

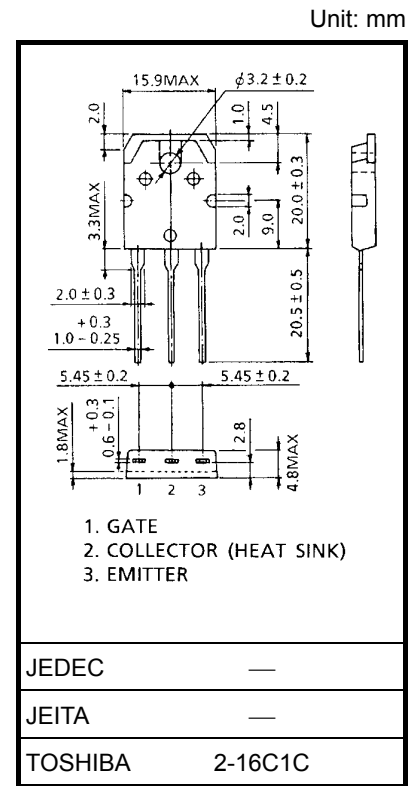
GT40J321

Current Resonance Inverter Switching Application

- FRD included between emitter and collector
- Enhancement mode type
- High-speed IGBT: $t_f = 0.11 \mu s$ (typ.) ($I_C = 40 A$)
- Low saturation voltage: $V_{CE(sat)} = 2.0 V$ (typ.) ($I_C = 40 A$)

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

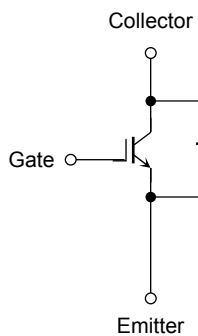
Characteristics		Symbol	Rating	Unit
Collector-emitter voltage		V_{CES}	600	V
Gate-emitter voltage		V_{GES}	± 25	V
Collector current	DC	I_C	40	A
	1ms	I_{CP}	100	
Diode forward current	DC	I_F	30	A
	1ms	I_{FP}	60	
Collector power dissipation ($T_c = 25^\circ C$)		P_C	120	W
Junction temperature		T_j	150	$^\circ C$
Storage temperature		T_{stg}	-55 to 150	$^\circ C$



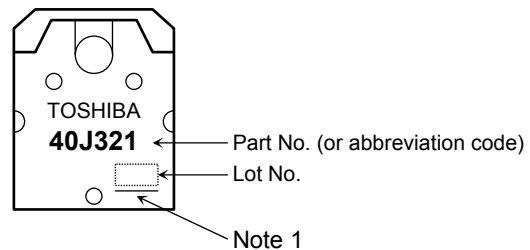
Weight: 4.6 g (typ.)

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



Start of commercial production
2008-09

Electrical Characteristics (Ta = 25°C)

