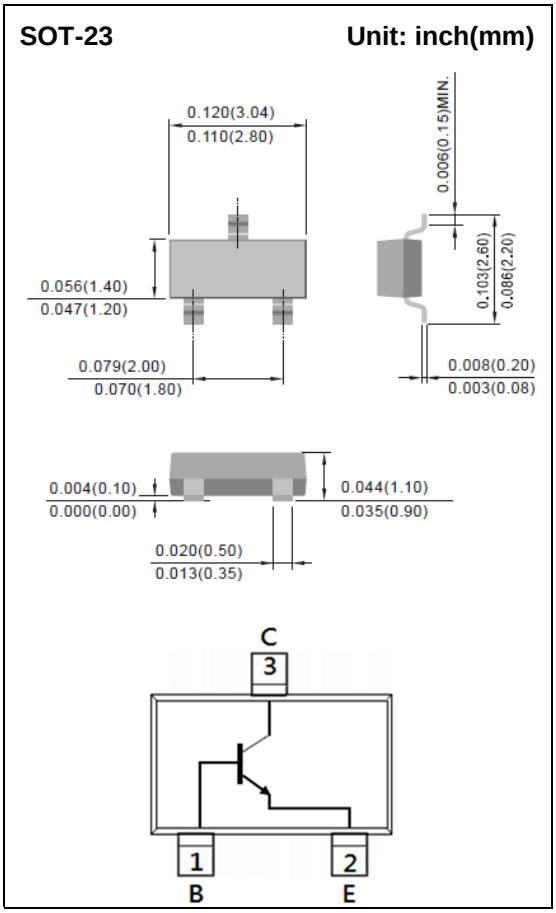
2SD1781A

NPN Low Vce(sat) Transistor

Voltage	50V	Current	3A



Features

- Silicon NPN epitaxial type
- Low Vce(sat) 0.14V(max)@Ic/Ib= 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 IEC 61249 standard

Mechanical Data

- Case: SOT-23 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight: 0.0003 ounces, 0.0084 grams

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

PARAMETER	SYMBOL	LIMIT	UNITS
Collector-Base Voltage	V_{CBO}	100	V
Collector-Emitter Voltage	V_{CEO}	50	V
Emitter-Base Voltage	V_{EBO}	7	V
Collector Current (DC)	I_C	3	A
Collector Current (Pulse)	I_{CP}	5	A
Collector Power Dissipation	P_D	1.25	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55~150	°C
Thermal Resistance from Junction to Ambient (Note)	$R_{\theta JA}$	100	°C/W

Note: Mounted on FR4 with 2oz. PCB at 1 inch square copper pad.

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

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNITS
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	-	-	V
Emitter-Base Breakdown Voltage	BV_{EBO}	I_E= 0.1mA, I_C= 0A	7	9.4	-	V
Collector-Base Cutoff Current	I_{CBO}	V_{CB}= 30V, I_E= 0A	-	1	100	nA
Emitter-Base Cutoff Current	I_{EBO}	V_{EB}= 4V	-	1	100	nA
Collector-Emitter Cutoff Current	I_{CES}	V_{CES}= 30V	-	1	100	nA
ON characteristics						
DC Current Gain	h_{FE}	V_{CE}= 5V I_C= 50mA	300	-	-	-
		V_{CE}= 5V I_C= 0.5A	300	500	900	
		V_{CE}= 5V I_C= 1A	200	-	-	
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	I_C= 100mA, I_B= 1mA	-	52	75	mV
		I_C= 500mA, I_B= 50mA	-	53	100	
		I_C= 1A, I_B= 100mA	-	94	140	
Base-Emitter Saturation voltage	$V_{BE(SAT)}$	I_C= 1A, I_B= 100mA	-	0.87	1.1	V
Base-Emitter Turn-on voltage	$V_{BE(on)}$	I_C= 1mA, V_{CE}= 2V	-	0.52	1.1	
Transition Frequency	f_T	I_C= 100mA, V_{CE}= 5V f=100MHz	-	250	-	MHz
Collector Output Capacitance	C_{OB}	V_{CB}= 10V I_E= 0A, f=1MHz	-	13	-	pF

