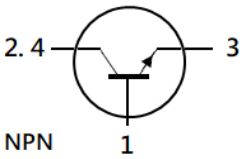
2SD1781W-AU

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

Voltage	50V	Current	3A

SOT-223



Pin Assignment:
1. Base
2.4. Collector
3. Emitter

Features

- Silicon NPN epitaxial type
- Low $V_{CE(SAT)}$ 0.14V(max)@I_C/I_B= 1A / 100mA
- High collector current capability
- Excellent DC current gain characteristics
- AEC-Q101 qualified
- 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 : 0.123 grams

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

PARAMETER	SYMBOL	LIMIT	UNIT
Collector-Base Voltage	V_{CBO}	100	V
Collector-Emitter Voltage	V_{CEO}	50	
Emitter-Base Voltage	V_{EBO}	7	
Collector Current (DC)	I_C	3	A
Collector Current (Pulse)	I_{CP}	5	
Base Current (DC)	I_B	0.3	
Power Dissipation	P_D	2.6	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55~150	°C
Thermal Resistance From Junction to Ambient(Note)	$R_{\theta JA}$	48	°C/W

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

2SD1781W-AU

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	50	-	-	V
Collector-Base Breakdown Voltage	BV_{CBO}	I_C= 0.1mA, I_E= 0A	100	-	-	
Emitter-Base Breakdown Voltage	BV_{EBO}	I_E= 0.1mA, I_C= 0A	7	9.4	-	
Collector Cutoff Current	I_{CBO}	V_{CB}= 50V, 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}= 50V, I_E= 0A	-	-	100	
ON Characteristics(Note 1)						
DC Current Gain	h_{FE}	V_{CE}= 5V, I_C= 50mA	300	-	-	-
		V_{CE}= 5V, I_C= 0.5A	100	500	900	
		V_{CE}= 5V, I_C= 2A	90	-	-	
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	I_C= 0.5A, I_B= 50mA	-	53	100	mV
		I_C= 1A, I_B= 100mA	-	94	140	
		I_C= 2A, I_B= 200mA	-	180	300	
Base-Emitter Saturation voltage	$V_{BE(SAT)}$	I_C= 2A, I_B= 200mA	-	1.1	1.3	V
Base-Emitter Turn-on voltage	$V_{BE(ON)}$	I_C= 1A, V_{CE}= 2V	-	0.75	1.1	
Base input Capacitance	C_{IB}	V_{EB}= 0.5V, I_C= 0A, f=1MHz	-	162	-	pF
Collector Output Capacitance	C_{OB}	V_{CB}= 10V, I_E= 0A, f=1MHz	-	10	-	pF

Note : 1. Pulse width≤300us, Duty cycle≤2%.

