

TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT process)

# 2SA950

## Audio Power Amplifier Applications

- High  $h_{FE}$ :  $h_{FE} = 100\sim320$
- 1 W output applications
- Complementary to 2SC2120

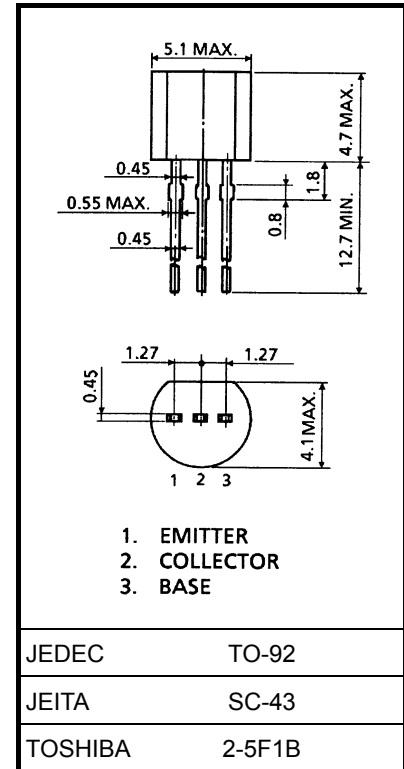
## Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Characteristics	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	-35	V
Collector-emitter voltage	$V_{CEO}$	-30	V
Emitter-base voltage	$V_{EBO}$	-5	V
Collector current	$I_C$	-800	mA
Base current	$I_B$	-160	mA
Collector power dissipation	$P_C$	600	mW
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature range	$T_{stg}$	-55~150	$^\circ\text{C}$

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

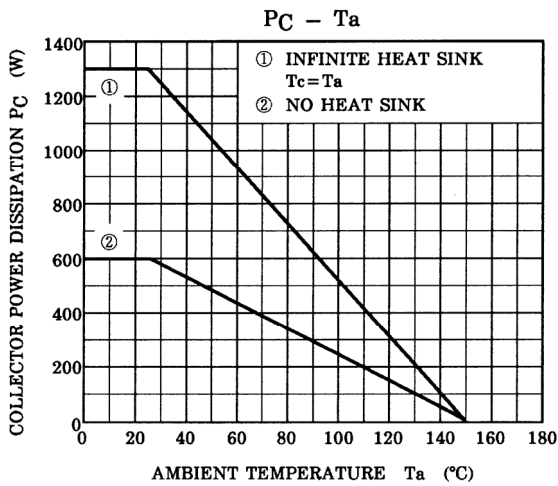
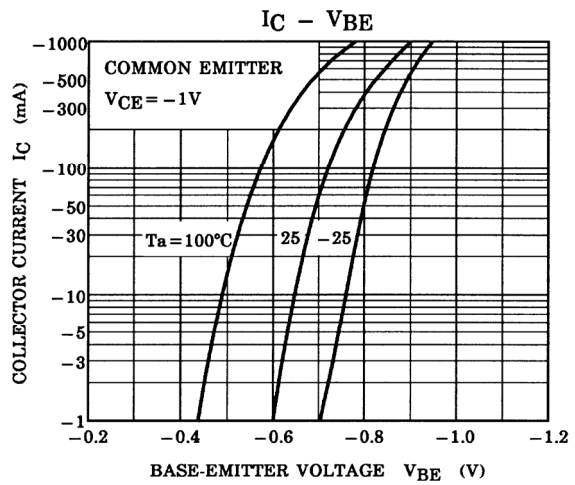
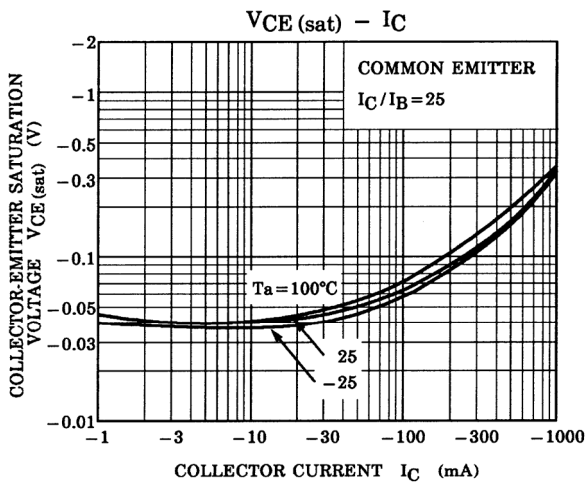
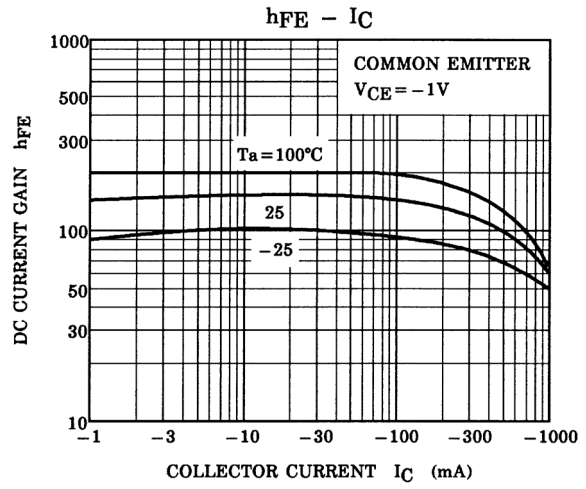
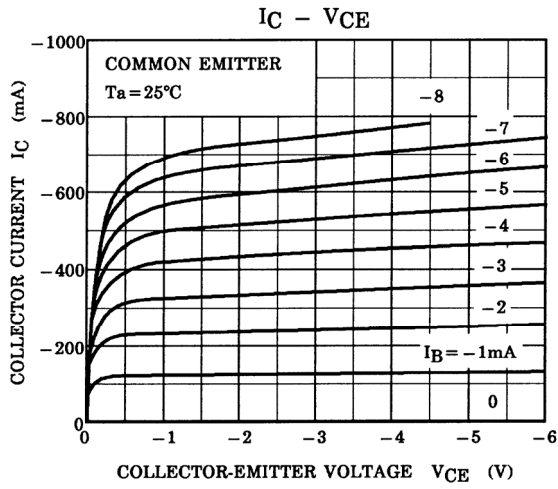


Weight: 0.21 g (typ.)

## Electrical Characteristics ( $T_a = 25^\circ\text{C}$ )

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	$I_{CBO}$	$V_{CB} = -35\text{ V}, I_E = 0$	—	—	-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	$V_{(BR)CEO}$	$I_C = -10\text{ mA}, I_B = 0$	-30	—	—	V
DC current gain	$h_{FE(1)}$ (Note)	$V_{CE} = -1\text{ V}, I_C = -100\text{ mA}$	100	—	320	
	$h_{FE(2)}$	$V_{CE} = -1\text{ V}, I_C = -700\text{ mA}$	35	—	—	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -500\text{ mA}, I_B = -20\text{ mA}$	—	—	-0.7	V
Base-emitter voltage	$V_{BE}$	$V_{CE} = -1\text{ V}, I_C = -10\text{ mA}$	-0.5	—	-0.8	V
Transition frequency	$f_T$	$V_{CE} = -5\text{ V}, I_C = -10\text{ mA}$	—	120	—	MHz
Collector output capacitance	$C_{ob}$	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	19	—	pF

Note:  $h_{FE(1)}$  classification O: 100~200, Y: 160~320



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20070701-EN GENERAL

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