

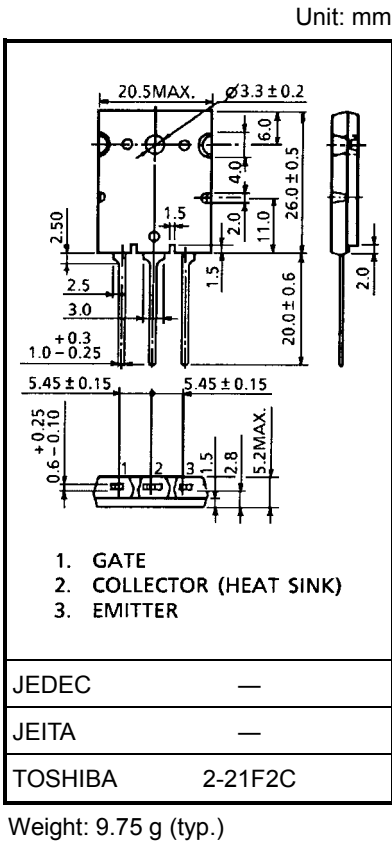
GT50G321

The 4th Generation
Current Resonance Inverter Switching Applications

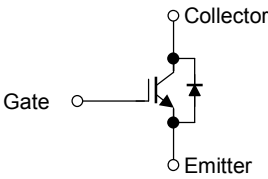
- FRD included between emitter and collector
- Enhancement-mode
- High speed: $t_f = 0.30 \mu s$ (typ.) ($I_C = 60 A$)
- Low saturation voltage: $V_{CE(sat)} = 1.8 V$ (typ.) ($I_C = 60 A$)

Maximum Ratings (Ta = 25°C)

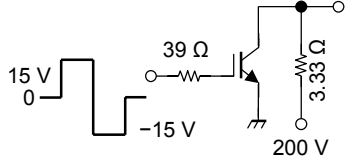
Characteristics		Symbol	Rating	Unit
Collector-emitter voltage		V_{CES}	400	V
Gate-emitter voltage		V_{GES}	± 25	V
Collector current	DC	I_C	50	A
	1 ms	I_{CP}	100	
Emitter-collector foward current	DC	I_F	15	A
	1 ms	I_{FP}	30	
Collector power dissipation (Tc = 25°C)		P_C	130	W
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	-55 to 150	°C

