

TOSHIBA Transistor Silicon NPN Triple Diffused Type

2SD1411A

High-Current Switching Applications

Power Amplifier Applications

Unit: mm

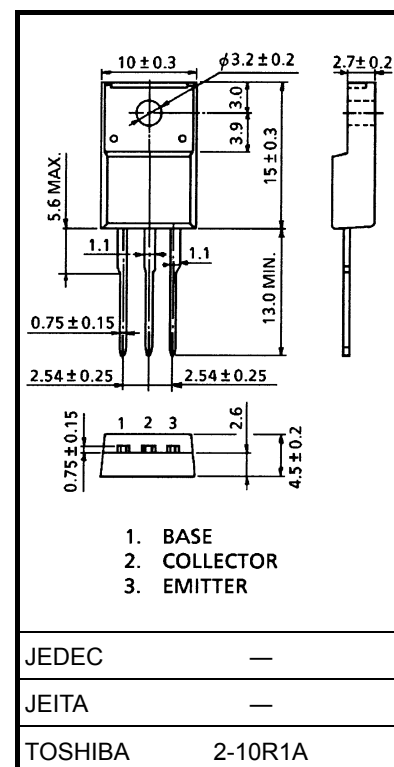
- Low saturation voltage: $V_{CE(sat)} = 0.5 \text{ V (max)}$ at $I_C = 4 \text{ A}$
- Complementary to 2SB1018A

Absolute Maximum Ratings ($T_c = 25^\circ\text{C}$)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	100	V
Collector-emitter voltage	V_{CEO}	80	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	I_C	7	A
Base current	I_B	1	A
Collector power dissipation	$T_a = 25^\circ\text{C}$	P_C 2.0	W
	$T_c = 25^\circ\text{C}$	30	
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55 to 150	$^\circ\text{C}$

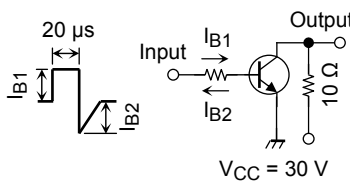
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) 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).



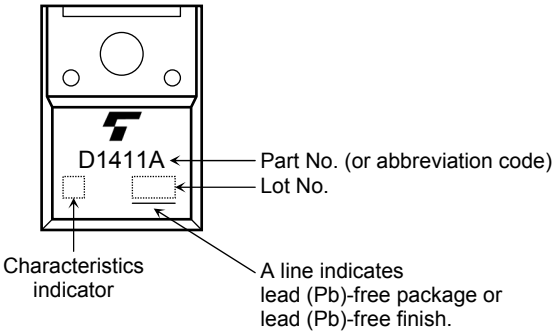
Weight: 1.7 g (typ.)

