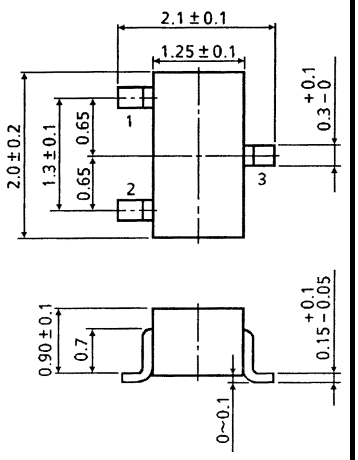
TOSHIBA Transistor Silicon PNP Epitaxial (PCT process)

2SA1588

Audio Frequency Low Power Amplifier Applications
Driver Stage Amplifier Applications
Switching Applications

Unit: mm



1. BASE
2. EMITTER
3. COLLECTOR

USM

JEDEC	—
JEITA	SC-70
TOSHIBA	2-2E1A

Weight: 0.006 g (typ.)

- Excellent h_{FE} linearity: $h_{FE\ (2)}$ = 25 (min)
  at V_{CE} = −6 V, I_C = −400 mA
- Complementary to 2SC4118

Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	−35	V
Collector-emitter voltage	V_{CEO}	−30	V
Emitter-base voltage	V_{EBO}	−5	V
Collector current	I_C	−500	mA
Base current	I_B	−50	mA
Collector power dissipation	P_C	100	mW
Junction temperature	T_j	125	°C
Storage temperature range	T_{stg}	−55~125	°C

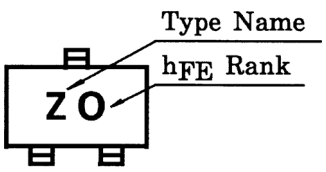
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) 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).

Electrical Characteristics (Ta = 25°C)

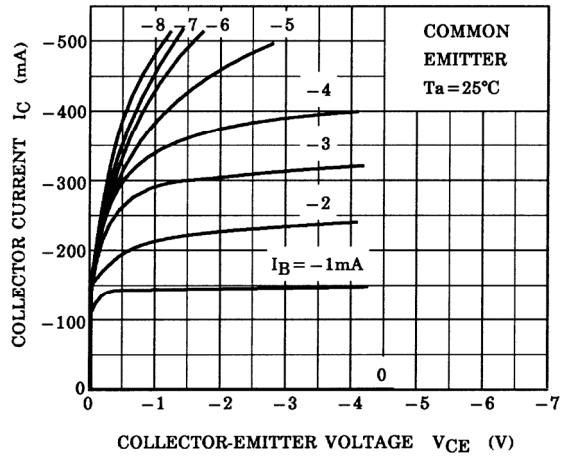
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	V_{CB} = −35 V, I_E = 0	—	—	−0.1	μA
Emitter cut-off current	I_{EBO}	V_{EB} = −5 V, I_C = 0	—	—	−0.1	μA
DC current gain (Note)	$h_{FE\ (1)}$	V_{CE} = −1 V, I_C = −100 mA	70	—	400	
	$h_{FE\ (2)}$	V_{CE} = −6 V, I_C = −400 mA	25	—	—	
Collector-emitter saturation voltage	$V_{CE\ (sat)}$	I_C = −100 mA, I_B = −10 mA	—	−0.1	−0.25	V
Base-emitter voltage	V_{BE}	V_{CE} = −1 V, I_C = −100 mA	—	−0.8	−1.0	V
Transition frequency	f_T	V_{CE} = −6 V, I_C = −20 mA	—	200	—	MHz
Collector output capacitance	C_{ob}	V_{CB} = −6 V, I_E = 0, f = 1 MHz	—	13	—	pF

Note: $h_{FE\ (1)}$ classification O(O): 70~140, Y(Y): 120~240, GR(G): 200~400 ( ) Marking Symbol
$h_{FE\ (2)}$ classification O: 25 (min), Y: 40 (min), GR: 75 (min)

