

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

# 2SD1220

## Power Amplifier Applications

- Complementary to 2SB905

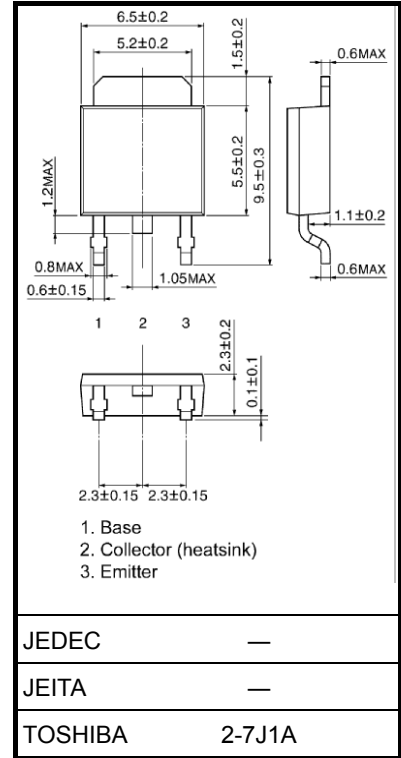
### Absolute Maximum Ratings (Ta = 25°C)

Characteristics		Symbol	Rating	Unit
Collector-base voltage		$V_{CBO}$	150	V
Collector-emitter voltage		$V_{CEO}$	150	V
Emitter-base voltage		$V_{EBO}$	6	V
Collector current		$I_C$	1.5	A
Base current		$I_B$	1.0	A
Collector power dissipation	Ta = 25°C	PC	1.0	W
	Tc = 25°C		10	
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).

Unit: mm



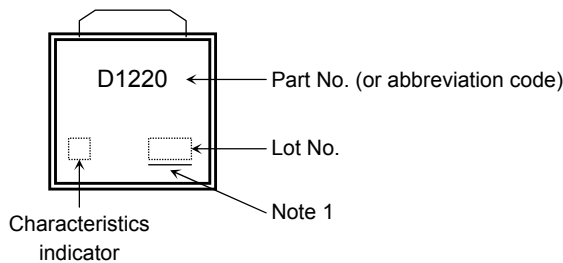
Weight: 0.36 g (typ.)

## Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	$I_{CBO}$	$V_{CB} = 150\text{ V}, I_E = 0$	—	—	1.0	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = 6\text{ V}, I_C = 0$	—	—	1.0	$\mu\text{A}$
Collector-emitter breakdown voltage	$V_{(BR) CEO}$	$I_C = 10\text{ mA}, I_B = 0$	150	—	—	V
DC current gain	$h_{FE}$ (Note)	$V_{CE} = 5\text{ V}, I_C = 200\text{ mA}$	60	—	320	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 500\text{ mA}, I_B = 50\text{ mA}$	—	—	1.5	V
Base-emitter voltage	$V_{BE}$	$V_{CE} = 5\text{ V}, I_C = 5\text{ mA}$	0.5	—	0.8	V
Transition frequency	$f_T$	$V_{CE} = 5\text{ V}, I_C = 200\text{ mA}$	20	100	—	MHz
Collector output capacitance	$C_{ob}$	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	13	20	pF

