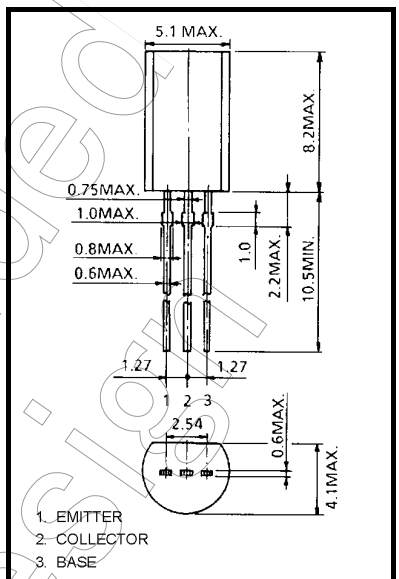
TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

2SA1020

Power Amplifier Applications
Power Switching Applications

- Low Collector saturation voltage: $V_{CE\ (sat)}$ = −0.5 V (max) (I_C = −1 A)
- High collector power dissipation: P_C = 900 mW
- High-speed switching: t_{stg} = 1.0 μs (typ.)
- Complementary to 2SC2655

Unit: mm



JEDEC	TO-92MOD
JEITA	—
TOSHIBA	2-5J1A

Weight: 0.36 g (typ.)

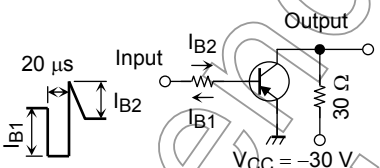
Absolute Maximum Ratings (T_a = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	−50	V
Collector-emitter voltage	V_{CEO}	−50	V
Emitter-base voltage	V_{EBO}	−5	V
Collector current	I_C	−2	A
Base current	I_B	−0.2	A
Collector power dissipation	P_C	900	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	−55 to 150	°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).

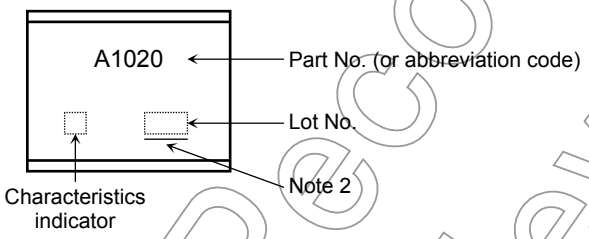
Not Recommended for New Design

Electrical Characteristics (T_a = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	V_{CB} = −50 V, I_E = 0	—	—	−1	μA
Emitter cut-off current		I_{EBO}	V_{EB} = −5 V, I_C = 0	—	—	−1	μA
Collector-emitter breakdown voltage		$V_{(BR)\ CEO}$	I_C = −10 mA, I_B = 0	−50	—	—	V
DC current gain		$h_{FE\ (1)}$	V_{CE} = −2 V, I_C = −0.5 A	70	—	240	
		$h_{FE\ (2)}$	V_{CE} = −2 V, I_C = −1.5 A	40	—	—	
Collector-emitter saturation voltage		$V_{CE\ (sat)}$	I_C = −1 A, I_B = −0.05 A	—	—	−0.5	V
Base-emitter saturation voltage		$V_{BE\ (sat)}$	I_C = −1 A, I_B = −0.05 A	—	—	−1.2	V
Transition frequency		f_T	V_{CE} = −2 V, I_C = −0.5 A	—	100	—	MHz
Collector output capacitance		C_{ob}	V_{CB} = −10 V, I_E = 0, f = 1 MHz	—	40	—	pF
Switching time	Turn-on time	t_{on}		—	0.1	—	μs
	Storage time	t_{stg}		—	1	—	
	Fall time	t_f	I_{B1} = 0.05 A , I_{B2} = 0.05 A DUTY CYCLE ≤ 1%	—	0.1	—	

