

TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT process)

# 2SA1201

Voltage Amplifier Applications

Power Amplifier Applications

- High voltage:  $V_{CEO} = -120\text{ V}$
- High transition frequency:  $f_T = 120\text{ MHz (typ.)}$
- Small flat package
- $P_C = 1\text{ to }2\text{ W}$  (mounted on a ceramic substrate)
- Complementary to 2SC2881

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

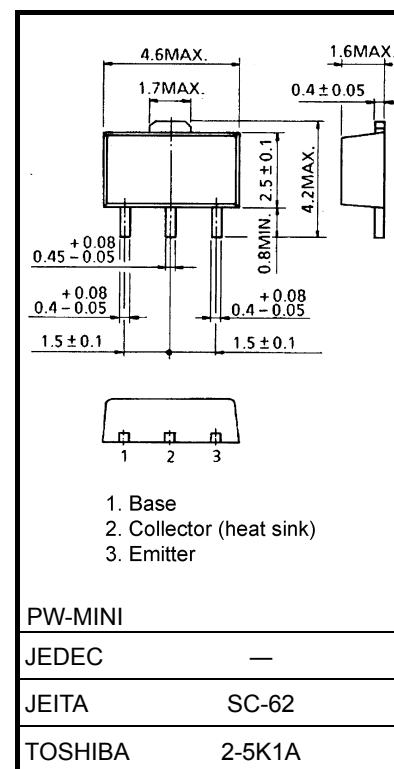
Characteristics	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	-120	V
Collector-emitter voltage	$V_{CEO}$	-120	V
Emitter-base voltage	$V_{EBO}$	-5	V
Collector current	$I_C$	-800	mA
Base current	$I_B$	-160	mA
Collector power dissipation	$P_C$	500	mW
	$P_C$ (Note 1)	1000	
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature range	$T_{stg}$	-55 to 150	$^\circ\text{C}$

Note 1: Mounted on a ceramic substrate ( $250\text{ mm}^2 \times 0.8\text{ t}$ )

Note 2: 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



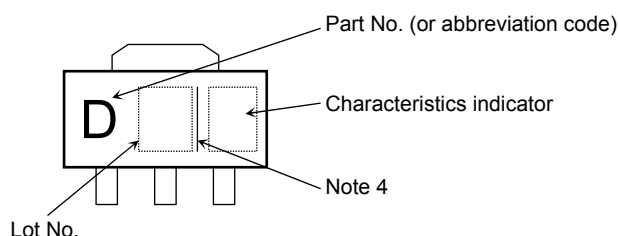
Weight: 0.05 g (typ.)

## Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	$I_{CBO}$	$V_{CB} = -120\text{ V}, I_E = 0$	—	—	-0.1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = -5\text{ V}, I_C = 0$	—	—	-0.1	$\mu\text{A}$
Collector-emitter breakdown voltage	$V_{(BR) CEO}$	$I_C = -10\text{ mA}, I_B = 0$	-120	—	—	V
Emitter-base breakdown voltage	$V_{(BR) EBO}$	$I_E = -1\text{ mA}, I_C = 0$	-5	—	—	V
DC current gain	$h_{FE}$ (Note 3)	$V_{CE} = -5\text{ V}, I_C = -100\text{ mA}$	80	—	240	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -500\text{ mA}, I_B = -50\text{ mA}$	—	—	-1.0	V
Base-emitter voltage	$V_{BE}$	$V_{CE} = -5\text{ V}, I_C = -500\text{ mA}$	—	—	-1.0	V
Transition frequency	$f_T$	$V_{CE} = -5\text{ V}, I_C = -100\text{ mA}$	—	120	—	MHz
Collector output capacitance	$C_{ob}$	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	—	30	pF

