Unit: mm

TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT process)

## 2SA1213

# Power Amplifier Applications Power Switching Applications

- Low saturation voltage:  $V_{CE (sat)} = -0.5 \text{ V (max) (I}_{C} = -1 \text{ A)}$
- High speed switching time:  $t_{stg} = 1.0 \mu s$  (typ.)
- Small flat package
- $P_C = 1.0$  to 2.0 W (mounted on ceramic substrate)
- Complementary to 2SC2873

#### **Maximum Ratings (Ta = 25°C)**

Characteristics	Symbol	Rating	Unit	
Collector-base voltage	$V_{CBO}$	-50	V	
Collector-emitter voltage	V <sub>CEO</sub>	-50	V	
Emitter-base voltage	V <sub>EBO</sub>	<b>-</b> 5	V	
Collector current	Ic	-2	Α	
Base current	Ι <sub>Β</sub>	-0.4	Α	
Collector power dissipation	P <sub>C</sub>	500	mW	
	PC	1000		
	(Note 1)	1000		
Junction temperature	Tj	150	°C	
Storage temperature range	T <sub>stg</sub>	−55 to 150	°C	

Note 1: Mounted on ceramic substrate (250 mm<sup>2</sup> × 0.8 t)

4.6MAX. 1.6MAX. 1.6MAX. 1.7MAX. 0.4±0.05

0.45-0.05

0.4-0.05

1.5±0.1

1. Base
2. Collector (heat sink)
3. Emitter

PW-MINI

JEDEC

JEITA

SC-62

TOSHIBA

2.6MAX. 1.6MAX. 1.6MAX. 1.6MAX. 1.6MAX. 1.6MAX. 1.7MAX. 0.4±0.05

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Weight: 0.05 g (typ.)

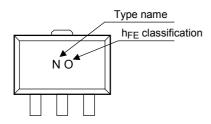


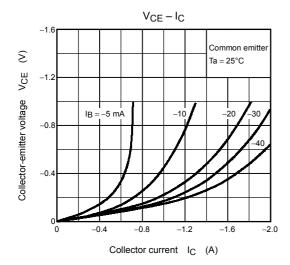
## Electrical Characteristics (Ta = 25°C)

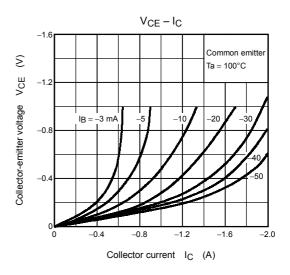
Characteristics		Symbol	Test Condition	Min	Тур.	Max	Unit
Collector cut-off cui	rrent	I <sub>CBO</sub>	$V_{CB} = -50 \text{ V}, I_E = 0$	_	_	-0.1	μΑ
Emitter cut-off curre	ent	I <sub>EBO</sub>	V <sub>EB</sub> = -5 V, I <sub>C</sub> = 0	_	_	-0.1	μΑ
Collector-emitter br	eakdown voltage	V (BR) CEO	$I_C = -10 \text{ mA}, I_B = 0$	-50	_	_	V
DC current gain		h <sub>FE (1)</sub> (Note 2)	V <sub>CE</sub> = -2 V, I <sub>C</sub> = -0.5 A	70	_	240	
		h <sub>FE (2)</sub>	V <sub>CE</sub> = -2 V, I <sub>C</sub> = -2.0 A	20	_	_	
Collector-emitter sa	aturation voltage	V <sub>CE</sub> (sat)	I <sub>C</sub> = -1 A, I <sub>B</sub> = -0.05 A	_	_	-0.5	V
Base-emitter satura	ation voltage	V <sub>BE (sat)</sub>	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	_	120	_	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>	IB2 OUTPUT IB2 OUTPUT INPUT IB1 OUTPUT OCC SSS SS		0.1	_	
	Storage time	t <sub>stg</sub>		_	1.0	_	μs
	Fall time	t <sub>f</sub>	-I <sub>B1</sub> = I <sub>B2</sub> = 0.05 A, DUTY CYCLE ≤ 1%	_	0.1	_	

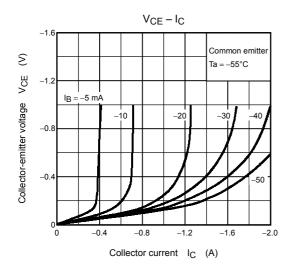
Note 2:  $h_{FE\ (1)}$  classification O: 70 to 140, Y: 120 to 240

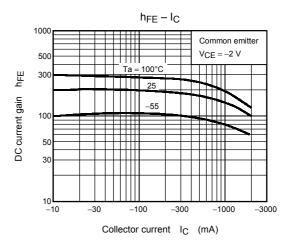
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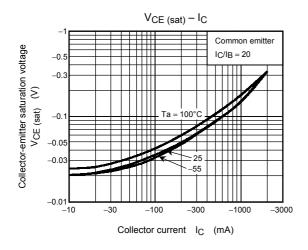


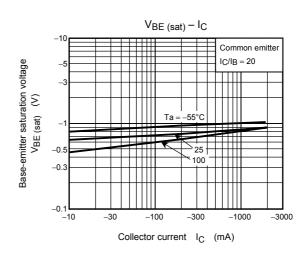




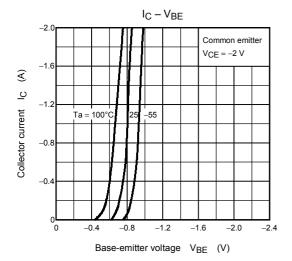


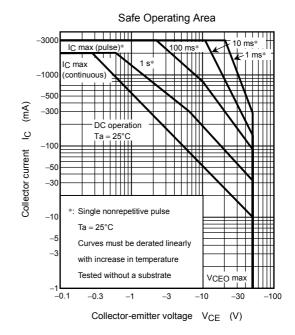


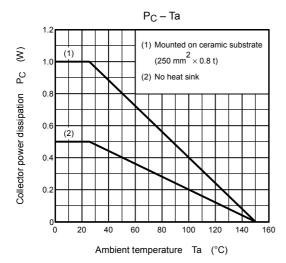




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