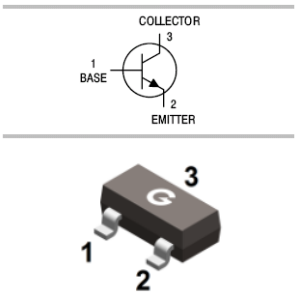
NPN Silicon Epitaxial Planar Transistor

2SD1782

Features

- Epitaxial planar die construction
- Complementary PNP type available(2SB1198)
- Low $V_{CE(sat)}$
- RoHS compliant with Halogen-free

HF



SOT-23

Mechanical Data

- Case: SOT-23
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
2SD1782-Q	SOT-23	3000 pcs / Tape & Reel	AJ
2SD1782-R	SOT-23	3000 pcs / Tape & Reel	AJ

Maximum Ratings (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	80	V
Collector-Emitter Breakdown Voltage	V_{CEO}	80	V
Emitter-Base Breakdown Voltage	V_{EBO}	5	V
Collector Current (Continuous)	I_C	0.5	A
Collector Current (Peak)	I_{CM}	1	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation	P_D	0.2	W
Thermal Resistance Junction-to-Air *1	$R_{\theta JA}$	258	°C/W
Thermal Resistance Junction-to-Case *1	$R_{\theta JC}$	142	°C/W
Thermal Resistance Junction-to-Lead *1	$R_{\theta JL}$	186	°C/W
Junction Temperature Range	T_J	-55 ~ +150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Note 1: The data tested by surface mounted on a 15mm * 15mm * 1mm FR4-epoxy P.C.B

Electrical Characteristics (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C = 50μA, I_E = 0	80	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 2mA, I_B = 0	80	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 50μA, I_C = 0	5	-	-	V
Collector Cut-off Current	I_{CBO}	V_{CB} = 20V, I_E = 0	-	-	0.5	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 4V, I_C = 0	-	-	0.5	μA
DC Current Gain	h_{FE}	V_{CE} = 3V, I_C = 100mA	120	-	390	-
Collector-emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 500mA, I_B = 50mA	-	0.2	0.5	V
Base-emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 500mA, I_B = 50mA	-	-	1.2	V
Current-Gain— Bandwidth Product	f_T	I_C = 50mA, V_{CE} = 10V f = 100MHz	-	120	-	MHz
Output Capacitance	C_{ob}	V_{CB} = 10V, I_E = 0, f = 1MHz	-	7.5	-	pF

Classification of h_{FE}

Rank	Q	R
Range	120-270	180-390

Ratings and Characteristics Curves (@ T_A = 25°C unless otherwise specified)

