



# NPN Low V<sub>CE(SAT)</sub> Transistor

Voltage

40V

**Current** 

1A

#### SOT-223

#### **Features**

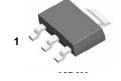
- Silicon NPN epitaxial type
- Low V<sub>CE(SAT)</sub> 0.25V(max)@I<sub>C</sub>/I<sub>B</sub>= 1A / 100mA
- High collector current capability
- Excellent DC current gain characteristics
- PNP complement : PBSS5140SH
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC61249 Standard

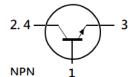
#### **Mechanical Data**

• Case: SOT-223 Package

• Terminals : Solderable per MIL-STD-750, Method 2026

• Approx. Weight: 0.0043 ounces, 0.123 grams





#### Pin Assignment:

- Base
- 2.4. Collector
- 3. Emitter

### Maximum Ratings and Thermal Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNITS
Collector-Base Voltage	V <sub>CBO</sub>	40	V
Collector-Emitter Voltage	$V_{CEO}$	40	V
Emitter-Base Voltage	V <sub>EBO</sub>	5	V
Collector Current (DC)	lc	1	Α
Collector Current (Pulse)	ICP	2	Α
Base Current (DC)	I <sub>B</sub>	0.2	Α
Power Dissipation	P <sub>D</sub>	2.6	W
Operating Junction and Storage Temperature Range	T <sub>J</sub> ,T <sub>STG</sub>	-55~150	°C
Typical Thermal Resistance From Junction to Ambient <sup>(Note)</sup>	Reja	48	°C/W

Note: Mounted on FR4 PCB at 1 inch square copper pad.





# **Electrical Characteristics** (T<sub>A</sub>=25°C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS		
OFF Characteristics								
Collector-Emitter Breakdown Voltage	BV <sub>CEO</sub>	I <sub>C</sub> = 10mA, I <sub>B</sub> = 0A	40	-	-	V		
Collector-Base Breakdown Voltage	ВУсво	Ic= 0.1mA, I <sub>E</sub> = 0A	40	-	-	V		
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	I <sub>E</sub> = 0.1mA, I <sub>C</sub> = 0A	5	-	-	V		
Collector Cutoff Current	I <sub>CBO</sub>	V <sub>CB</sub> = 40V, I <sub>E</sub> = 0A	-	-	100	nA		
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> = 5V, I <sub>C</sub> = 0A	•	-	100	nA		
ON characteristics								
DC Current Gain <sup>(Note 1)</sup>	hfE	V <sub>CE</sub> = 5V, I <sub>C</sub> = 500mA	300	-	900	-		
		V <sub>CE</sub> = 5V, I <sub>C</sub> = 1A	200	-	-			
		V <sub>CE</sub> = 5V, I <sub>C</sub> = 2A	35	-	-			
Collector-Emitter Saturation Voltage (Note 1)	VCE(SAT)	I <sub>C</sub> = 500mA, I <sub>B</sub> = 50mA	-	70	150	mV		
		I <sub>C</sub> = 1A, I <sub>B</sub> = 100mA	-	120	250			
		I <sub>C</sub> = 1A, I <sub>B</sub> = 50mA	-	150	350			
Base-Emitter Saturation voltage (Note 1)	V <sub>BE(SAT)</sub>	Ic= 500mA, I <sub>B</sub> = 50mA		-	1.0	V		
		I <sub>C</sub> = 1A, I <sub>B</sub> = 100mA	ı	-	1.1			
Transition Frequency	f⊤	V <sub>CE</sub> = 10V, I <sub>E</sub> = 50mA	150	-	-	MHz		
Collector Output Capacitance	Сов	V <sub>CB</sub> = 10V, I <sub>E</sub> = 0A, f=1MHz	-	-	10	pF		

