

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process)

2SC2713

Audio Frequency General Purpose Amplifier Applications

- High voltage: $V_{CEO} = 120$ V
- Excellent hFE linearity: hFE ($I_C = 0.1$ mA)/ hFE ($I_C = 2$ mA) = 0.95 (typ.)
- High hFE : $hFE = 200$ to 700
- Low noise: $NF = 1$ dB (typ.), 10 dB (max)
- Complementary to 2SA1163
- 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	I_C	100	mA
Base current	I_B	20	mA
Collector power dissipation	P_C	150	mW
Junction temperature	T_j	125	°C
Storage temperature range	T_{stg}	-55 to 125	°C

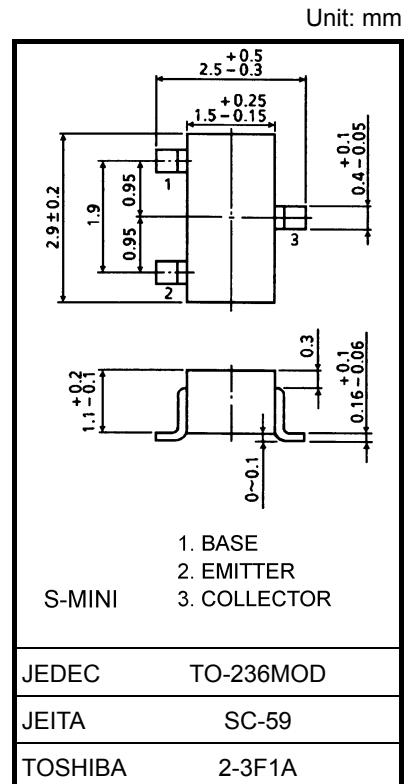
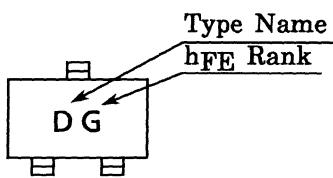
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

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)