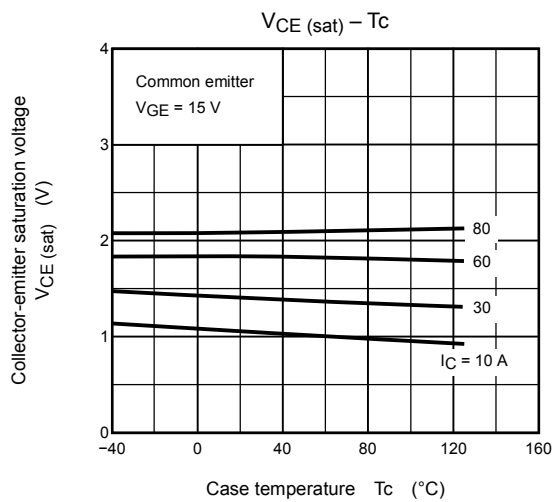
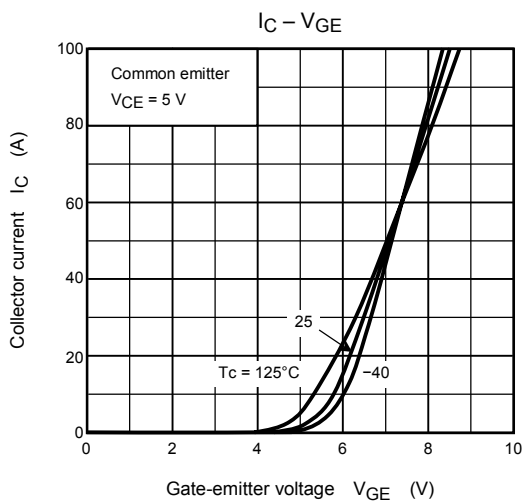
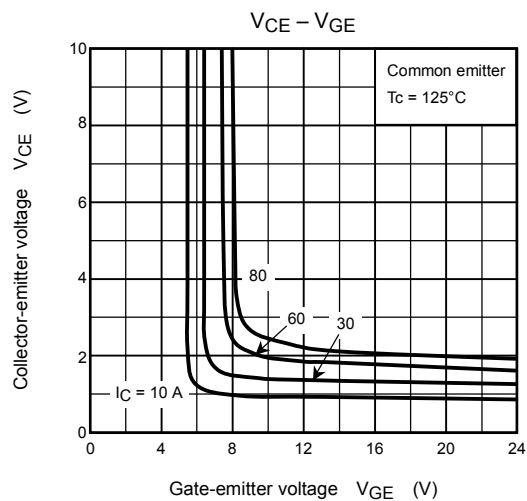
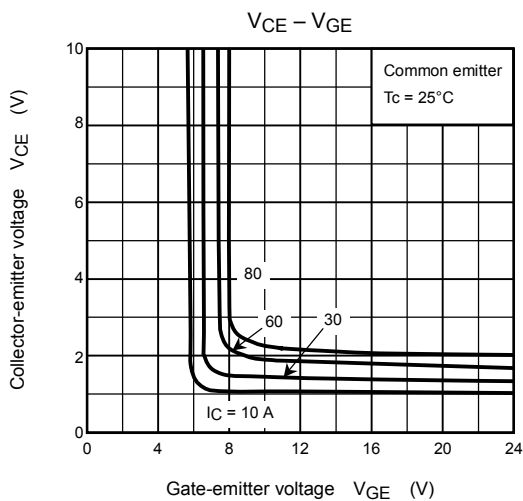
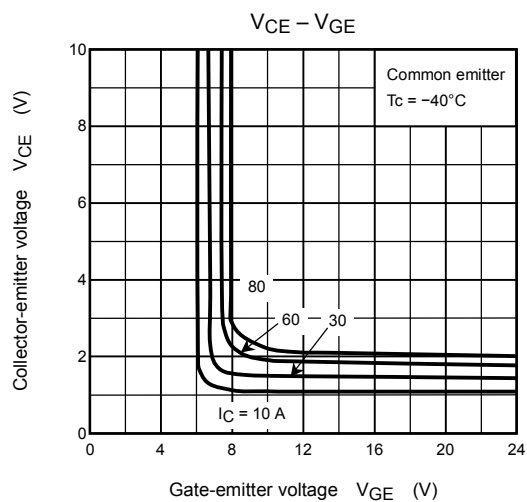
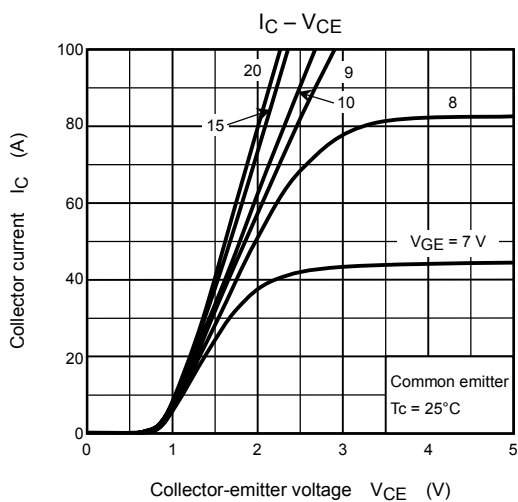