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TYPICAL CHARACTERISTIC CURVES

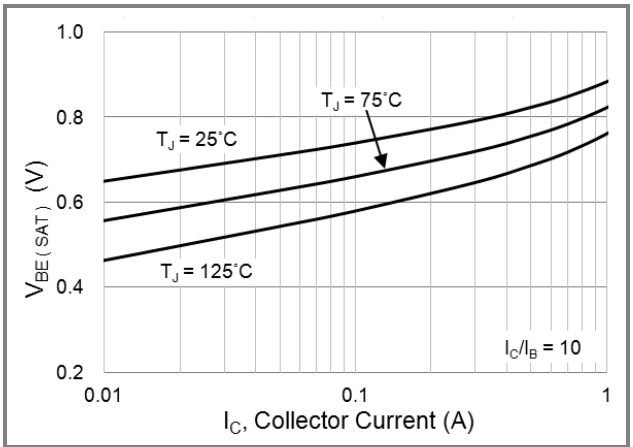

Fig.1 Typical Base-Emitter Saturation Voltage

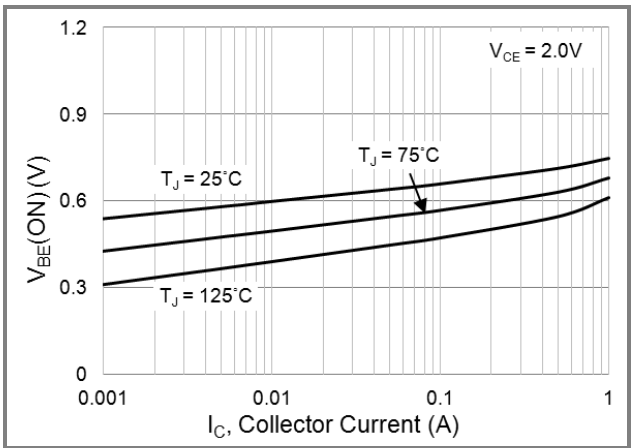

Fig.2 Typical Base-Emitter Turn-on Voltage

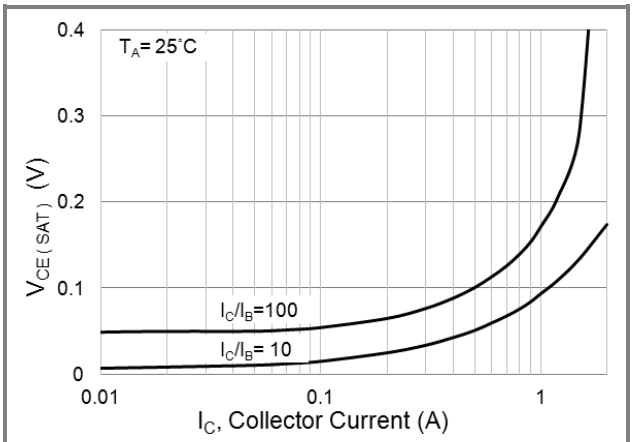

Fig.3 Typical Collector-Emitter Saturation

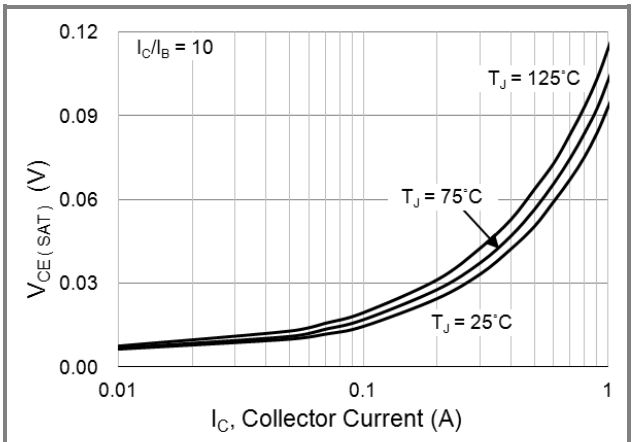

Fig.4 Typical Collector-Emitter Saturation

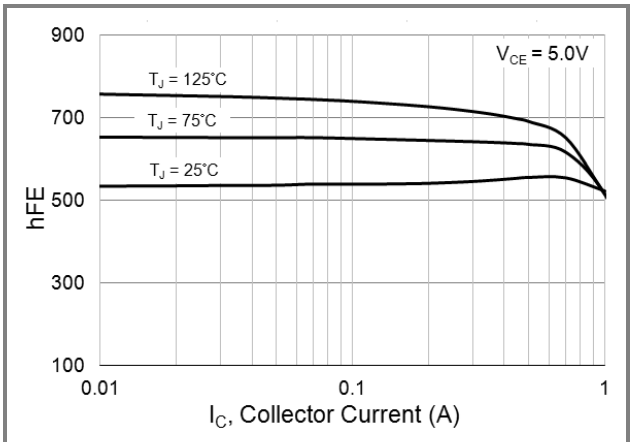

