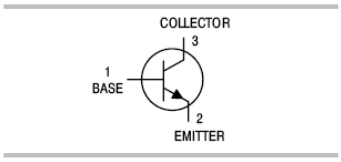
NPN Silicon Epitaxial Planar Transistor

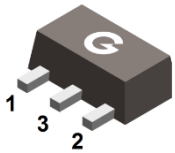
T2SD1766

Features

- Low saturation voltage
- High saturation current capability
- Complementary pair with T2SB1188
- RoHS compliant with Halogen-free
- Qualified to AEC-Q101 Standards

HF





SOT-89

Mechanical Data

- Case: SOT-89
- 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
T2SD1766-P	SOT-89	1000 pcs / Tape & Reel	DBP
T2SD1766-Q	SOT-89	1000 pcs / Tape & Reel	DBQ
T2SD1766-R	SOT-89	1000 pcs / Tape & Reel	DBR

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

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	40	V
Collector-Emitter Breakdown Voltage	V_{CEO}	32	V
Emitter-Base Breakdown Voltage	V_{EBO}	5	V
Collector Current (Continuous)	I_C	2	A
Collector Current (Peak)	I_{CM}	2	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation (T_A = 25°C)	P_D	0.5	W
Thermal Resistance Junction-to-Air *1	$R_{\theta JA}$	45	°C/W
Thermal Resistance Junction-to-Case *1	$R_{\theta JC}$	17	°C/W
Thermal Resistance Junction-to-Lead *1	$R_{\theta JL}$	7	°C/W
Junction Temperature	T_J	-55 ~ +150	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Note 1: The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper

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	40	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1mA, I_B = 0	32	-	-	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	-	-	1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 4V, I_C = 0	-	-	1	μA
DC Current Gain	h_{FE}	V_{CE} = 3V, I_C = 0.5A	82	-	390	-
Collector-emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 2A, I_B = 0.2A	-	0.5	0.8	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 2A, I_B = 0.2A	-	-	1.2	V
Output Capacity	C_{ob}	V_{CB} = 10V, f = 1MHz, I_E = 0	-	30	-	pF
Current-Gain—Bandwidth Product	f_T	I_C = 0.05A, V_{CE} = 5V f = 100MHz	-	100	-	MHz

