

TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT process)

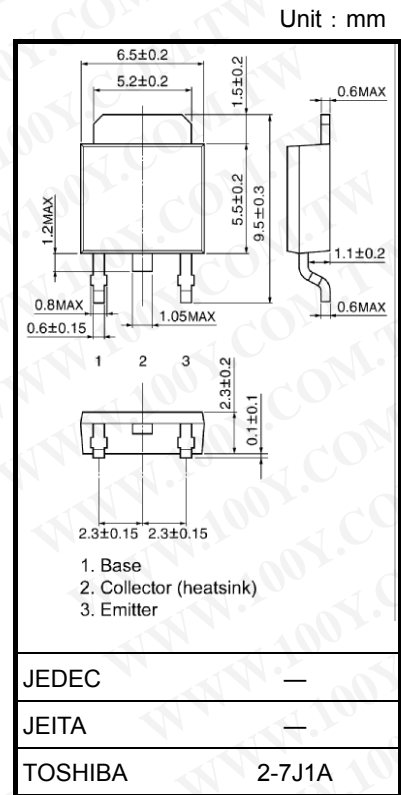
# 2SA1241

Power Amplifier Applications  
Power Switching Applications

- Low Collector saturation voltage:  $V_{CE(sat)} = -0.5\text{ V (max)}$  ( $I_C = -1\text{ A}$ )
- Excellent switching time:  $t_{stg} = 1.0\ \mu\text{s (typ.)}$
- Complementary to 2SC3076

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

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	$I_B$	-1	A
Collector power dissipation	$P_C$	$T_a = 25^\circ\text{C}$	1.0
		$T_c = 25^\circ\text{C}$	10
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature range	$T_{stg}$	-55 to 150	$^\circ\text{C}$



Note1: 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).

Weight: 0.36 g (typ.)

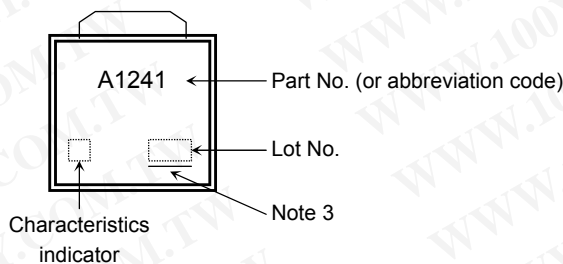
**勝特力材料 886-3-5753170**  
**勝特力电子(上海) 86-21-34970699**  
**勝特力电子(深圳) 86-755-83298787**  
[Http://www.100y.com.tw](http://www.100y.com.tw)

## Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		$I_{CBO}$	$V_{CB} = -50\text{ V}, I_E = 0$	—	—	-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		$V_{(BR)CEO}$	$I_C = -10\text{ mA}, I_B = 0$	-50	—	—	V
DC current gain	$h_{FE(1)}$ (Note 2)		$V_{CE} = -2\text{ V}, I_C = -0.5\text{ A}$	70	—	240	
	$h_{FE(2)}$		$V_{CE} = -2\text{ V}, I_C = -1.5\text{ A}$	40	—	—	
Collector-emitter saturation voltage		$V_{CE(sat)}$	$I_C = -1\text{ A}, I_B = -0.05\text{ A}$	—	—	-0.5	V
Base-emitter saturation voltage		$V_{BE(sat)}$	$I_C = -1\text{ A}, I_B = -0.05\text{ A}$	—	—	-1.2	V
Transition frequency		$f_T$	$V_{CE} = -2\text{ V}, I_C = -0.5\text{ A}$	—	100	—	MHz
Collector output capacitance		$C_{ob}$	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	40	—	pF
Switching time	Turn-on time	$t_{on}$		—	0.1	—	$\mu\text{s}$
	Storage time	$t_{stg}$		—	1.0	—	
	Fall time	$t_f$		$I_{B1} = 0.05\text{ A}, I_{B2} = 0.05\text{ A}$ DUTY CYCLE $\leq 1\%$	—	0.1	

