TOSHIBA Transistor Silicon NPN Epitaxial Type

# 2SD2241

### **Switching Applications**

• High DC current gain: hFE = 2000 (min)

• Low saturation voltage: VCE (sat) = 1.5 V (max)

• Complementary to 2SB1481

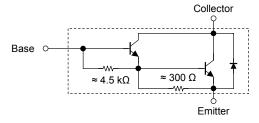
### **Maximum Ratings (Tc = 25°C)**

Characteristics		Symbol	Rating	Unit	
Collector-base voltage		$V_{CBO}$	100	V	
Collector-emitter voltage		V <sub>CEO</sub>	100	V	
Emitter-base voltage		V <sub>EBO</sub>	5	V	
Collector current	DC	I <sub>C</sub>	±4	Α	
	Pulse	I <sub>CP</sub>	±6		
Base current		Ι <sub>Β</sub>	0.3	Α	
Collector power dissipation	Ta = 25°C	Pc	2.0	W	
	Tc = 25°C	FC	25		
Junction temperature		Tj	150	°C	
Storage temperature range		T <sub>stg</sub>	-55 to 150	°C	

# Unit: mm 10±0.3 03.2±0.2 2.7+0.2 0.75±0.15 1. BASE 2. COLLECTOR 3. EMITTER JEDEC JEITA SC-67 TOSHIBA 2-10R1A

Weight: 1.7 g (typ.)

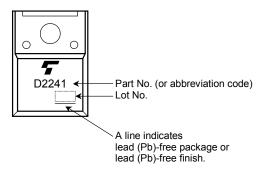
### **Equivalent Circuit**

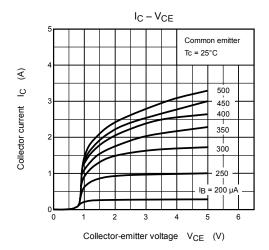


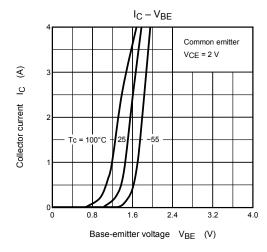
## Electrical Characteristics (Tc = 25°C)

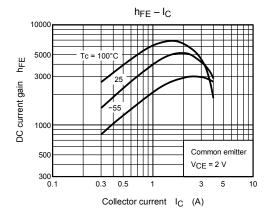
Characteristics		Symbol	Test Condition	Min	Тур.	Max	Unit
Collector cut-off current		I <sub>CBO</sub>	V <sub>CB</sub> = 100 V, I <sub>E</sub> = 0	_	_	20	μΑ
Emitter cut-off current		I <sub>EBO</sub>	V <sub>EB</sub> = 5 V, I <sub>C</sub> = 0	_	_	2.5	mA
Collector-emitter breakdown voltage		V (BR) CEO	I <sub>C</sub> = 10 mA, I <sub>B</sub> = 0	100	_	_	V
DC current gain		h <sub>FE (1)</sub>	V <sub>CE</sub> = 2 V, I <sub>C</sub> = 1.5 A	2000	_	_	
		h <sub>FE (2)</sub>	V <sub>CE</sub> = 2 V, I <sub>C</sub> = 3 A	1000	_	_	
Collector-emitter saturation voltage		V <sub>CE (sat)</sub>	I <sub>C</sub> = 3 A, I <sub>B</sub> = 6 mA	_	_	1.5	V
Base-emitter saturation voltage		V <sub>BE (sat)</sub>	I <sub>C</sub> = 3 A, I <sub>B</sub> = 6 mA	_	_	2.0	V
Emitter-collector forward voltage		V <sub>ECF</sub>	I <sub>E</sub> = 1 A, I <sub>B</sub> = 0	_	_	2.0	V
Switching time	Turn-on time	t <sub>on</sub>	Output  Input $ B_1 $ $ B_2 $ $ B_1 $ Output $ B_1 $ $ B_1 $ Output $ B_2 $ $ B_2 $ $ B_2 $ $ B_1 $ $ B_2 $ $ B_1 $ Output $ B_1 $ $ B_2 $ $ B_2 $ $ B_2 $ $ B_3 $	_	0.2	_	
	Storage time	t <sub>stg</sub>		_	1.5	_	μs
	Fall time	t <sub>f</sub>		_	0.6	_	

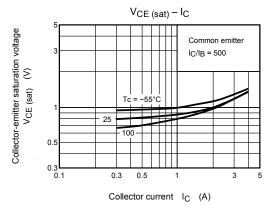
### Marking

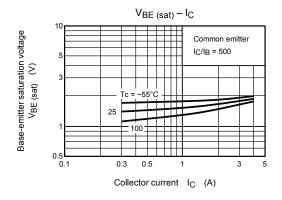


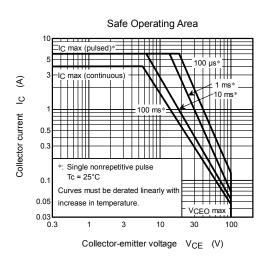












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