

TOSHIBA Transistor Silicon PNP Triple Diffused Type

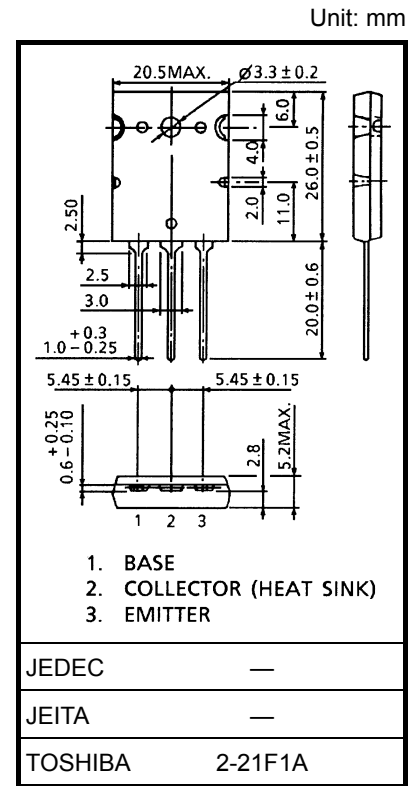
# TTA0002

○ Power Amplifier Applications

- High collector voltage:  $V_{CEO} = -160$  V (min)
- Complementary to TTC0002
- Recommended for 100-W high-fidelity audio frequency amplifier output stage.

**Absolute Maximum Ratings (Tc = 25°C)**

Characteristics		Symbol	Rating	Unit
Collector-base voltage		$V_{CBO}$	-160	V
Collector-emitter voltage		$V_{CEO}$	-160	V
Emitter-base voltage		$V_{EBO}$	-5	V
Collector current	DC	$I_C$	-18	A
	Pulse	$I_{CP}$	-35	A
Base current		$I_B$	-9	A
Collector power dissipation		$P_C$	180	W
Junction temperature		$T_j$	150	°C
Storage temperature range		$T_{stg}$	-55 to 150	°C



Weight: 9.75 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.

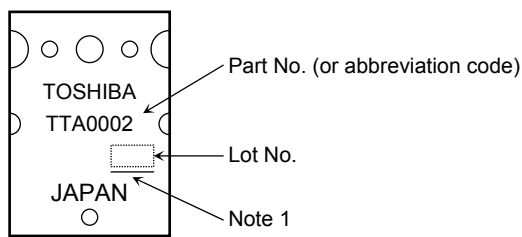
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Start of commercial production  
2009-01

## Electrical Characteristics (Tc = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	$I_{CBO}$	$V_{CB} = -160\text{ V}, I_E = 0$	—	—	-1.0	$\mu\text{ A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = -5\text{ V}, I_C = 0$	—	—	-1.0	$\mu\text{ A}$
Collector-emitter breakdown voltage	$V_{(BR) CEO}$	$I_C = -50\text{ mA}, I_B = 0$	-160	—	—	V
DC current gain	$h_{FE} (1)$	$V_{CE} = -5\text{ V}, I_C = -1\text{ A}$	80	—	160	
	$h_{FE} (2)$	$V_{CE} = -5\text{ V}, I_C = -9\text{ A}$	35	—	—	
Collector-emitter saturation voltage	$V_{CE (sat)}$	$I_C = -9\text{ A}, I_B = -0.9\text{ A}$	—	—	-2.0	V
Base-emitter voltage	$V_{BE}$	$V_{CE} = -5\text{ V}, I_C = -9\text{ A}$	—	—	-1.5	V
Transition frequency	$f_T$	$V_{CE} = -5\text{ V}, I_C = -1\text{ A}$	—	30	—	MHz
Collector output capacitance	$C_{ob}$	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	410	—	pF