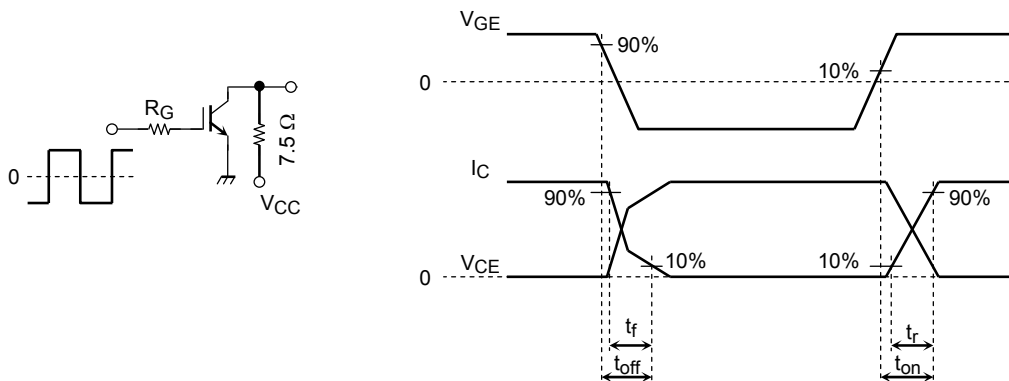
Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Gate leakage current		I_{GES}	$V_{GE} = \pm 25\text{ V}, V_{CE} = 0$	—	—	± 500	nA
Collector cut-off current		I_{CES}	$V_{CE} = 600\text{ V}, V_{GE} = 0$	—	—	1.0	mA
Gate-emitter cut-off voltage		$V_{GE(OFF)}$	$I_C = 40\text{ mA}, V_{CE} = 5\text{ V}$	3.0	—	6.0	V
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = 40\text{ A}, V_{GE} = 15\text{ V}$	—	2.0	2.9	V
Input capacitance		C_{ies}	$V_{CE} = 10\text{ V}, V_{GE} = 0, f = 1\text{ MHz}$	—	2500	—	pF
Switching time	Rise time	t_r	Resistive Load $V_{CC} = 300\text{ V}, I_C = 40\text{ A}$ $V_{GG} = \pm 15\text{ V}, R_G = 39\ \Omega$ (Note 2)	—	0.20	—	μs
	Turn-on time	t_{on}		—	0.30	—	