2SD1781W-AU

TYPICAL CHARACTERISTIC CURVES

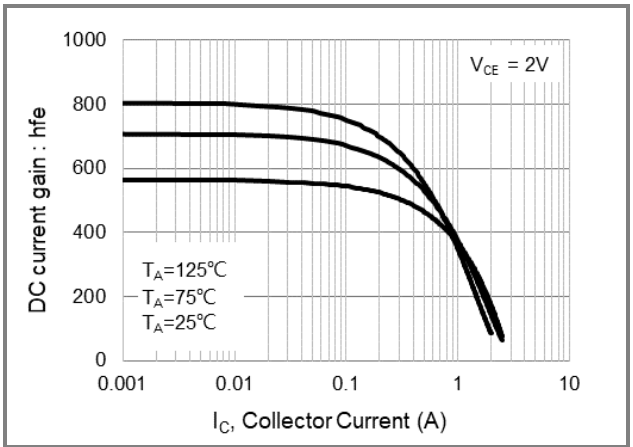


Fig.1 DC Current Gain

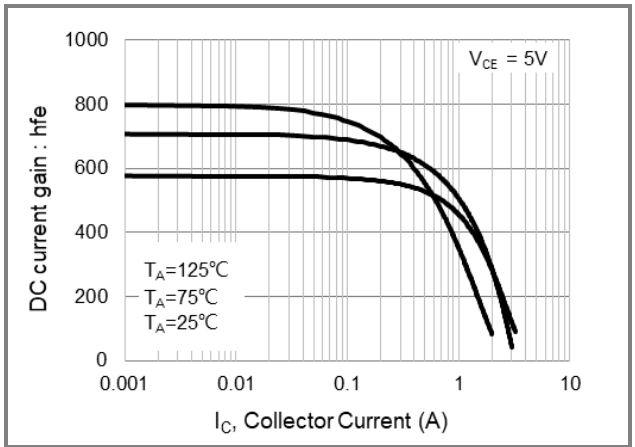


Fig.2 DC Current Gain

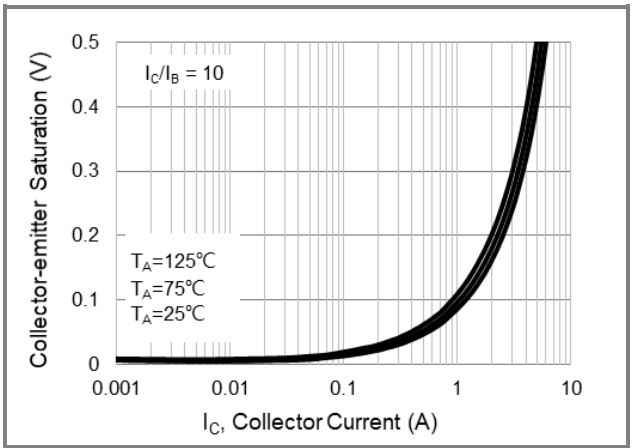


Fig.3 Collector-Emitter Saturation Voltage

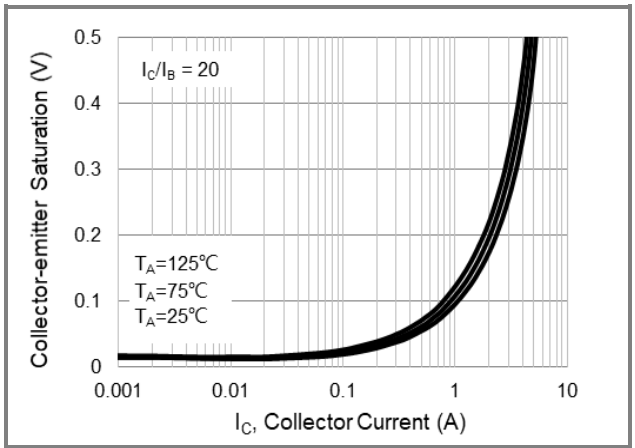


Fig.4 Collector-Emitter Saturation Voltage

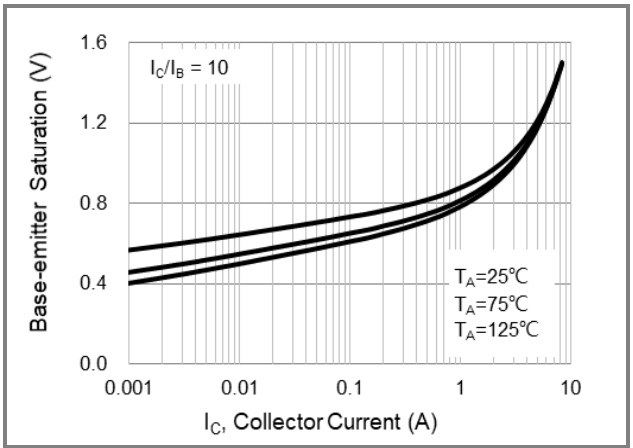


Fig.5 Base-Emitter Saturation Voltage

