

TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

# 2SA1431

Strobe Flash Applications  
Medium Power Amplifier Applications

- High DC current gain and excellent  $h_{FE}$  linearity  
:  $h_{FE(1)} = 100$  to  $320$  ( $V_{CE} = -2$  V,  $I_C = -0.5$  A)  
:  $h_{FE(2)} = 70$  (min) ( $V_{CE} = -2$  V,  $I_C = -4$  A)
- Low saturation voltage:  $V_{CE(sat)} = -1.0$  V (max)  
( $I_C = -4$  A,  $I_B = -0.1$  A)

### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

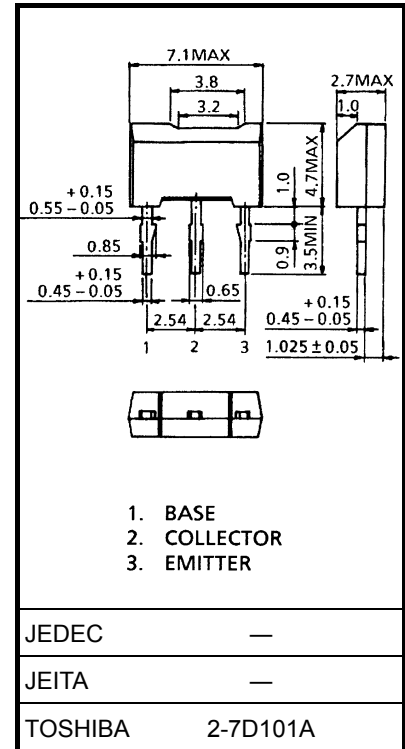
Characteristics		Symbol	Rating	Unit
Collector-base voltage		$V_{CBO}$	-35	V
Collector-emitter voltage		$V_{CEO}$	-20	V
Emitter-base voltage		$V_{EBO}$	-8	V
Collector current	DC	$I_C$	-5	A
	Pulsed (Note 1)	$I_{CP}$	-8	
Base current		$I_B$	-0.5	A
Collector power dissipation		$P_C$	1000	mW
Junction temperature		$T_j$	150	$^\circ\text{C}$
Storage temperature range		$T_{stg}$	-55 to 150	$^\circ\text{C}$

Note 1: Pulse width = 10 ms (max), duty cycle = 30% (max)

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).

Unit: mm



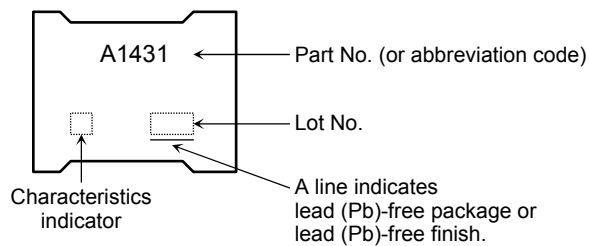
Weight: 0.2 g (typ.)

