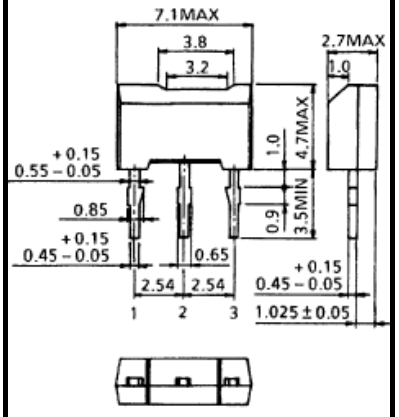
TOSHIBA Transistor Silicon NPN Epitaxial Type

2SC6139

○ Audio Frequency Amplifier Applications

- High collector voltage : V_{CEO} = 160 V (min)
- Small collector output capacitance : C_{ob} = 12pF (typ.)
- High transition frequency : f_T = 100MHz (typ.)
- Complementary to 2SA2219

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	2-7D101A

Weight : 0.2 g (typ.)

Absolute Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	160	V
Collector-emitter voltage		V_{CEO}	160	V
Emitter-base voltage		V_{EBO}	6	V
Collector current	DC	I_C	1.5	A
	Pulse	I_{CP}	2.5	A
Base current		I_B	0.5	A
Collector power dissipation		P_C	1	W
Junction temperature		T_j	150	°C
Storage temperature range		T_{stg}	−55 to 150	°C

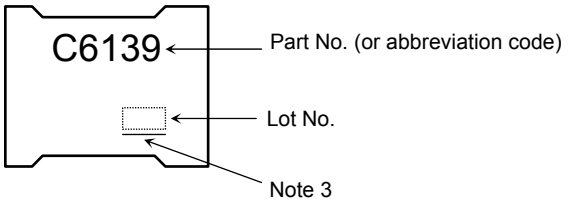
Note 1: Ensure that the channel temperature does not exceed 150°C during use of the device.

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).

Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	V_{CB} = 160V, I_E = 0	—	—	100	n A
Emitter cut-off current	I_{EBO}	V_{EB} = 6V, I_C = 0	—	—	100	n A
Collector-emitter breakdown voltage	$V_{(BR)\ CEO}$	I_C = 10mA, I_B = 0	160	—	—	V
DC current gain	h_{FE} (1)	V_{CE} = 5V, I_C = 1mA	80	—	—	
	h_{FE} (2)	V_{CE} = 5V, I_C = 0.1A	140	—	280	
Collector-emitter saturation voltage	$V_{CE\ (sat)}$	I_C = 0.5A, I_B = 50mA	—	—	0.5	V
Base-emitter saturation voltage	$V_{BE\ (sat)}$	I_C = 0.5A, I_B = 50mA	—	—	1.3	V
Collector output capacitance	C_{ob}	V_{CB} = 10V, I_C = 0, f = 1MHz	—	12	—	pF
Transition frequency	f_T	V_{CE} = 10V, I_C = 100mA	—	100	—	MHz

Marking

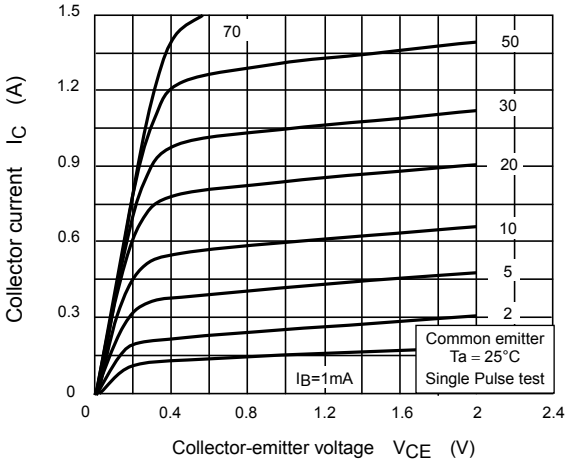


Note 3 : A line under a Lot No. identifies the indication of product Labels.
[[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

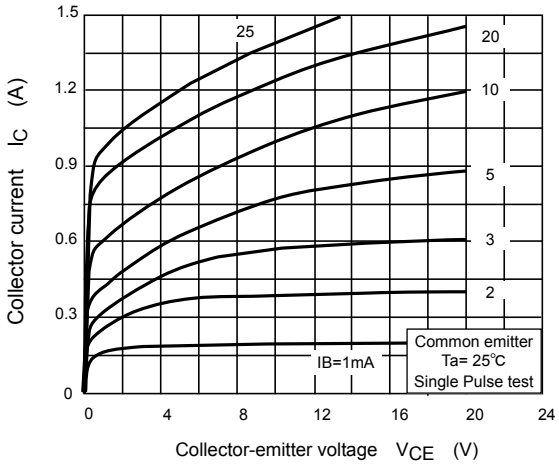
Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product.

