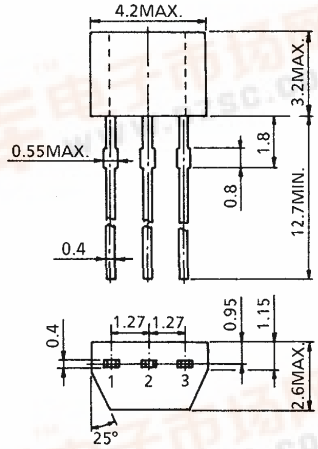
TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE

2SC3113

FOR AUDIO AMPLIFIER AND SWITCHING APPLICATIONS

Unit in mm

- High DC Current Gain : h_{FE} = 600~3600
- High Breakdown Voltage : V_{CEO} = 50V
- High Collector Current : I_C = 150mA (Max.)
- Small Package



1. EMITTER
2. COLLECTOR
3. BASE

JEDEC	—
EIAJ	—
TOSHIBA	2-4E1A

Weight : 0.13g

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	50	V
Collector-Emitter Voltage	V_{CEO}	50	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	I_C	150	mA
Base Current	I_B	30	mA
Collector Power Dissipation	P_C	200	mW
Junction Temperature	T_j	125	°C
Storage Temperature Range	T_{stg}	−55~125	°C

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	V_{CB} = 50V, I_E = 0	—	—	0.1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 5V, I_C = 0	—	—	0.1	μA
DC Current Gain	h_{FE} (Note)	V_{CE} = 6V, I_C = 2mA	600	—	3600	
Collector-Emitter Saturation Voltage	$V_{CE\ (sat)}$	I_C = 100mA, I_B = 10mA	—	0.12	0.25	V
Transition Frequency	f_T	V_{CE} = 10V, I_C = 10mA	100	250	—	MHz
Collector Output Capacitance	C_{ob}	V_{CB} = 10V, I_E = 0, f = 1MHz	—	3.5	—	pF
Noise Figure	NF (1)	V_{CE} = 6V, I_C = 0.1mA, f = 100Hz, R_G = 10kΩ	—	0.5	—	dB
	NF (2)	V_{CE} = 6V, I_C = 0.1mA, f = 1kHz, R_G = 10kΩ	—	0.3	—	dB

(Note) : h_{FE} Classification A : 600~1800, B : 1200~3600

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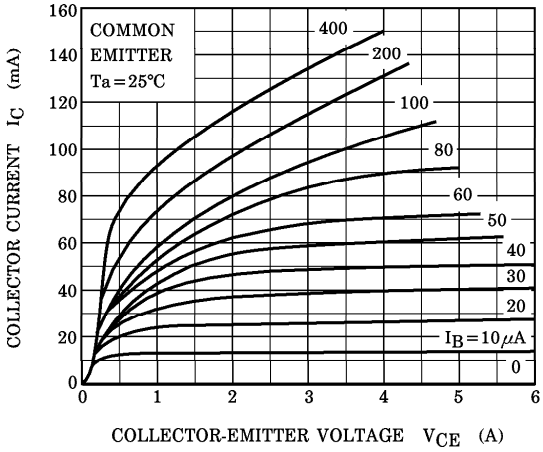
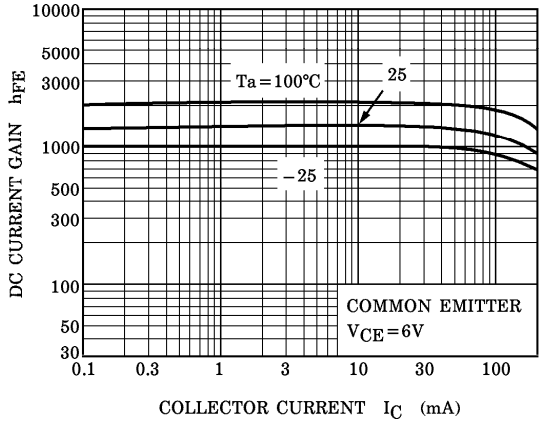
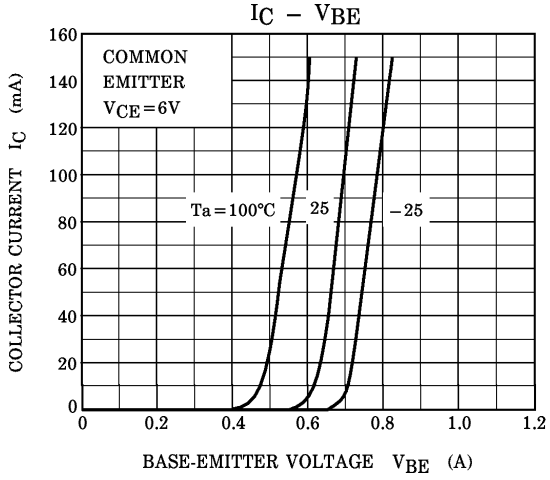
$I_C - V_{CE}$



