

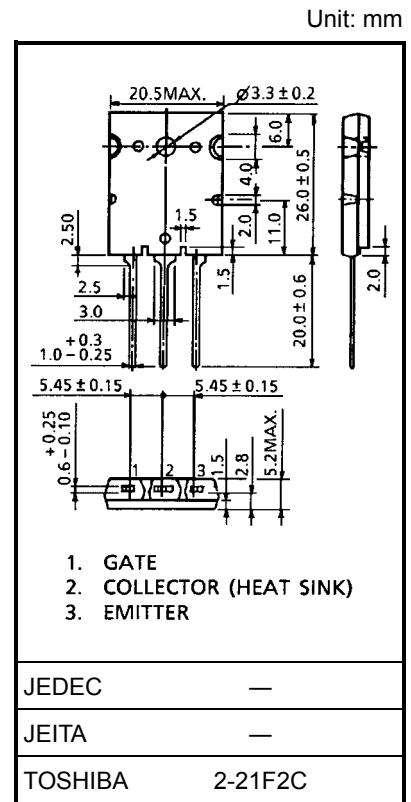
# GT50G321

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.) ( $I_C = 60 A$ )

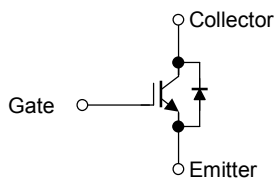
### Maximum Ratings ( $T_a = 25^\circ C$ )

Characteristics	Symbol	Rating	Unit
Collector-emitter voltage	$V_{CES}$	400	V
Gate-emitter voltage	$V_{GES}$	$\pm 25$	V
Collector current	DC	$I_C$	50
	1 ms	$I_{CP}$	100
Emitter-collector forward current	DC	$I_F$	15
	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 to 150	$^\circ C$