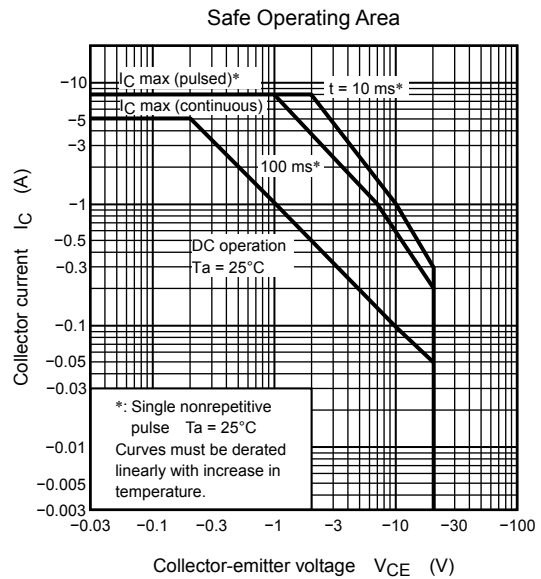
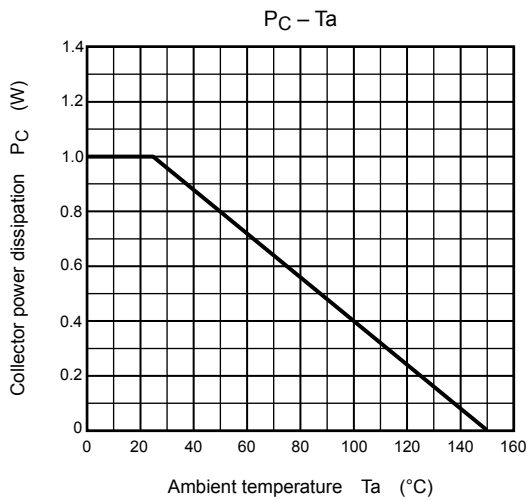
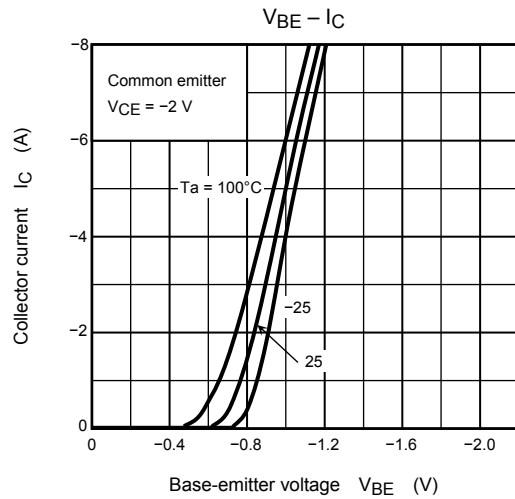
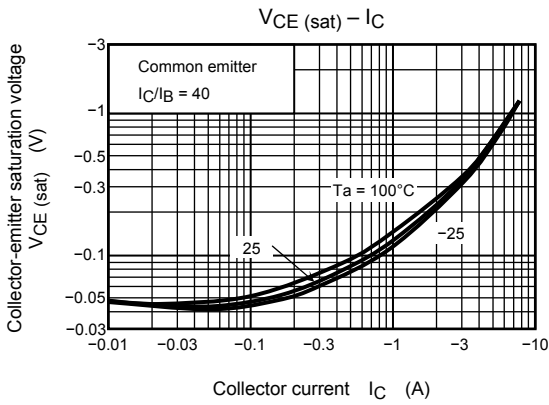
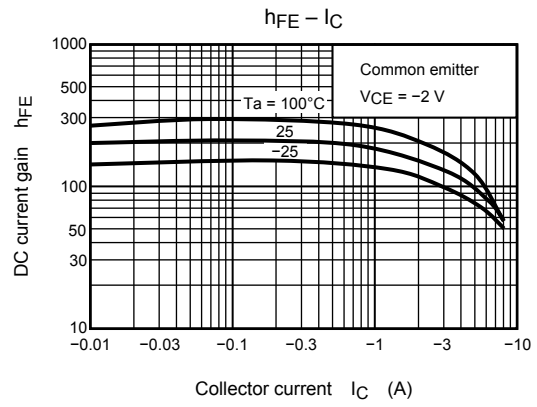
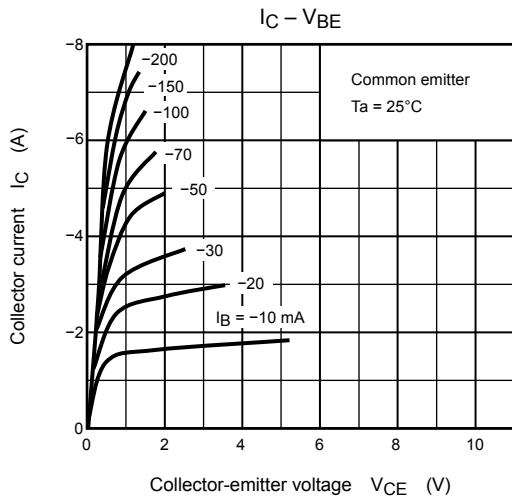
## Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	$I_{CBO}$	$V_{CB} = -35\text{ V}, I_E = 0$	—	—	-100	nA
Emitter cut-off current	$I_{EBO}$	$V_{EB} = -8\text{ V}, I_C = 0$	—	—	-100	nA
Collector-emitter breakdown voltage	$V_{(BR) CEO}$	$I_C = -10\text{ mA}, I_B = 0$	-20	—	—	V
Emitter-base breakdown voltage	$V_{(BR) EBO}$	$I_E = -1\text{ mA}, I_C = 0$	-8	—	—	V
DC current gain	$h_{FE (1)}$ (Note 3)	$V_{CE} = -2\text{ V}, I_C = -0.5\text{ A}$	100	—	320	
	$h_{FE (2)}$	$V_{CE} = -2\text{ V}, I_C = -4\text{ A}$	70	—	—	
Collector-emitter saturation voltage	$V_{CE (sat)}$	$I_C = -4\text{ A}, I_B = -0.1\text{ A}$	—	—	-1.0	V
Base-emitter voltage	$V_{BE}$	$V_{CE} = -2\text{ V}, I_C = -4\text{ A}$	—	—	-1.5	V
Transition frequency	$f_T$	$V_{CE} = -2\text{ V}, I_C = -0.5\text{ A}$	—	170	—	MHz
Collector output capacitance	$C_{ob}$	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	62	—	pF

Note 3:  $h_{FE (1)}$  classification O: 100 to 200, Y: 160 to 320

## Marking





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20070701-EN

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