Classification of h_{FE}

Rank	P	Q	R
Range	82-180	120-270	180-390
Marking	DBP	DBQ	DBR

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

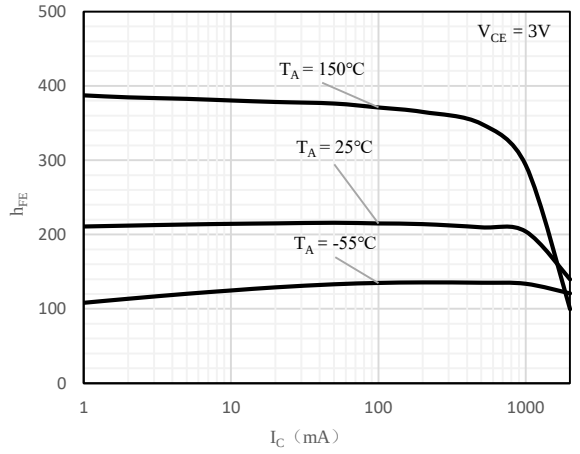


Fig 1 h_{FE} vs. I_C

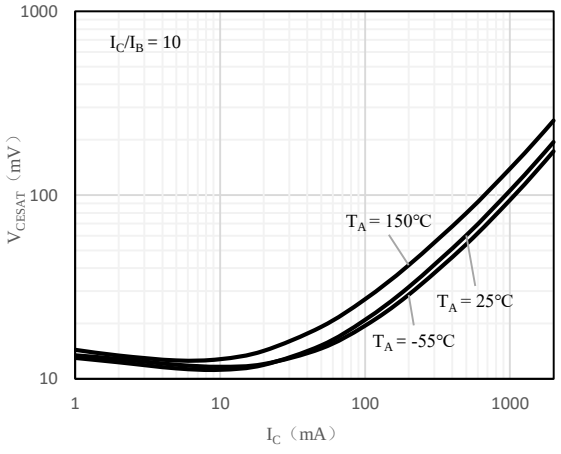


Fig 2 $V_{CE(sat)}$ vs. I_C

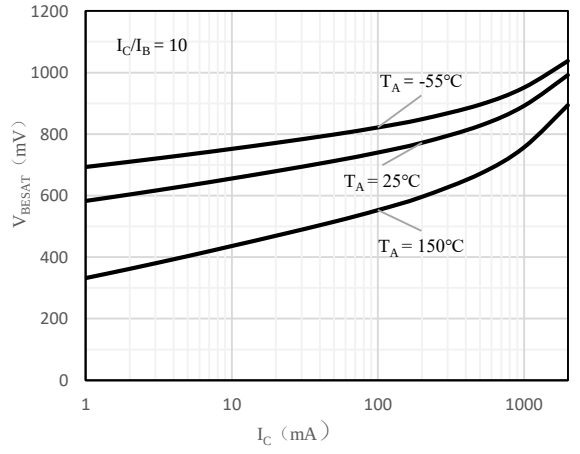


Fig 3 $V_{BE(sat)}$ vs. I_C

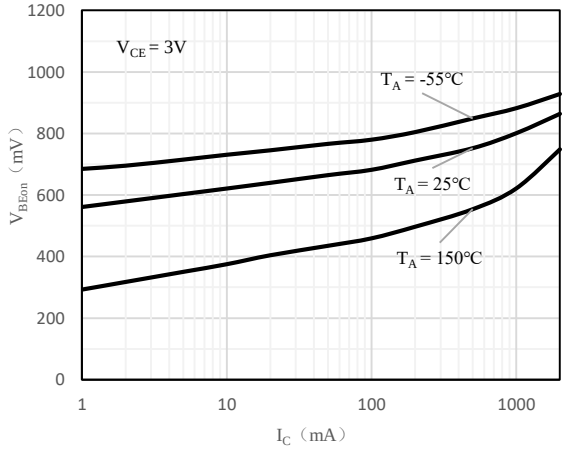


Fig 4 $V_{BE(ON)}$ vs. I_C

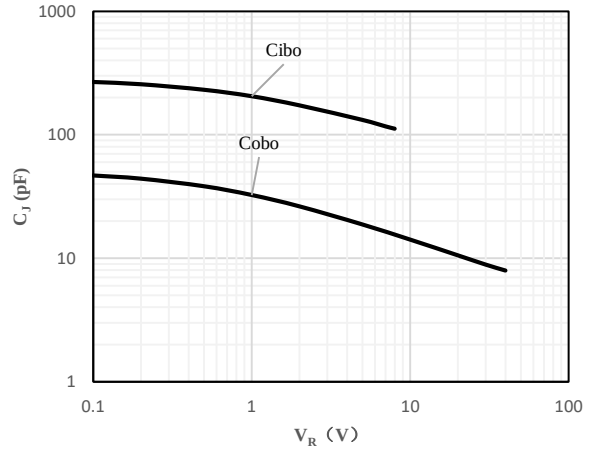


Fig 5 C_J vs. V_R

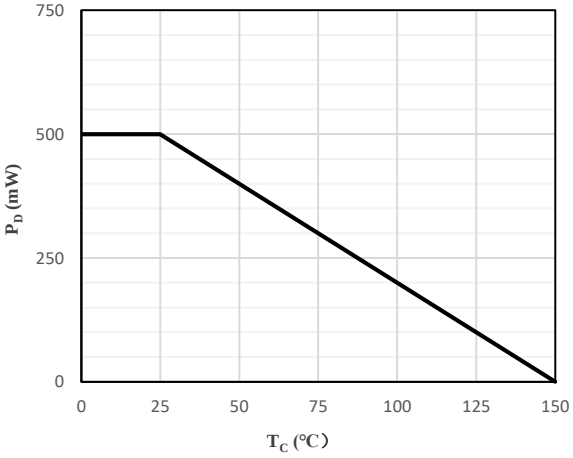


Fig 6 Steady State Power Derating

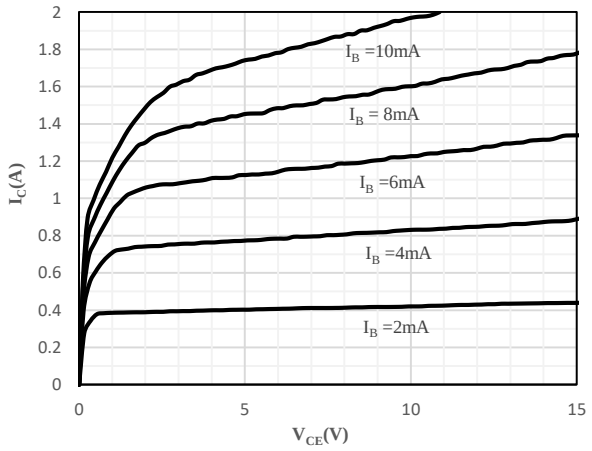
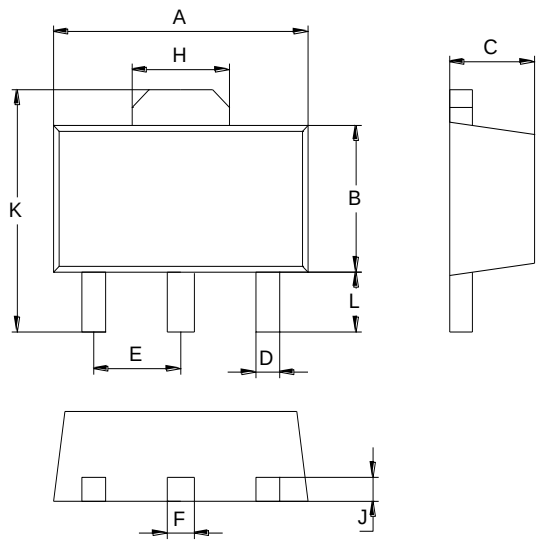


Fig 7 I_C vs. V_{CE}

Package Outline Dimensions (Unit: mm)



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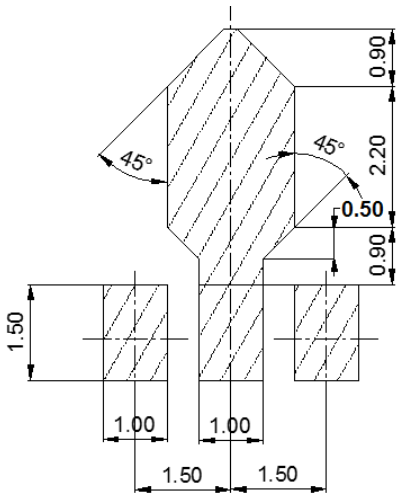
Dimension	**Min.**	**Max.**
A	4.30	4.70
B	2.25	2.65
C	1.30	1.70
D	0.30	0.50
E	1.40	1.60
F	0.38	0.58
H	1.60	1.80
J	0.30	0.50
L	0.90	1.10
K	3.95	4.35

Mounting Pad Layout (Unit: mm)

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