Note 2:  $h_{FE(1)}$  classification O: 70 to 140, Y: 120 to 240

## Marking

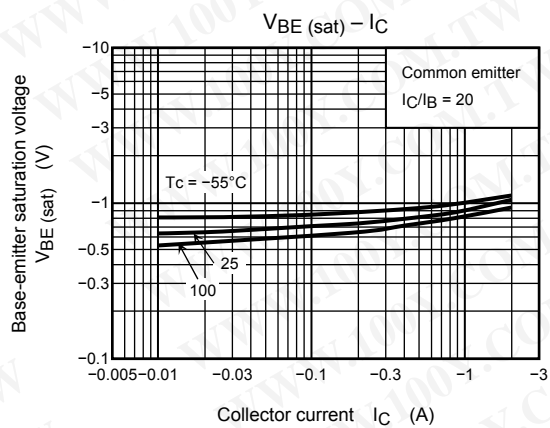
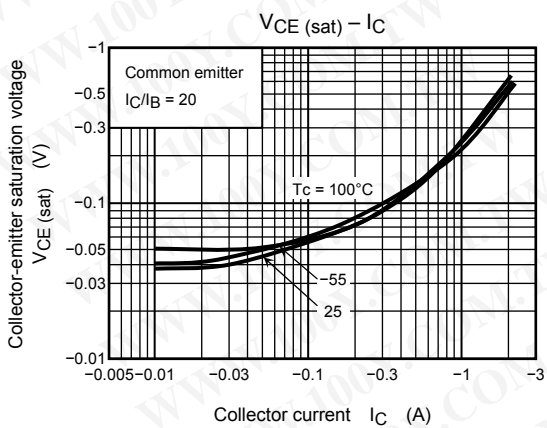
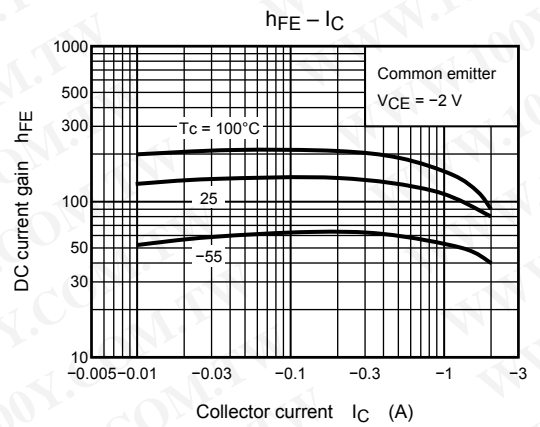
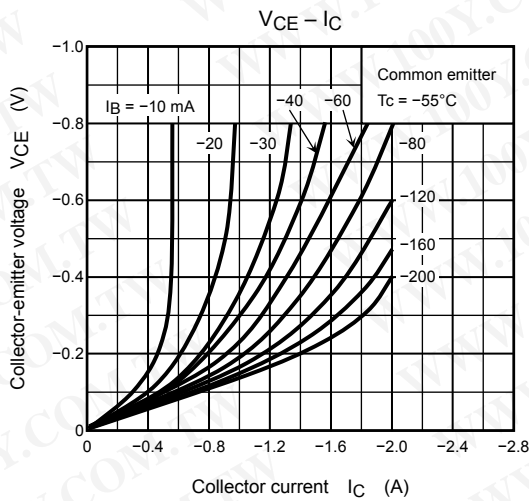
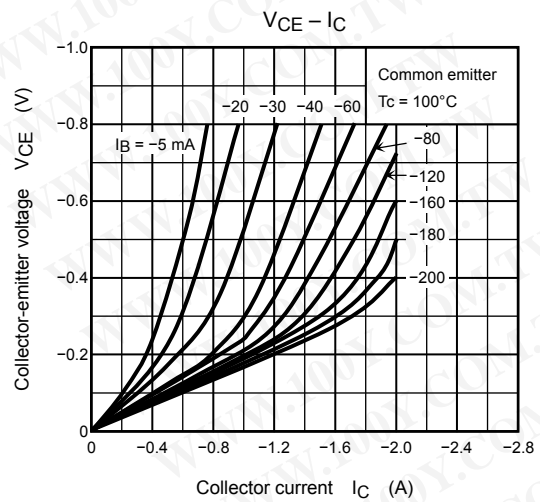
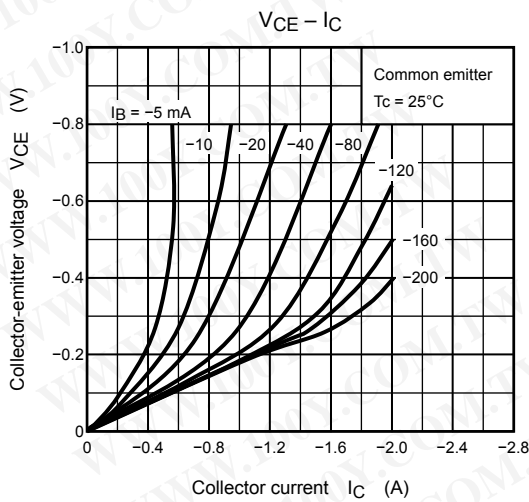