Note 3:  $h_{FE}$  classification O: 80 to 160, Y: 120 to 240

## Marking

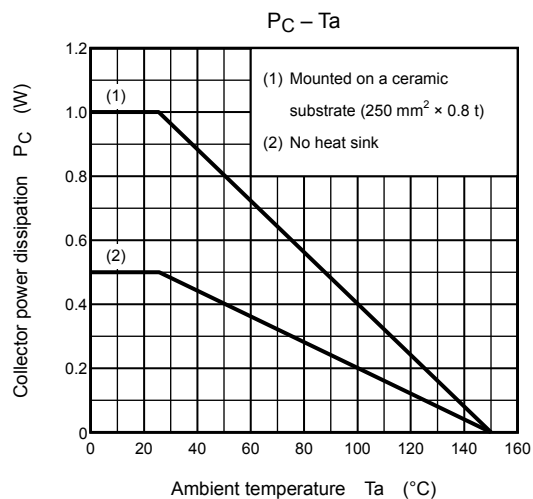
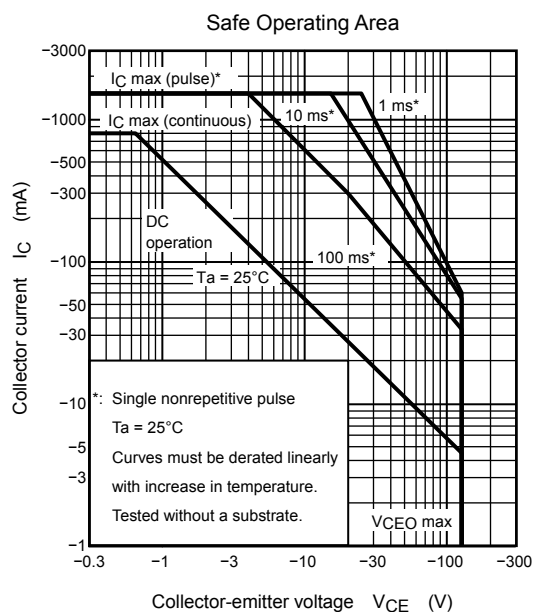
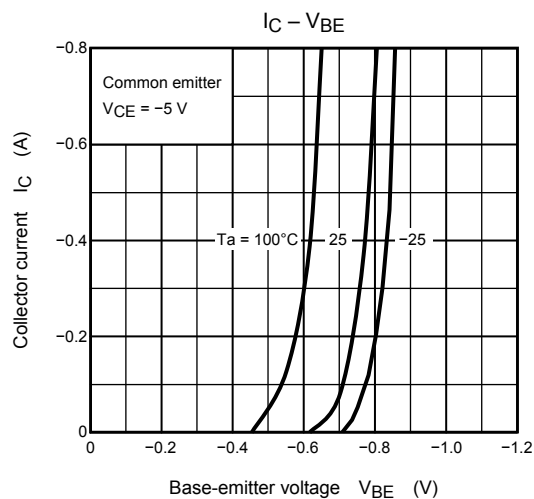
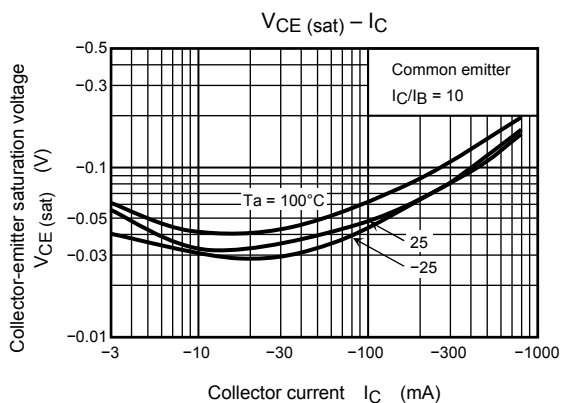
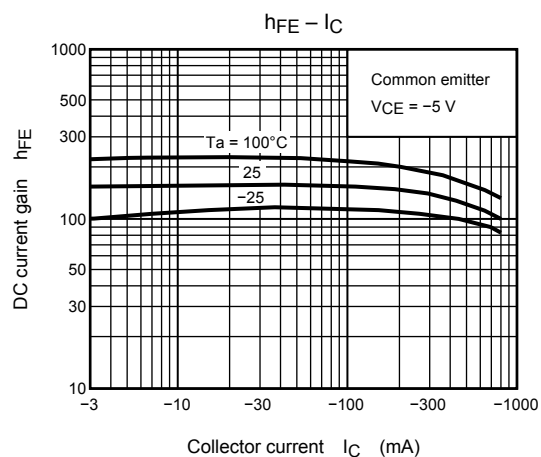
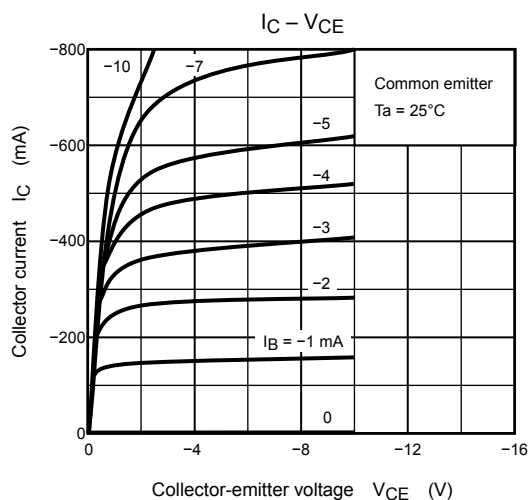


Note 4: A line beside a Lot No. identifies the indication of product Labels.

Without a line: [[Pb]]/INCLUDES > MCV

With a line: [[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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