

TOSHIBA Transistor Silicon NPN Triple Diffused Type

# 2SD1407A

## Power Amplifier Applications

- High breakdown voltage:  $V_{CEO} = 100\text{ V}$
- Low collector saturation voltage:  $V_{CE(sat)} = 2.0\text{ V (max)}$
- Complementary to 2SB1016A

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

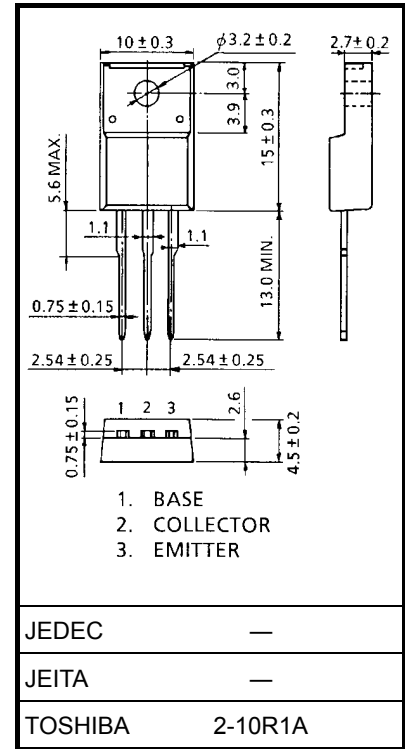
Characteristics	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	100	V
Collector-emitter voltage	$V_{CEO}$	100	V
Emitter-base voltage	$V_{EBO}$	5	V
Collector current	$I_C$	5	A
Base current	$I_B$	0.5	A
Collector power dissipation ( $T_c = 25^\circ\text{C}$ )	$P_C$	30	W
Junction temperature	$T_j$	150	$^\circ\text{C}$
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).

## Industrial Applications

Unit: mm



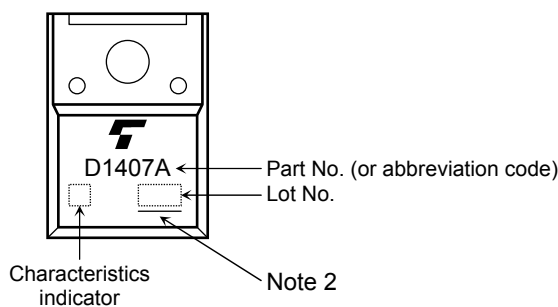
Weight: 1.7 g (typ.)

## Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	$I_{CBO}$	$V_{CB} = 100\text{ V}, I_E = 0$	—	—	100	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 5\text{ V}, I_C = 0$	—	—	1	$\text{mA}$
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = 50\text{ mA}, I_B = 0$	100	—	—	$\text{V}$
DC current gain	$h_{FE(1)}$ (Note 1)	$V_{CE} = 5\text{ V}, I_C = 1\text{ A}$	40	—	240	
	$h_{FE(2)}$	$V_{CE} = 5\text{ V}, I_C = 4\text{ A}$	20	—	—	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 4\text{ A}, I_B = 0.4\text{ A}$	—	—	2.0	$\text{V}$
Base-emitter saturation voltage	$V_{BE}$	$V_{CE} = 5\text{ V}, I_C = 1\text{ A}$	—	—	1.5	$\text{V}$
Transition frequency	$f_T$	$V_{CE} = 5\text{ V}, I_C = 1\text{ A}$	—	12	—	$\text{MHz}$
Collector output capacitance	$C_{ob}$	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	100	—	$\text{pF}$