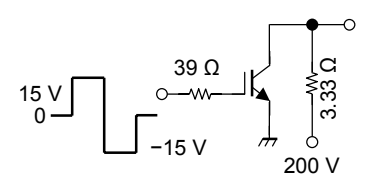


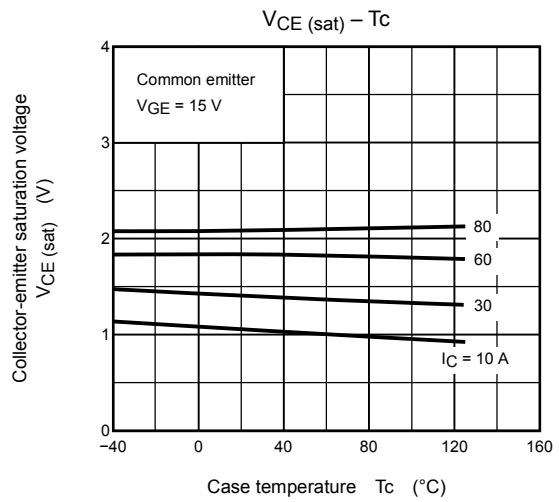
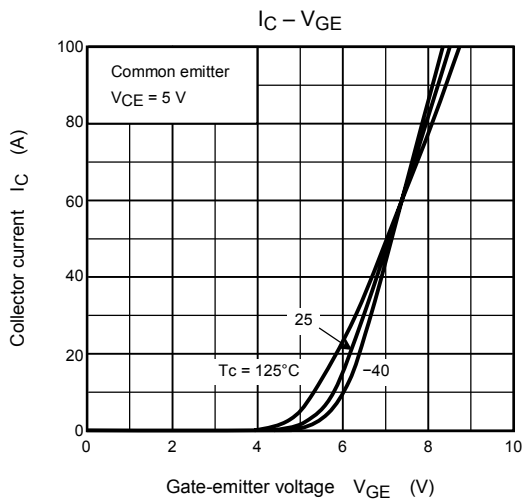
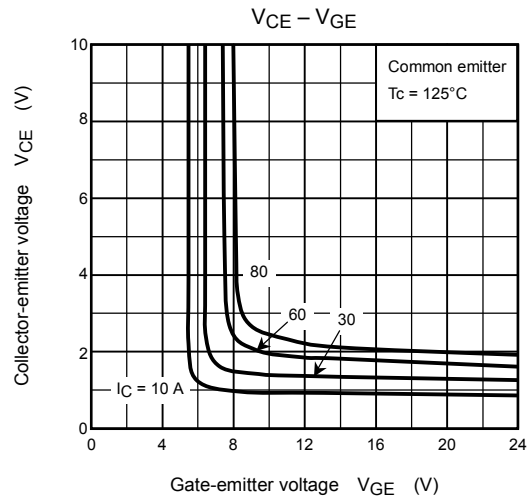
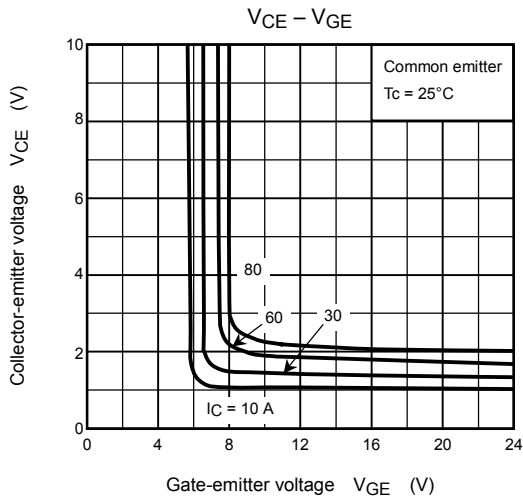
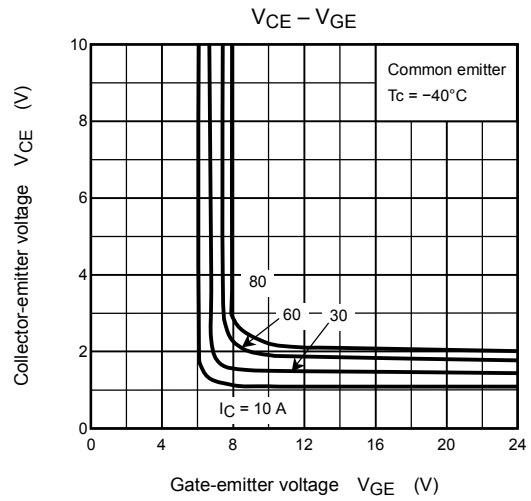
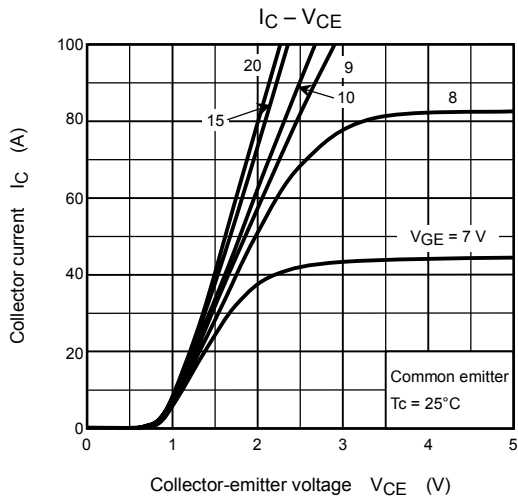
Weight: 9.75 g (typ.)

