TOSHIBA Transistor Silicon NPN Epitaxial Type

2SC6124

Power Amplifier Applications

Power Switching Applications

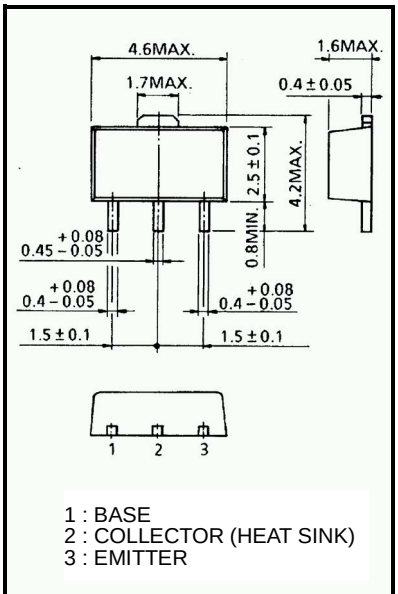
Low collector emitter saturation voltage

: $V_{CE\ (sat)}$ = 0.5 V (Max) (I_C = 1 A)

High-speed switching: t_{stg} = 400 ns (Typ.)

Complementary to 2SA2206

Unit: mm



JEDEC	—
JEITA	SC-62
TOSHIBA	2-5K1A

Weight: 0.05 g (Typ.)

Absolute Maximum Ratings (Ta = 25°C)

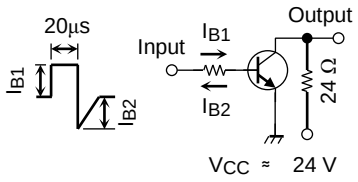
Characteristic		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	160	V
Collector-emitter voltage		V_{CEX}	160	V
		V_{CEO}	80	V
Emitter-base voltage		V_{EBO}	7	V
Collector current	DC	I_C	2	A
	Pulse	I_{CP}	4	A
Base current		I_B	0.5	A
Collector power dissipation	t = 10 s	P_C (Note 1)	2.5	W
	DC		1.0	
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	−55 to 150	°C

Note 1: Mounted on an FR4 board (glass-epoxy; 1.6 mm thick; Cu area, 645 mm^2)

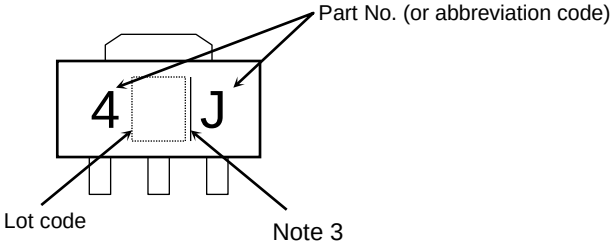
Note 2: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) 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).

Start of commercial production
2007-01

Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	V_{CB} = 160 V, I_E = 0 A	—	—	1	μA
Emitter cut-off current		I_{EBO}	V_{EB} = 7 V, I_C = 0 A	—	—	1	μA
Collector-emitter breakdown voltage		$V_{(BR)\ CEO}$	I_C = 10 mA, I_B = 0 A	80	—	—	V
DC current gain		h_{FE} (1)	V_{CE} = 2 V, I_C = 1 mA	80	—	—	
		h_{FE} (2)	V_{CE} = 2 V, I_C = 0.5 A	100	—	200	
		h_{FE} (3)	V_{CE} = 2 V, I_C = 1 A	60	—	—	
Collector-emitter saturation voltage		$V_{CE\ (sat)}$ (1)	I_C = 0.5 A, I_B = 50 mA	—	—	0.30	V
		$V_{CE\ (sat)}$ (2)	I_C = 1 A, I_B = 100 mA	—	—	0.50	V
Base-emitter saturation voltage		$V_{BE\ (sat)}$	I_C = 1 A, I_B = 100 mA	—	—	1.50	V
Transition frequency		f_T	V_{CE} = 2 V, I_C = 0.5 A	—	150	—	MHz
Collector output capacitance		C_{ob}	V_{CB} = 10 V, I_E = 0 A, f = 1MHz	—	14	—	pF
Switching time	Rise time	t_r		—	50	—	ns
	Storage time	t_{stg}		—	400	—	
	Fall time	t_f	I_C = 1 A , I_{B1} = I_{B2} = 100 mA Duty cycle ≤ 1%	—	150	—	