	Fall time	t_f		—	0.11	0.21	
	Turn-off time	t_{off}		—	0.40	—	
Diode forward voltage		V_F	$I_F = 30\text{ A}, V_{GE} = 0$	—	1.4	2.0	V
Reverse recovery time		t_{rr}	$I_F = 30\text{ A}, V_{GE} = 0, di/dt = -100\text{ A}/\mu\text{s}$	—	—	0.2	μs
Thermal Resistance (IGBT)		$R_{th(j-c)}$	—	—	—	1.04	$^{\circ}\text{C}/\text{W}$
Thermal Resistance (Diode)		$R_{th(j-c)}$	—	—	—	2.0	$^{\circ}\text{C}/\text{W}$

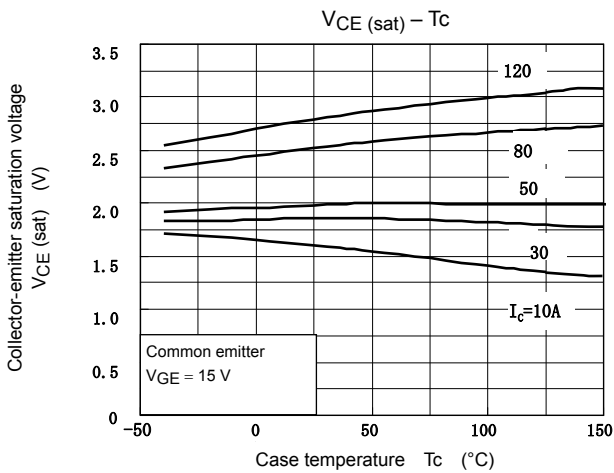
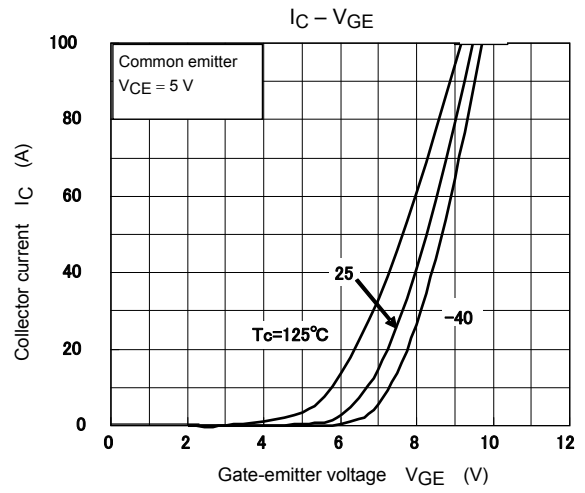
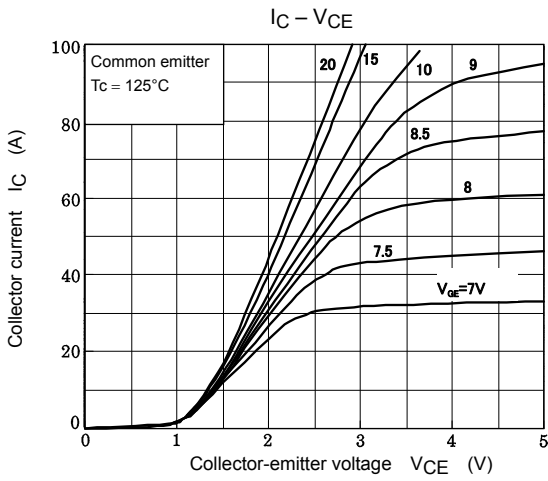
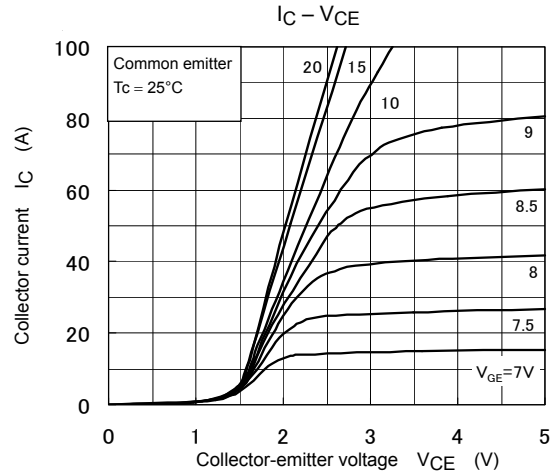
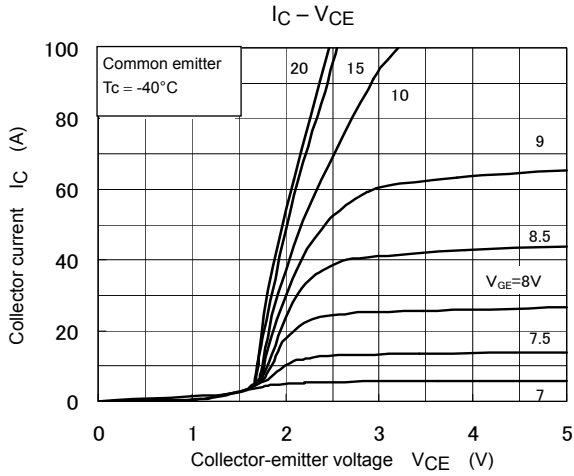
Note 1: A line under a Lot No. identifies the indication of product Labels
[[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

