

TOSHIBA Transistor Silicon NPN Triple Diffused Type

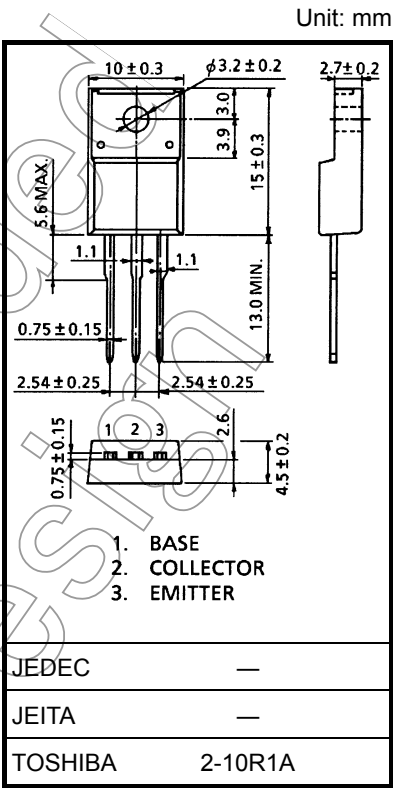
2SD1411A

High-Current Switching Applications
Power Amplifier Applications

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

Absolute Maximum Ratings (Ta = 25°C)

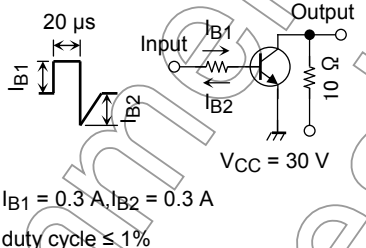
Characteristics		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	100	V
Collector-emitter voltage		V_{CEO}	80	V
Emitter-base voltage		V_{EBO}	5	V
Collector current		I_C	4	A
Base current		I_B	1	A
Collector power dissipation	Ta = 25°C	P_C	2.0	W
	Tc = 25°C		30	
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	-55 to 150	°C



Note1: 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).

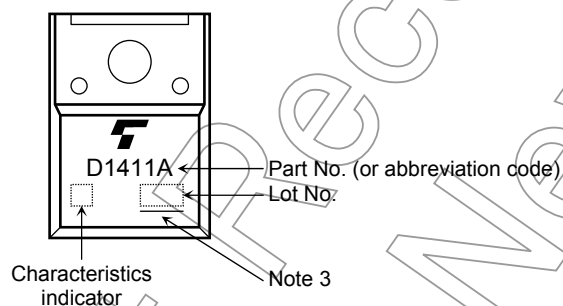
Weight: 1.7 g (typ.)

Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	$V_{CB} = 100\text{ V}, I_E = 0$	—	—	5	μA
Emitter cut-off current		I_{EBO}	$V_{EB} = 5\text{ V}, I_C = 0$	—	—	5	μA
Collector-emitter breakdown voltage		$V_{(BR)CEO}$	$I_C = 50\text{ mA}, I_B = 0$	80	—	—	V
DC current gain	$h_{FE(1)}$ (Note 2)		$V_{CE} = 1\text{ V}, I_C = 1\text{ A}$	70	—	240	
	$h_{FE(2)}$		$V_{CE} = 1\text{ V}, I_C = 4\text{ A}$	30	—	—	
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = 4\text{ A}, I_B = 0.4\text{ A}$	—	0.25	0.5	V
Base-emitter saturation voltage		$V_{BE(sat)}$	$I_C = 4\text{ A}, I_B = 0.4\text{ A}$	—	0.9	1.4	V
Transition frequency		f_T	$V_{CE} = 4\text{ V}, I_C = 1\text{ A}$	—	10	—	MHz
Collector output capacitance		C_{ob}	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	200	—	pF
Switching time	Turn-on time	t_{on}		—	0.4	—	μs
	Storage time	t_{stg}		—	2.5	—	
	Fall time	t_f		—	0.5	—	

