TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

2SC4667

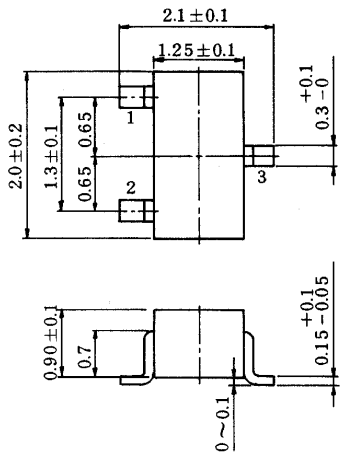
ULTRA HIGH SPEED SWITCHING APPLICATIONS.
COMPUTER, COUNTER APPLICATIONS.

- High Transition Frequency : f_T = 400MHz (Typ.)
- Low Saturation Voltage : $V_{CE\ (sat)}$ = 0.3V (Max.)
- High Speed Switching Time : t_{stg} = 15ns (Typ.)

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	40	V
Collector-Emitter Voltage	V_{CEO}	15	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	I_C	200	mA
Base Current	I_B	40	mA
Collector Power Dissipation	P_C	100	mW
Junction Temperature	T_j	125	°C
Storage Temperature Range	T_{stg}	−55~125	°C

Unit in mm



1. BASE
2. EMITTER
3. COLLECTOR

JEDEC	—
EIAJ	SC-70
TOSHIBA	2-2E1A

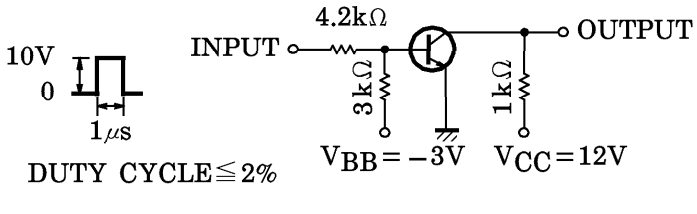
Weight : 0.006g

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

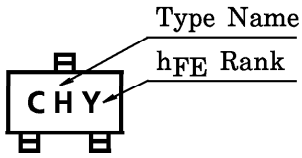
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	V_{CB}=40V, I_E=0	—	—	0.1	μA
Emitter Cut-off Current		I_{EBO}	V_{EB}=5V, I_C=0	—	—	0.1	μA
DC Current Gain		$h_{FE\,(1)}$ (Note 1)	V_{CE}=1V, I_C=10mA	40	—	240	
		$h_{FE\,(2)}$	V_{CE}=1V, I_C=100mA	20	—	—	
Collector-Emitter Saturation Voltage		$V_{CE\,(sat)}$	I_C=20mA, I_B=1mA	—	—	0.3	V
Base-Emitter Saturation Voltage		$V_{BE\,(sat)}$	I_C=20mA, I_B=1mA	—	—	1.0	V
Transition Frequency		f_T	V_{CE}=10V, I_C=10mA	200	400	—	MHz
Collector Output Capacitance		C_{ob}	V_{CB}=10V, I_E=0, f=1MHz	—	4	6	pF
Switching Time	Turn-on Time	t_{on}	(Note 2)	—	70	—	ns
	Storage Time	t_{stg}		—	15	—	
	Turn-off Time	t_{off}		—	30	—	