The RoHS is the Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

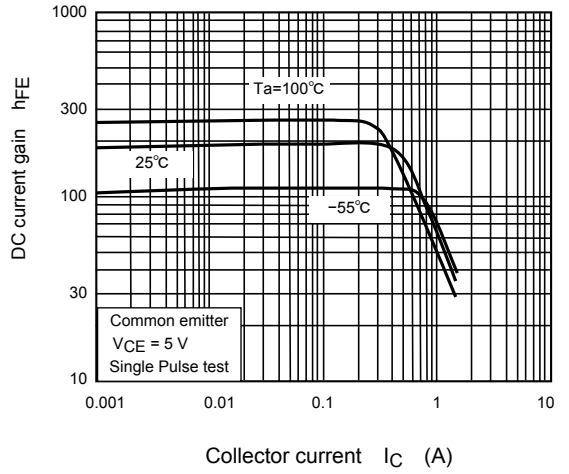
$I_C - V_{CE}$



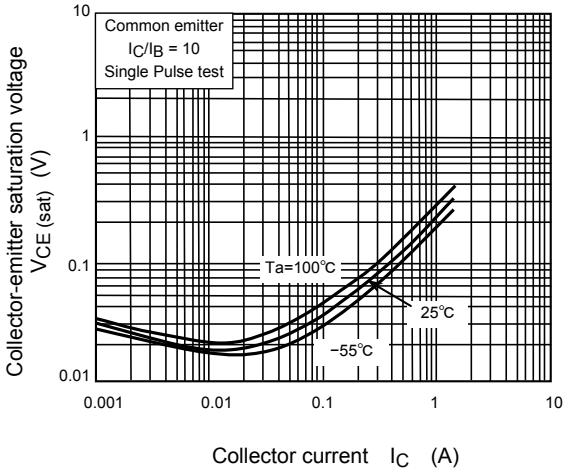
$I_C - V_{CE}$



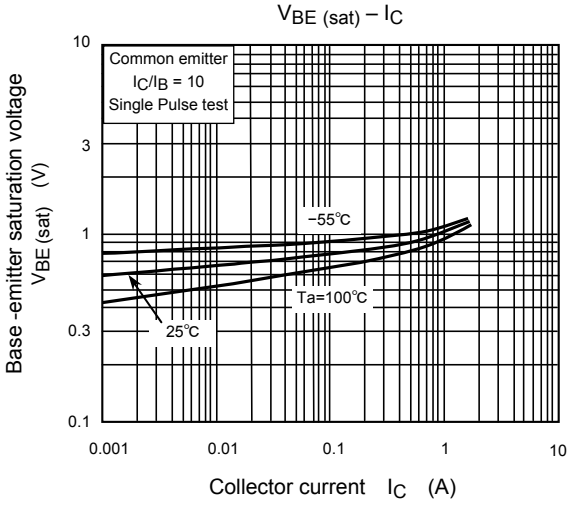
$h_{FE} - I_C$



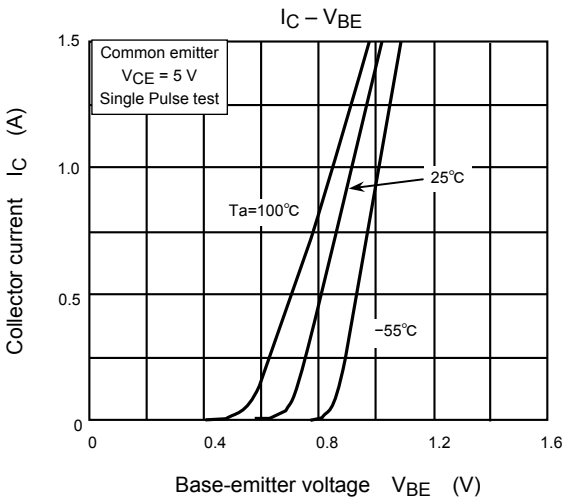