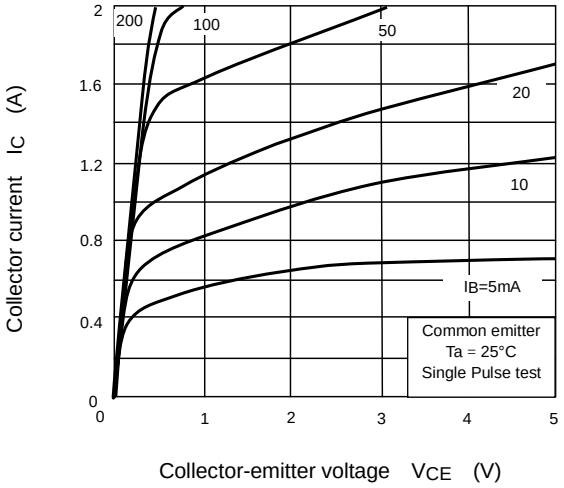
Marking



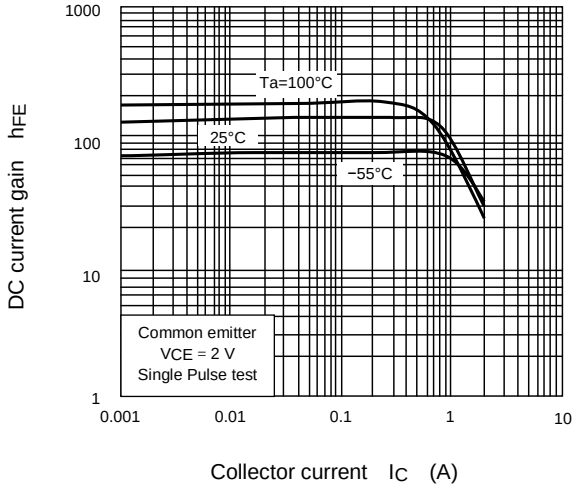
Note 3: A line beside a Lot No. identifies the indication of product Labels.
[[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product.
The RoHS is the Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