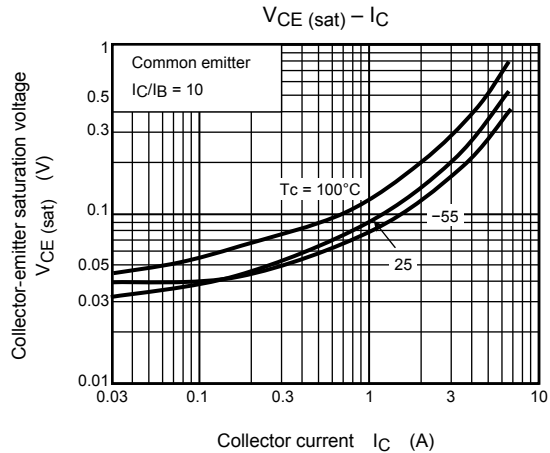
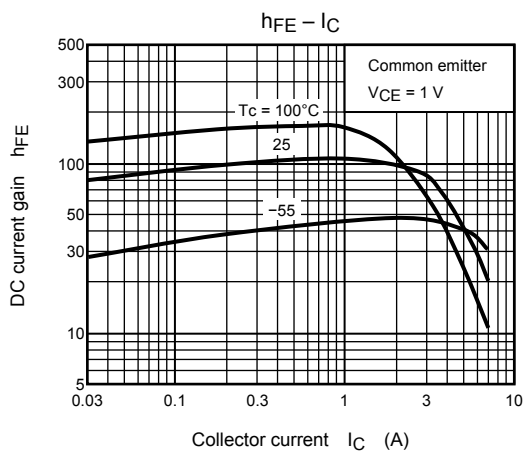
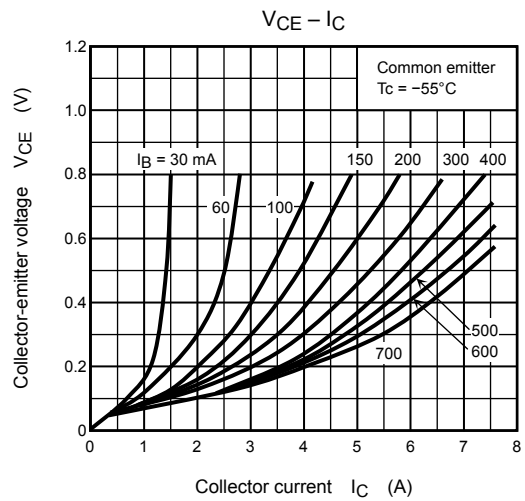
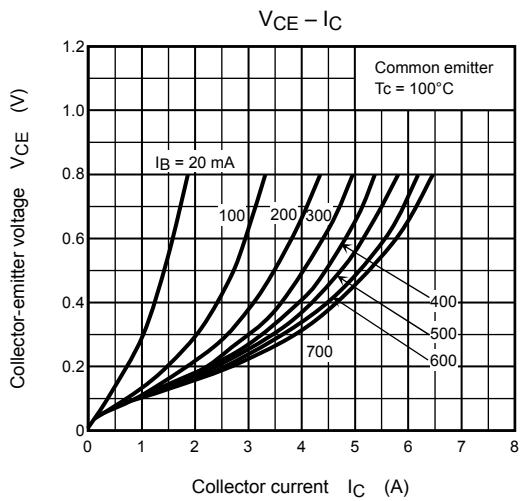
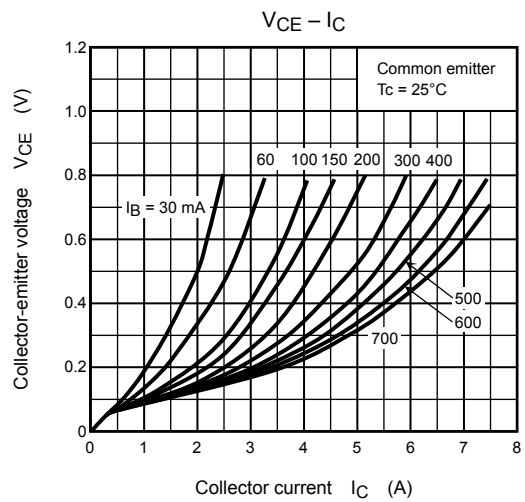
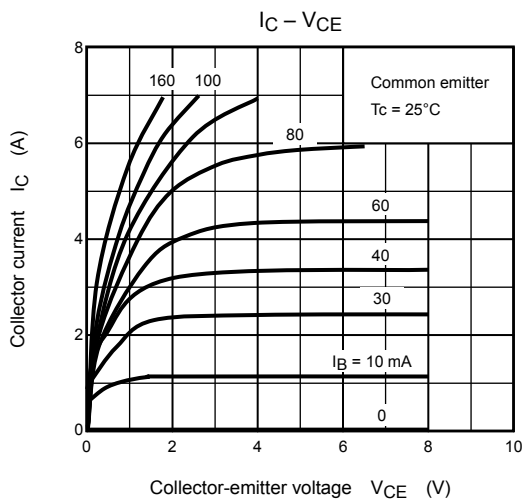
Electrical Characteristics (Tc = 25°C)

