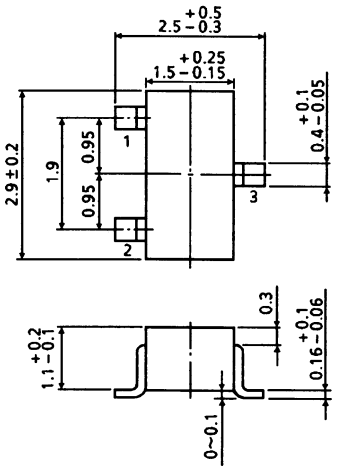
TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process)

2SC3437

Ultra High Speed Switching Applications
Computer, Counter Applications

- High transition frequency: f_T = 400 MHz (typ.)
- Low saturation voltage: $V_{CE\ (sat)}$ = 0.3 V (max)
- High speed switching time: t_{stg} = 15 ns (typ.)

Unit: mm



1. BASE
2. EMITTER
3. COLLECTOR

S-MINI

JEDEC	TO-236MOD
JEITA	SC-59
TOSHIBA	2-3F1A

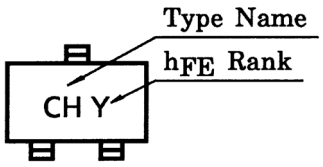
Weight: 0.012 g (typ.)

Absolute Maximum Ratings (Ta = 25°C)

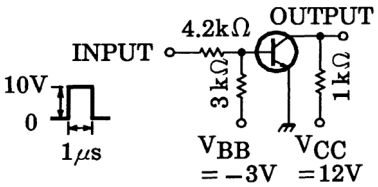
Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	40	V
Collector-emitter voltage	V_{CEO}	15	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	I_C	200	mA
Base current	I_B	40	mA
Collector power dissipation	P_C	150	mW
Junction temperature	T_j	125	°C
Storage temperature range	T_{stg}	−55~125	°C

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook (“Handling Precautions”/“Derating Concept and Methods”) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Marking

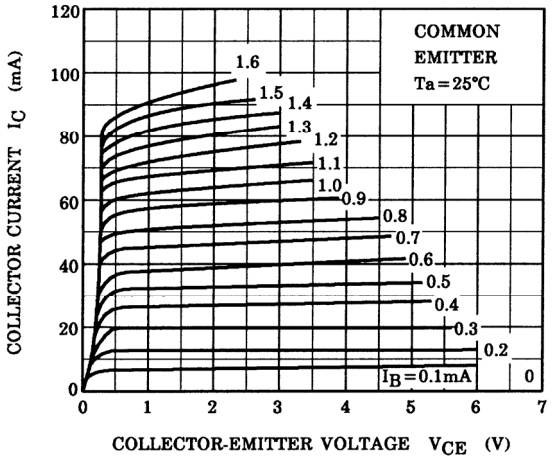


Electrical Characteristics (Ta = 25°C)

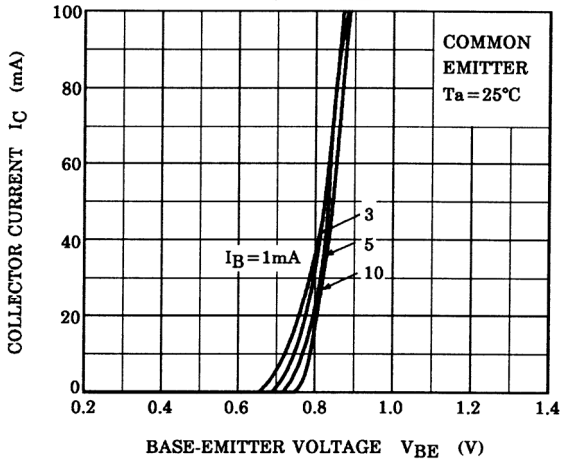
Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	V_{CB} = 40 V, I_E = 0	—	—	0.1	μA
Emitter cut-off current		I_{EBO}	V_{EB} = 5 V, I_C = 0	—	—	0.1	μA
DC current gain		$h_{FE\ (1)}$ (Note)	V_{CE} = 1 V, I_C = 10 mA	40	—	240	
		$h_{FE\ (2)}$	V_{CE} = 1 V, I_C = 100 mA	20	—	—	
Collector-emitter saturation voltage		$V_{CE\ (sat)}$	I_C = 20 mA, I_B = 1 mA	—	—	0.3	V
Base-emitter saturation voltage		$V_{BE\ (sat)}$	I_C = 20 mA, I_B = 1 mA	—	—	1.0	V
Transition frequency		f_T	V_{CE} = 10 V, I_C = 10 mA	200	400	—	MHz
Collector output capacitance		C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1 MHz	—	4	6	pF
Switching time	Turn-on time	t_{on}	 Duty cycle ≦ 2%	—	70	—	ns
	Storage time	t_{stg}		—	15	—	
	Fall time	t_f		—	30	—	

