

TOSHIBA TRANSISTOR SILICON PNP EPITAXIAL TYPE (PCT PROCESS)

2SA970

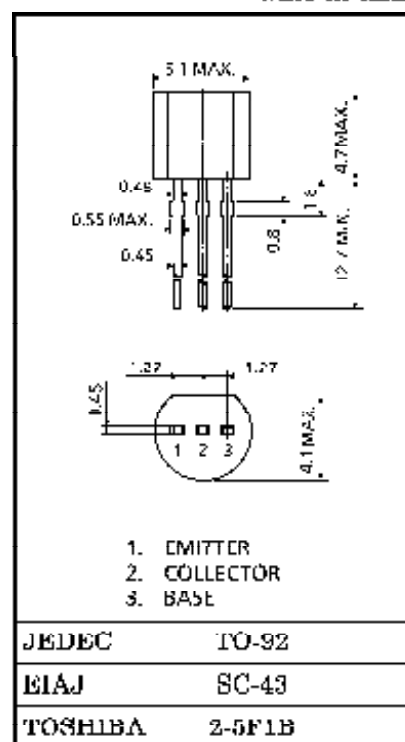
LOW NOISE AUDIO AMPLIFIER APPLICATIONS

Unit in mm

- Low Noise
: $NF = 3\text{dB}$ (Typ.) $R_G = 100\Omega$, $V_{CE} = -6\text{V}$, $I_C = -100\mu\text{A}$, $f = 1\text{kHz}$
: $NF = 0.5\text{dB}$ (Typ.) $R_G = 1\text{k}\Omega$, $V_{CE} = -6\text{V}$, $I_C = -100\mu\text{A}$, $f = 1\text{kHz}$
- High DC Current Gain : $h_{FE} = 200 \sim 700$
- High Breakdown Voltage : $V_{CEO} = -120\text{V}$
- Low Pulse Noise, Low $1/f$ Noise

MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	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	300	mW
Junction Temperature	T_j	125	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55~125	$^\circ\text{C}$



