Unit: mm

TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT process)

2SA1163

Audio Frequency General Purpose Amplifier Applications

• High voltage: $V_{CEO} = -120 \text{ V}$

• Excellent hFE linearity: hFE (IC = -0.1 mA)/hFE (IC = -2 mA) = 0.95 (typ.)

• High hFE: hFE = $200 \sim 700$

• Low noise: NF = 1dB (typ.), 10dB (max)

• Complementary to 2SC2713

• Small package

Absolute Maximum Ratings (Ta = 25°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	IC	-100	mA
Base current	ΙΒ	-20	mA
Collector power dissipation	PC	150	mW
Junction temperature	Tj	125	°C
Storage temperature range	T _{stg}	−55 ~ 125	°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.

1. BASE
2. EMITTER
S-MINI 3. COLLECTOR

JEDEC TO-236MOD

JEITA SC-59

TOSHIBA 2-3F1A

Weight: 0.012 g (typ.)

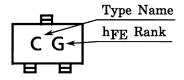
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Electrical Characteristics (Ta = 25°C)

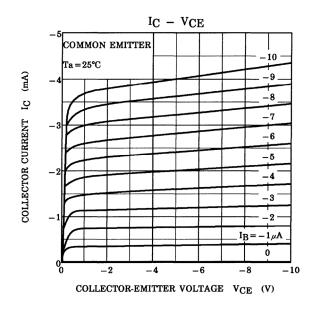
Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Collector cut-off current	I _{CBO}	$V_{CB} = -120 \text{ V}, I_E = 0$	_	_	-0.1	μΑ
Emitter cut-off current	I _{EBO}	$V_{EB} = -5 \text{ V}, I_{C} = 0$	_	_	-0.1	μΑ
DC current gain	h _{FE} (Note)	$V_{CE} = -6 \text{ V, } I_{C} = -2 \text{ mA}$	200	_	700	
Collector-emitter saturation voltage	V _{CE (sat)}	$I_C = -10 \text{ mA}, I_B = -1 \text{ mA}$	_	_	-0.3	V
Transition frequency	f _T	$V_{CE} = -6 \text{ V}, I_{C} = -1 \text{ mA}$	_	100	_	MHz
Collector output capacitance	C _{ob}	$V_{CB} = -10 \text{ V}, I_E = 0, f = 1 \text{ MHz}$	_	4	_	pF
Noise figure	NF	$\begin{split} V_{CE} &= -6 \text{ V, } I_{C} = -0.1 \text{ mA, } f = 1 \text{ kHz,} \\ Rg &= 10 \text{ k}\Omega, \end{split}$	_	1.0	10	dB

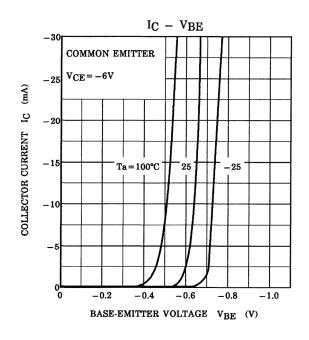
Note: h_{FE} classification GR (G): 200~400, BL (L): 350~700 () marking symbol

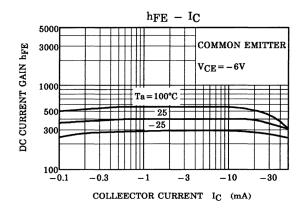
Marking

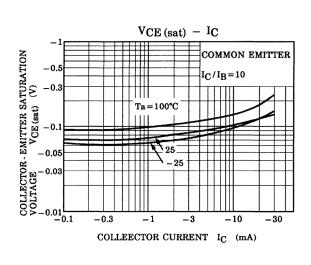


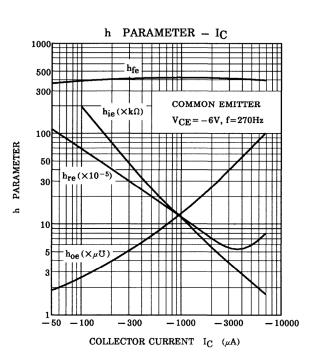
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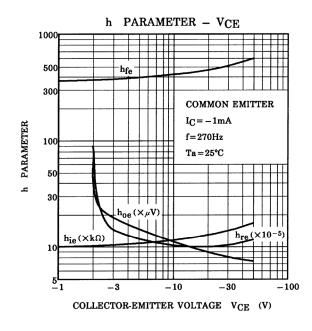


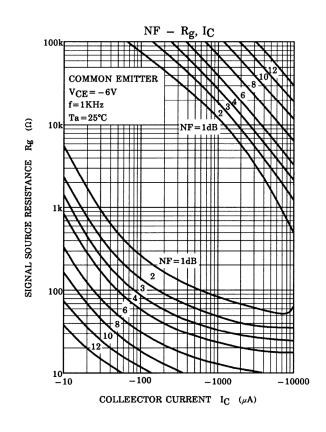


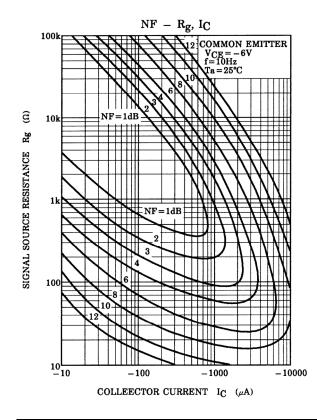


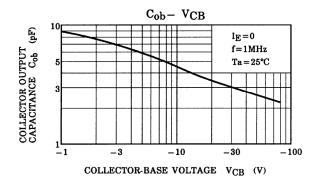


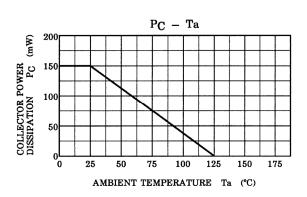












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20070701-EN GENERAL

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