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

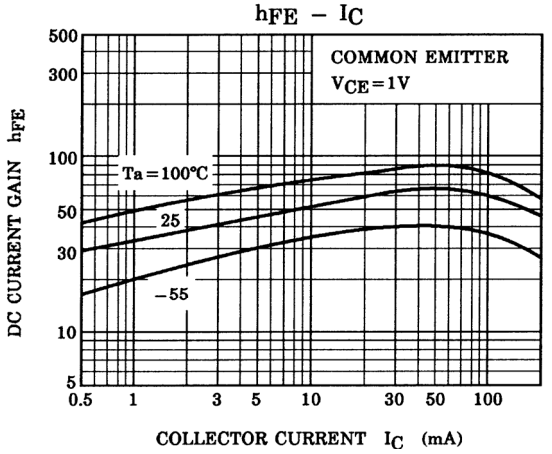
$I_C - V_{CE}$



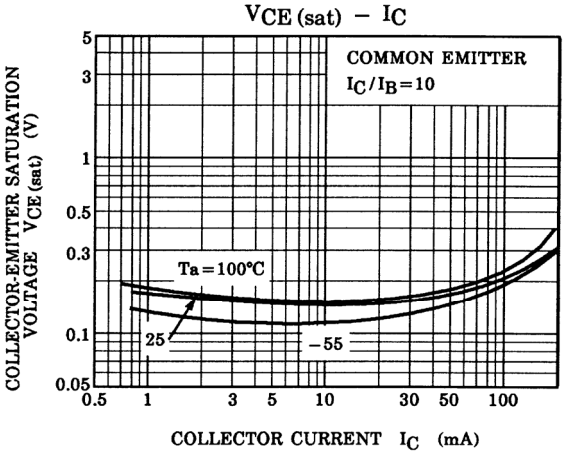
$I_C - V_{BE}$



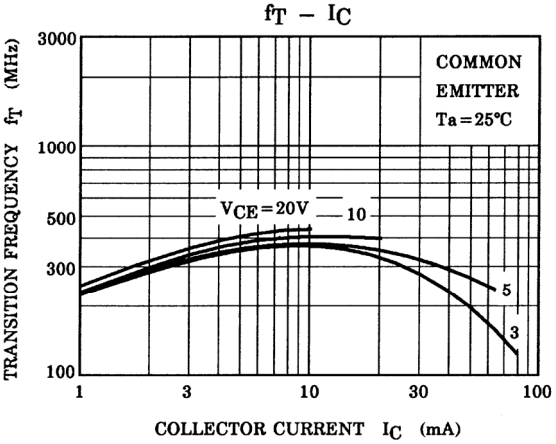
$h_{FE} - I_C$



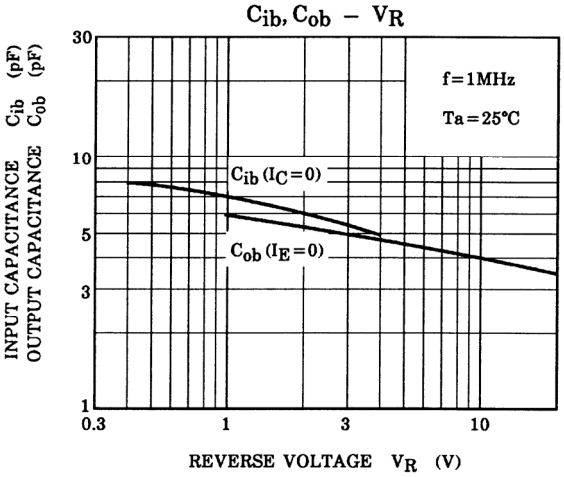
$V_{CE\,(sat)} - I_C$

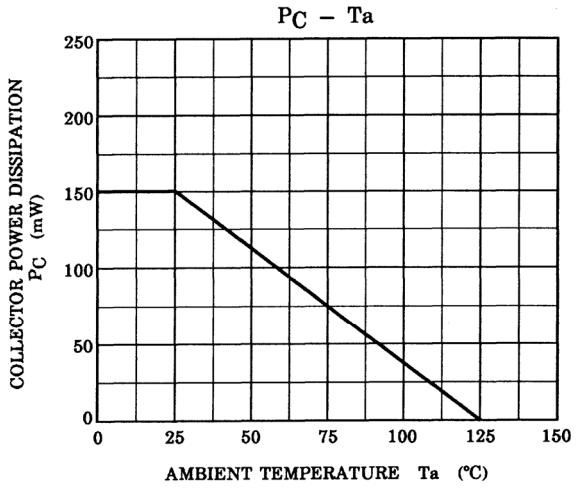


$f_T - I_C$



$C_{ib}, C_{ob} - V_R$




P_C – Ta
COLLECTOR POWER DISSIPATION P_C (mW)
250
200
150
100
50
0
0
25
50
75
100
125
150
AMBIENT TEMPERATURE Ta (°C)

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20070701-EN GENERAL

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