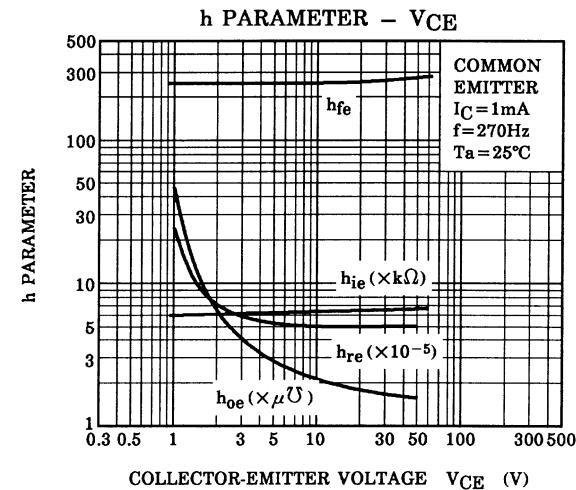
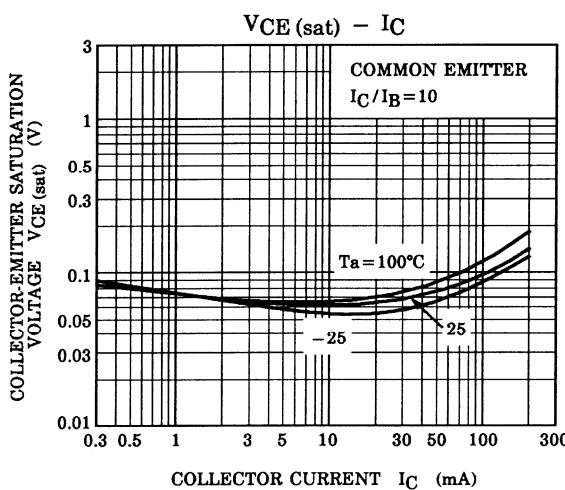
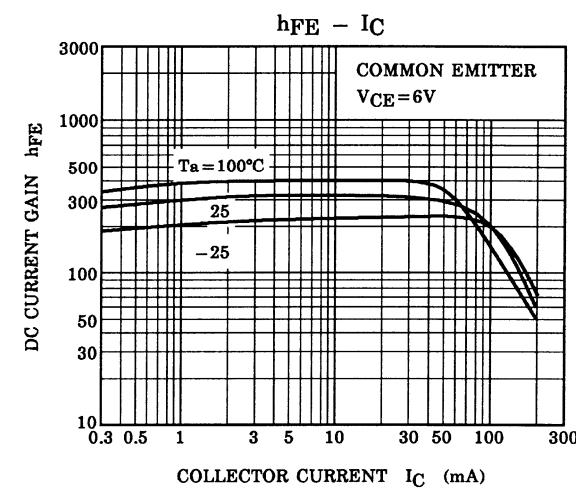
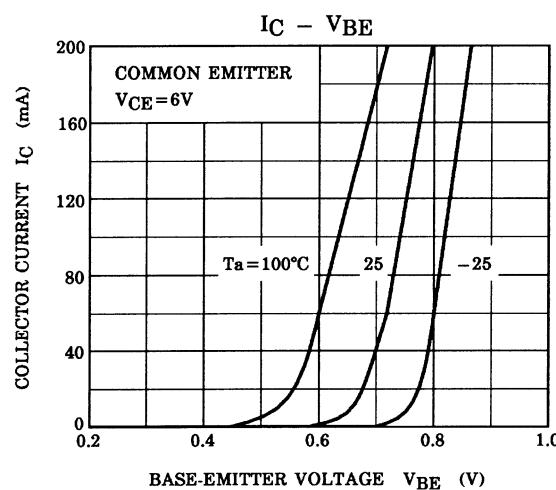
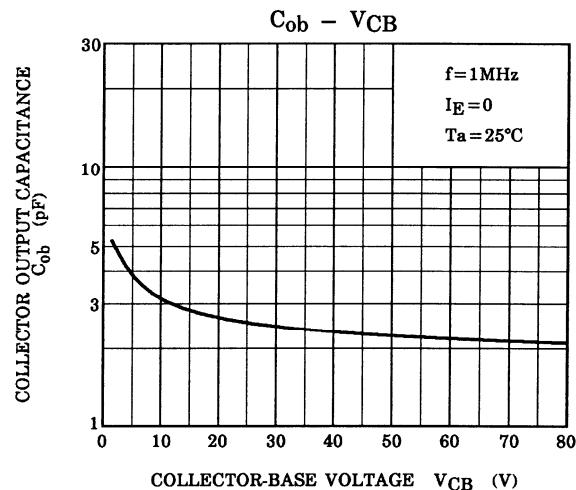
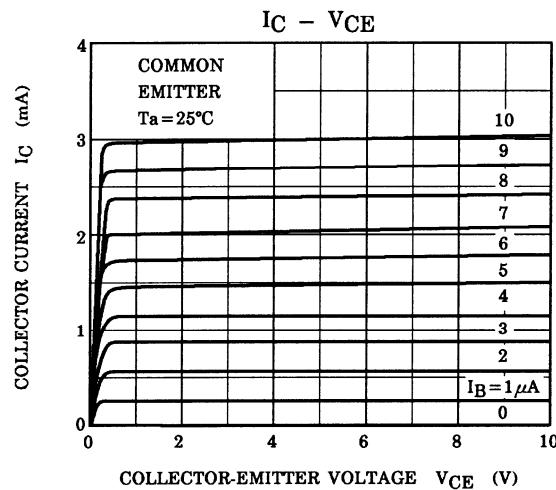
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	$V_{CB} = 120$ V, $I_E = 0$	—	—	0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = 5$ V, $I_C = 0$	—	—	0.1	μA
DC current gain (Note)	h_{FE}	$V_{CE} = 6$ V, $I_C = 2$ mA	200	—	700	
Collector-emitter saturation voltage	V_{CE} (sat)	$I_C = 10$ mA, $I_B = 1$ mA	—	—	0.3	V
Transition frequency	f_T	$V_{CE} = 6$ V, $I_C = 1$ mA	—	100	—	MHz
Collector output capacitance	C_{ob}	$V_{CB} = 10$ V, $I_E = 0$, $f = 1$ MHz	—	3.0	—	pF
Noise figure	NF	$V_{CE} = 6$ V, $I_C = 0.1$ mA $f = 1$ kHz, $R_G = 10$ kΩ	—	1.0	10	dB