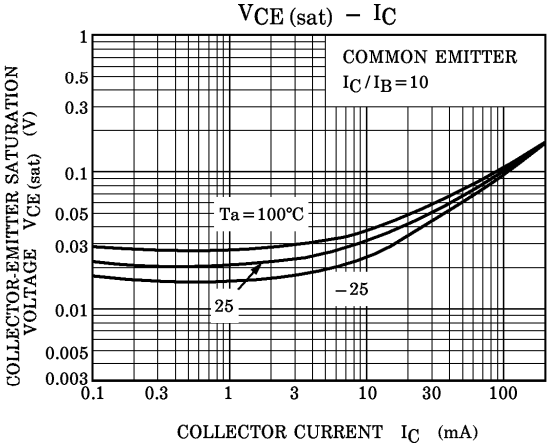
$h_{FE} - I_C$



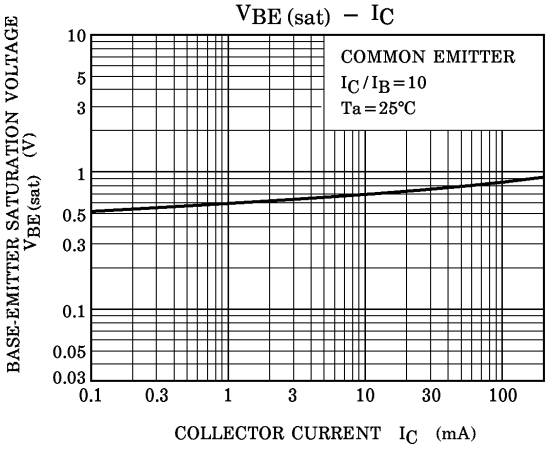
$I_C - V_{BE}$



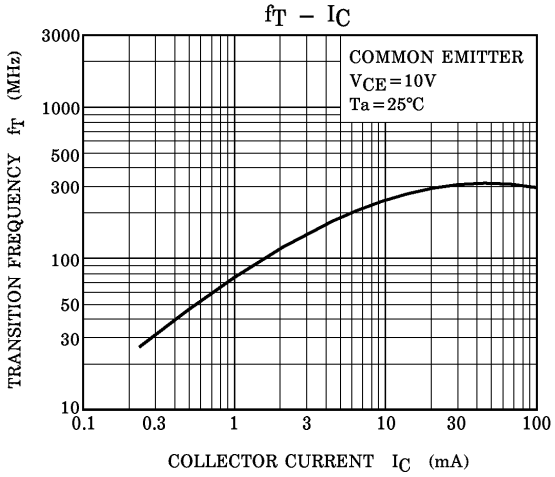
$V_{CE\,(sat)} - I_C$



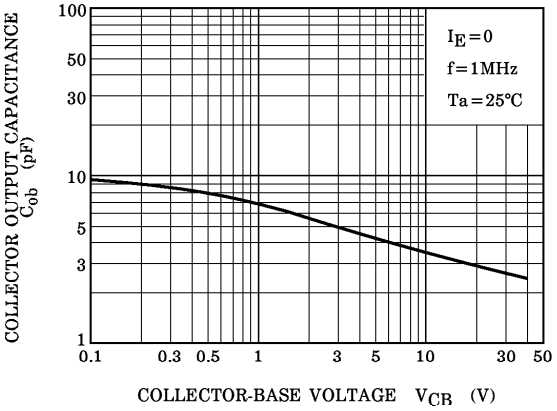
$V_{BE\,(sat)} - I_C$



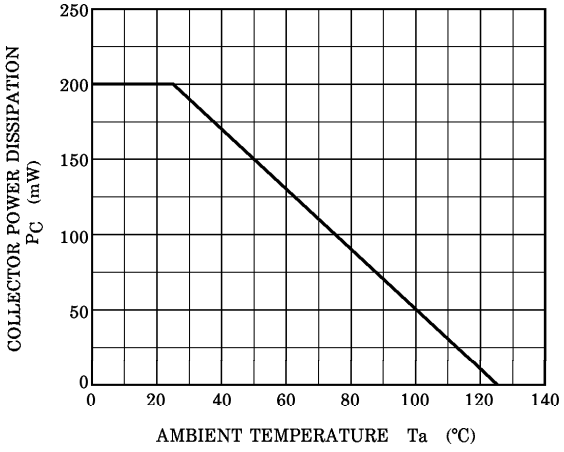
$f_T - I_C$



C_{ob} – V_{CB}


COLLECTOR OUTPUT CAPACITANCE C_{ob} (pF)
100
50
30
10
5
3
1
0.1
0.3
0.5
1
3
5
10
30
50
$I_E = 0$
f = 1MHz
Ta = 25°C
COLLECTOR-BASE VOLTAGE V_{CB} (V)

P_C – Ta


COLLECTOR POWER DISSIPATION P_C (mW)
250
200
150
100
50
0
0
20
40
60
80
100
120
140
AMBIENT TEMPERATURE Ta (°C)