

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

# 2SC3329

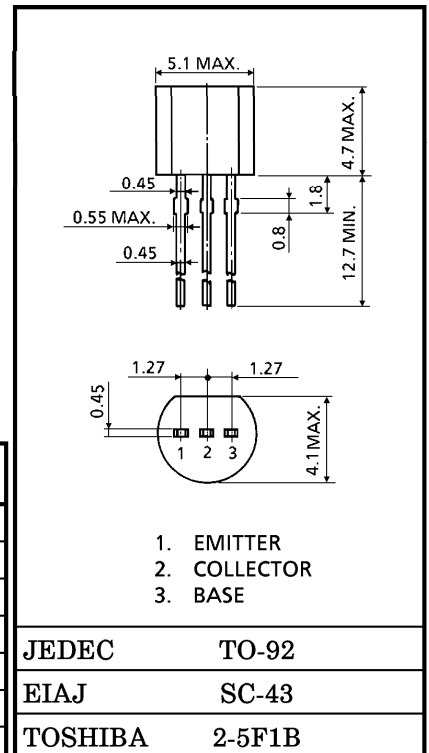
FOR LOW NOISE AUDIO AMPLIFIER APPLICATIONS AND  
RECOMMENDED FOR THE FIRST STAGES OF MC HEAD AMPLIFIERS

- Very Low Noise in the Region of Low Signal Source Impedance  
Equivalent Input Noise Voltage :  $E_n = 0.6nV/\sqrt{Hz}$  (Typ.)
- Low Pulse Noise. Low 1/f Noise
- Low Base Spreading Resistance :  $r_{bb'} = 2.0 \Omega$  (Typ.)
- Complementary to 2SA1316

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	$V_{CB0}$	80	V
Collector-Emitter Voltage	$V_{CEO}$	80	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Collector Current	$I_C$	100	mA
Base Current	$I_B$	20	mA
Collector Power Dissipation	$P_C$	400	mW
Junction Temperature	$T_j$	125	$^\circ C$
Storage Temperature Range	$T_{stg}$	-55~125	$^\circ C$

Unit in mm



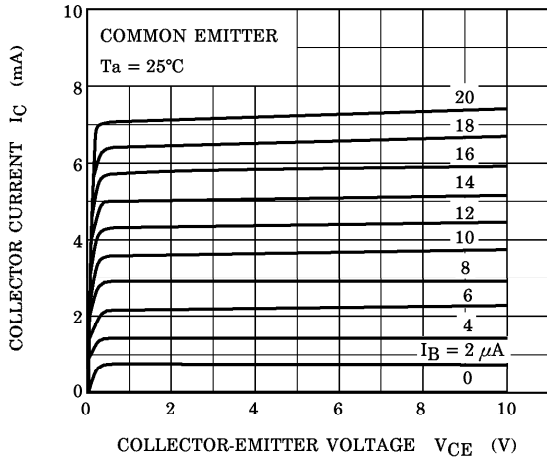
Weight : 0.21 g

## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

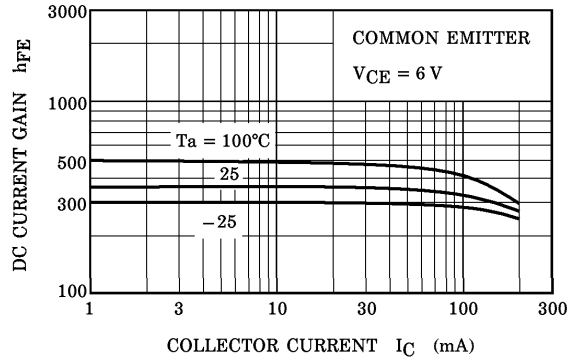
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	$I_{CBO}$	$V_{CB} = 80\text{ V}, I_E = 0$	—	—	0.1	$\mu\text{A}$
Emitter Cut-off Current	$I_{EBO}$	$V_{EB} = 5\text{ V}, I_C = 0$	—	—	0.1	$\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 1\text{ mA}, I_B = 0$	80	—	—	V
DC Current Gain	$h_{FE}$ (Note)	$V_{CE} = 6\text{ V}, I_C = 2\text{ mA}$	200	—	700	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10\text{ mA}, I_B = 1\text{ mA}$	—	—	0.1	V
Base-Emitter Voltage	$V_{BE}$	$V_{CE} = 6\text{ V}, I_C = 2\text{ mA}$	—	0.6	—	V
Base Spreading Resistance	$r_{bb'}$	$V_{CE} = 6\text{ V}, I_C = 1\text{ mA},$ $f = 100\text{ MHz}$	—	2.0	—	$\Omega$
Transition Frequency	$f_T$	$V_{CE} = 6\text{ V}, I_C = 1\text{ mA}$	—	42	—	MHz
Collector Output Capacitance	$C_{ob}$	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	6.2	—	pF
Noise Figure	NF	$V_{CE} = 6\text{ V}, I_C = 0.1\text{ mA}$ $f = 10\text{ Hz}, R_G = 10\text{ k}\Omega$	—	2	6	dB
		$V_{CE} = 6\text{ V}, I_C = 0.1\text{ mA}$ $f = 1\text{ kHz}, R_G = 10\text{ k}\Omega$	—	1	2	
		$V_{CE} = 6\text{ V}, I_C = 0.1\text{ mA}$ $f = 1\text{ kHz}, R_G = 100\ \Omega$	—	2.5	—	