Note:  $h_{FE}$  classification R: 60 to 120, O: 100 to 200, Y: 160 to 320

## Marking

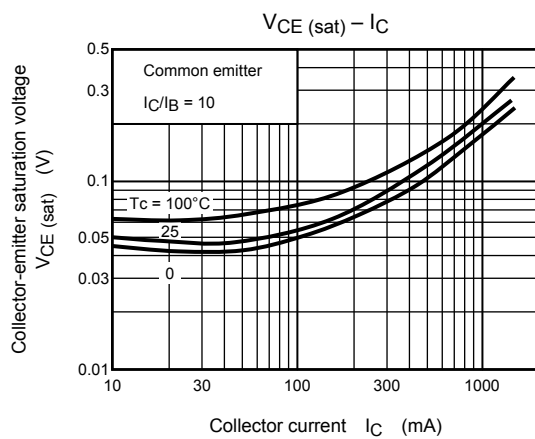
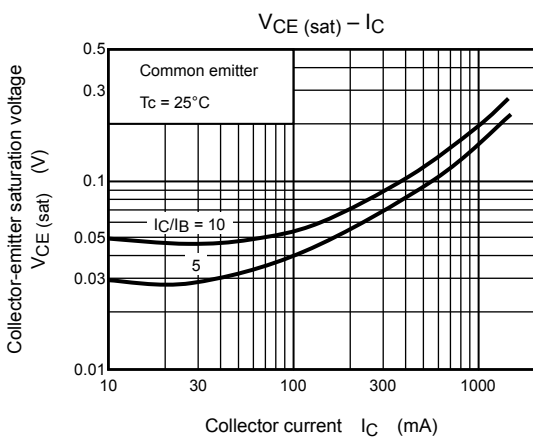
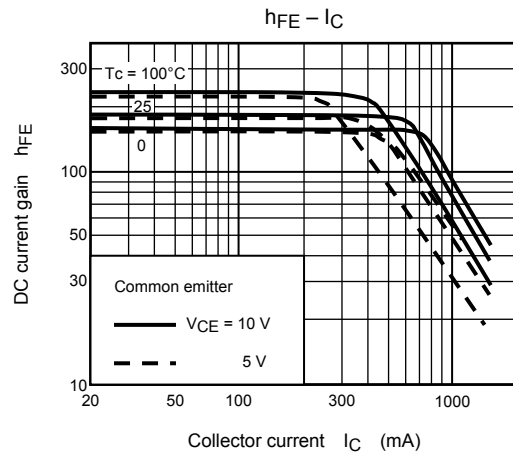
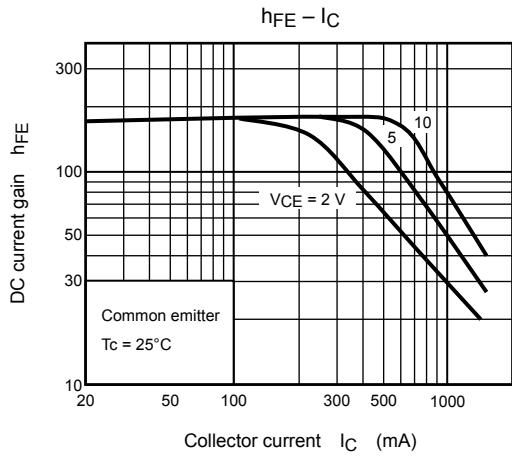
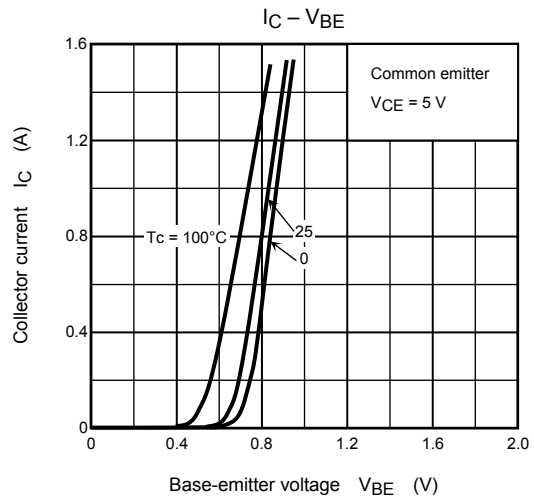
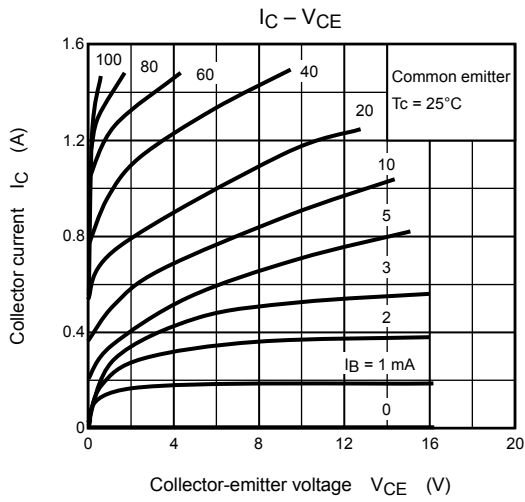