Note 2: $h_{FE(1)}$ classification O: 70 to 140, Y: 120 to 240

Marking

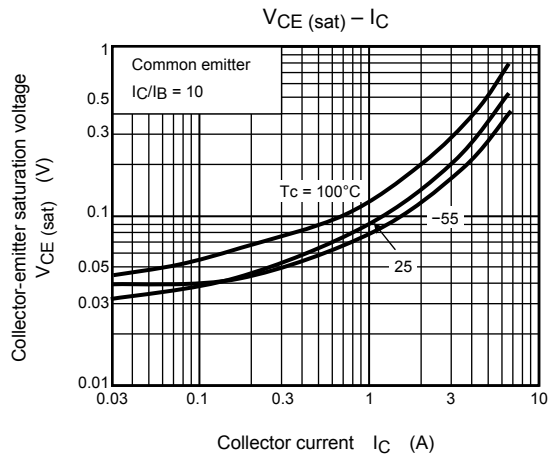
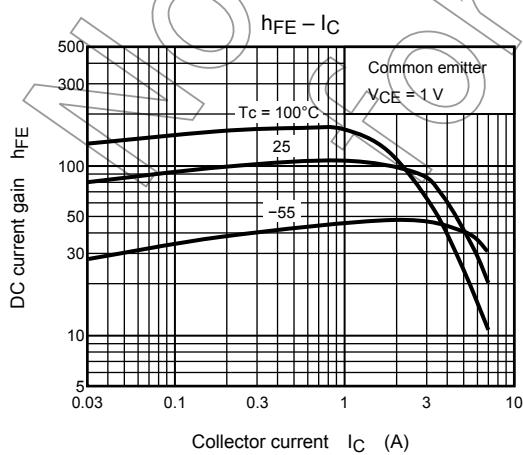
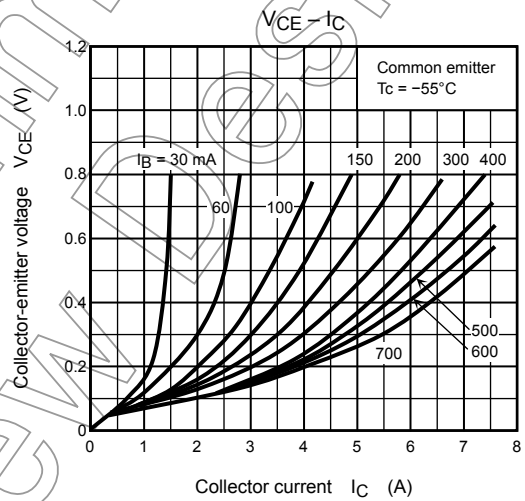
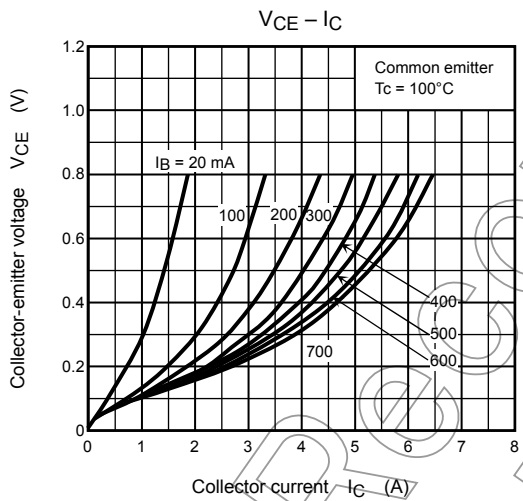
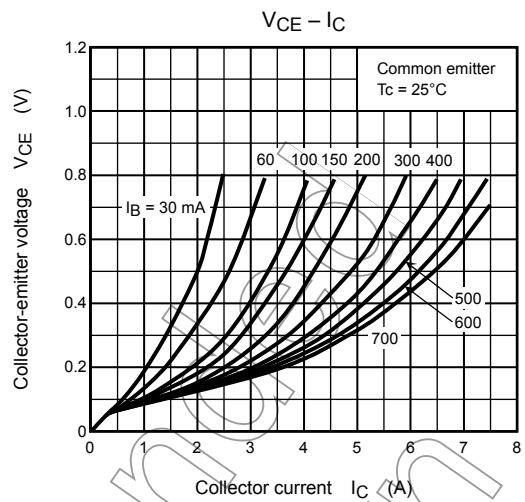
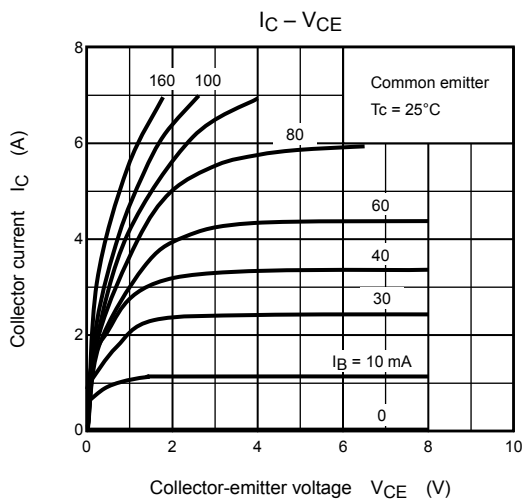


