

TOSHIBA Transistor Silicon PNP Triple Diffused Type

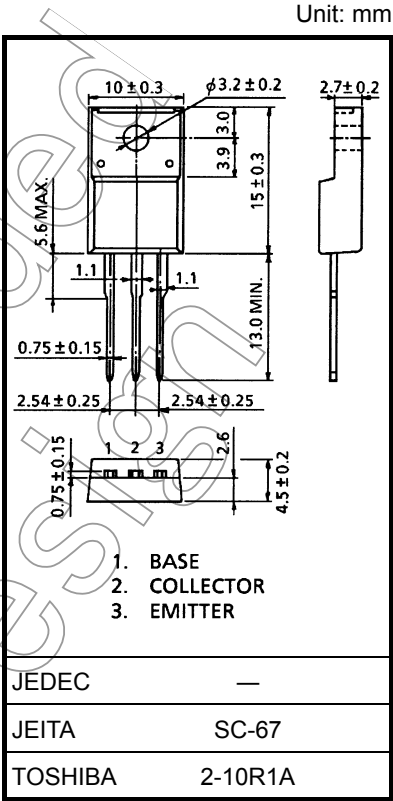
2SB1411

Switching Applications
Hammer Drive, Pulse Motor Drive Applications

- High DC current gain: $h_{FE} = 1500$ (min) ($V_{CE} = -3$ V, $I_C = -1$ A)
- Low saturation voltage: $V_{CE(sat)} = -1.5$ V (max) ($I_C = -1$ A)

Absolute Maximum Ratings (Tc = 25°C)

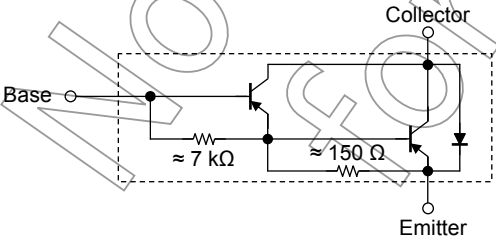
Characteristics		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	-100	V
Collector-emitter voltage		V_{CEO}	-100	V
Emitter-base voltage		V_{EBO}	-7	V
Collector current	DC	I_C	-2	A
	Peak	I_{CP}	-3	
Base current		I_B	-0.5	A
Collector power dissipation	Ta = 25°C	P_C	2.0	W
	Tc = 25°C		20	
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	-55 to 150	°C



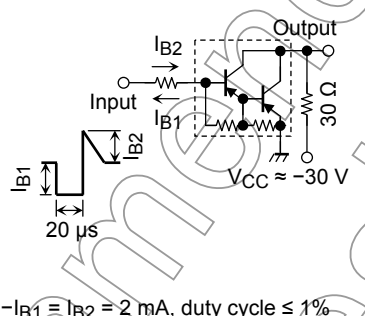
Weight: 1.7 g (typ.)

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).

