

TOSHIBA Transistor Silicon NPN Triple Diffused Type

2SD2012

Audio Frequency Power Amplifier Applications

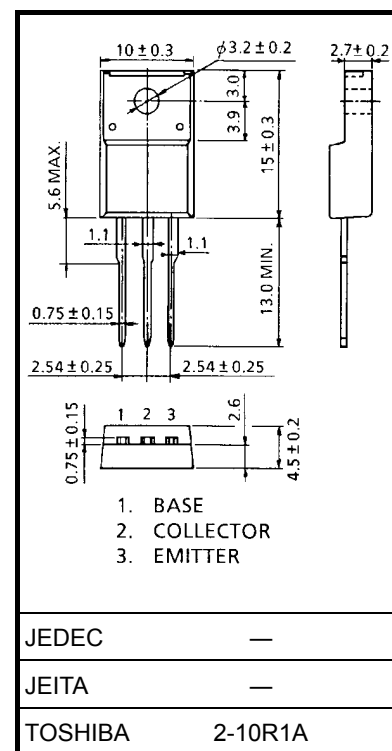
Unit: mm

- Low saturation voltage: $V_{CE(sat)} = 0.4 \text{ V (typ.)}$ ($I_C = 2 \text{ A} / I_B = 0.2 \text{ A}$)
- High power dissipation: $P_C = 25 \text{ W}$ ($T_c = 25^\circ\text{C}$)

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

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	60	V
Collector-emitter voltage	V_{CEO}	60	V
Emitter-base voltage	V_{EBO}	7	V
Collector current	I_C	3	A
Base current	I_B	0.5	A
Collector power dissipation	$T_a = 25^\circ\text{C}$	P_C 2.0	W
	$T_c = 25^\circ\text{C}$	25	
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55 to 150	$^\circ\text{C}$

Note 1: 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).

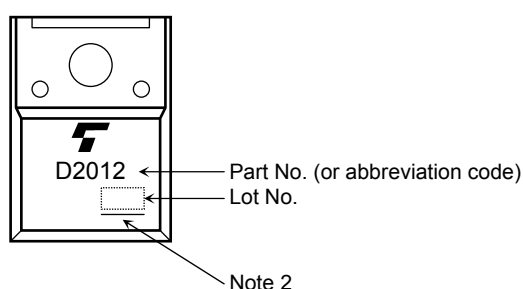


Weight: 1.7 g (typ.)

Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	$V_{CB} = 60\text{ V}, I_E = 0$	—	—	100	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = 7\text{ V}, I_C = 0$	—	—	100	μA
Collector-emitter breakdown voltage	$V_{(BR) CEO}$	$I_C = 50\text{ mA}, I_B = 0$	60	—	—	V
DC current gain	$h_{FE (1)}$	$V_{CE} = 5\text{ V}, I_C = 0.5\text{ A}$	100	—	320	
	$h_{FE (2)}$	$V_{CE} = 5\text{ V}, I_C = 2\text{ A}$	20	—	—	
Collector-emitter saturation voltage	$V_{CE (sat)}$	$I_C = 2\text{ A}, I_B = 0.2\text{ A}$	—	0.4	1.0	V
Base-emitter voltage	V_{BE}	$V_{CE} = 5\text{ V}, I_C = 0.5\text{ A}$	—	0.75	1.0	V
Transition frequency	f_T	$V_{CE} = 5\text{ V}, I_C = 0.5\text{ A}$	—	3	—	MHz
Collector output capacitance	C_{ob}	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	35	—	pF