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

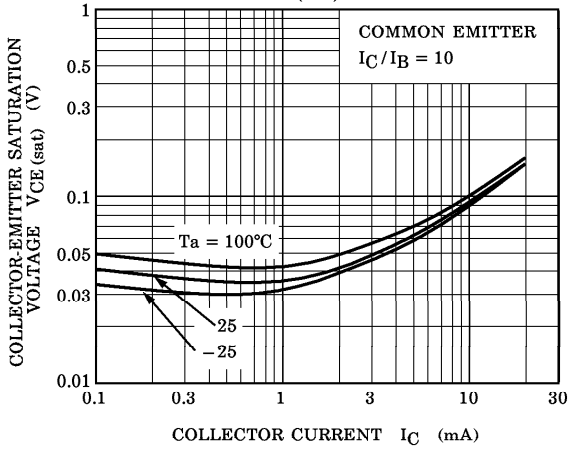
$I_C - V_{CE}$



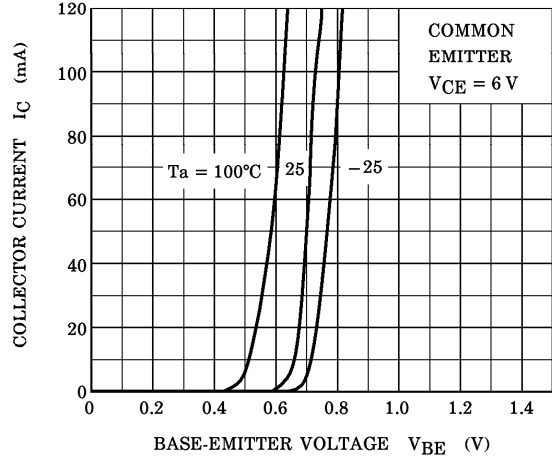
$h_{FE} - I_C$



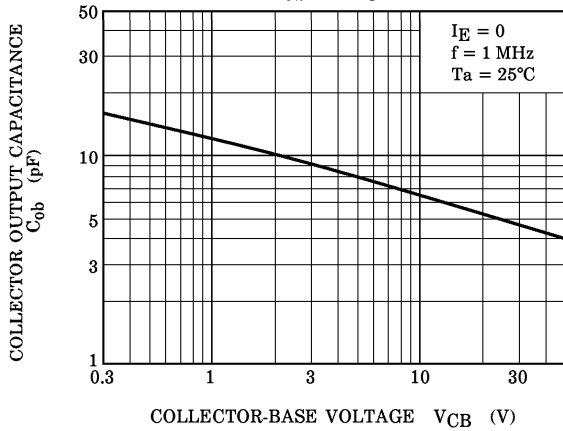
$V_{CE(sat)} - I_C$



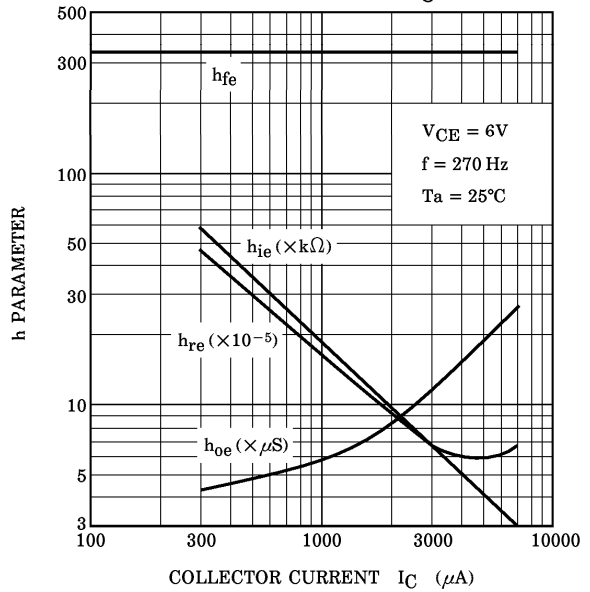
