

TOSHIBA TRANSISTOR SILICON PNP EPITAXIAL TYPE (PCT PROCESS)

# 2SA1049

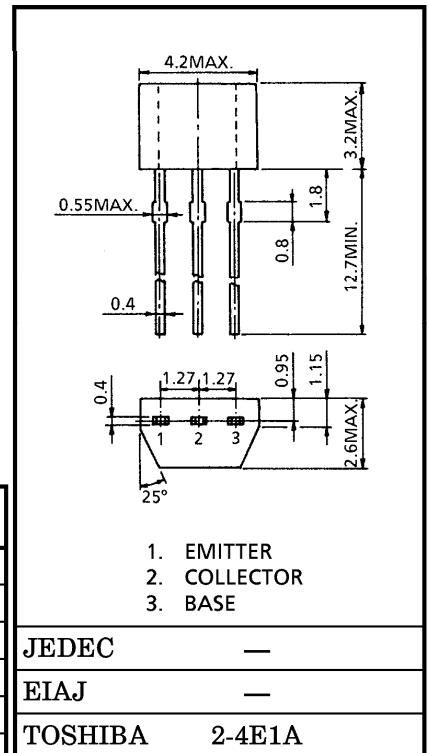
AUDIO FREQUENCY AMPLIFIER APPLICATIONS

Unit in mm

- Small Package.
- High Breakdown Voltage :  $V_{CEO} = -120\text{ V}$
- High  $h_{FE}$  :  $h_{FE} = 200\sim 700$
- Excellent  $h_{FE}$  Linearity  
:  $h_{FE}(I_C = -0.1\text{ mA}) / h_{FE}(I_C = -2\text{ mA}) = 0.95$  (Typ.)
- Low Noise :  $NF = 1\text{ dB}$  (Typ.),  $10\text{ dB}$  (Max.)
- Complementary to 2SC2459.

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	$P_C$	200	mW
Junction Temperature	$T_j$	125	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55~125	$^\circ\text{C}$