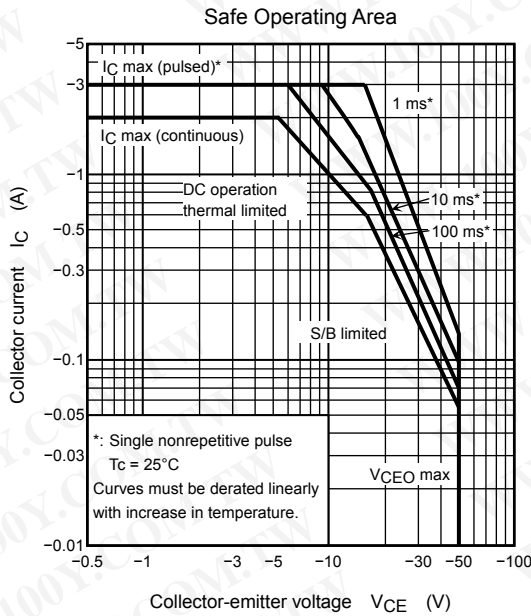
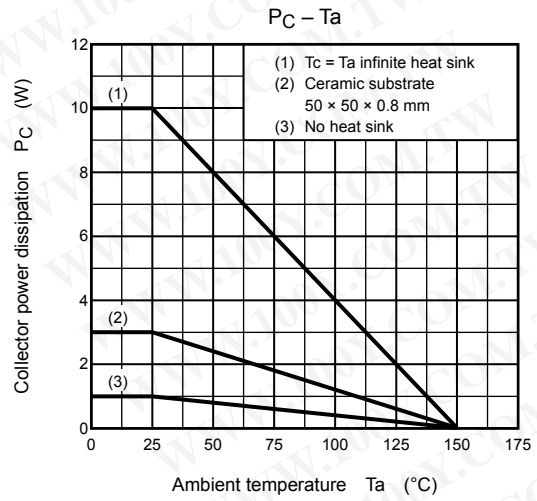
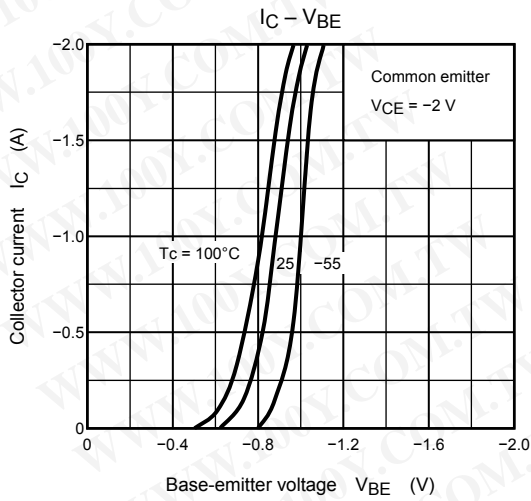
Note 3: A line under a Lot No. identifies the indication of product Labels.