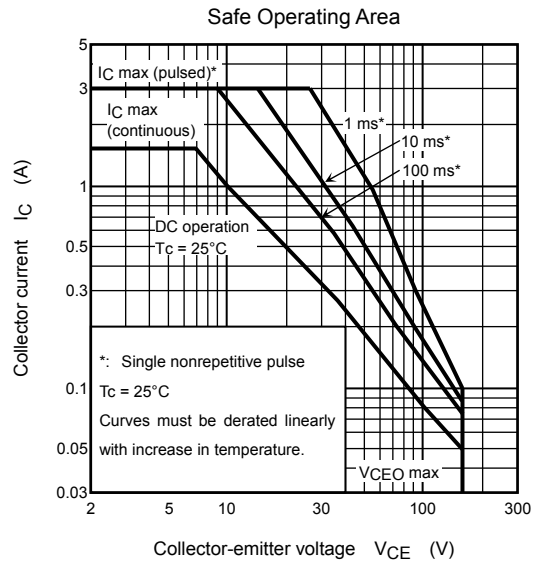
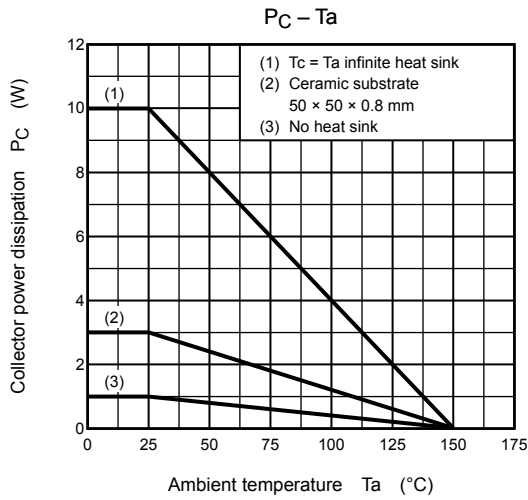
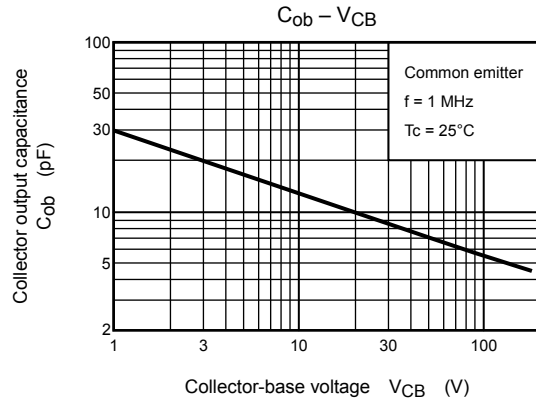
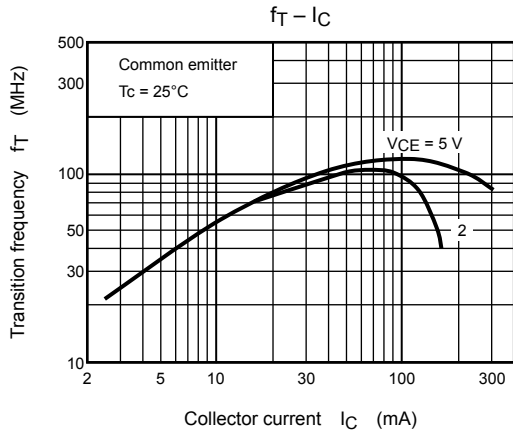
Note 1: A line under a Lot No. identifies the indication of product Labels.

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.





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