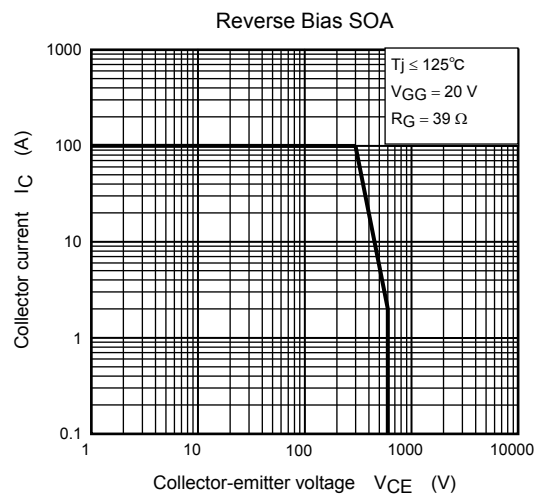
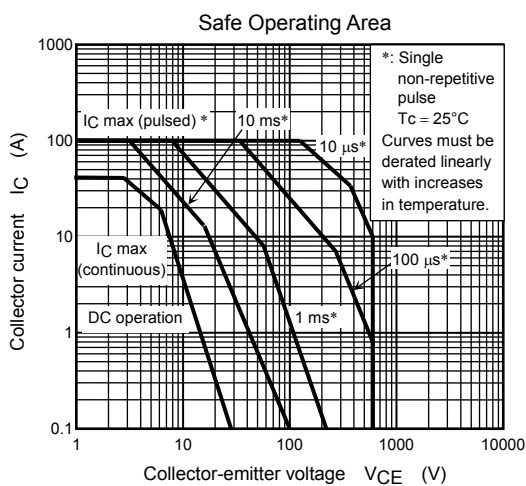
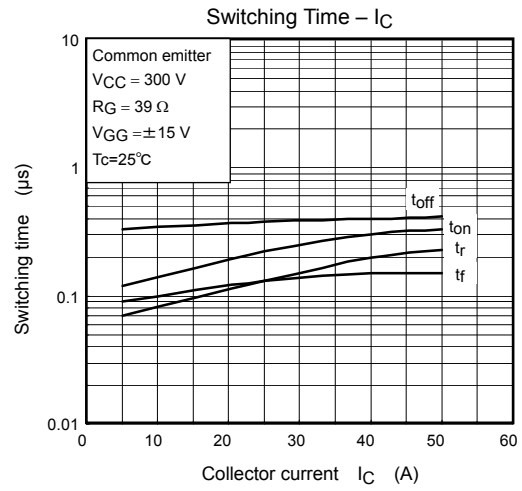
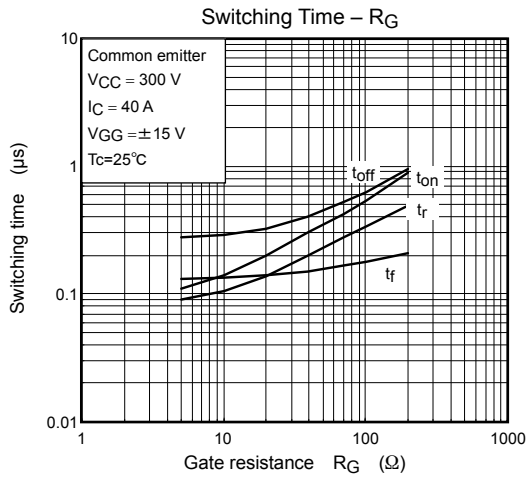
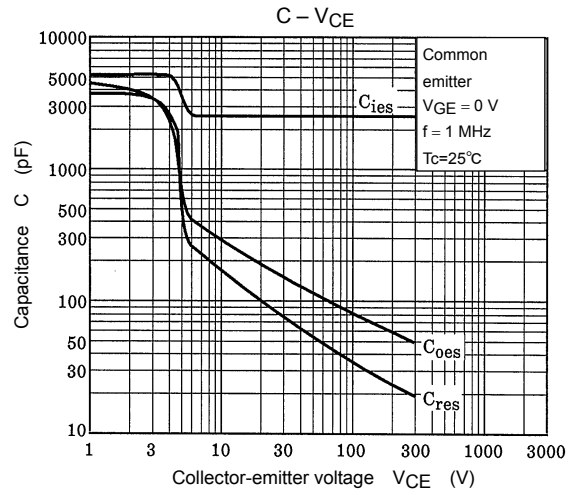
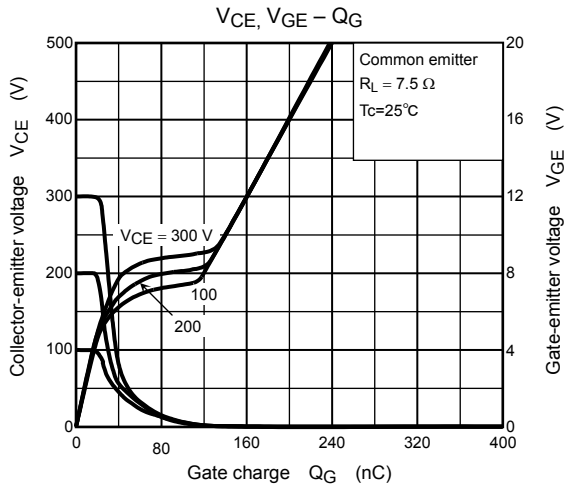
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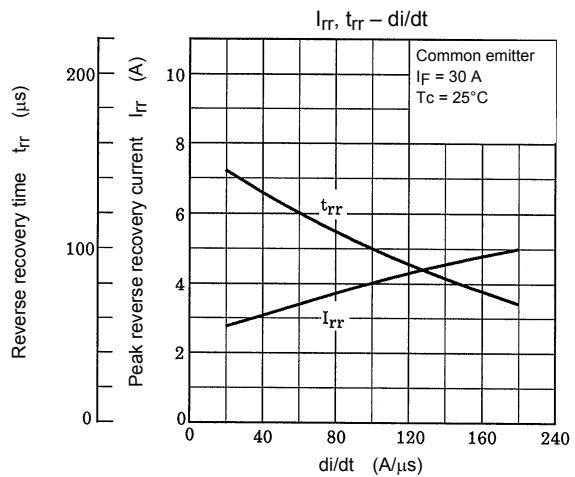