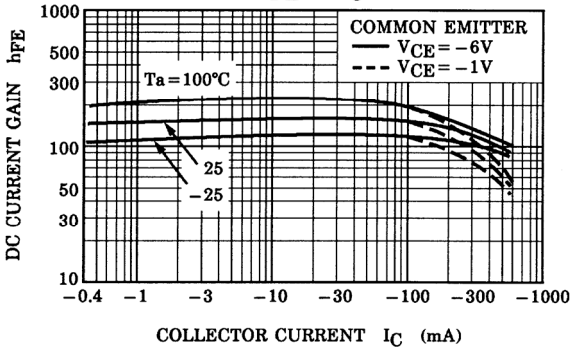
Marking



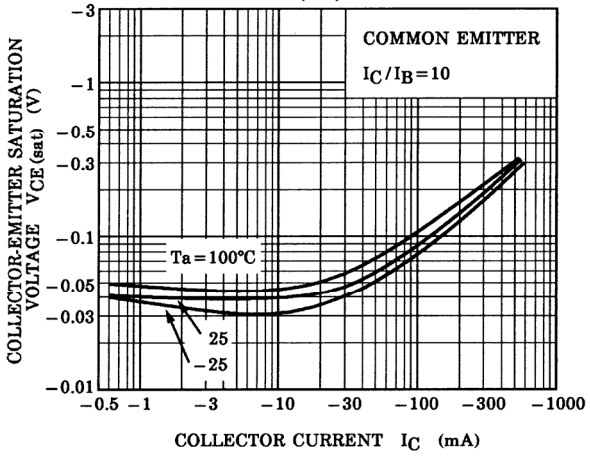
$I_C - V_{CE}$



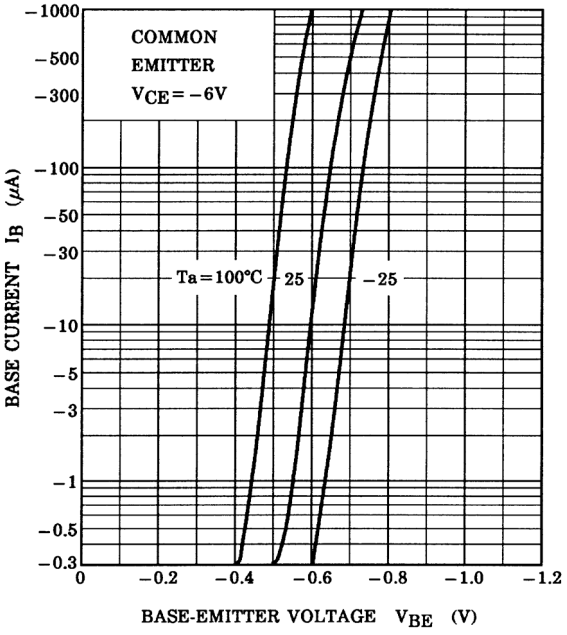
$h_{FE} - I_C$



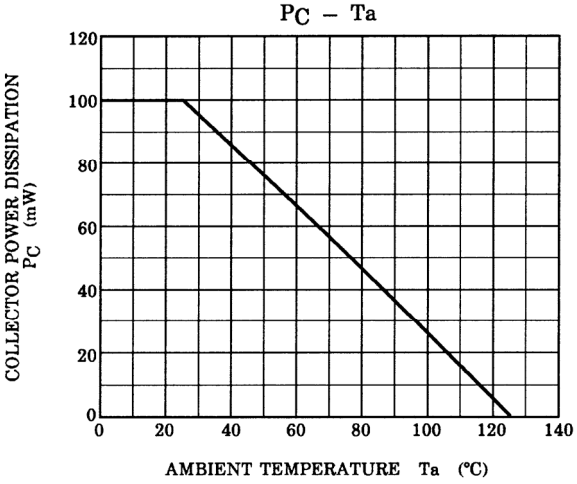
$V_{CE\,(sat)} - I_C$



$I_B - V_{BE}$



$P_C - Ta$



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20070701-EN GENERAL

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