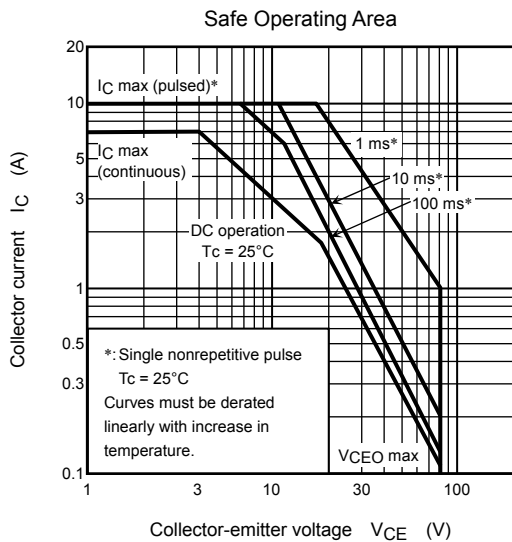
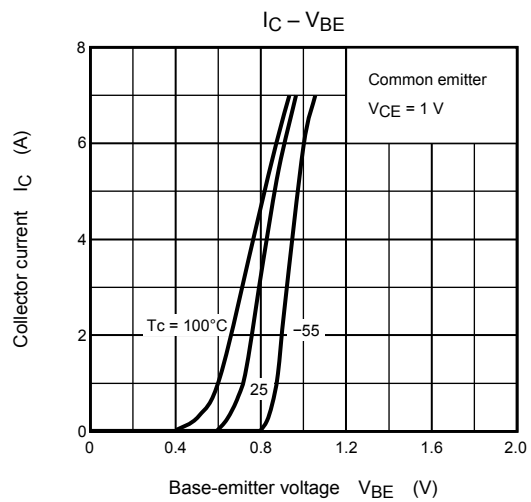
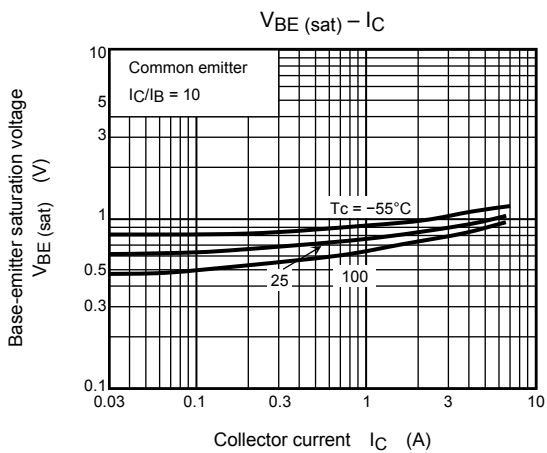
Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		ICBO	V _{CB} = 100 V, I _E = 0	—	—	5	μA
Emitter cut-off current		IEBO	V _{EB} = 5 V, I _C = 0	—	—	5	μA
Collector-emitter breakdown voltage		V (BR) CEO	I _C = 50 mA, I _B = 0	80	—	—	V
DC current gain	h _{FE} (1) (Note)		V _{CE} = 1 V, I _C = 1 A	70	—	240	
	h _{FE} (2)		V _{CE} = 1 V, I _C = 4 A	30	—	—	
Collector-emitter saturation voltage		V _{CE} (sat)	I _C = 4 A, I _B = 0.4 A	—	0.25	0.5	V
Base-emitter saturation voltage		V _{BE} (sat)	I _C = 4 A, I _B = 0.4 A	—	0.9	1.4	V
Transition frequency		f _T	V _{CE} = 4 V, I _C = 1 A	—	10	—	MHz
Collector output capacitance		C _{ob}	V _{CB} = 10 V, I _E = 0, f = 1 MHz	—	200	—	pF
Switching time	Turn-on time	t _{on}	 I _{B1} = -I _{B2} = 0.3 A, duty cycle ≤ 1%	—	0.4	—	μs
	Storage time	t _{stg}		—	2.5	—	
	Fall time	t _f		—	0.5	—	

Note: h_{FE} (1) classification O: 70 to 140, Y: 120 to 240

Marking







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20070701-EN

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