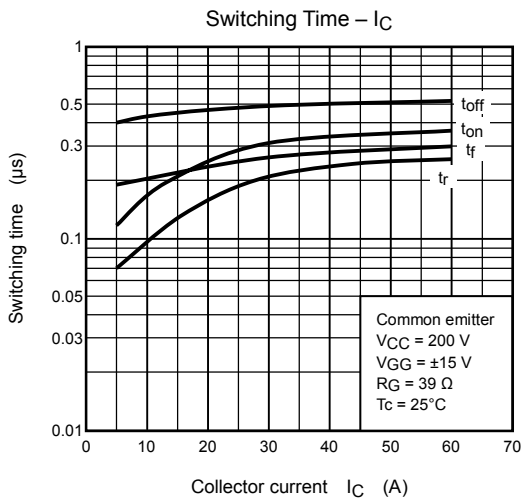
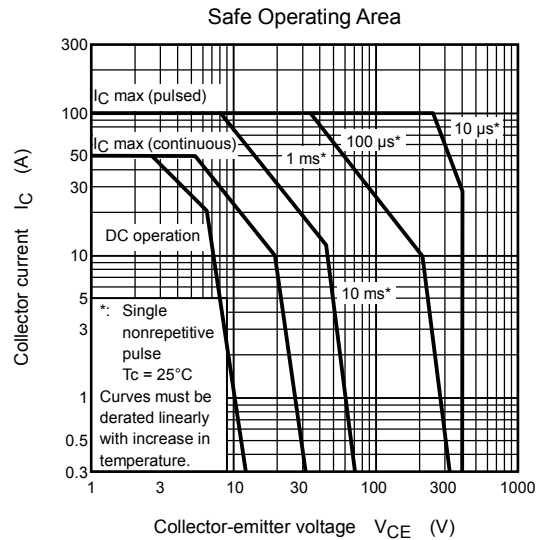
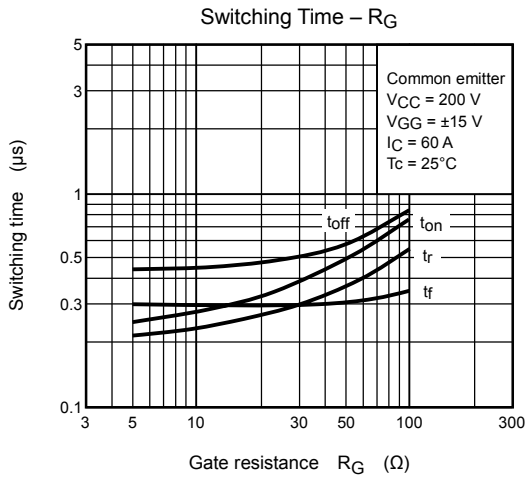
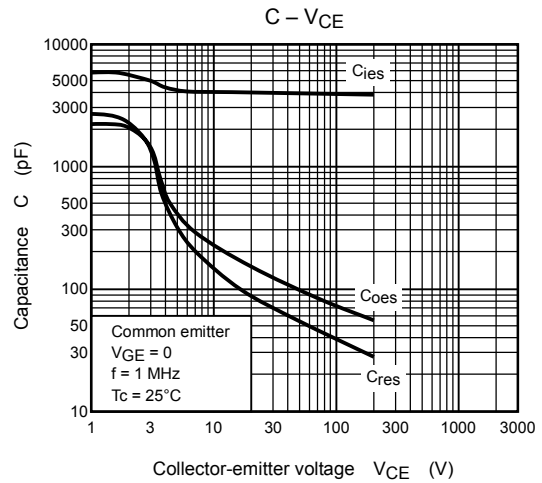
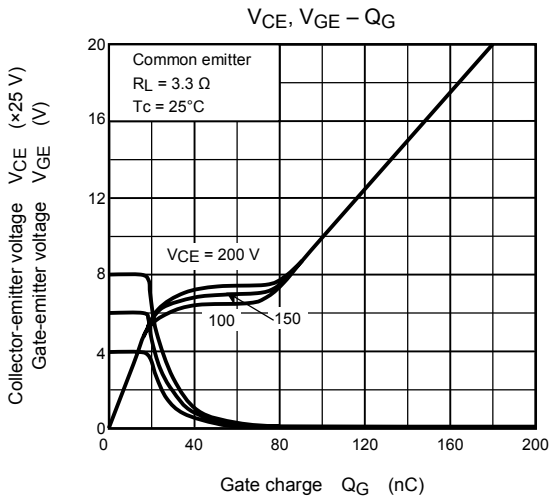
### Equivalent Circuit