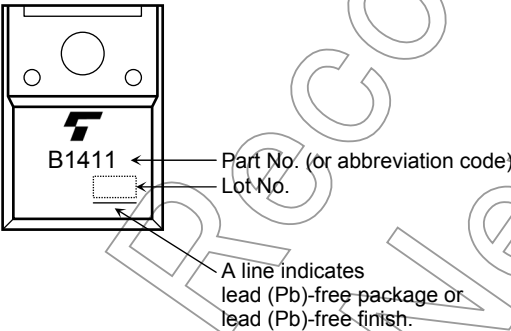
Equivalent Circuit

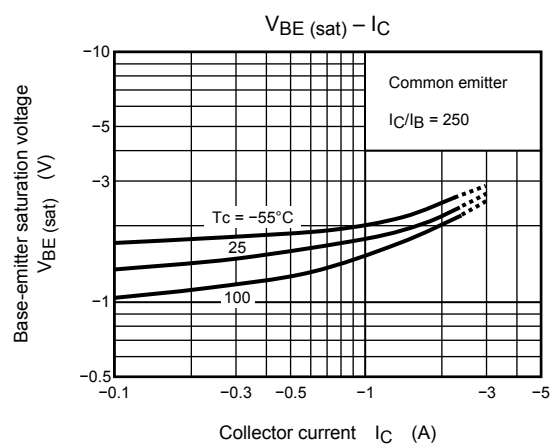
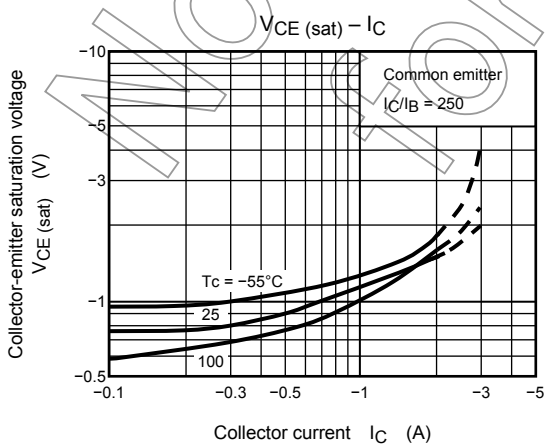
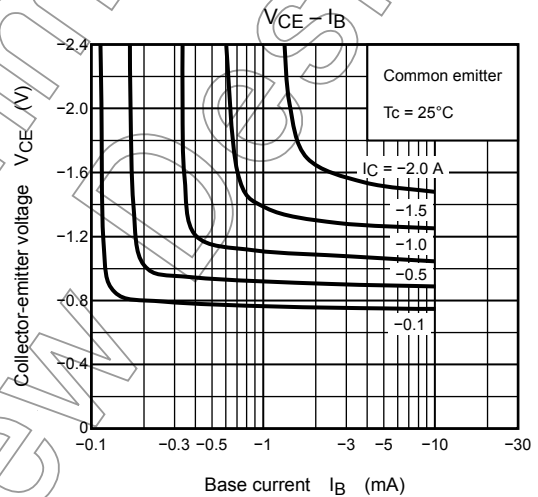
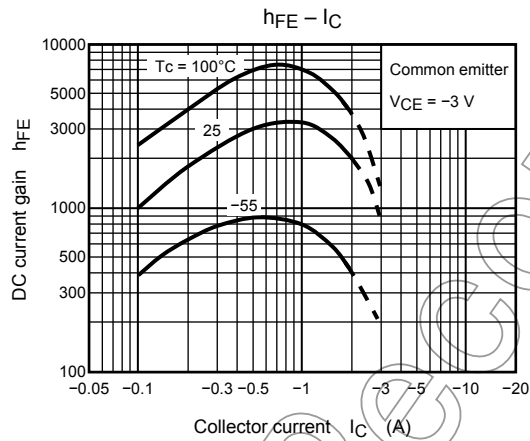
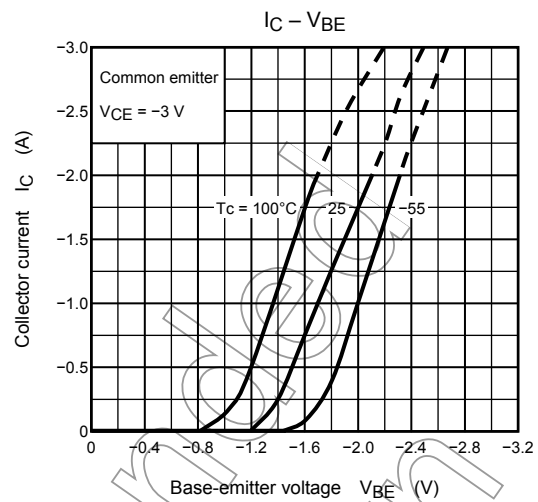
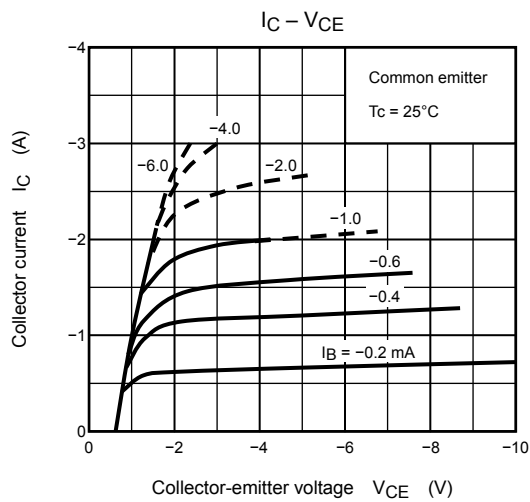


