TOSHIBA Transistor Silicon NPN Triple Diffused Type

2SD1407A

Power Amplifier Applications

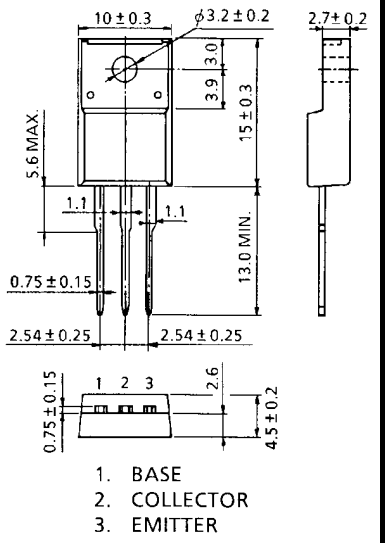
Industrial Applications

- High breakdown voltage: V_{CEO} = 100 V
- Low collector saturation voltage: $V_{CE\ (sat)}$ = 2.0 V (max)
- Complementary to 2SB1016A

Absolute Maximum Ratings (Tc = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	100	V
Collector-emitter voltage	V_{CEO}	100	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	I_C	5	A
Base current	I_B	0.5	A
Collector power dissipation (Tc = 25°C)	P_C	30	W
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	−55 to 150	°C

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	2-10R1A

Weight: 1.7 g (typ.)

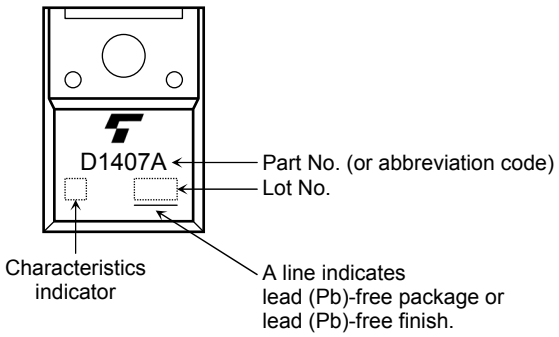
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) 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 (Tc = 25°C)

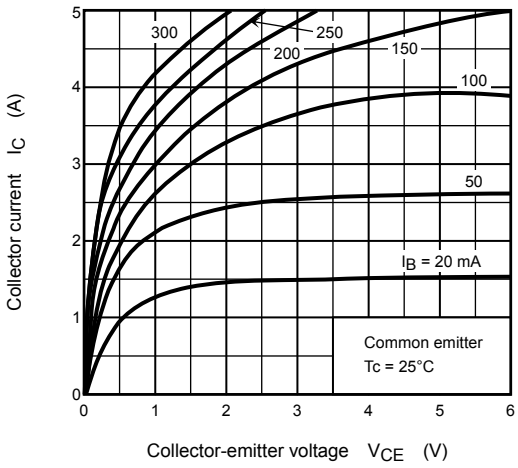
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	V_{CB} = 100 V, I_E = 0	—	—	100	μA
Emitter cut-off current	I_{EBO}	V_{EB} = 5 V, I_C = 0	—	—	1	mA
Collector-emitter breakdown voltage	$V_{(BR)\ CEO}$	I_C = 50 mA, I_B = 0	100	—	—	V
DC current gain	$h_{FE\ (1)}$ (Note)	V_{CE} = 5 V, I_C = 1 A	40	—	240	
	$h_{FE\ (2)}$	V_{CE} = 5 V, I_C = 4 A	20	—	—	
Collector-emitter saturation voltage	$V_{CE\ (sat)}$	I_C = 4 A, I_B = 0.4 A	—	—	2.0	V
Base-emitter saturation voltage	V_{BE}	V_{CE} = 5 V, I_C = 1 A	—	—	1.5	V
Transition frequency	f_T	V_{CE} = 5 V, I_C = 1 A	—	12	—	MHz
Collector output capacitance	C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1 MHz	—	100	—	pF