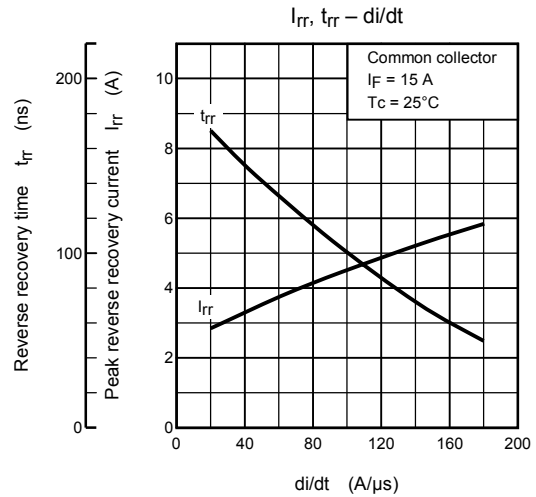
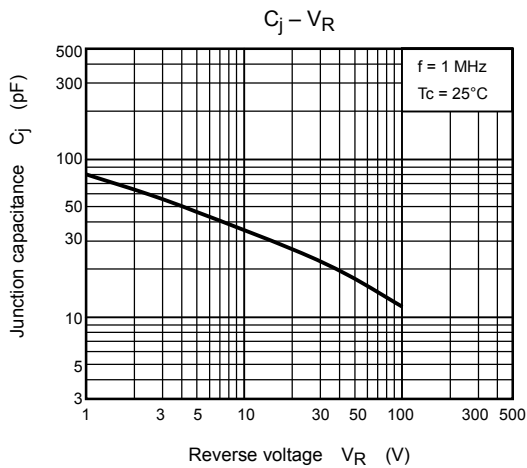
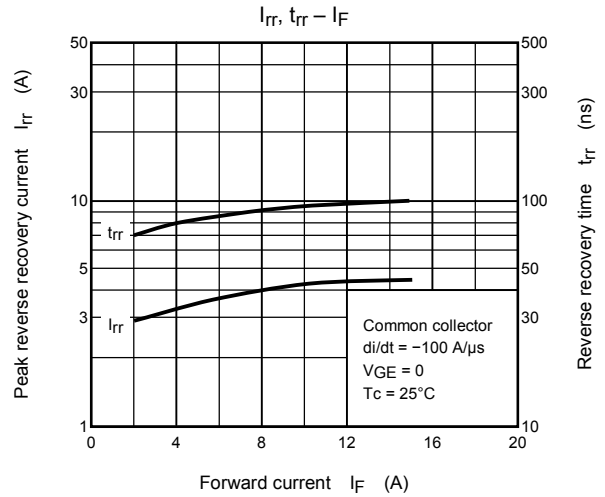
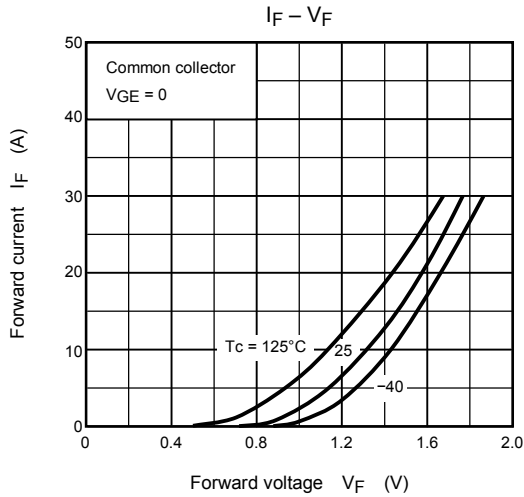
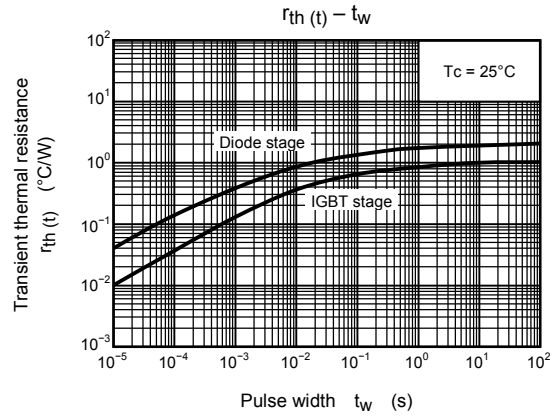
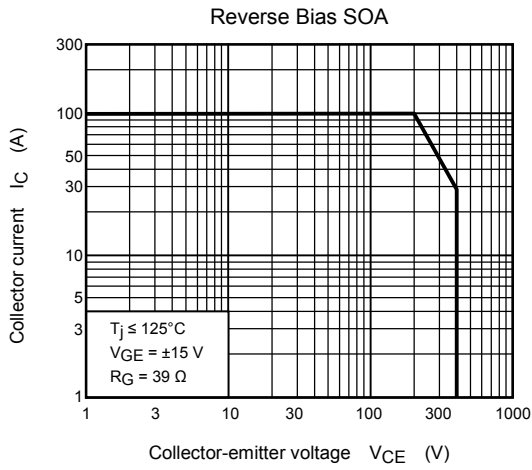


## Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		$I_{GES}$	$V_{GE} = \pm 25\text{ V}, V_{CE} = 0$	—	—	$\pm 500$	nA
Collector cut-off current		$I_{CES}$	$V_{CE} = 400\text{ V}, V_{GE} = 0$	—	—	1.0	mA
Gate-emitter cut-off voltage		$V_{GE(OFF)}$	$I_C = 60\text{ mA}, V_{CE} = 5\text{ V}$	3.0	—	6.0	V
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = 60\text{ A}, V_{GE} = 15\text{ V}$	—	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	—	$\mu\text{s}$
	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	$\mu\text{s}$
Thermal resistance (IGBT)		$R_{th(j-c)}$	—	—	—	0.96	$^{\circ}\text{C}/\text{W}$
Thermal resistance (FRD)		$R_{th(j-c)}$	—	—	—	2.08	$^{\circ}\text{C}/\text{W}$







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