Note 1:  $h_{FE(1)}$  classification R: 40 to 80, O: 70 to 140, Y: 120 to 240

## Marking

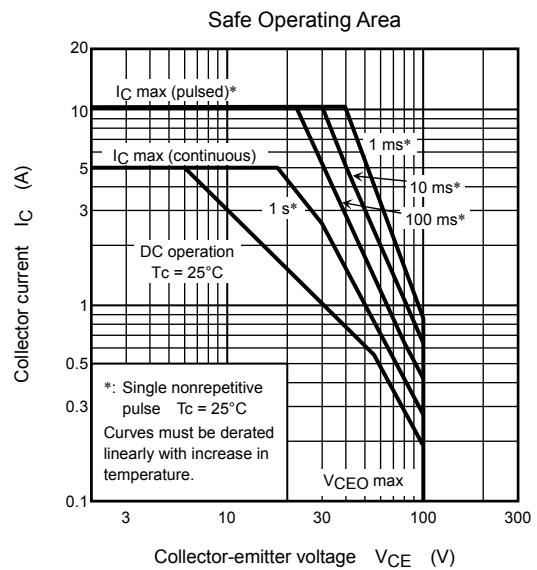
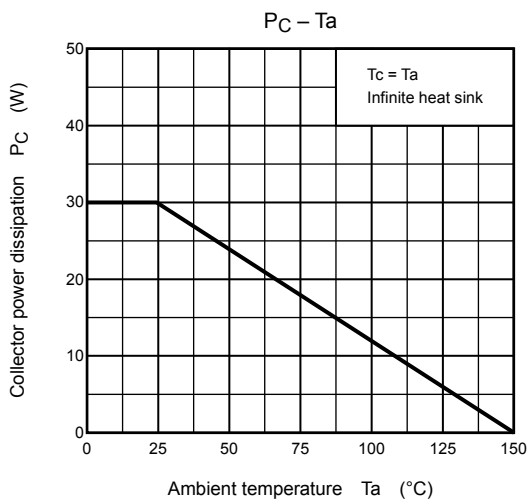
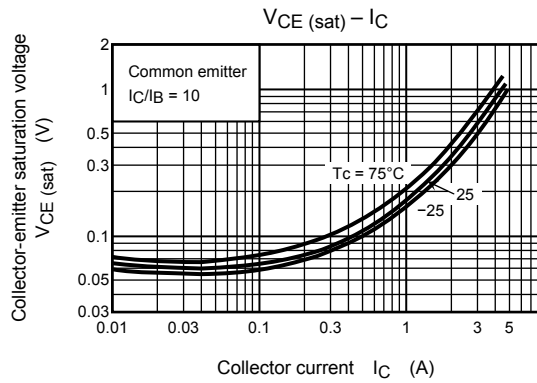
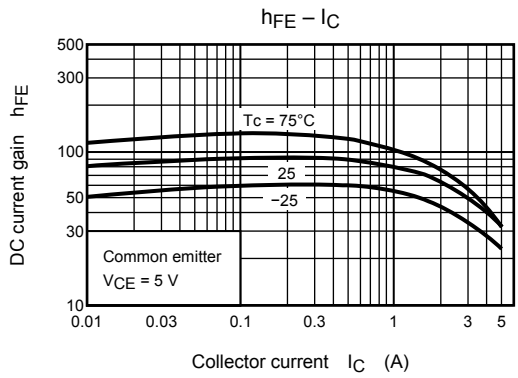
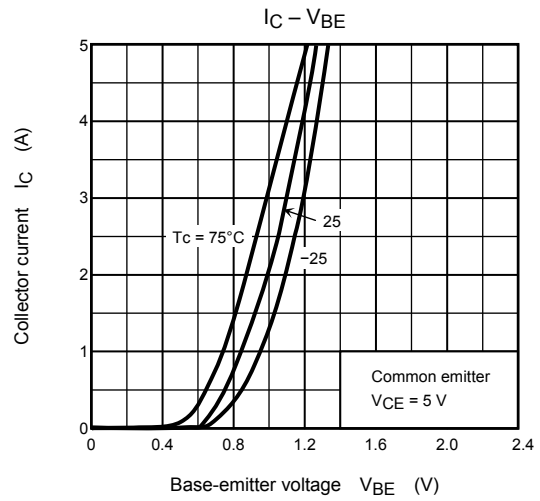
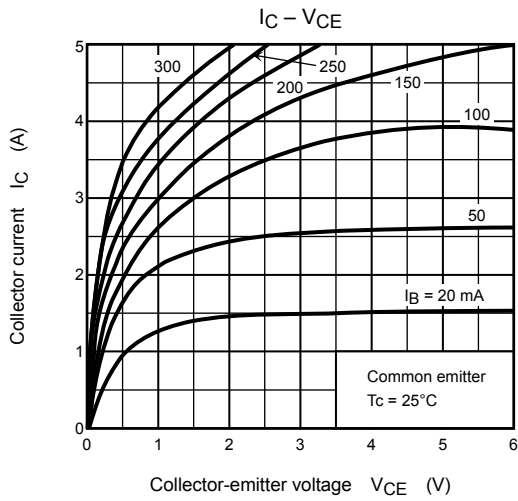


Note 2: A line under a Lot No. identifies the indication of product Labels.

[[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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