Marking

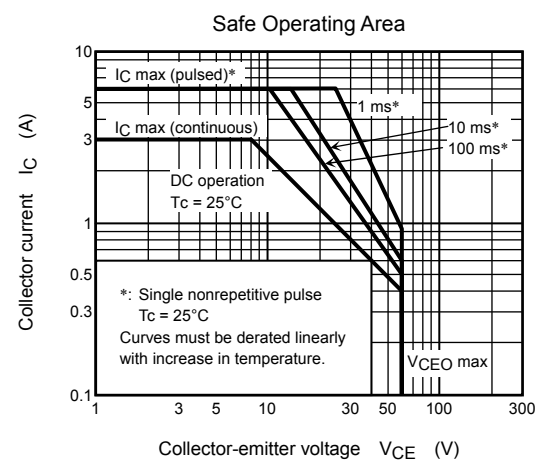
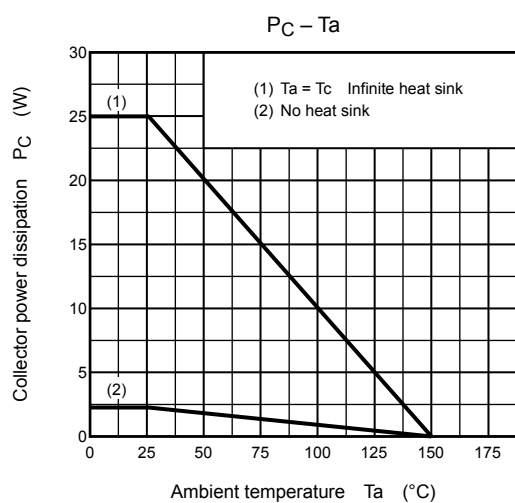
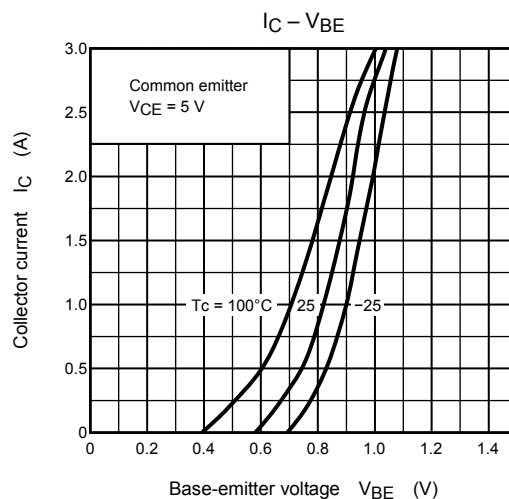
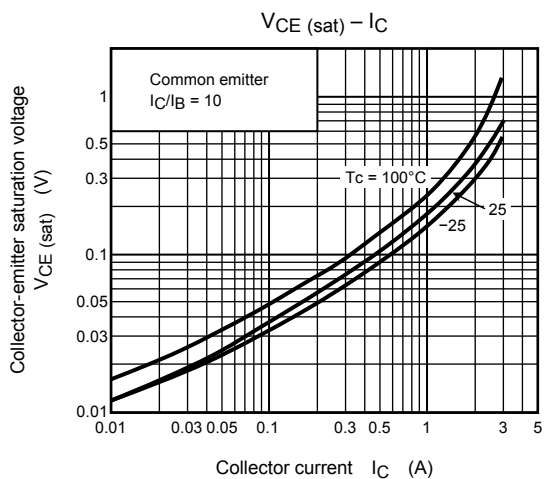
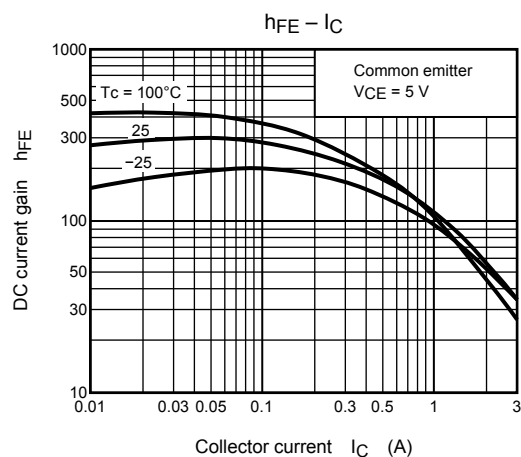
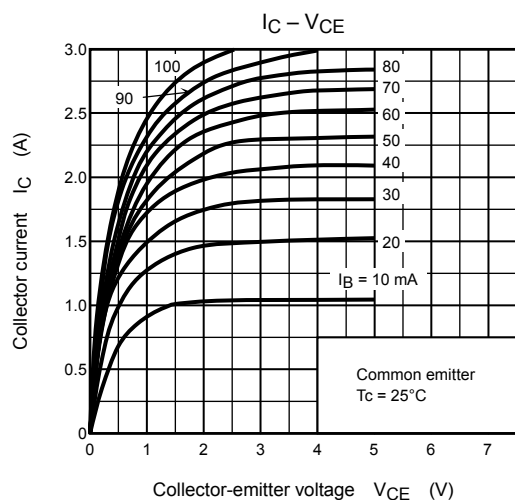


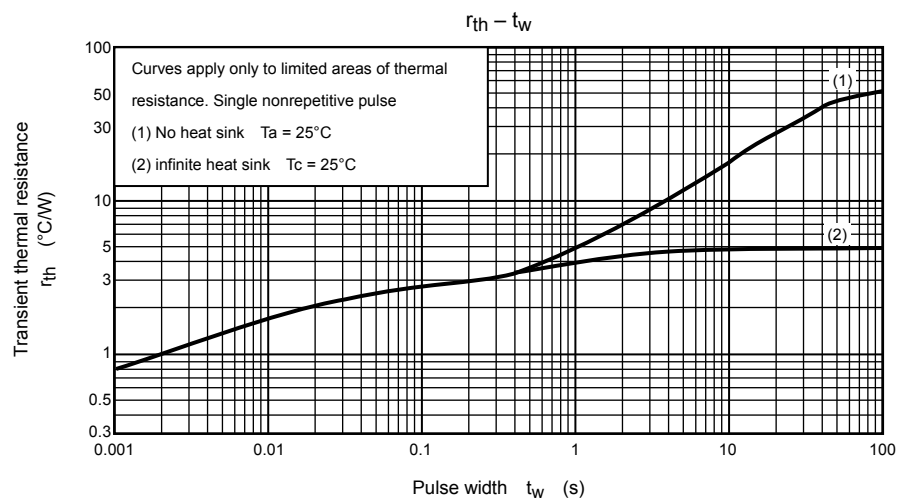
Note 2: A line under a Lot No. identifies the indication of product Labels.

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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