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

Marking

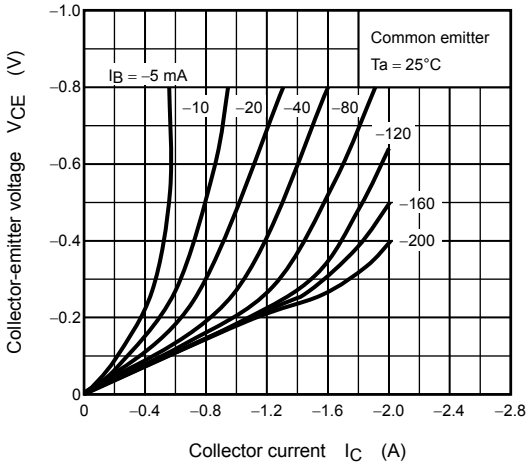


Note 2: A line under a Lot No. identifies the indication of product Labels.
Not underlined: [[Pb]]/INCLUDES > MCV
Underlined: [[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

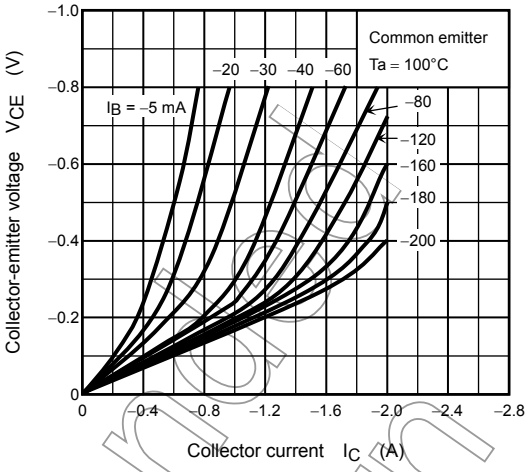
Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product. The RoHS is the Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Not Recommended for New Design