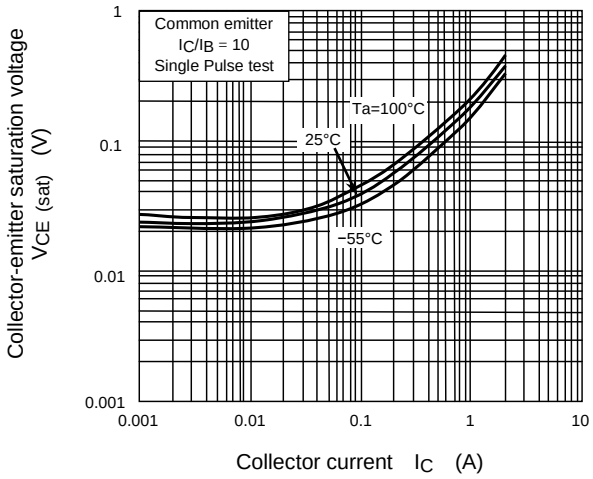
$I_C - V_{CE}$



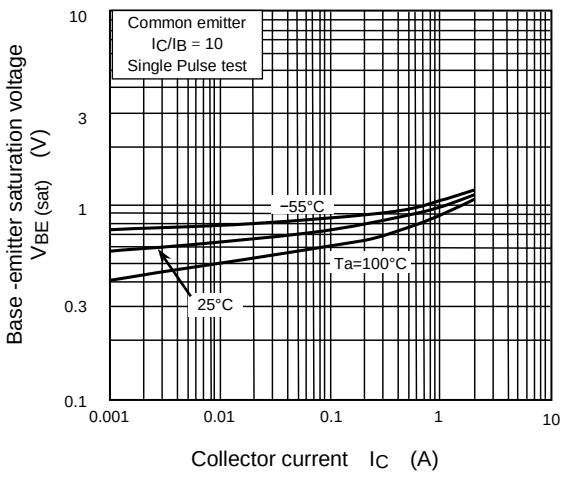
$h_{FE} - I_C$



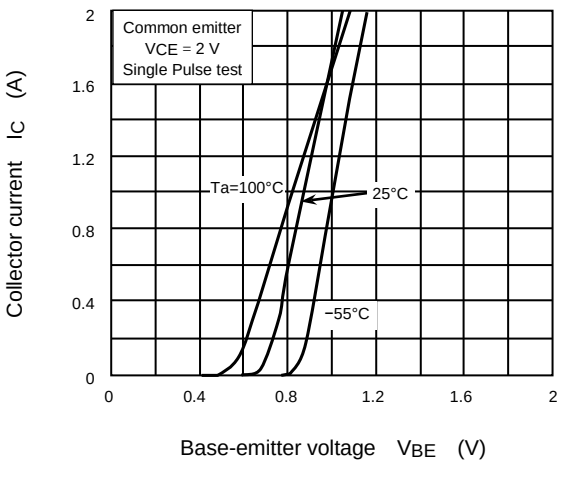
$V_{CE\ (sat)} - I_C$



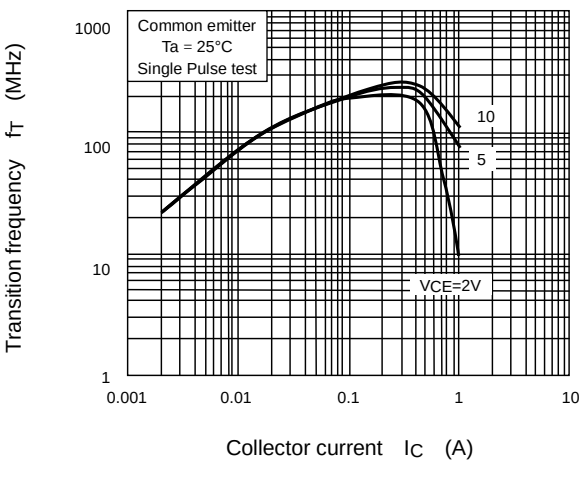
$V_{BE\ (sat)} - I_C$



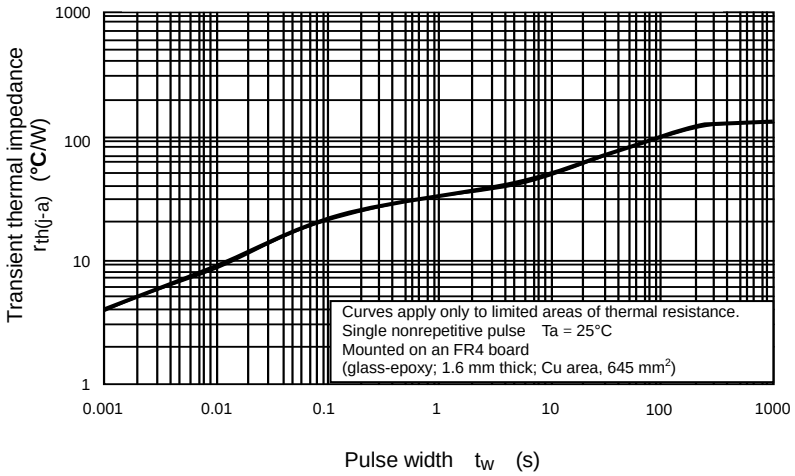
