TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process)

# 2SC2713

### Audio Frequency General Purpose Amplifier Applications

Unit: mm

• High voltage: VCEO = 120 V

• Excellent hFE linearity: hFE ( $I_C = 0.1 \text{ mA}$ )/hFE ( $I_C = 2 \text{ mA}$ ) = 0.95 (typ.)

• High hFE: hFE =  $200 \sim 700$ 

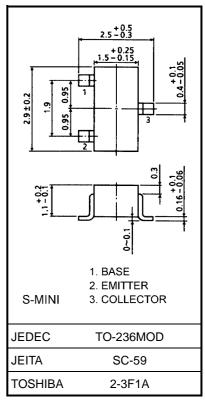
• Low noise: NF = 1dB (typ.), 10dB (max)

• Complementary to 2SA1163

• Small package

## **Maximum Ratings (Ta = 25°C)**

Characteristics	Symbol	Rating	Unit
Collector-base voltage	$V_{CBO}$	120	V
Collector-emitter voltage	V <sub>CEO</sub>	120	V
Emitter-base voltage	V <sub>EBO</sub>	5	V
Collector current	IC	100	mA
Base current	Ι <sub>Β</sub>	20	mA
Collector power dissipation	P <sub>C</sub>	150	mW
Junction temperature	Tj	125	°C
Storage temperature range	T <sub>stg</sub>	-55~125	°C



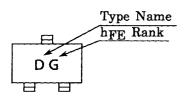
Weight: 0.012 g (typ.)

### **Electrical Characteristics (Ta = 25°C)**

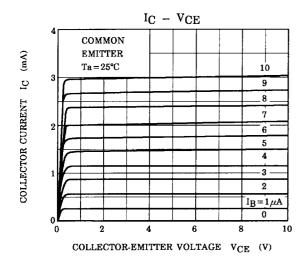
Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> = 120 V, I <sub>E</sub> = 0	_	_	0.1	μΑ
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> = 5 V, I <sub>C</sub> = 0	_	_	0.1	μΑ
DC current gain	h <sub>FE</sub> (Note)	V <sub>CE</sub> = 6 V, I <sub>C</sub> = 2 mA	200	_	700	
Collector-emitter saturation voltage	V <sub>CE</sub> (sat)	I <sub>C</sub> = 10 mA, I <sub>B</sub> = 1 mA	_	_	0.3	V
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> = 6 V, I <sub>C</sub> = 1 mA	_	100	_	MHz
Collector output capacitance	C <sub>ob</sub>	V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0, f = 1 MHz	_	3.0	_	pF
Noise figure	NF	$V_{CE} = 6 \text{ V}, I_C = 0.1 \text{ mA}$ $f = 1 \text{ kHz}, R_G = 10 \text{ k}\Omega$	_	1.0	10	dB

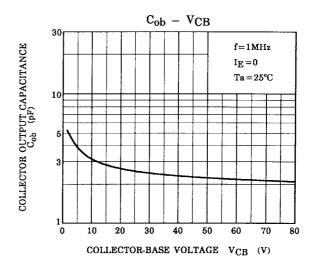
Note: hFE classification GR (G): 200~400, BL (L): 350~700

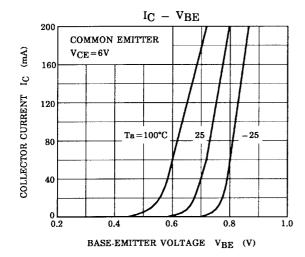
#### Marking

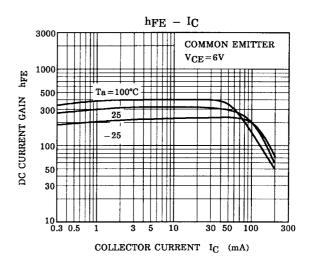


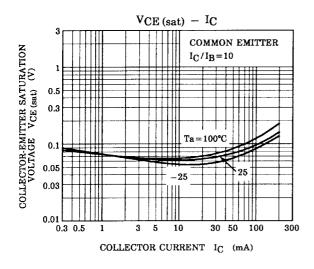
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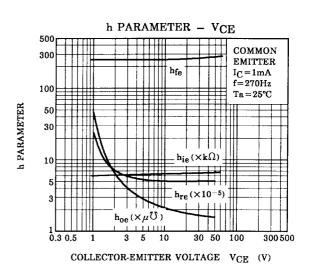




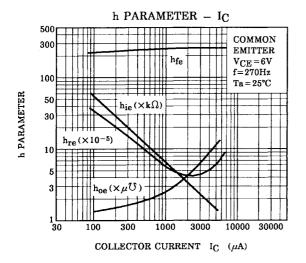


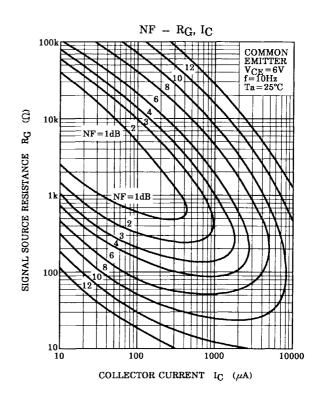


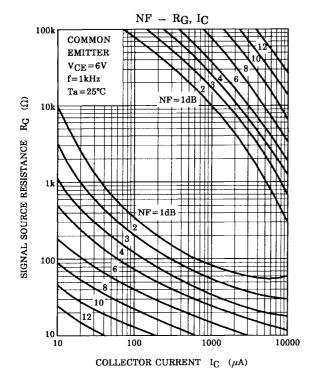


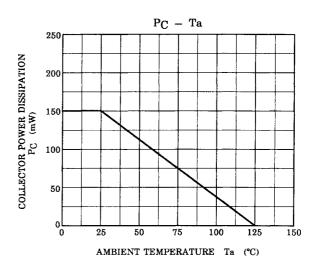


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