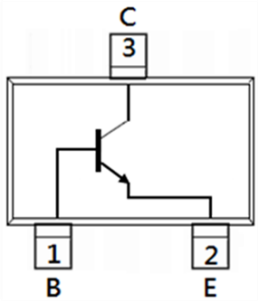
PBSS4140SA

NPN Low $V_{CE(SAT)}$ Transistor

Voltage	40V	Current	1A

SOT-23



Features

- Silicon NPN epitaxial type
- Low $V_{CE(SAT)}$ 0.25V(max)@I_C/I_B= 1A / 100mA
- High collector current capability
- Excellent DC current gain characteristics
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC61249 Standard
- PNP complement : PBSS5140SA

Mechanical Data

- Case : SOT-23 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0084 grams

Maximum Ratings and Thermal Characteristics (T_A=25°C unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNIT
Collector-Base Voltage	V_{CBO}	40	V
Collector-Emitter Voltage	V_{CEO}	40	
Emitter-Base Voltage	V_{EBO}	5	
Collector Current (DC)	I_C	1	A
Collector Current (Pulse)	I_{CM}	2	
Base Current (DC)	I_B	0.1	
Base Current (Pulse)	I_{BM}	0.2	
Power Dissipation	P_D	0.83	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55~150	°C
Thermal Resistance From Junction to Ambient(Note 2)	$R_{\theta JA}$	150	°C/W

PBSS4140SA

Electrical Characteristics (T_A=25°C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
OFF Characteristics						
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C= 10mA, I_B= 0A	40	-	-	V
Collector-Base Breakdown Voltage	BV_{CBO}	I_C= 0.1mA, I_E= 0A	40	-	-	
Emitter-Base Breakdown Voltage	BV_{EBO}	I_E= 0.1mA, I_C= 0A	5	-	-	
Collector Cutoff Current	I_{CBO}	V_{CB}= 40V, I_E= 0A	-	-	100	nA
Emitter Cutoff Current	I_{EBO}	V_{EB}= 5V, I_C= 0A	-	-	100	
Collector-Emitter Cutoff Current	I_{CES}	V_{CES}= 40V, I_E= 0A	-	-	100	
ON Characteristics						
DC Current Gain(Note 1)	h_{FE}	V_{CE}= 5V, I_C= 100mA	300	-	900	-
		V_{CE}= 5V, I_C= 500mA	250	-	-	
		V_{CE}= 5V, I_C= 1A	200	-	-	
Collector-Emitter Saturation Voltage(Note 1)	$V_{CE(SAT)}$	I_C= 500mA, I_B= 50mA	-	70	150	mV
		I_C= 1A, I_B= 100mA	-	120	250	
		I_C= 1A, I_B= 50mA	-	130	350	
Collector-Emitter Saturation resistance	$R_{CE(SAT)}$	I_C= 1A, I_B= 100mA	-	120	250	mΩ
Base-Emitter Saturation Voltage (Note 1)	$V_{BE(SAT)}$	I_C= 500mA, I_B= 50mA	-		1	V
		I_C= 1A, I_B= 100mA	-		1.1	
Base-Emitter Turn-On Voltage(Note 1)	$V_{BE(ON)}$	V_{CE}= 5V, I_C= 1A	-		1	
Transition Frequency	f_T	V_{CE}= 10V, I_E= 50mA	150	-	-	MHz
Base input Capacitance	C_{IB}	V_{EB}= 0.5V, f=1MHz	-	83	-	pF
Collector Output Capacitance	C_{OB}	V_{CB}= 10V, f=1MHz	-	6.3	-	

Notes :