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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TOSHIBA TRANSISTOR SILICON PNP EPITAXIAL TYPE (PCT PROCESS)

# 2SA1241

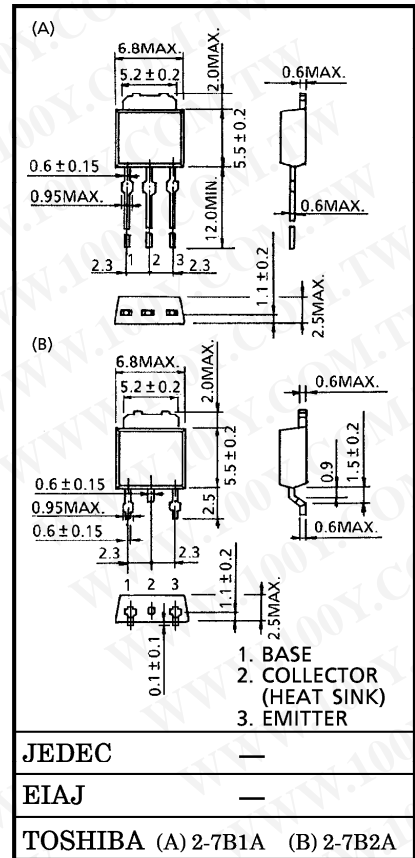
POWER AMPLIFIER APPLICATIONS  
POWER SWITCHING APPLICATIONS

Unit in mm

- Low Collector Saturation Voltage  
:  $V_{CE(sat)} = -0.5\text{ V (Max.)}$  ( $I_C = -1\text{ A}$ )
- Excellent Switching Time :  $t_{stg} = 1.0\ \mu\text{s}$  (Typ.)
- Complementary to 2SC3076

MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

CHARACTERISTIC	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	$I_B$	-1	A
Collector Power Dissipation	$P_C$	$T_a = 25^\circ\text{C}$	1.0
		$T_c = 25^\circ\text{C}$	10
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55~150	$^\circ\text{C}$



Weight : 0.36 g

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 勝特力电子(深圳) 86-755-83298787  
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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		ICBO	V <sub>CB</sub> = -50 V, I <sub>E</sub> = 0	—	—	-1.0	μA
Emitter Cut-off Current		IEBO	V <sub>EB</sub> = -5 V, I <sub>C</sub> = 0	—	—	-1.0	μA
Collector-Emitter Breakdown Voltage		V (BR) CEO	I <sub>C</sub> = -10 mA, I <sub>B</sub> = 0	-50	—	—	V
DC Current Gain	h <sub>FE</sub> (1) (Note)		V <sub>CE</sub> = -2 V, I <sub>C</sub> = -0.5 A	70	—	240	
	h <sub>FE</sub> (2)		V <sub>CE</sub> = -2 V, I <sub>B</sub> = -1.5 A	40	—	—	
Collector-Emitter Saturation Voltage		V <sub>CE</sub> (sat)	I <sub>C</sub> = -1 A, I <sub>B</sub> = -0.05 A	—	—	-0.5	V
Base-Emitter Saturation Voltage		V <sub>BE</sub> (sat)	I <sub>C</sub> = -1 A, I <sub>B</sub> = -0.05 A	—	—	-1.2	V
Transition Frequency		f <sub>T</sub>	V <sub>CE</sub> = -2 V, I <sub>C</sub> = -0.5 A	—	100	—	MHz
Collector Output Capacitance		C <sub>ob</sub>	V <sub>CB</sub> = -10 V, I <sub>E</sub> = 0, f = 1 MHz	—	40	—	pF
Switching Time	Turn-on Time	t <sub>on</sub>	<p> <math>20 \mu s</math>                      INPUT <math>I_{B2}</math>  <math>I_{B1}</math>                      OUTPUT  <math>30 \Omega</math>  <math>V_{CC} = -30 V</math>  <math>-I_{B1} = I_{B2} = 0.05 A</math>                      DUTY CYCLE <math>\leq 1\%</math> </p>	—	0.1	—	μs
	Storage Time	t <sub>stg</sub>		—	1.0	—	
	Fall Time	t <sub>f</sub>		—	0.1	—	

Note : h<sub>FE</sub>(1) Classification O : 70~140, Y : 120~240