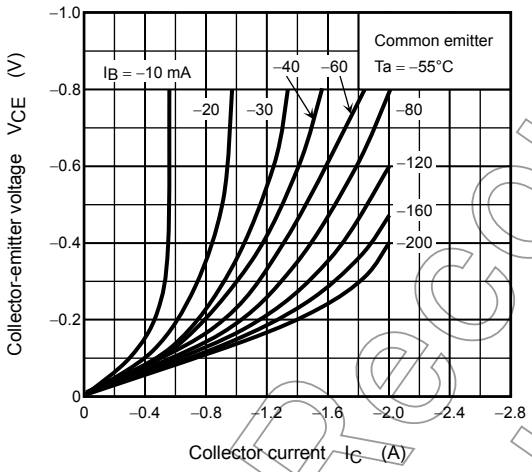
$V_{CE} - I_C$



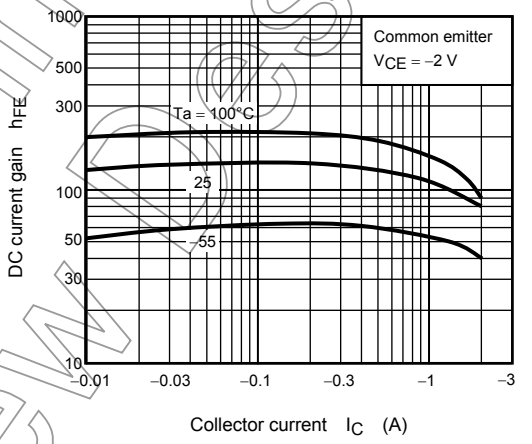
$V_{CE} - I_C$



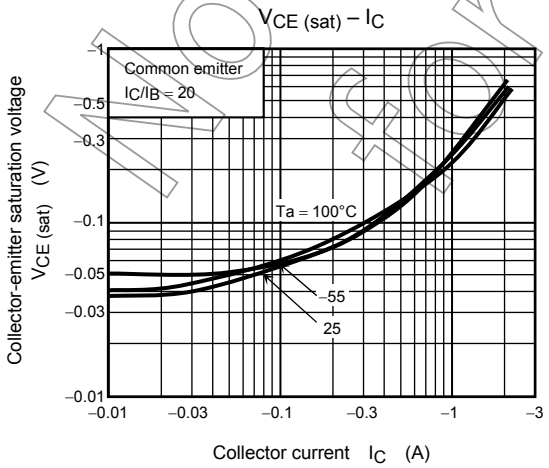
$V_{CE} - I_C$



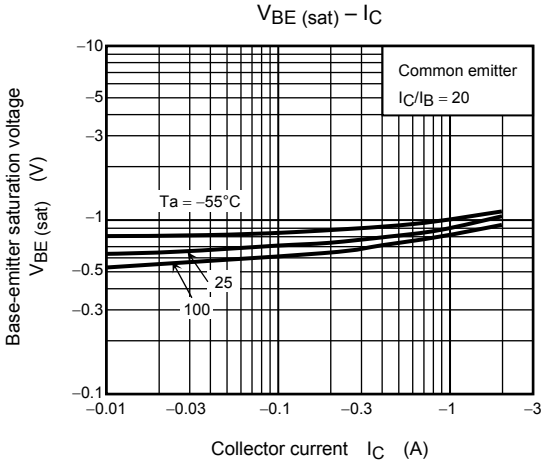
$h_{FE} - I_C$



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

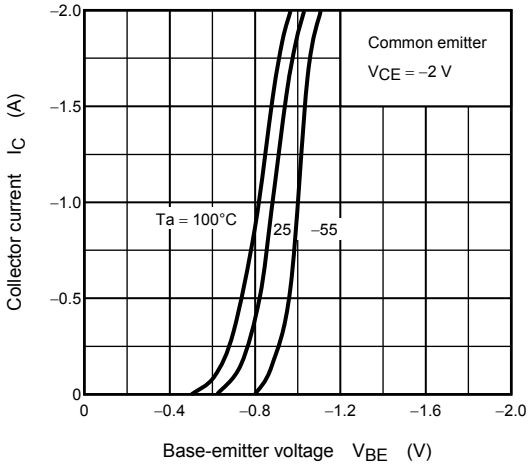


$V_{BE\ (sat)} - I_C$

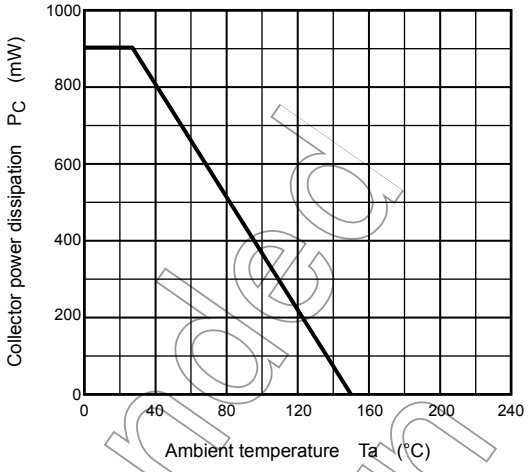


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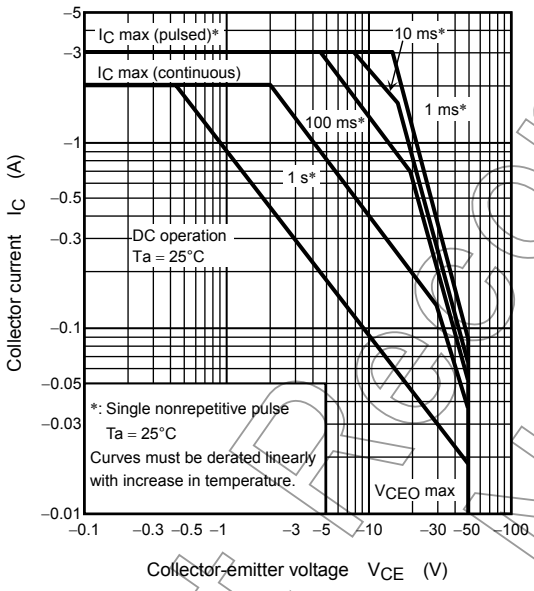
$I_C - V_{BE}$



$P_C - Ta$



Safe Operating Area



Not Recommended for New Design

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