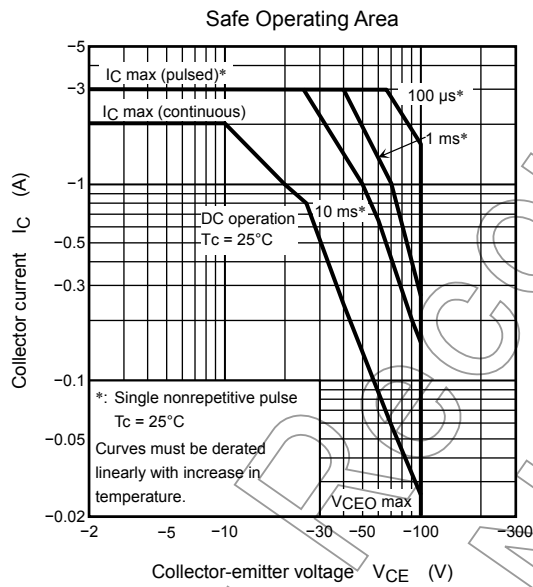
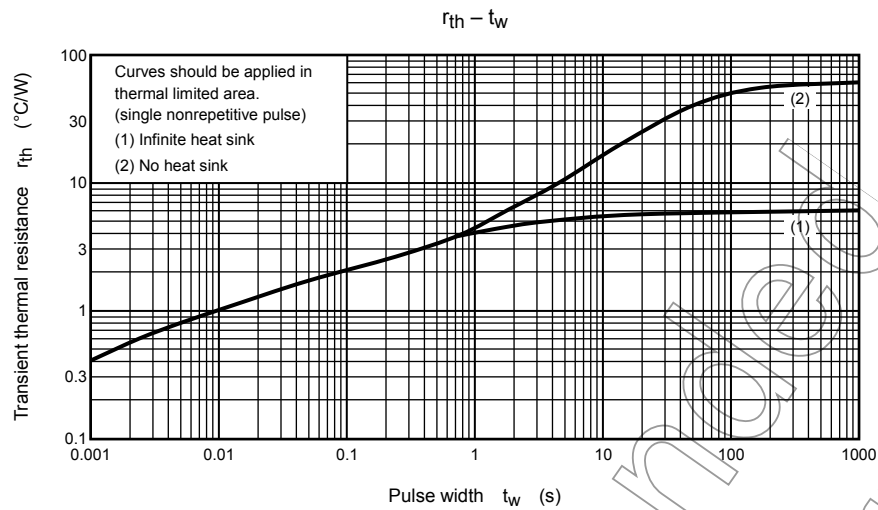
Electrical Characteristics (Tc = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		ICBO	V _{CB} = -100 V, I _E = 0	—	—	-100	μA
Emitter cut-off current		IEBO	V _{EB} = -6 V, I _C = 0	—	—	-2.5	mA
Collector-emitter breakdown voltage		V (BR) CEO	I _C = -30 mA, I _B = 0	-100	—	—	V
DC current gain		h _{FE} (1)	V _{CE} = -3 V, I _C = -1 A	1500	—	15000	
		h _{FE} (2)	V _{CE} = -3 V, I _C = -2 A	1000	—	—	
Collector-emitter saturation voltage		V _{CE} (sat) (1)	I _C = -1 A, I _B = -2 mA	—	—	-1.5	V
		V _{CE} (sat) (2)	I _C = -2 A, I _B = -8 mA	—	—	-2.5	
Base-emitter saturation voltage		V _{BE} (sat)	I _C = -1 A, I _B = -2 mA	—	—	-2.2	V
Switching time	Turn-on time	t _{on}	 -I _{B1} = I _{B2} = 2 mA, duty cycle ≤ 1%	—	1.0	—	μs
	Storage time	t _{stg}		—	3.0	—	
	Fall time	t _f		—	2.0	—	

Marking







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20070701-EN

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