Note: 1. Pulse width<a></a>300us, Duty cycle<a></a>2%





#### **TYPICAL CHARACTERISTIC CURVES**

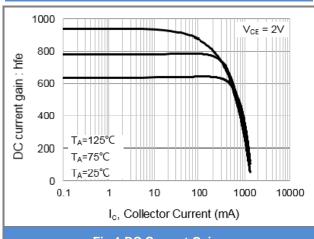


Fig.1 DC Current Gain

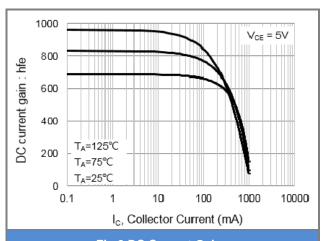


Fig.2 DC Current Gain

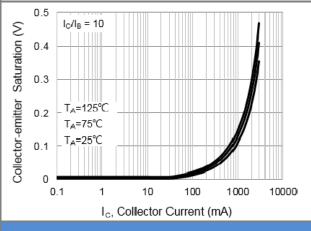


Fig.3 Collector-Emitter Saturation Voltage

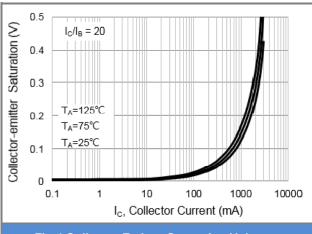
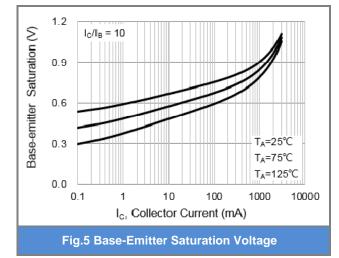
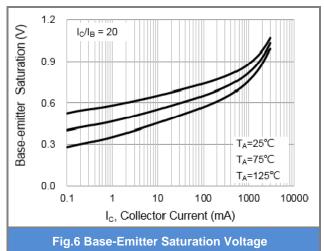


Fig.4 Collector-Emitter Saturation Voltage









### TYPICAL CHARACTERISTIC CURVES

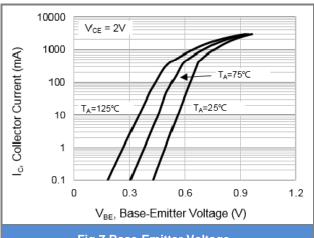
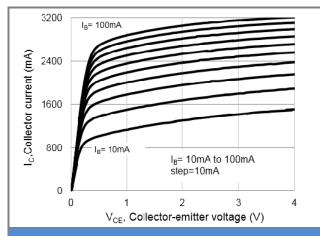


Fig.7 Base-Emitter Voltage



**Fig.8 Collector Current** 

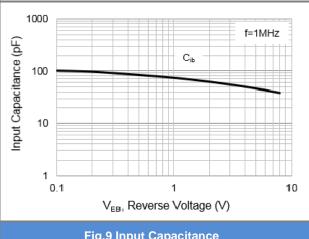
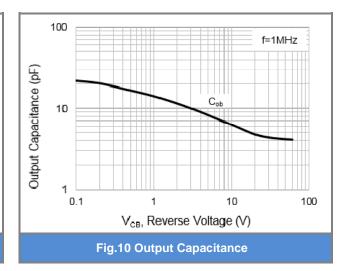
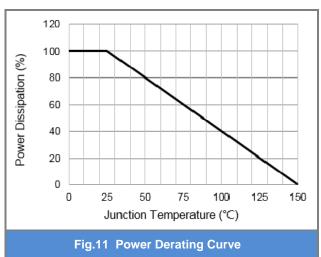


Fig.9 Input Capacitance





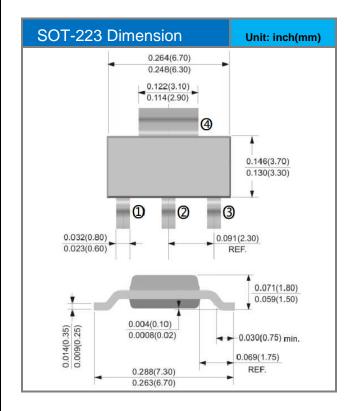


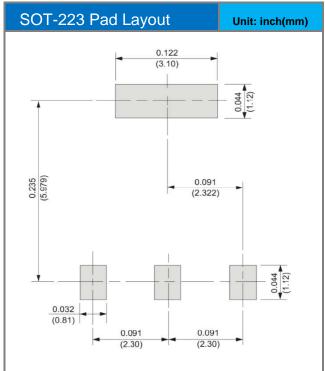


### Part No. Packing Code Version

Part No. Packing Code	Package Type	Packing Type	Marking	Version
PBSS4140SW_R2_00001	SOT-223	2.5K pcs / 13" reel	4140SW	Halogen free

### **Packaging Information & Mounting Pad Layout**









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