$I_C - V_{BE}$

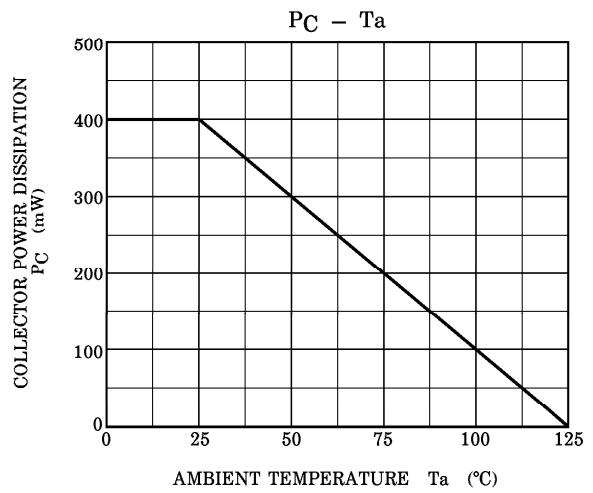
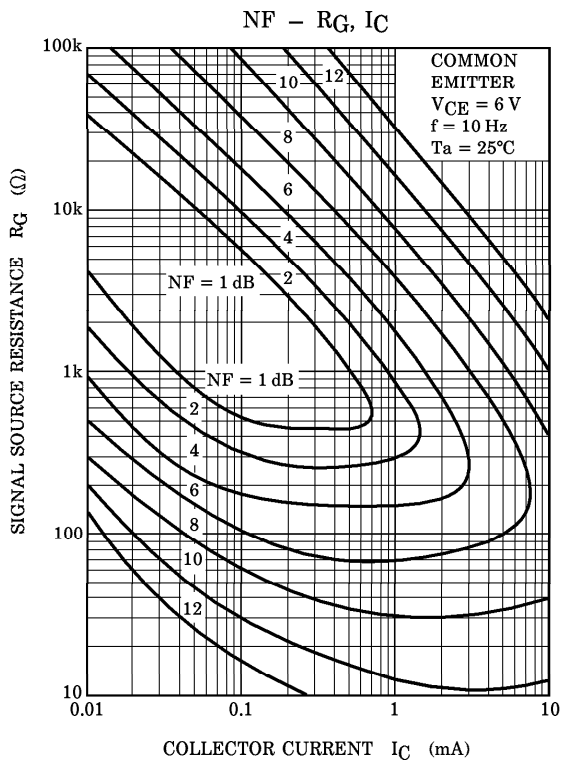
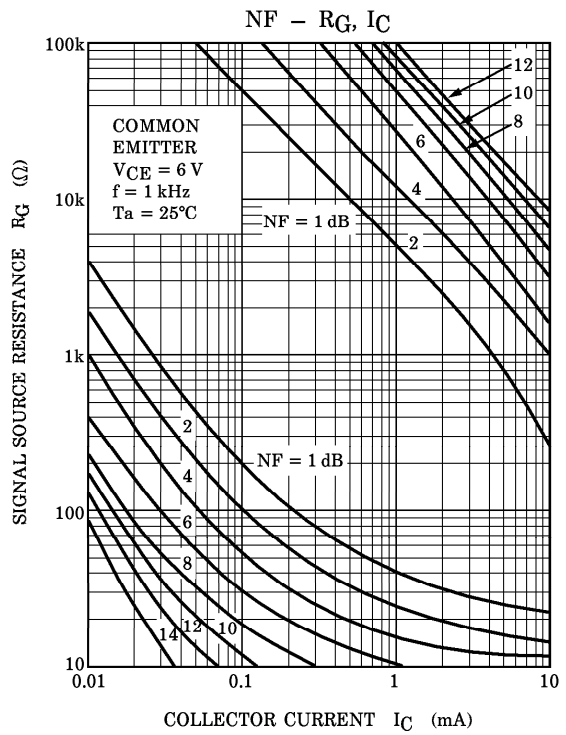
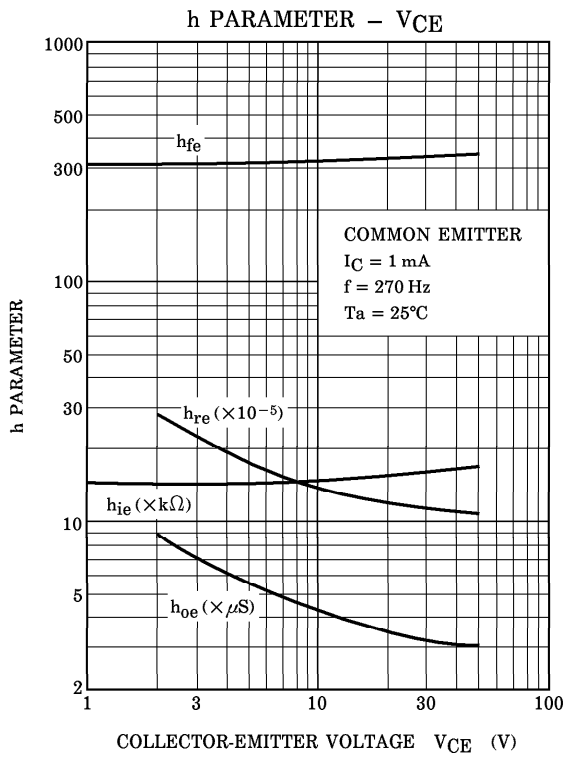


$C_{ob} - V_{CB}$



$h$  PARAMETER -  $I_C$





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