Weight : 0.13 g

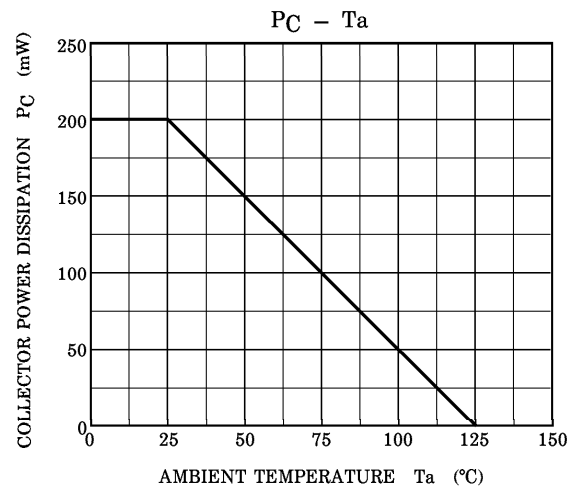
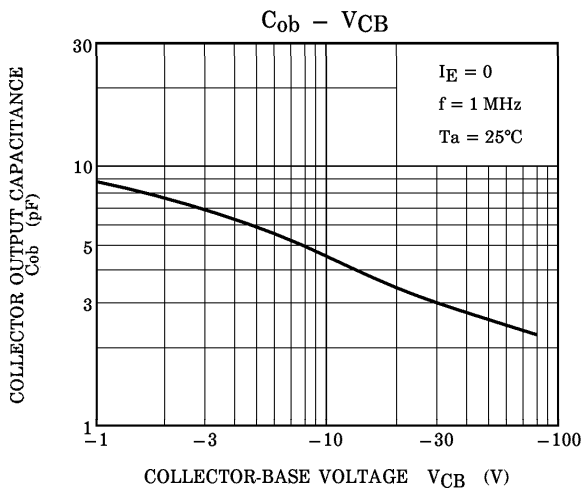
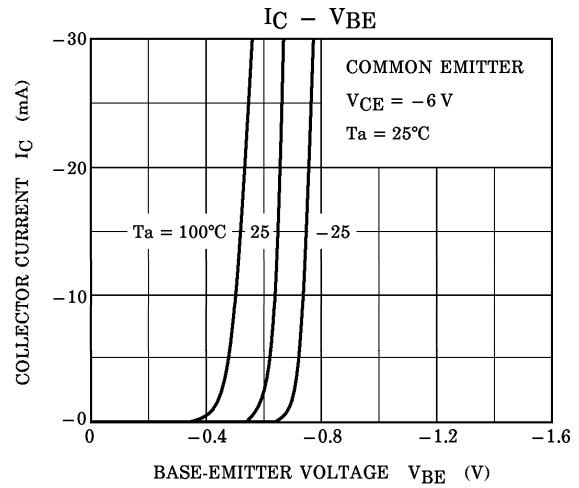
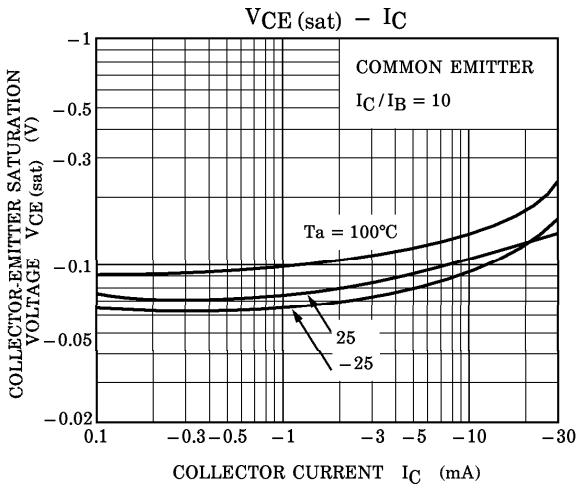
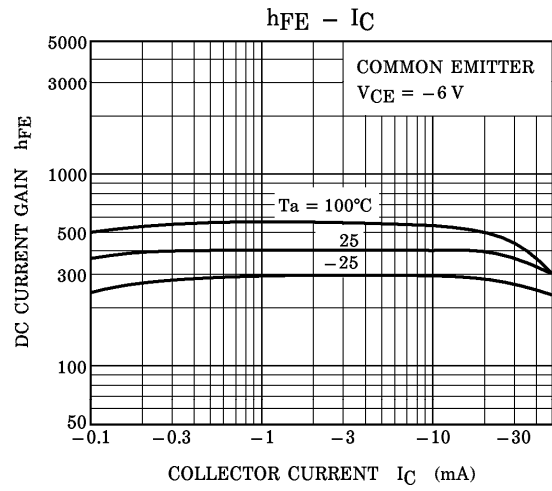
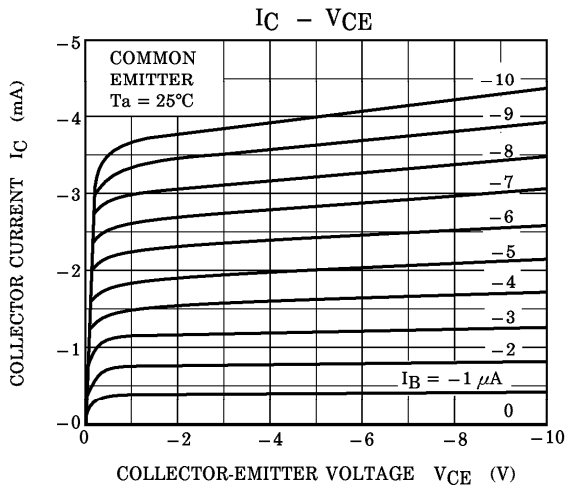
ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = -120\text{ V}, I_E = 0$	—	—	-0.1	$\mu\text{A}$
Emitter Cut-off Current	$I_{EBO}$	$V_{EB} = -5\text{ V}, I_C = 0$	—	—	-0.1	$\mu\text{A}$
DC Current Gain	$h_{FE}$ (Note)	$V_{CE} = -6\text{ V}, I_C = -2\text{ mA}$	200	—	700	
Collector-Emitter Saturation Voltage	$V_{CE}(\text{sat})$	$I_C = -10\text{ mA}, I_B = -1\text{ mA}$	—	—	-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	$V_{CE} = -6\text{ V}, I_C = -0.1\text{ mA}$ $f = 1\text{ kHz}, R_G = 10\text{ k}\Omega$	—	1.0	10	dB

(Note) :  $h_{FE}$  Classification GR : 200~400 BL : 350~700

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