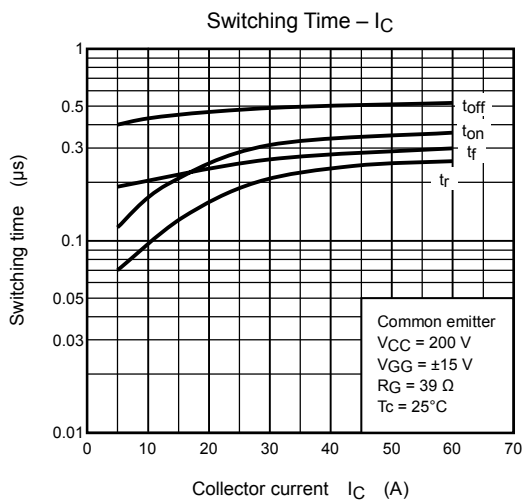
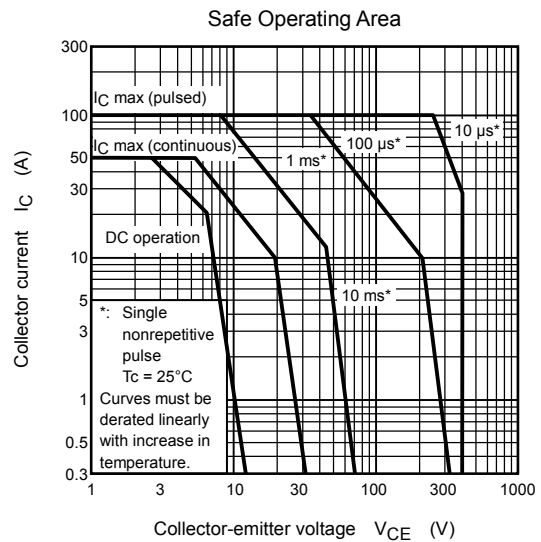
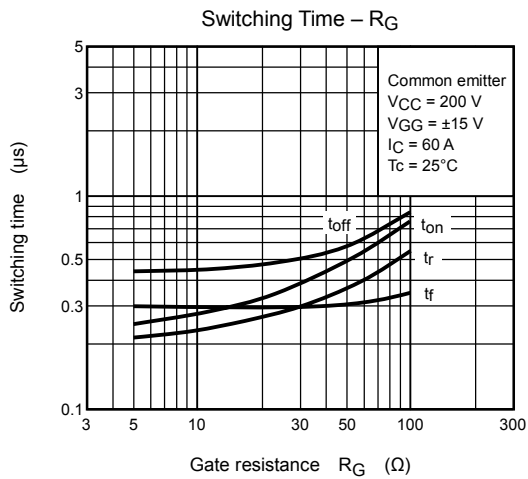
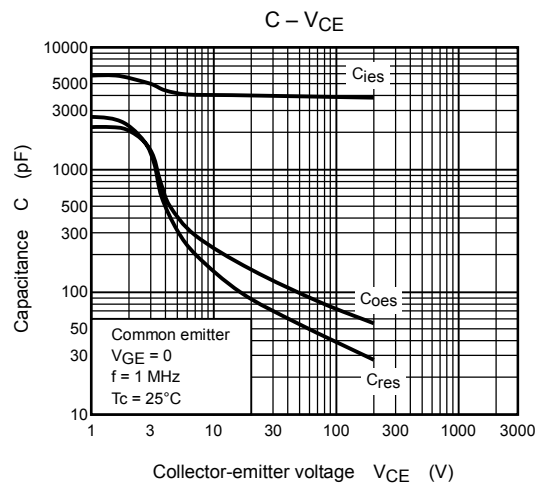
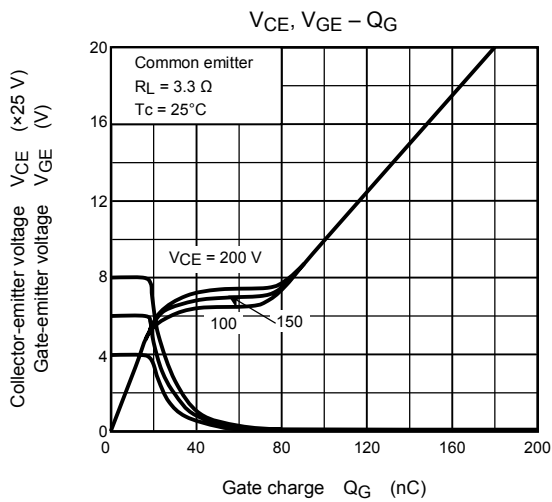
Equivalent Circuit