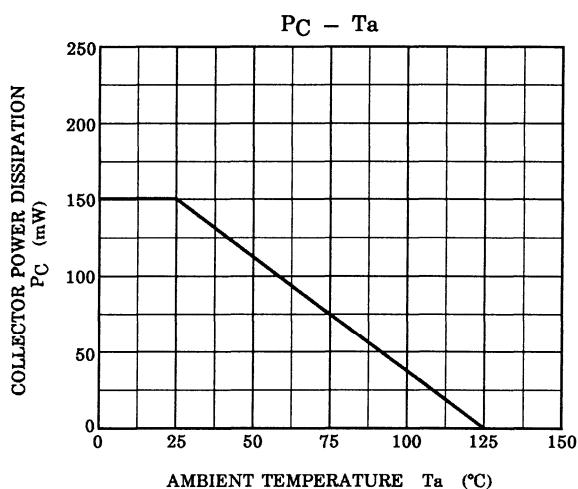
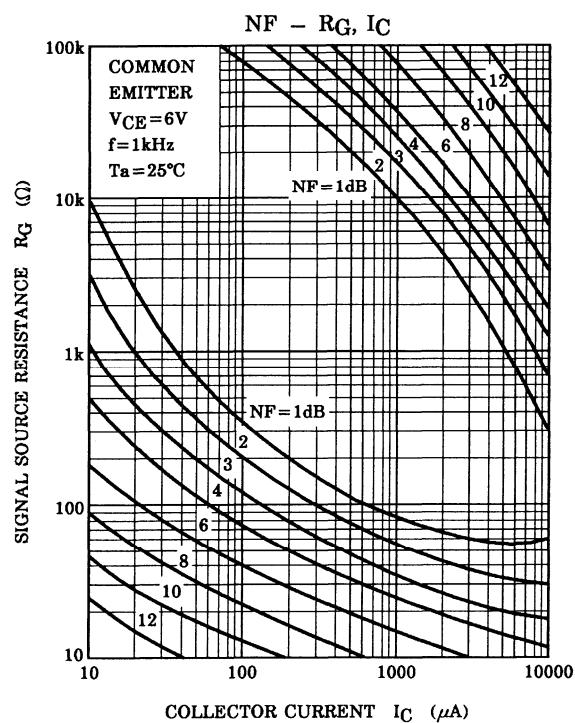
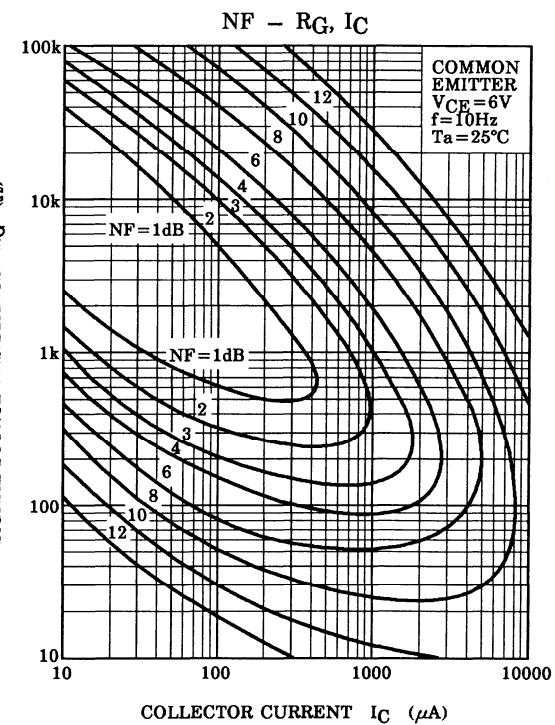
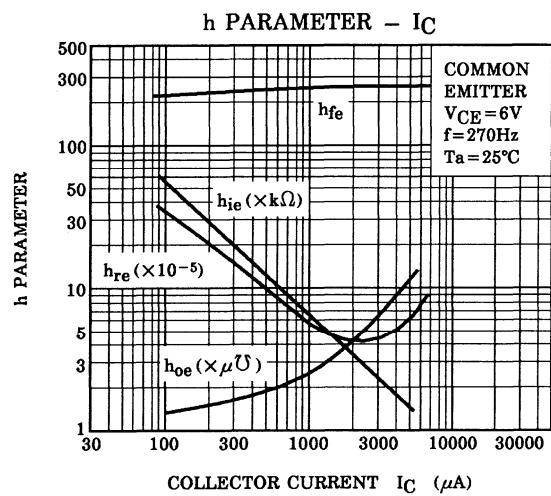
Note: hFE classification GR (G): 200~400, BL (L): 350~700, () marking symbol

Marking

Weight: 0.012 g (typ.)

Start of commercial production
1982-10





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