TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

# 2SD1220

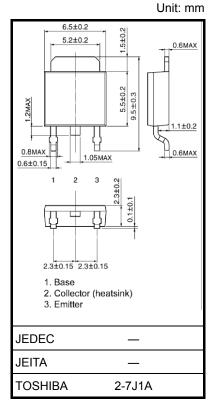
## **Power Amplifier Applications**

• Complementary to 2SB905

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

Characteristics		Symbol	Rating	Unit	
Collector-base voltage		V <sub>CBO</sub>	150	V	
Collector-emitter voltage		V <sub>CEO</sub>	150	V	
Emitter-base voltage		V <sub>EBO</sub>	6	V	
Collector current		I <sub>C</sub>	1.5	Α	
Base current		Ι <sub>Β</sub>	1.0	Α	
Collector power dissipation	Ta = 25°C	Pc	1.0	W	
	Tc = 25°C		10		
Junction temperature		Tj	150	°C	
Storage temperature range		T <sub>stg</sub>	-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.



Weight: 0.36 g (typ.)

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).

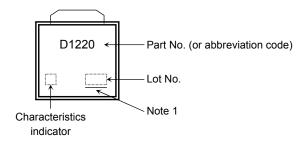


# **Electrical Characteristics (Ta = 25°C)**

Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Collector cut-off current	I <sub>CBO</sub>	V <sub>CB</sub> = 150 V, I <sub>E</sub> = 0	_	_	1.0	μΑ
Emitter cut-off current	I <sub>EBO</sub>	V <sub>EB</sub> = 6 V, I <sub>C</sub> = 0	_	_	1.0	μΑ
Collector-emitter breakdown voltage	V (BR) CEO	I <sub>C</sub> = 10 mA, I <sub>B</sub> = 0	150	_	-	V
DC current gain	h <sub>FE</sub> (Note)	V <sub>CE</sub> = 5 V, I <sub>C</sub> = 200 mA	60	-	320	
Collector-emitter saturation voltage	V <sub>CE</sub> (sat)	I <sub>C</sub> = 500 mA, I <sub>B</sub> = 50 mA	_	_	1.5	٧
Base-emitter voltage	V <sub>BE</sub>	V <sub>CE</sub> = 5 V, I <sub>C</sub> = 5 mA	0.5	_	0.8	٧
Transition frequency	f <sub>T</sub>	V <sub>CE</sub> = 5 V, I <sub>C</sub> = 200 mA	20	100	_	MHz
Collector output capacitance	C <sub>ob</sub>	V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0, f = 1 MHz	_	13	20	pF

Note: hFE classification R: 60 to 120, O: 100 to 200, Y: 160 to 320

# Marking



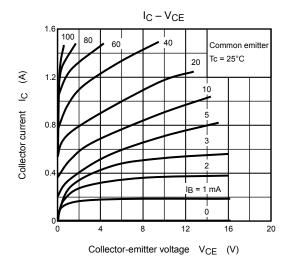
Note 1: A line under a Lot No. identifies the indication of product Labels.

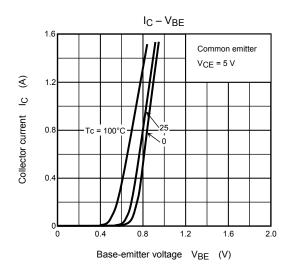
Not underlined: [[Pb]]/INCLUDES > MCV

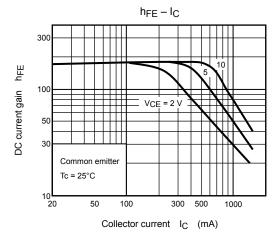
Underlined: [[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

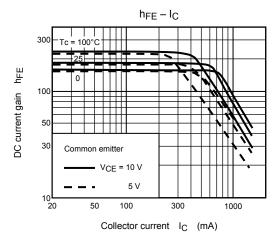
Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product. The RoHS is the Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical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

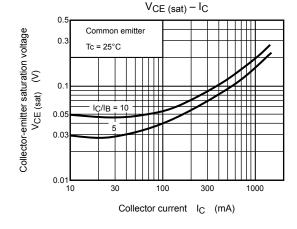
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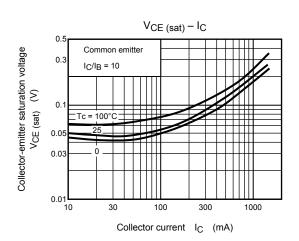




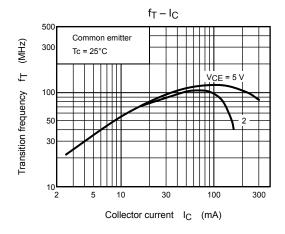


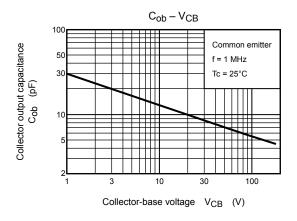


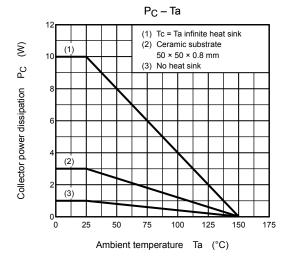


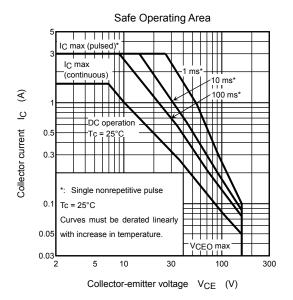


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