Note 1 : $h_{FE\,(1)}$ Classification R : 40~80, O : 70~140, Y : 120~240

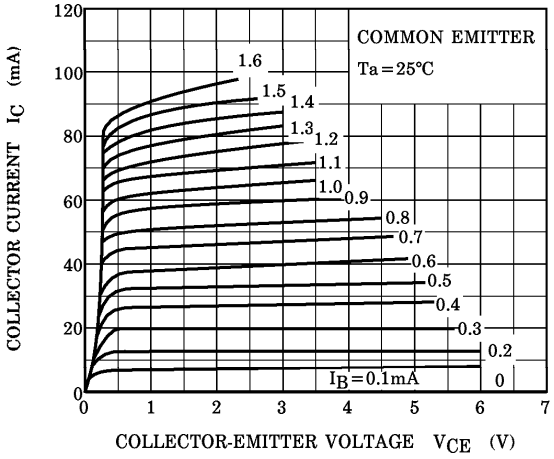
Note 2 : SWITCHING TIME TEST CIRCUIT



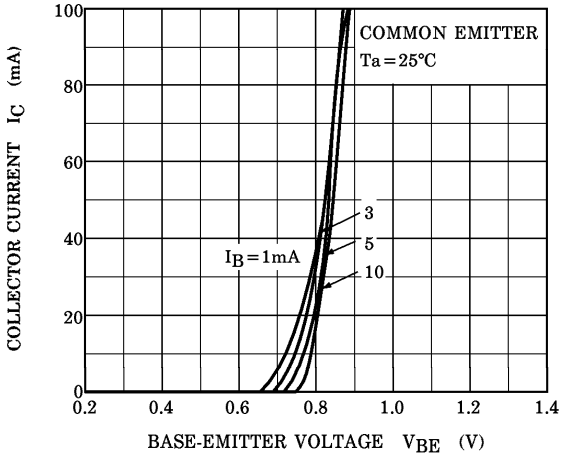
MARKING



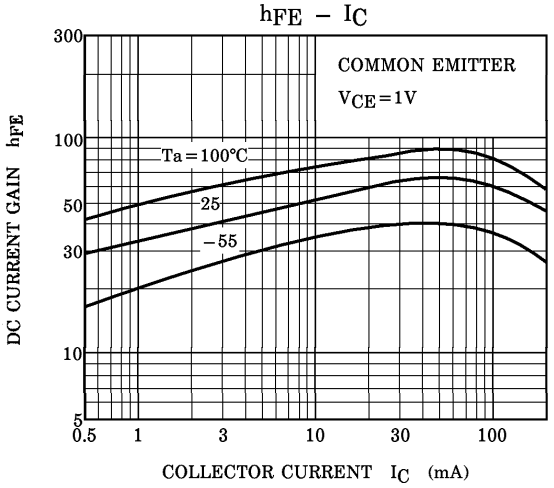
$I_C - V_{CE}$



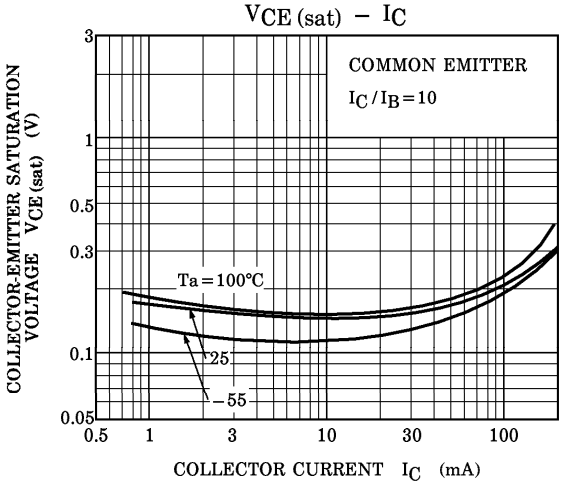
$I_C - V_{BE}$

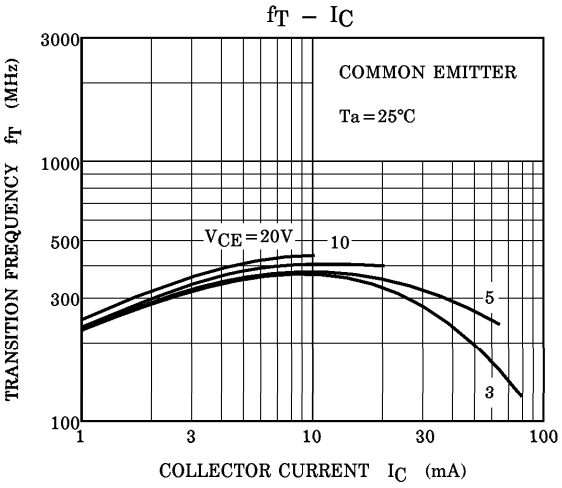


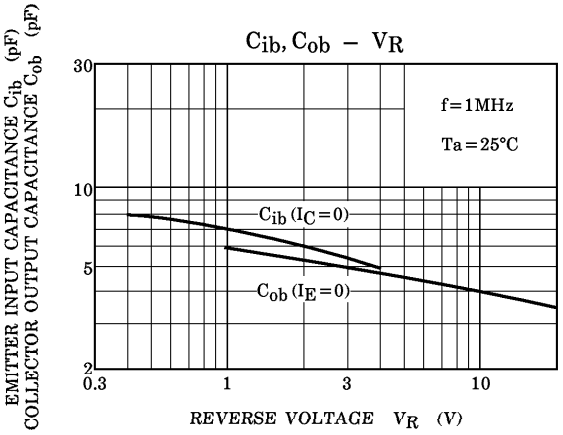
$h_{FE} - I_C$

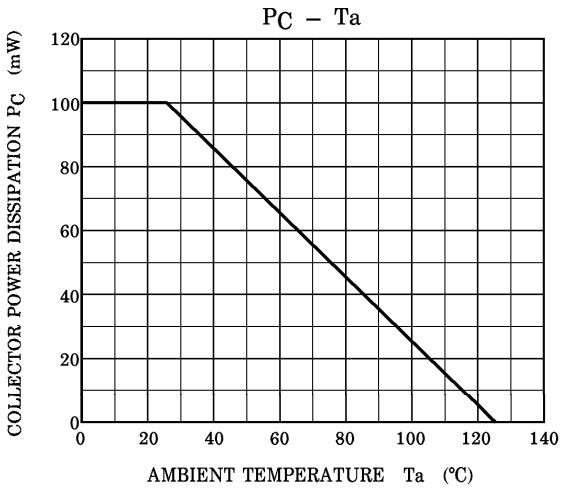


$V_{CE\,(sat)} - I_C$




f_T – I_C
COMMON EMITTER
Ta = 25°C
V_{CE} = 20V
10
5
3
TRANSITION FREQUENCY f_T (MHz)
3000
1000
500
300
100
1
3
10
30
100
COLLECTOR CURRENT I_C (mA)


C_{ib}, C_{ob} – V_R
f = 1MHz
Ta = 25°C
C_{ib} (I_C = 0)
C_{ob} (I_E = 0)
EMITTER INPUT CAPACITANCE C_{ib} (pF)
COLLECTOR OUTPUT CAPACITANCE C_{ob} (pF)
30
10
5
2
0.3
1
3
10
REVERSE VOLTAGE V_R (V)


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

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