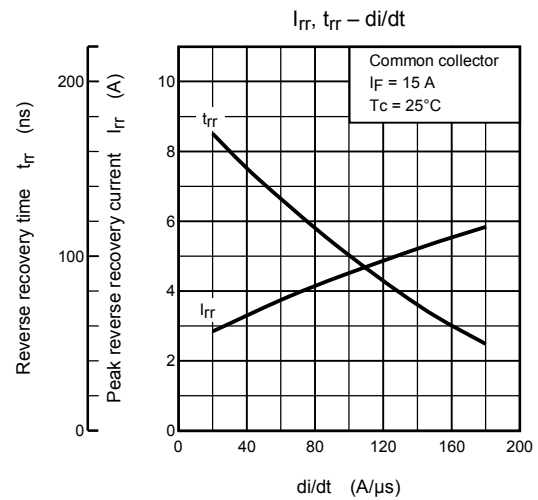
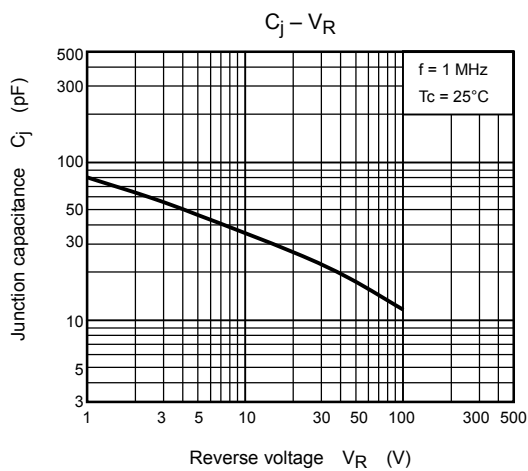
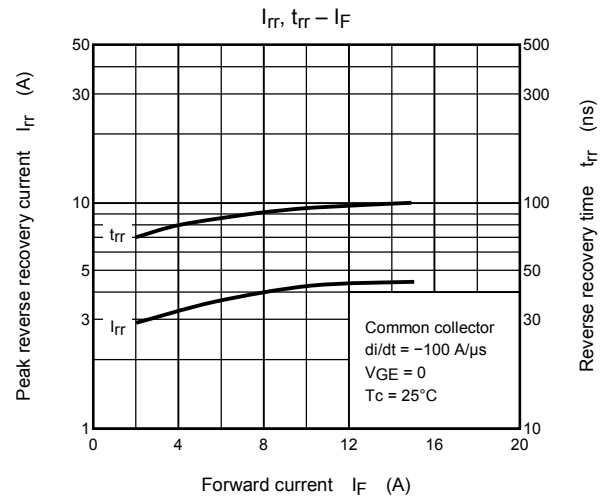
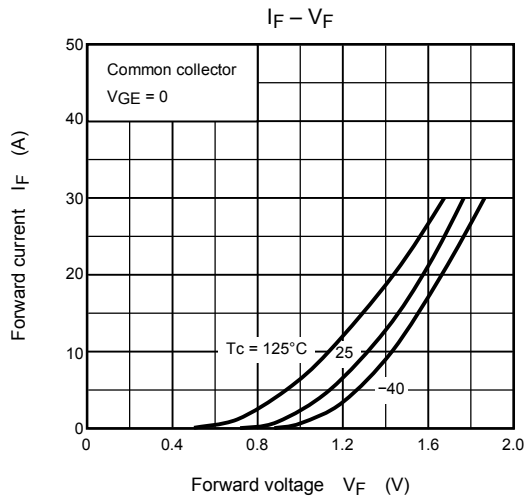
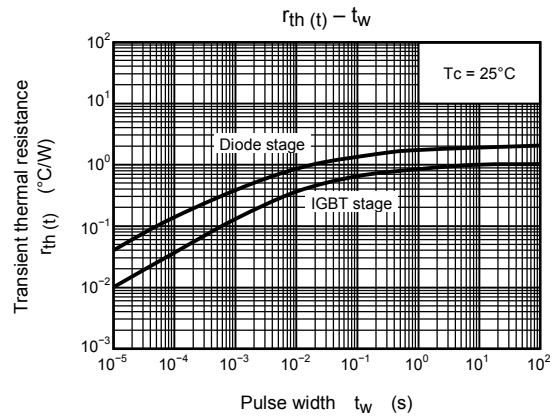
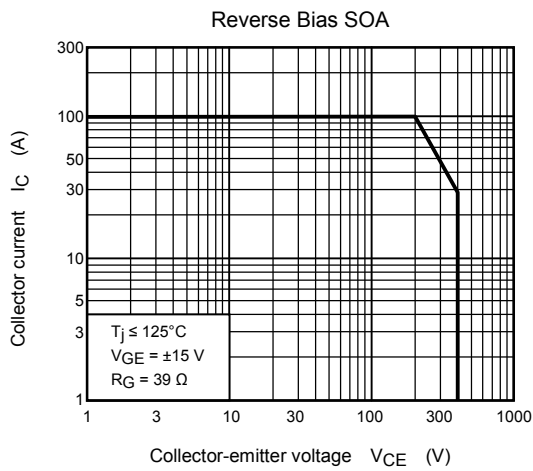


Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		I_{GES}	$V_{GE} = \pm 25 \text{ V}, V_{CE} = 0$	—	—	± 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 (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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