Weight : 0.21g

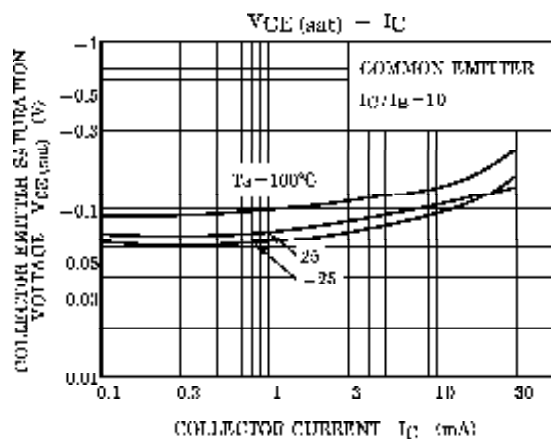
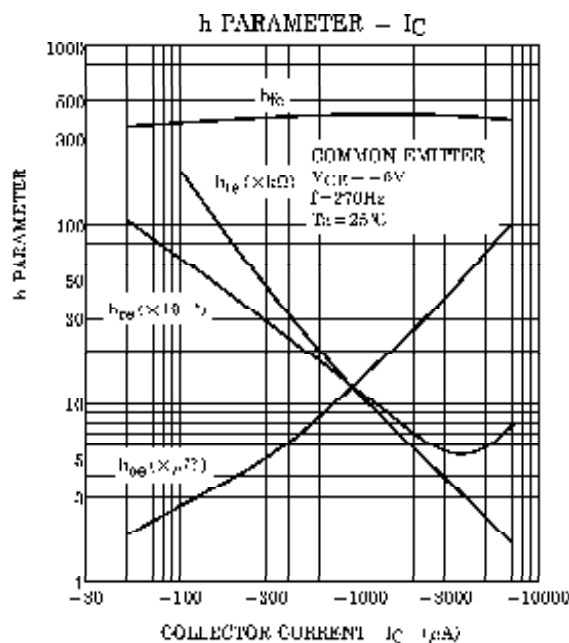
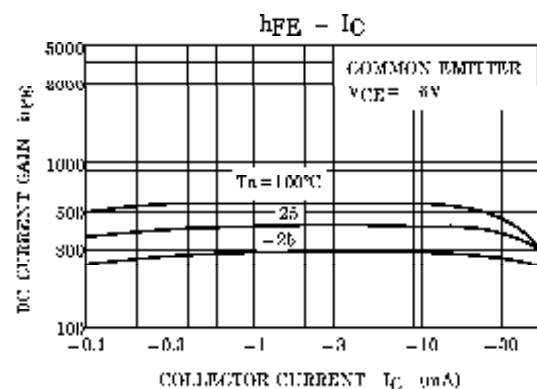
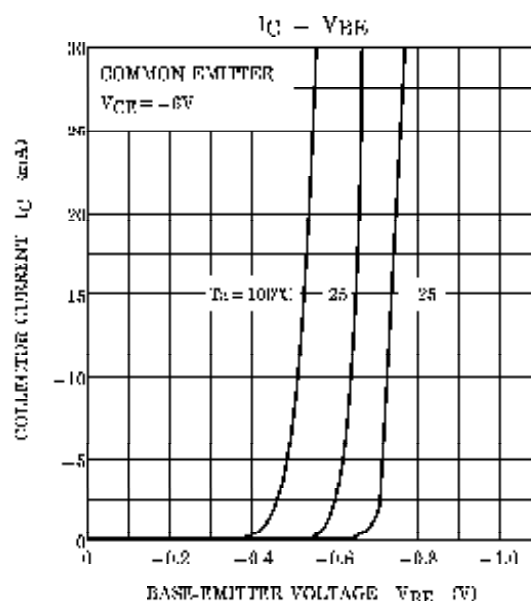
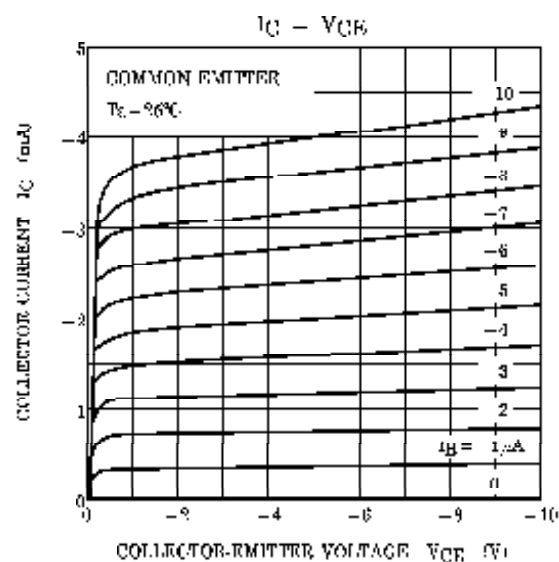
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	$V_{CB} = -120\text{V}$, $I_E = 0$	—	—	-0.1	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = -5\text{V}$, $I_C = 0$	—	—	-0.1	μA
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = -1\text{mA}$, $I_B = 0$	-120	—	—	V
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
Base-Emitter Voltage	V_{BE}	$V_{CE} = -6\text{V}$, $I_C = -2\text{mA}$	—	0.65	—	V
Transition Frequency	f_T	$V_{CE} = -6\text{V}$, $I_C = -1\text{mA}$	—	100	—	MHz
Collector Output Capacitance	C_{ob}	$V_{CB} = -10\text{V}$, $I_E = 0$, $f = 1\text{MHz}$	—	4.0	—	pF
Noise Figure	NF	$V_{CE} = -6\text{V}$, $I_C = -0.1\text{mA}$, $f = 10\text{Hz}$, $R_G = 10\text{k}\Omega$	—	—	6	dB
		$V_{CE} = -6\text{V}$, $I_C = -0.1\text{mA}$, $f = 1\text{kHz}$, $R_G = 10\text{k}\Omega$	—	—	2	
		$V_{CE} = -6\text{V}$, $I_C = -0.1\text{mA}$, $f = 1\text{kHz}$, $R_G = 100\Omega$	—	3	—	

Note : h_{FE} Classification GR : 200~400, BL : 350~700

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