Fig.5 Typical DC Current Gain vs Collector Current

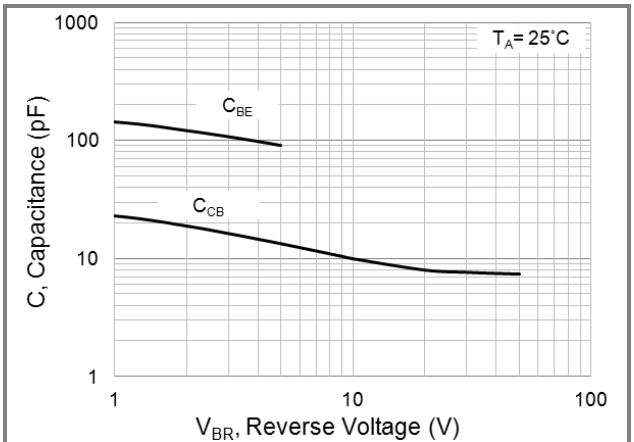

Fig.6 Typical Capacitance

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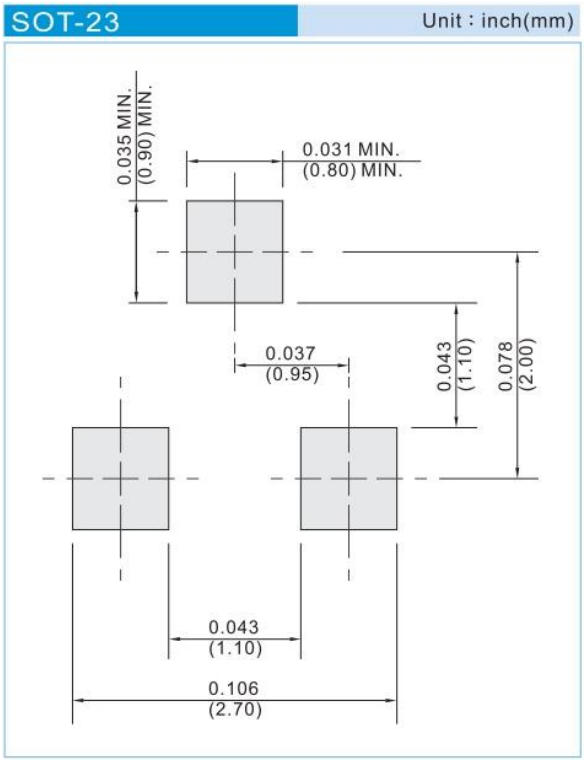
PART NO PACKING CODE VERSION

Part No Packing Code	Package Type	Packing Type	Marking	Version
2SD1781A_R1_00001	SOT-23	3K pcs / 7” reel	D81	Halogen free
2SD1781A_R2_00001	SOT-23	12K pcs / 13” reel	D81	Halogen free

MOUNTING PAD LAYOUT



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