

TOSHIBA INSULATED GATE BIPOLAR TRANSISTOR SILICON N CHANNEL IGBT

GT50G321

THE 4TH GENERATION

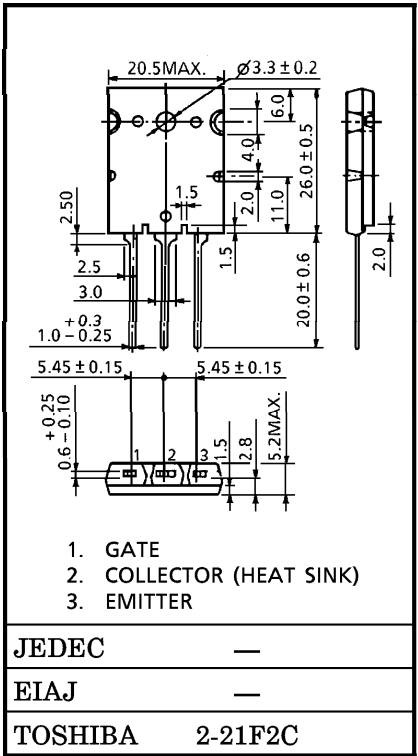
CURRENT RESONANCE INVERTER SWITCHING APPLICATIONS

- FRD Included Between Emitter and Collector
- Enhancement-Mode
- High Speed : $t_f = 0.30 \mu s$ (Typ.) ($I_C = 60 A$)
- Low Saturation Voltage : $V_{CE(sat)} = 1.8 V$ (Typ.) ($I_C = 60 A$)

MAXIMUM RATINGS ($T_a = 25^{\circ}C$)

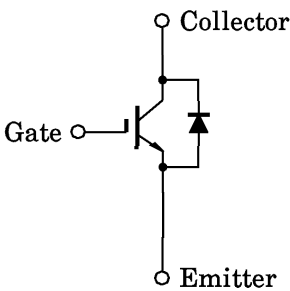
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Emitter Voltage		V_{CES}	400	V
Gate-Emitter Voltage		V_{GES}	± 25	V
Collector Current	DC	I_C	50	A
	1 ms	I_{CP}	100	
Emitter-Collector Foward Current	DC	I_F	15	A
	1 ms	I_{FP}	30	
Collector Power Dissipation ($T_c = 25^{\circ}C$)		P_C	130	W
Junction Temperature		T_j	150	$^{\circ}C$
Storage Temperature Range		T_{stg}	$-55 \sim 150$	$^{\circ}C$