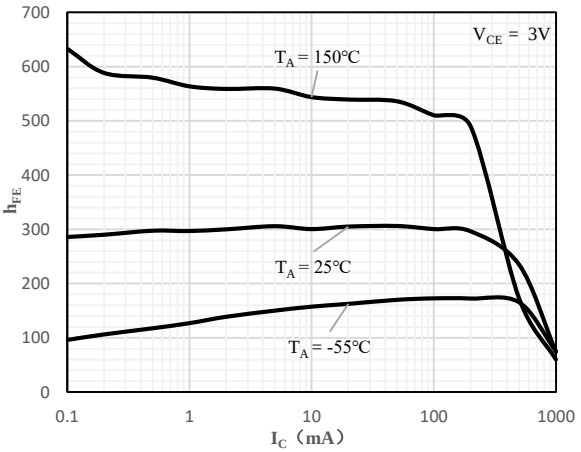


Fig 1 h_{FE} vs. I_C

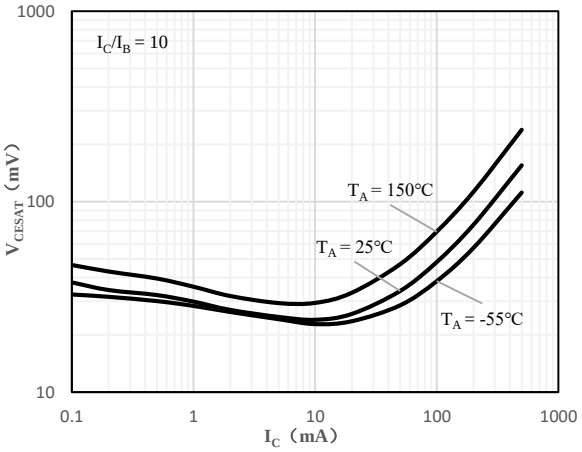


Fig 2 $V_{CE(sat)}$ vs. I_C

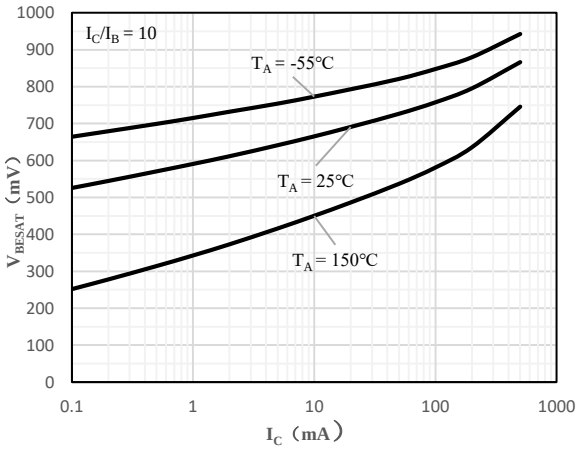


Fig 3 $V_{BE(sat)}$ vs. I_C

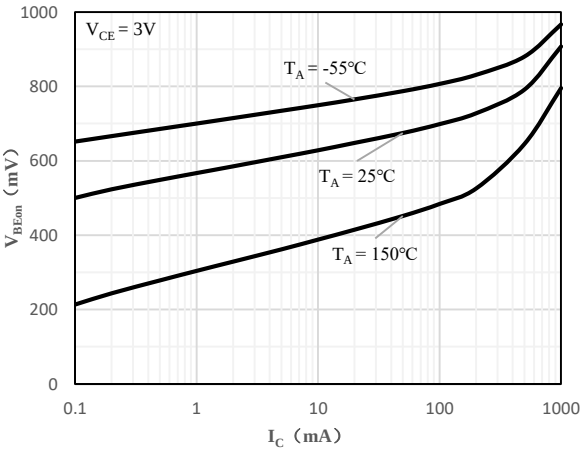
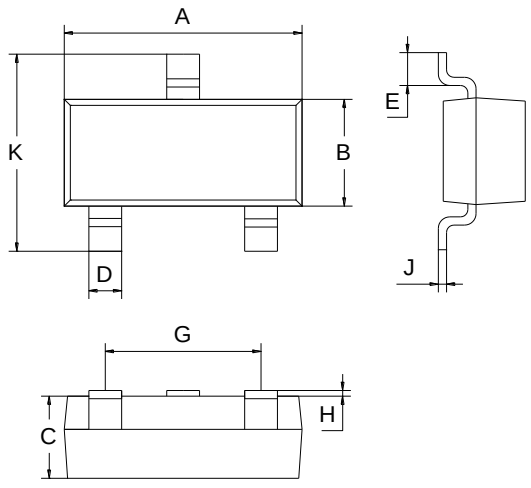


Fig 4 $V_{BE(ON)}$ vs. I_C

Package Outline Dimensions (Unit: mm)



SOT-23		
Dimension	**Min.**	**Max.**
A	2.70	3.10
B	1.10	1.50
C	0.90	1.10
D	0.30	0.50
E	0.35	0.48
G	1.80	2.00
H	0.02	0.10
J	0.05	0.15
K	2.20	2.60

Package Outline Dimensions (Unit: mm)

SOT-23