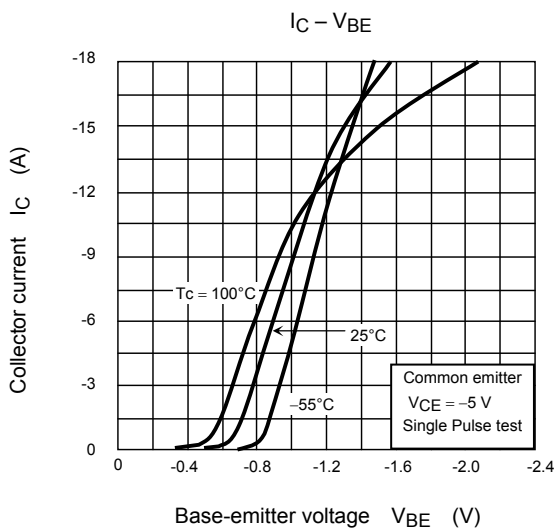
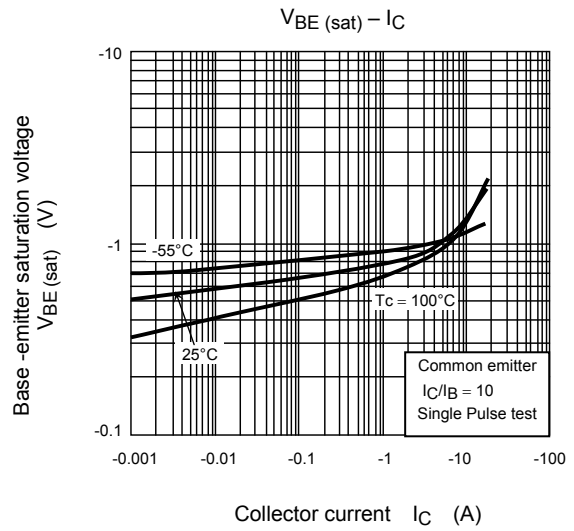
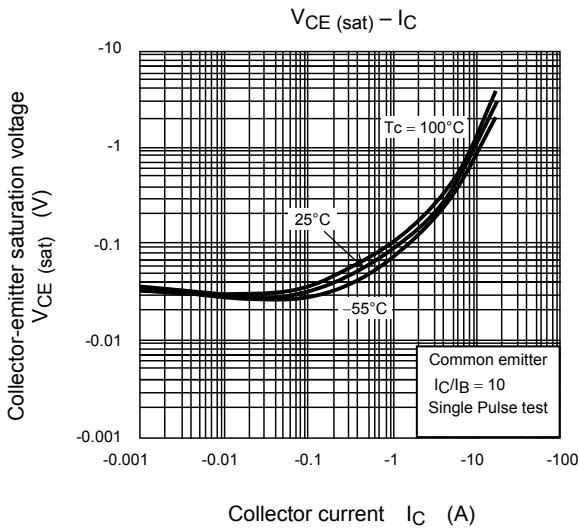
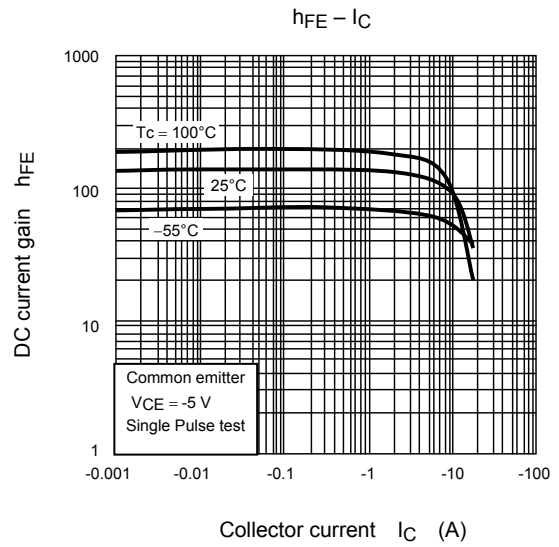
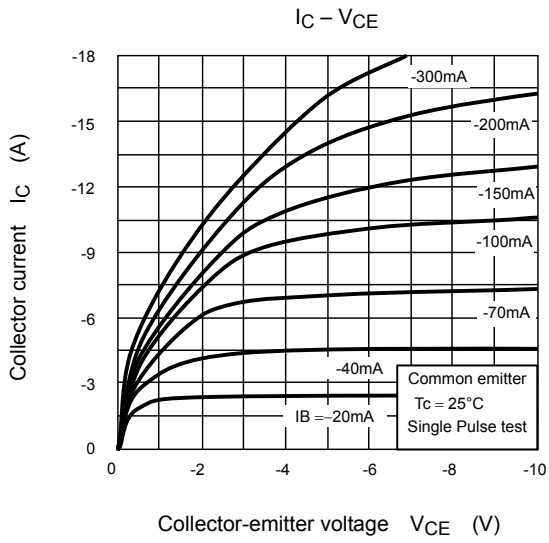
## Marking