Unit in mm



Weight : 9.75 g

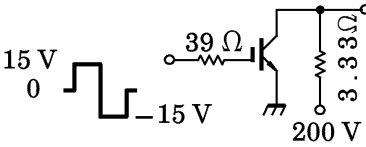
EQUIVALENT CIRCUIT

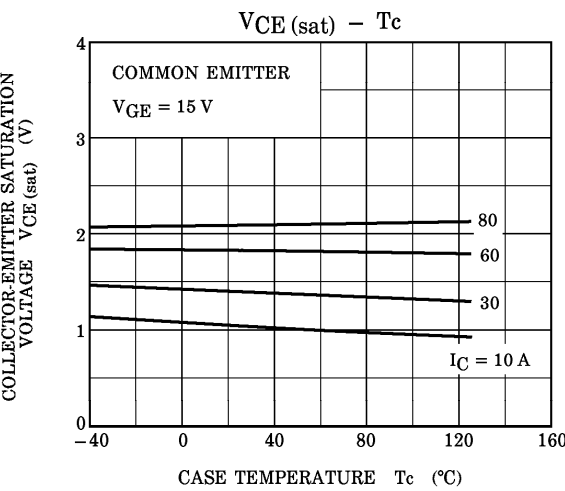
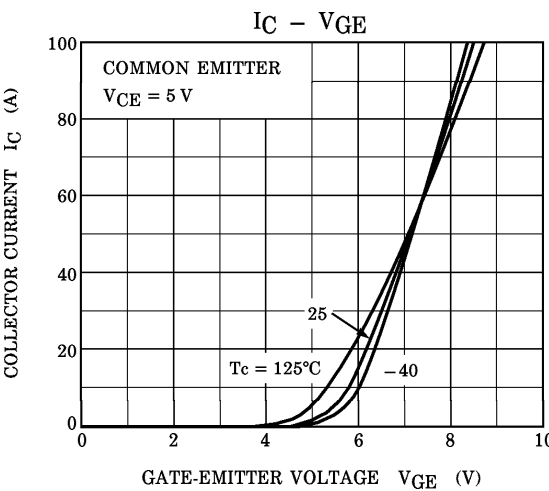
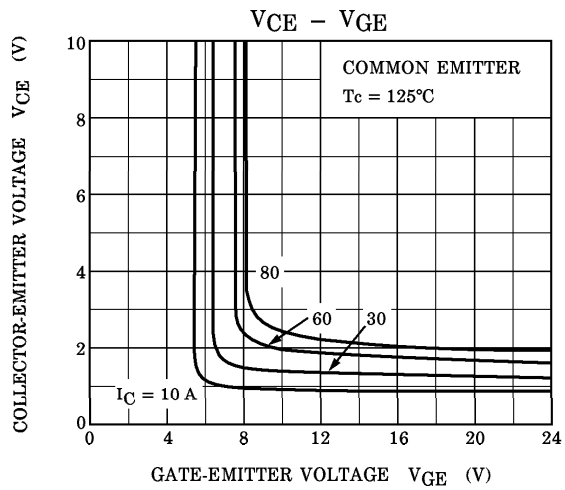
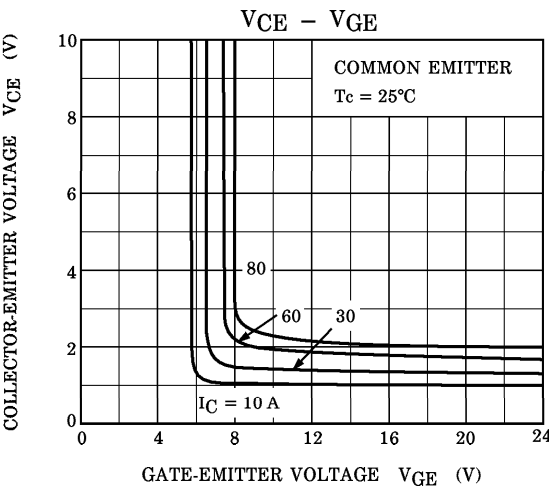
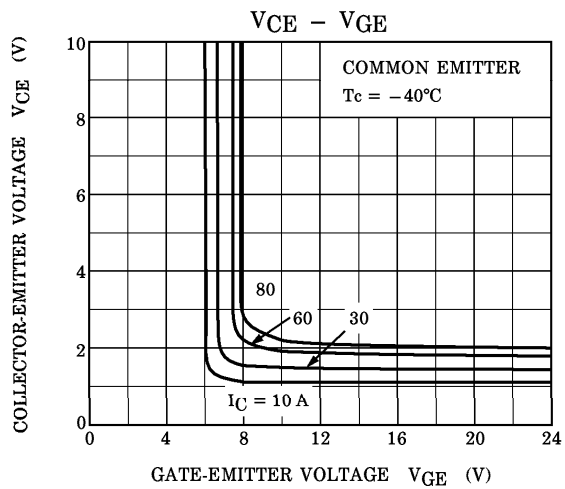
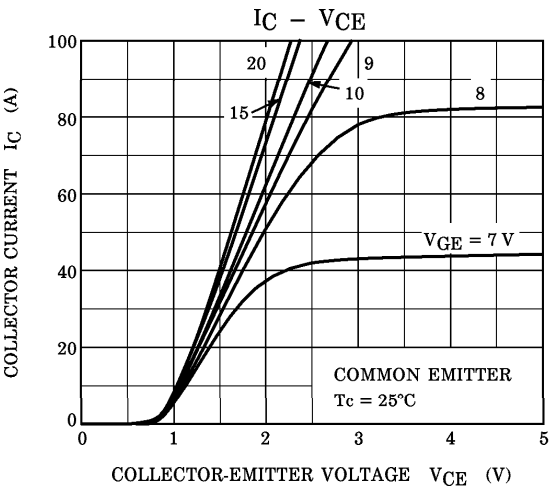