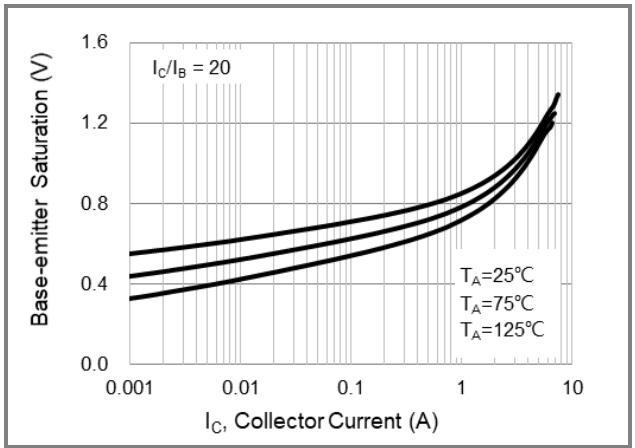


Fig.6 Base-Emitter Saturation Voltage

2SD1781W-AU

TYPICAL CHARACTERISTIC CURVES

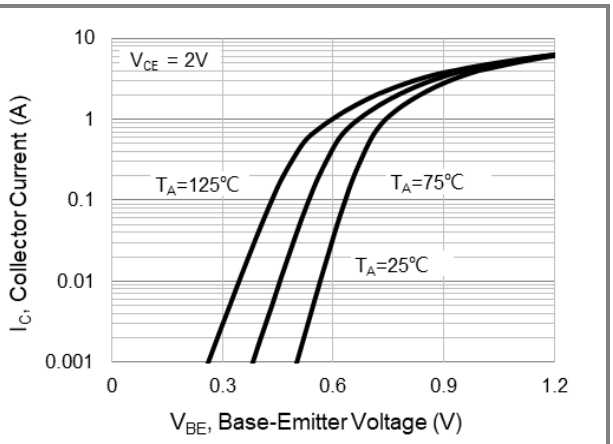


Fig.7 Base-Emitter Turn-on Voltage

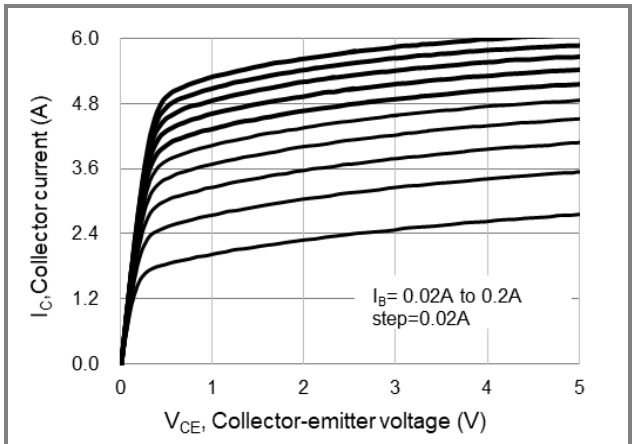


Fig.8 Collector Current

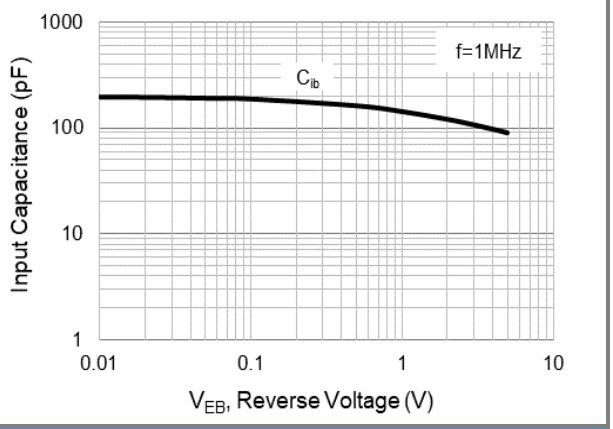


Fig.9 Input Capacitance

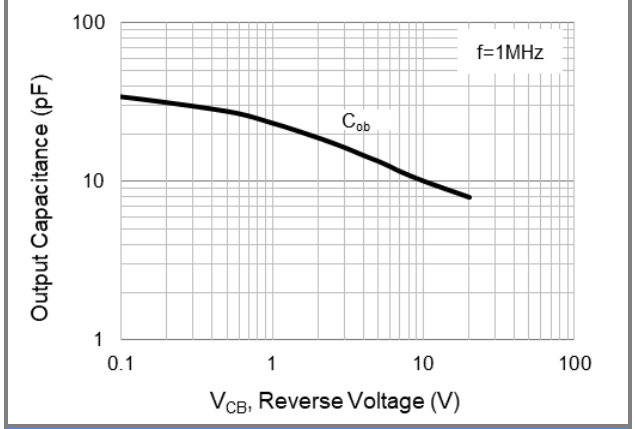


Fig.10 Output Capacitance

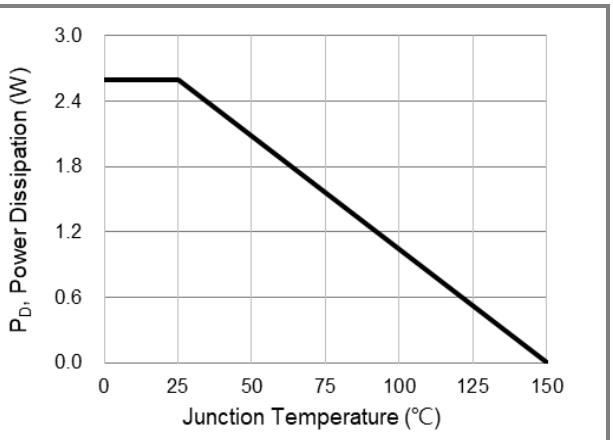