1. Pulse width≤300us, Duty cycle≤2%.
2. Mounted on FR4 PCB at 1 inch square copper pad.

PBSS4140SA

TYPICAL CHARACTERISTIC CURVES

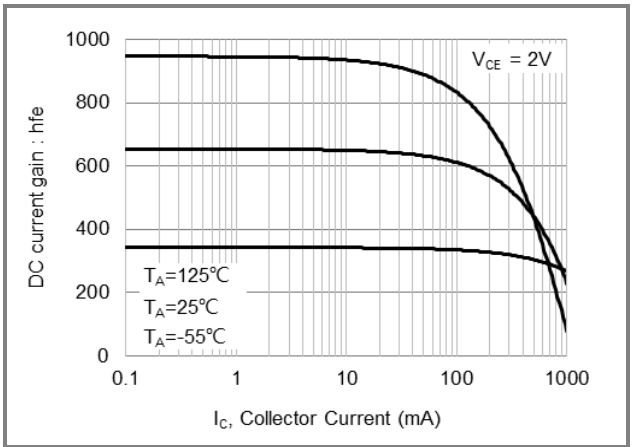


Fig.1 DC Current Gain

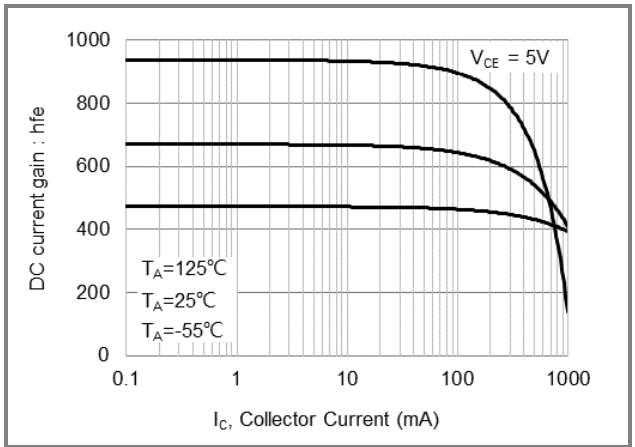


Fig.2 DC Current Gain

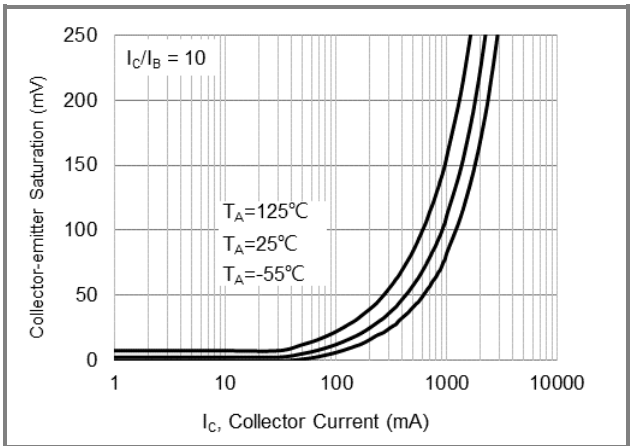


Fig.3 Collector-Emitter Saturation Voltage

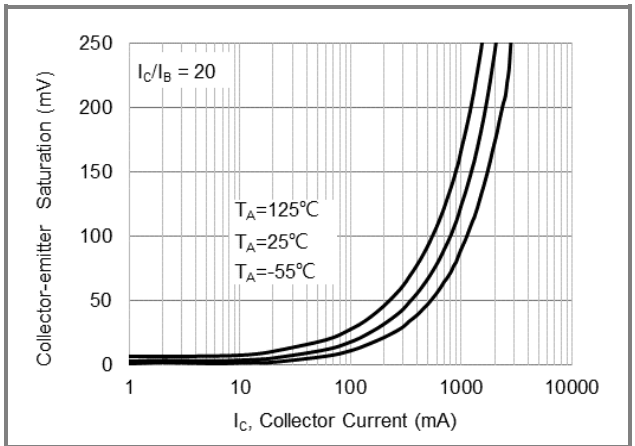


Fig.4 Collector-Emitter Saturation Voltage

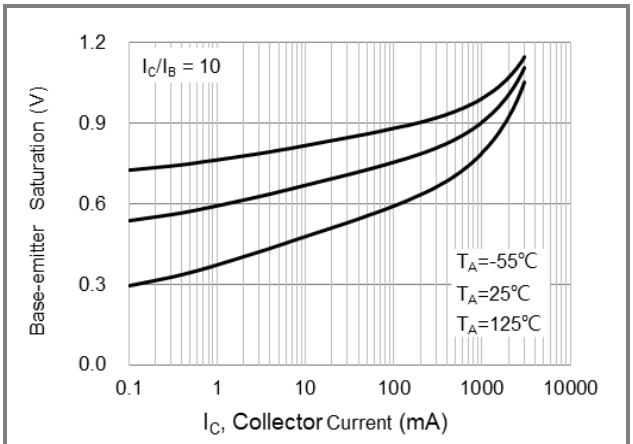


Fig.5 Base-Emitter Saturation Voltage

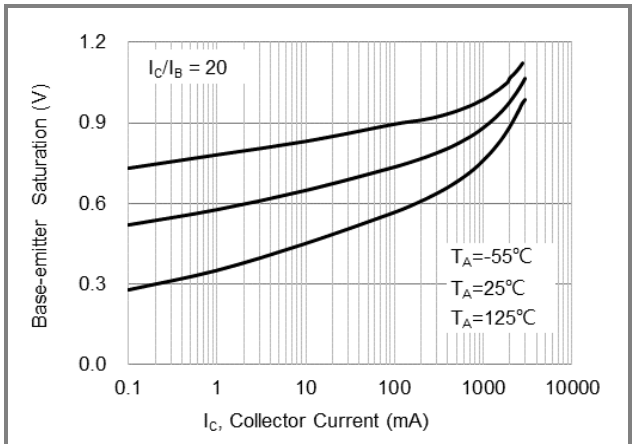


Fig.6 Base-Emitter Saturation Voltage

PBSS4140SA

TYPICAL CHARACTERISTIC CURVES

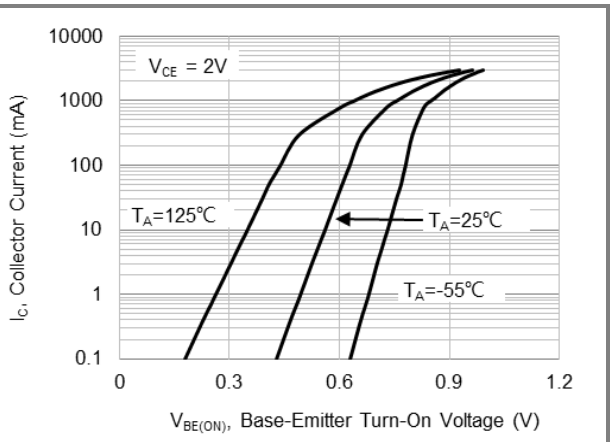


Fig.7 Base-Emitter Turn-On Voltage

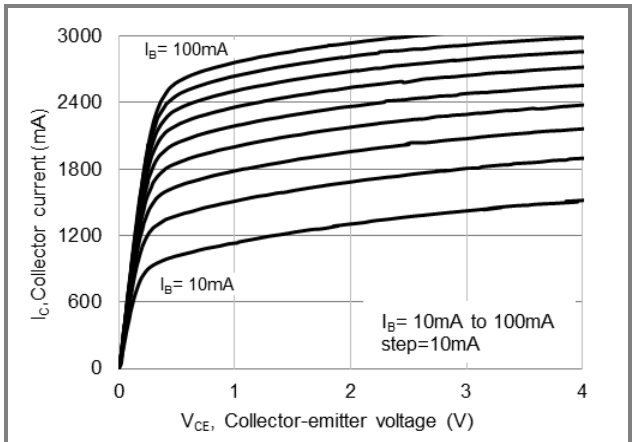


Fig.8 Collector Current

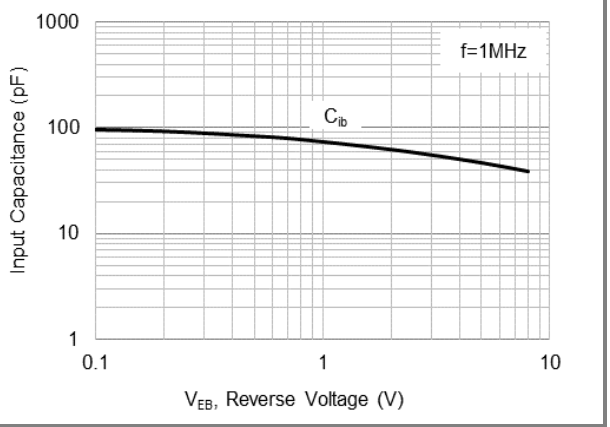


Fig.9 Input Capacitance

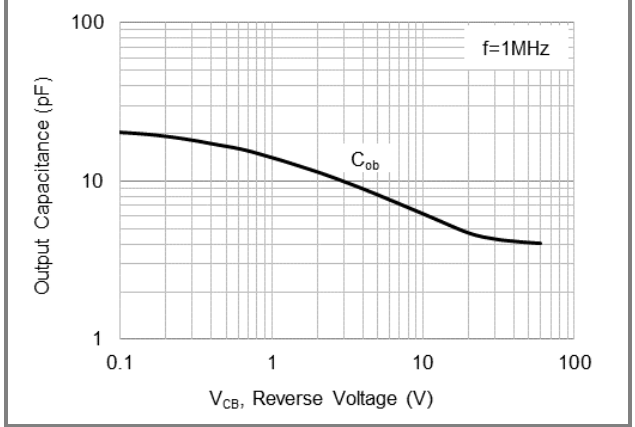


Fig.10 Output Capacitance

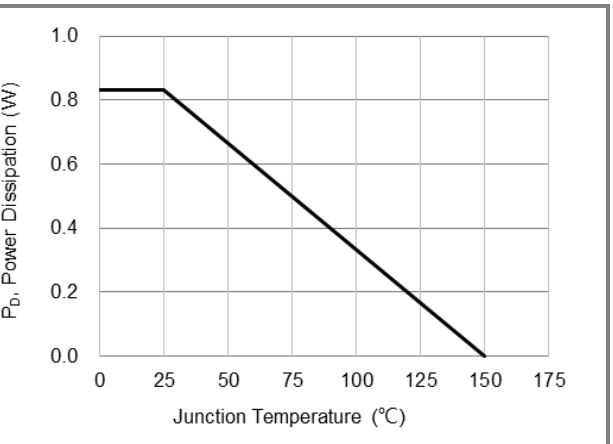