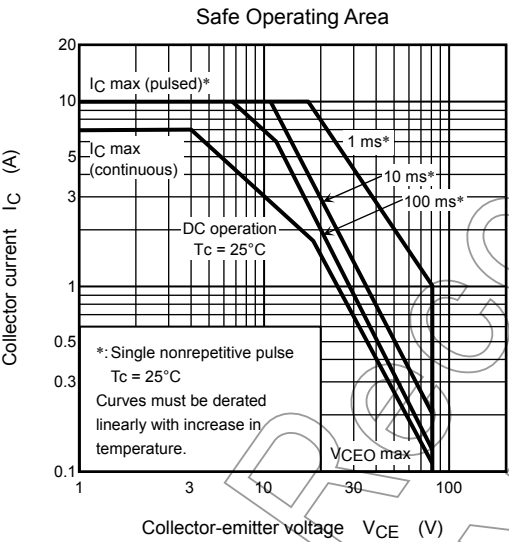
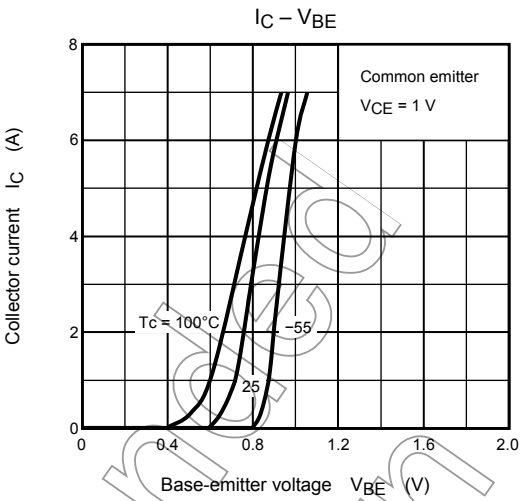
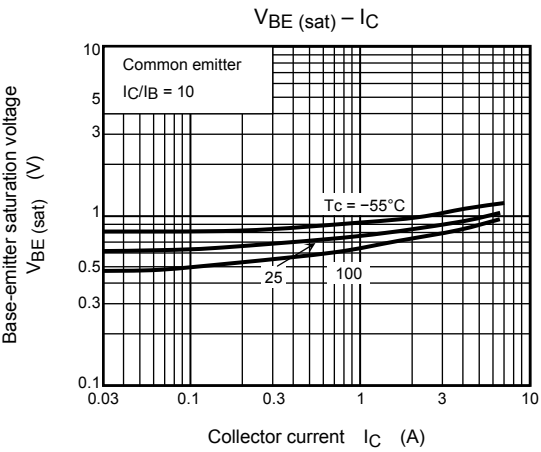
Note 3: A line under a Lot No. identifies the indication of product Labels.

Not underlined: $[[Pb]]/INCLUDES > MCV$

Underlined: $[[G]]/RoHS COMPATIBLE$ or $[[G]]/RoHS [[Pb]]$

Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product. The RoHS is the Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.





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