

TOSHIBA Transistor Silicon PNP Triple Diffused Type

# 2SA1987

## Power Amplifier Applications

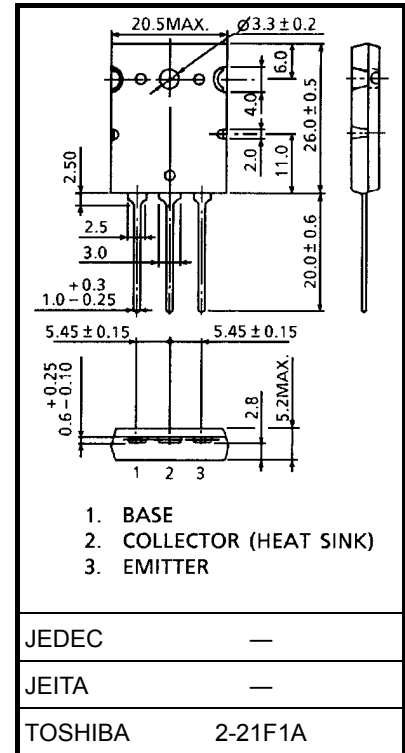
- High breakdown voltage:  $V_{CEO} = -230 \text{ V (min)}$
- Complementary to 2SC5359
- Recommended for 100-W high-fidelity audio frequency amplifier output stage.

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

Characteristics	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	-230	V
Collector-emitter voltage	$V_{CEO}$	-230	V
Emitter-base voltage	$V_{EBO}$	-5	V
Collector current	$I_C$	-15	A
Base current	$I_B$	-1.5	A
Collector power dissipation ( $T_c = 25^\circ\text{C}$ )	$P_C$	180	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).

Unit: mm



Weight: 9.75 g (typ.)

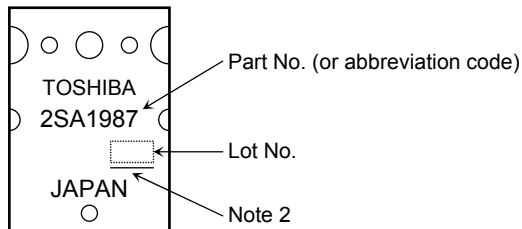
Start of commercial production  
1995-12

## Electrical Characteristics (Tc = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	$I_{CBO}$	$V_{CB} = -230\text{ V}, I_E = 0$	—	—	-5.0	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = -5\text{ V}, I_C = 0$	—	—	-5.0	$\mu\text{A}$
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = -50\text{ mA}, I_B = 0$	-230	—	—	V
DC current gain	$h_{FE(1)}$ (Note 1)	$V_{CE} = -5\text{ V}, I_C = -1\text{ A}$	55	—	160	
	$h_{FE(2)}$	$V_{CE} = -5\text{ V}, I_C = -7\text{ A}$	35	70	—	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -8\text{ A}, I_B = -0.8\text{ A}$	—	-1.5	-3.0	V
Base-emitter voltage	$V_{BE}$	$V_{CE} = -5\text{ V}, I_C = -7\text{ A}$	—	-1.0	-1.5	V
Transition frequency	$f_T$	$V_{CE} = -5\text{ V}, I_C = -1\text{ A}$	—	30	—	MHz
Collector output capacitance	$C_{ob}$	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	360	—	pF