Fig.11 Power Derating Curve

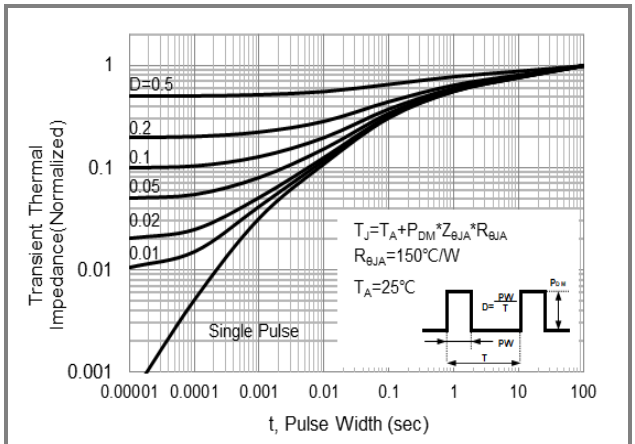


Fig.12 Normalized Transient Thermal Impedance

PBSS4140SA

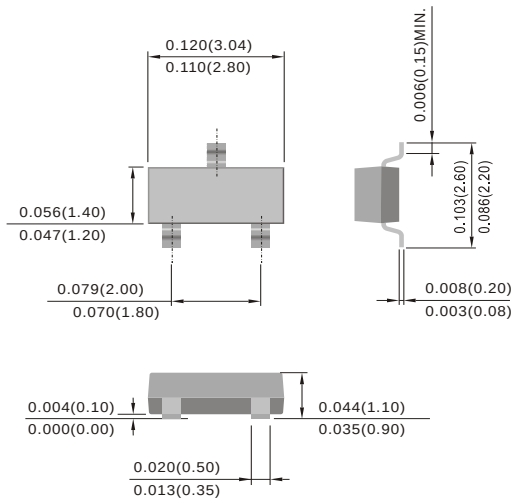
Product and Packing Information

Part No.	Package Type	Packing Type	Marking
PBSS4140SA	SOT-23	3K pcs / 7” reel	414

Packaging Information & Mounting Pad Layout

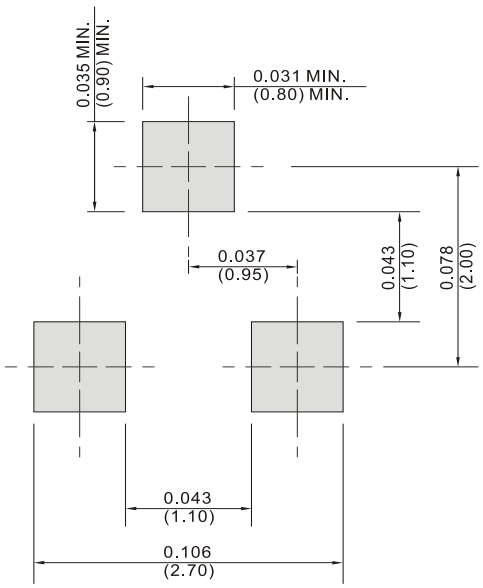
SOT-23 Dimension

Unit: inch(mm)



SOT-23 Pad Layout

Unit: inch(mm)



Disclaimer

- Reproducing and modifying information of the document is prohibited without permission from PANJIT International Inc..
- PANJIT International Inc. reserves the rights to make changes of the content herein the document follow PCN procedure. Please refer to our website for the latest document.
- PANJIT International Inc. disclaims any and all liability arising out of the application or use of any product including damages incidentally and consequentially occurred.
- PANJIT International Inc. does not assume any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.
- Applications shown on the herein document are examples of standard use and operation. Customers are responsible in comprehending the suitable use in particular applications. PANJIT International Inc. makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.
- The products shown herein are not designed or authorized for equipment relating to human life, life-saving or life-sustaining applications, such as medical instruments, transportation equipment, aerospace machinery, or for other applications intended to cause personal injury. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify PANJIT International Inc. for any damages resulting from such improper use or sale. For additional terms and conditions regarding the use of PANJIT products, please refer to the Terms of Use available on the PANJIT website.
- Since PANJIT uses lot number as the tracking base, please provide the lot number for tracking when complaining.