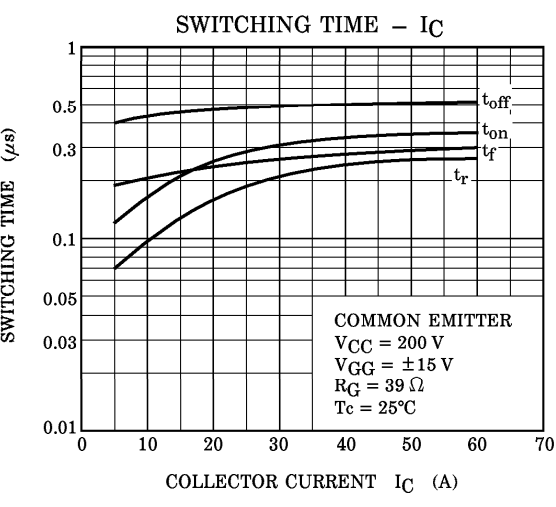
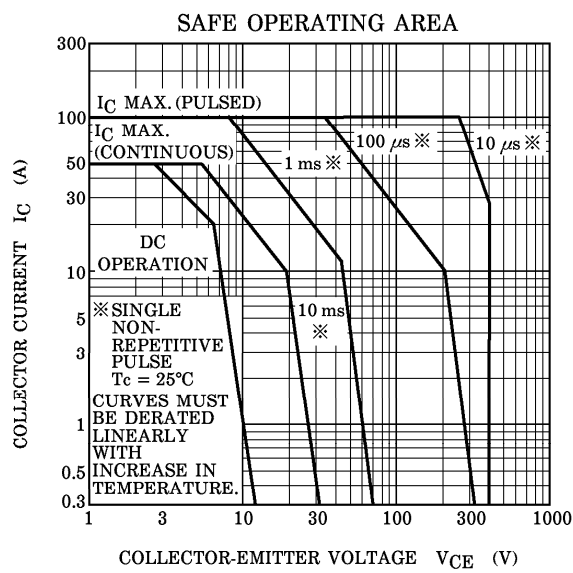
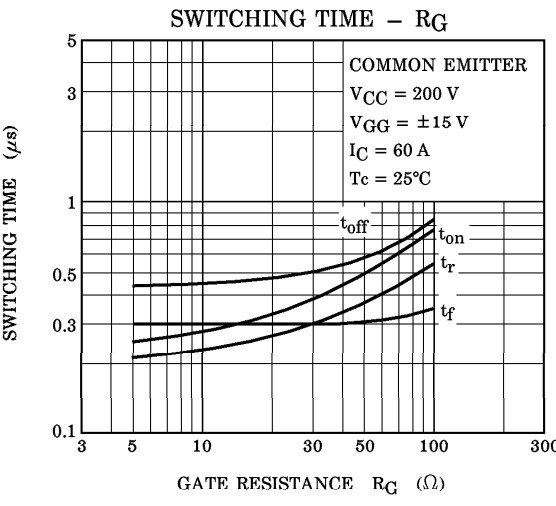
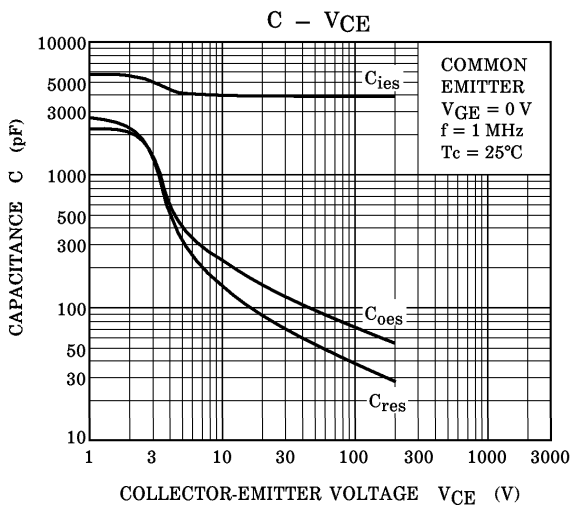
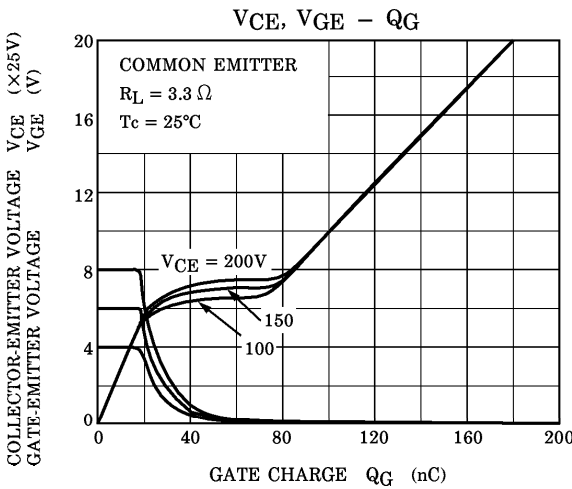
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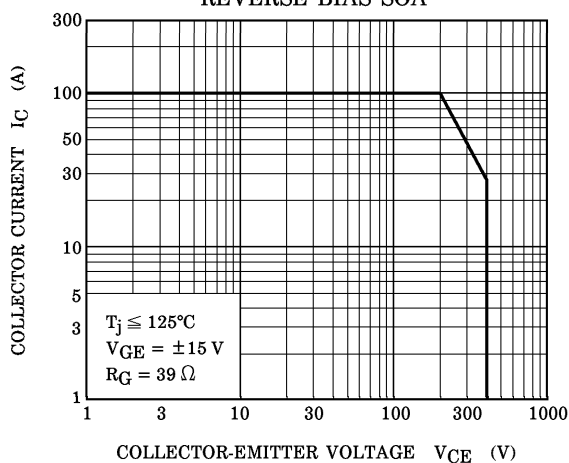
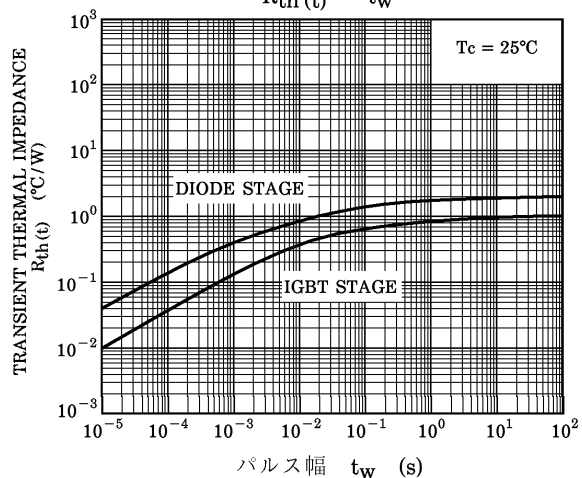
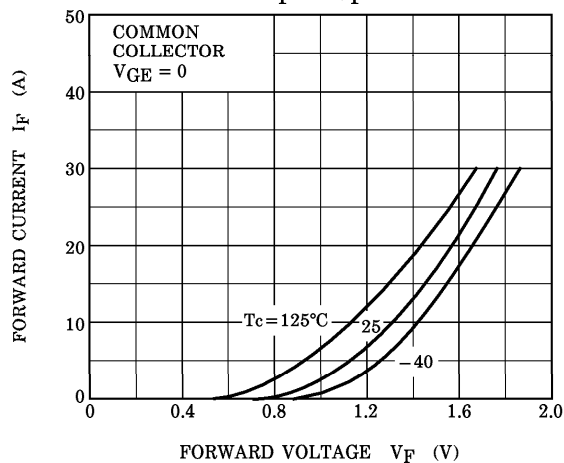
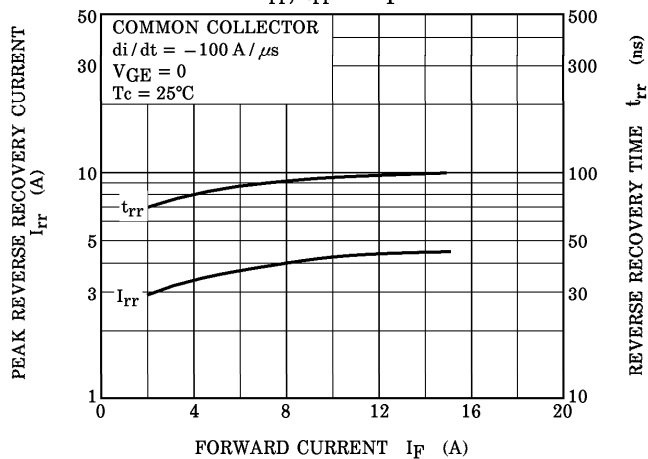
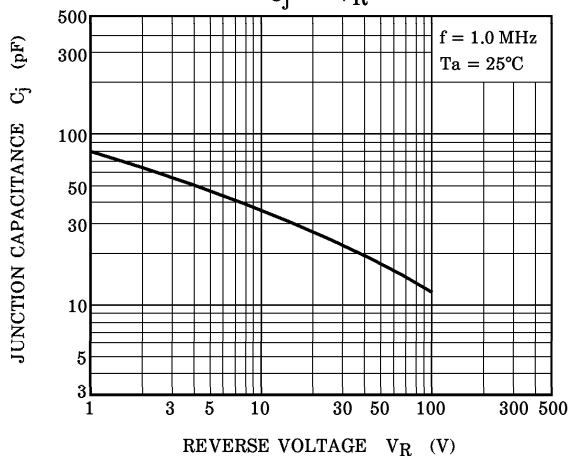
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP	MAX.	UNIT