$I_C - V_{BE}$



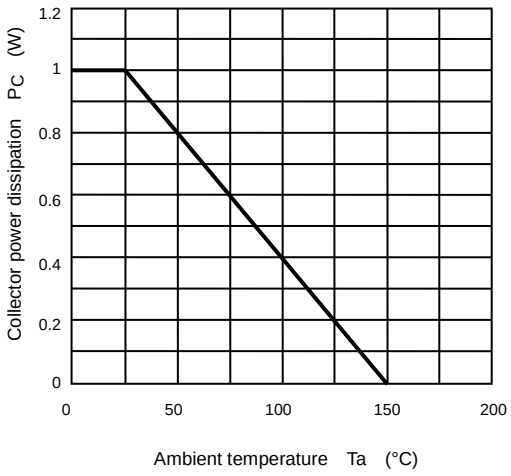
$f_T - I_C$



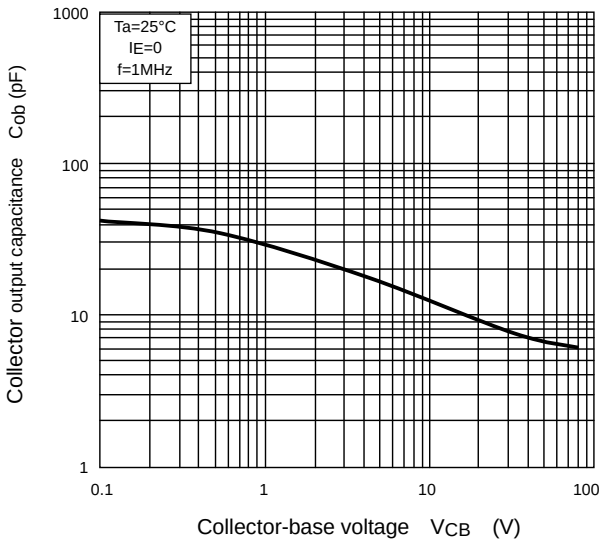
rth−tw



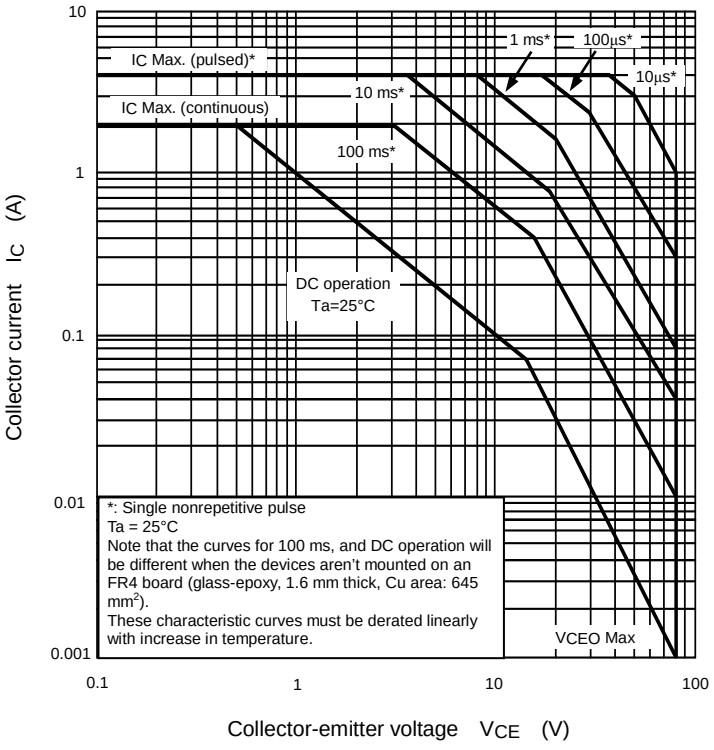
P_C – Ta



C_{ob}−V_{CB}



Safe Operating Area



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