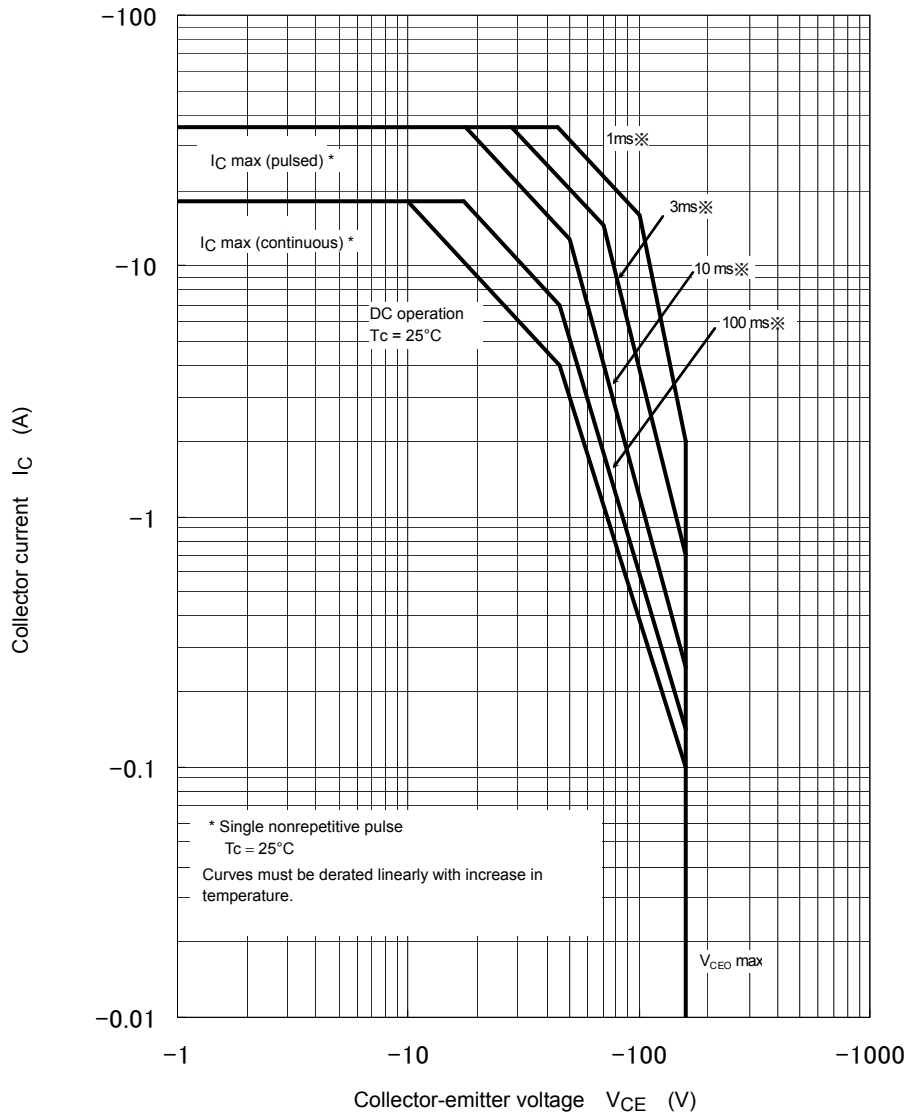
Note 1: Marking for identifying the indication of product Labels  
 [[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

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.



Safe Operating Area



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