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

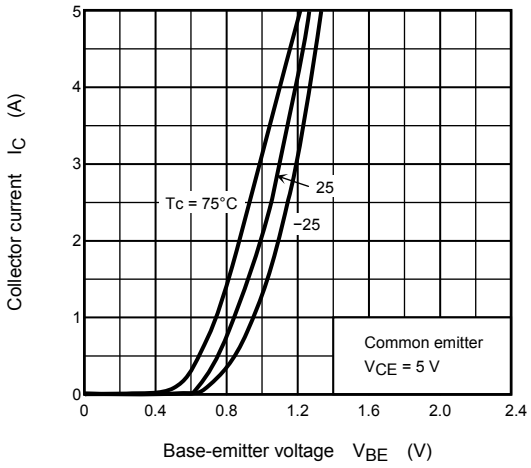
Marking



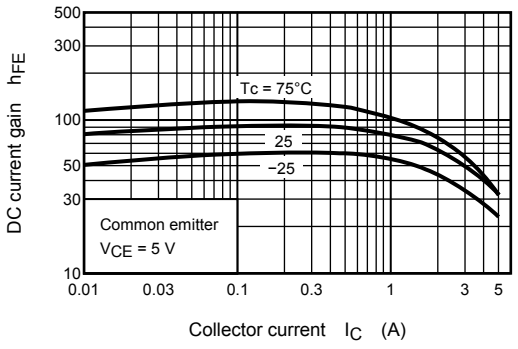
$I_C - V_{CE}$



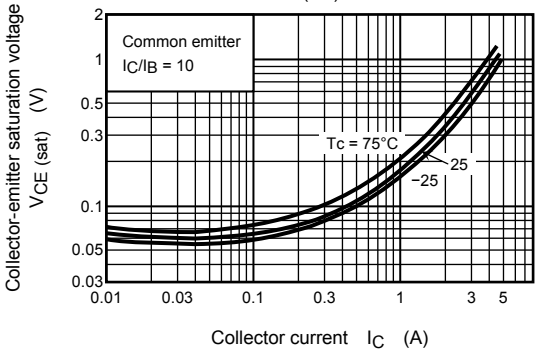
$I_C - V_{BE}$



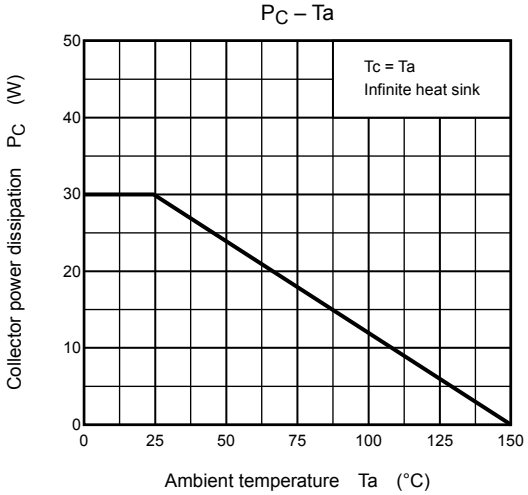
$h_{FE} - I_C$



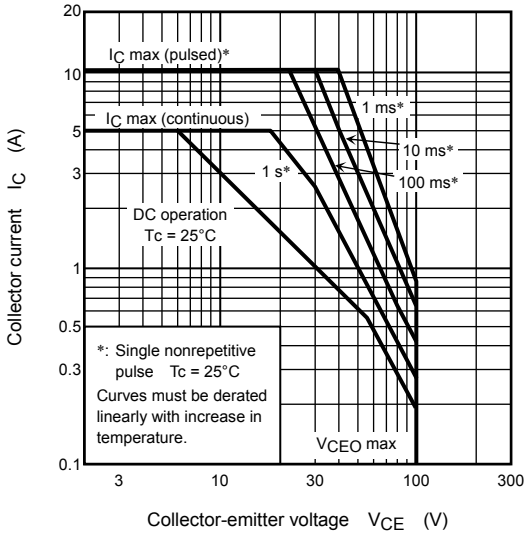
$V_{CE\ (sat)} - I_C$



$P_C - Ta$



Safe Operating Area



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