Gate Leakage Current		I_{GES}	$V_{GE} = \pm 25 \text{ V}, V_{CE} = 0$	—	—	± 500	nA
Collector Cut-off Current		I_{CES}	$V_{CE} = 400 \text{ V}, V_{GE} = 0$	—	—	1.0	mA
Gate-Emitter Cut-off Voltage		$V_{GE}(\text{OFF})$	$I_C = 60 \text{ mA}, V_{CE} = 5 \text{ V}$	3.0	—	6.0	V
Collector-Emitter Saturation Voltage		$V_{CE}(\text{sat})$	$I_C = 60 \text{ A}, V_{GE} = 15 \text{ V}$	—	1.8	2.5	V
Input Capacitance		C_{ies}	$V_{CE} = 10 \text{ V}, V_{GE} = 0,$ $f = 1 \text{ MHz}$	—	3900	—	pF
Switching Time	Rise Time	t_r		—	0.33	—	μs
	Turn-on Time	t_{on}		—	0.43	—	
	Fall Time	t_f		—	0.30	0.40	
	Turn-off Time	t_{off}		—	0.54	—	
Forward Voltage		V_F	$I_F = 15 \text{ A}, V_{GE} = 0$	—	—	2.0	V
Reverse Recovery Time		t_{rr}	$I_F = 15 \text{ A}, V_{GE} = 0$ $di/dt = -100 \text{ A}/\mu\text{s}$	—	—	0.2	μs
Thermal Resistance		$R_{th(j-c)}$	IGBT	—	—	0.96	$^{\circ}\text{C}/\text{W}$
Thermal Resistance		$R_{th(j-c)}$	Diode	—	—	2.08	$^{\circ}\text{C}/\text{W}$





REVERSE BIAS SOA

 $R_{th}(t) - t_w$  $I_F - V_F$  $I_{rr}, t_{rr} - I_F$  $C_j - V_R$  $I_{rr}, t_{rr} - di/dt$ 