$V_{CE\ (sat)} - I_C$



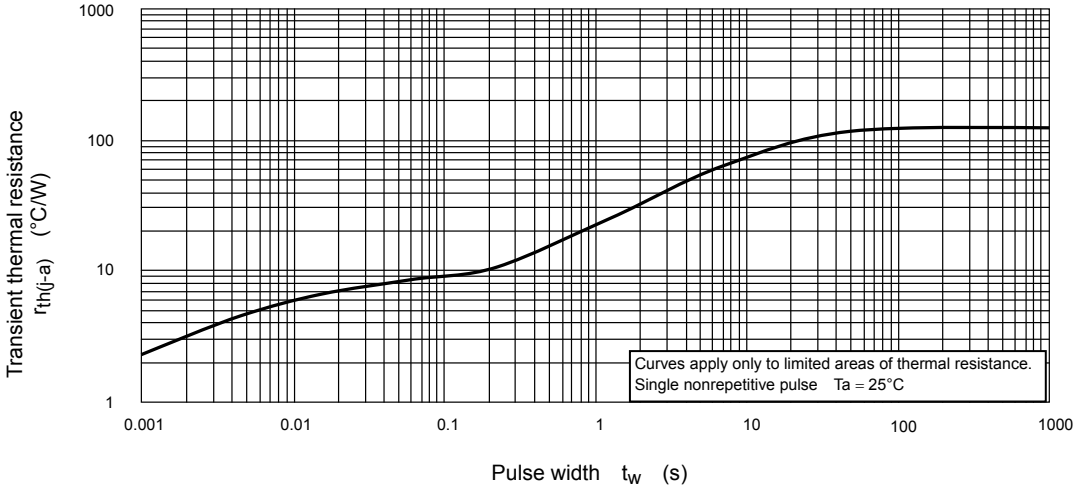
$V_{BE\ (sat)} - I_C$



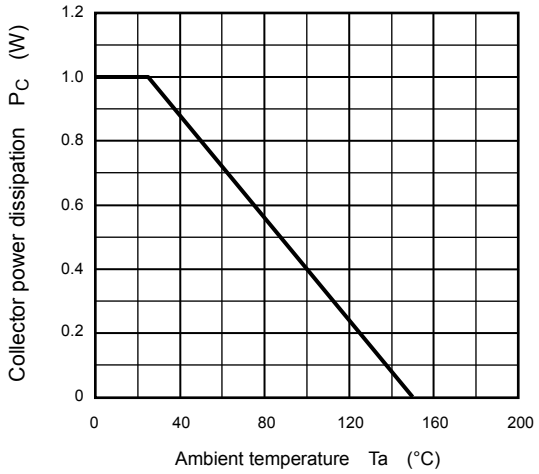
$I_C - V_{BE}$



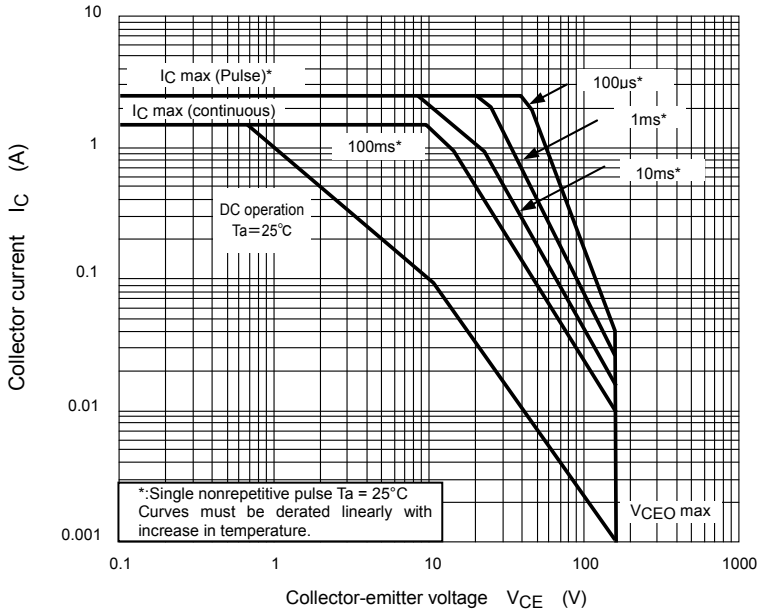
$r_{th(j-a)} - t_w$



$P_C - Ta$



Safe Operating Area



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