—	0.625	°C / W
Thermal Resistance		R <sub>th (j-c)</sub>	Diode	—	—	4.0	°C / W