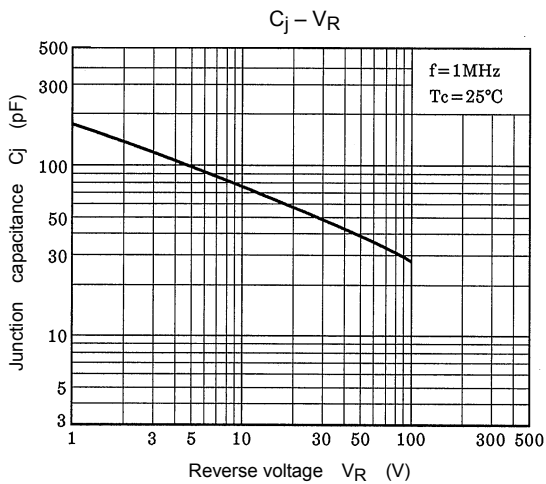
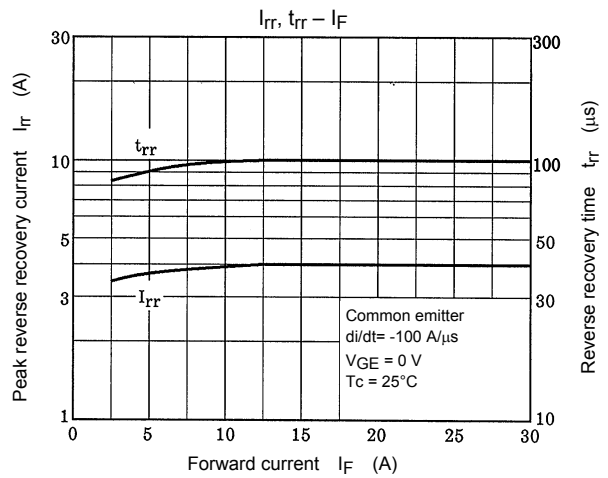
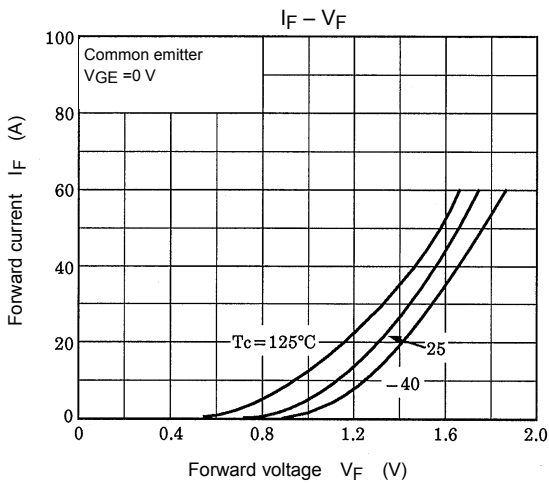
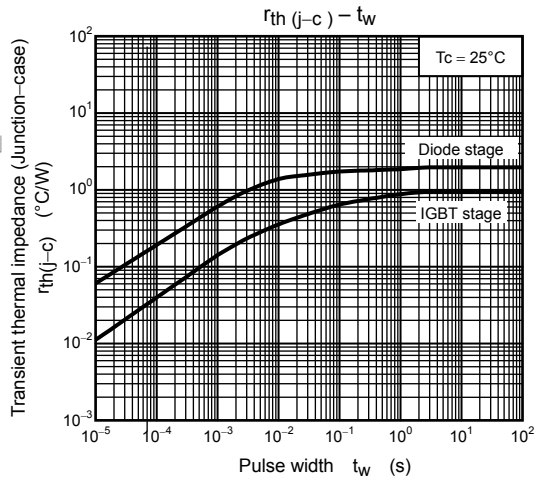
The RoHS is Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

Note 2: Switching time measurement circuit and input/output waveforms









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