Fig.11 Power Derating Curve

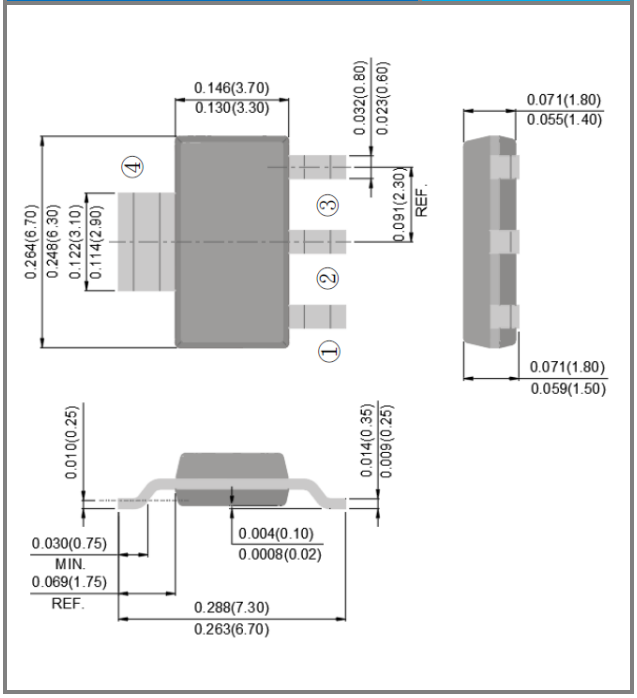
2SD1781W-AU

Product and Packing Information

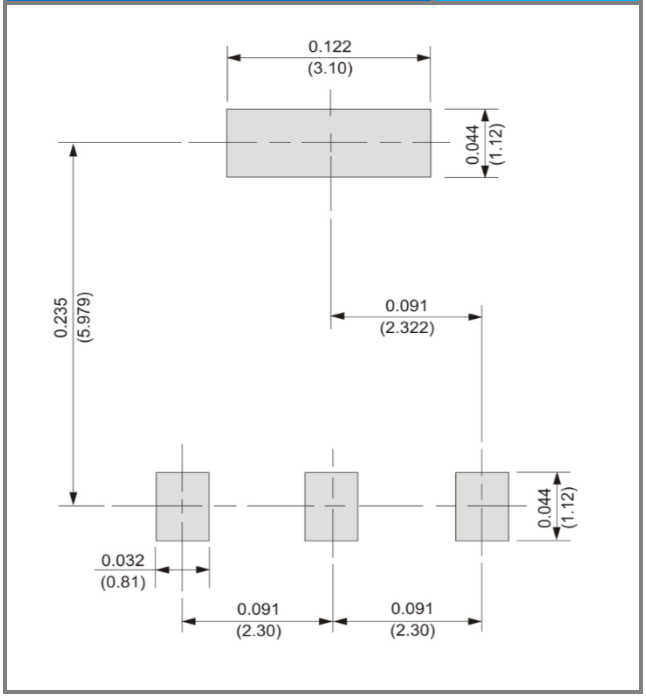
Part No.	Package Type	Packing Type	Marking
2SD1781W-AU	SOT-223	2.5K pcs / 13” reel	1781W

Packaging Information & Mounting Pad Layout

SOT-223 Dimension — Unit: inch(mm)



SOT-223 Pad Layout — Unit: inch(mm)



2SD1781W-AU

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