Note 1:  $h_{FE(1)}$  classification R: 55 to 110, O: 80 to 160

## Marking



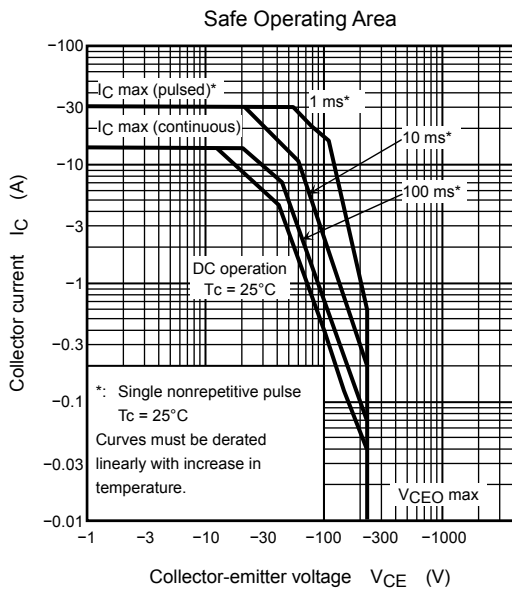
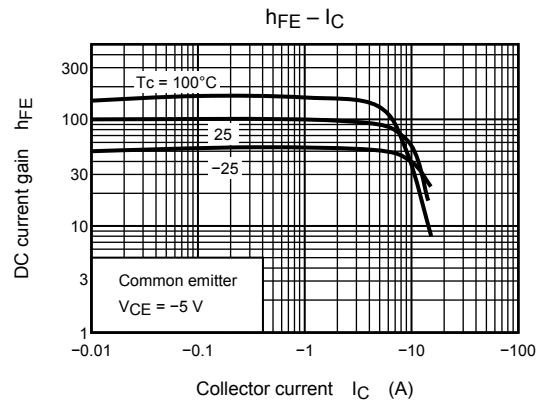
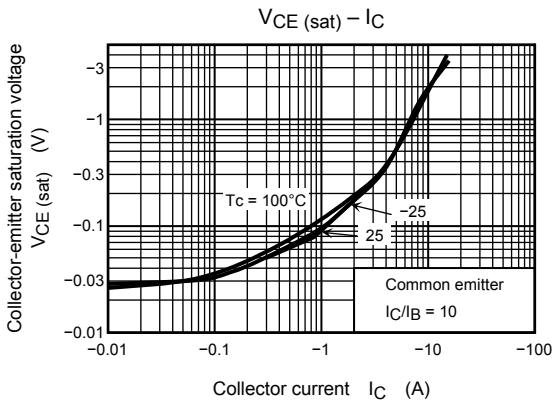
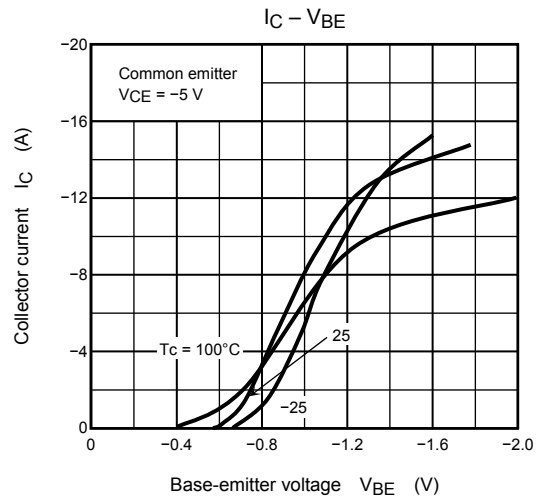
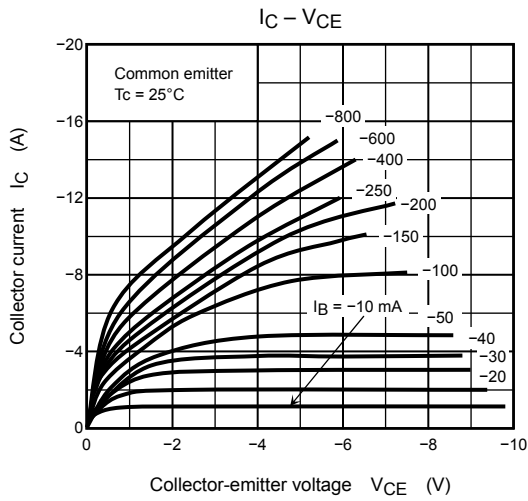
Note 2: A line under a Lot No. identifies the indication of product Labels.

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 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.



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