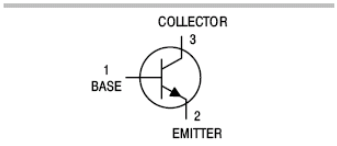
NPN Silicon Epitaxial Planar Transistor

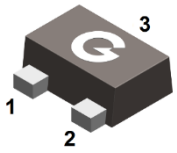
2SC5658

Features

HF

- Epitaxial planar die construction
- Complimentary to 2SA2029
- Ultra-small surface mount package
- RoHS compliant with Halogen-free





SOT-723

Mechanical Data

- Case: SOT-723
- 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
2SC5658-Q	SOT-723	10000 pcs / Tape & Reel	BQ
2SC5658-R	SOT-723	10000 pcs / Tape & Reel	BR
2SC5658-S	SOT-723	10000 pcs / Tape & Reel	BS

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

Parameter	Symbol	Value	Unit
Collector-Base Breakdown Voltage	V_{CBO}	60	V
Collector-Emitter Breakdown Voltage	V_{CEO}	50	V
Emitter-Base Breakdown Voltage	V_{EBO}	7	V
Continuous Collector Current	I_C	150	mA
Peak Collector Current	I_{CM}	200	mA

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation (T_A = 25°C)	P_D	100	mW
Thermal Resistance Junction-to-Air *1	$R_{\theta JA}$	360	°C/W
Thermal Resistance Junction-to-Case *1	$R_{\theta JC}$	206	°C/W
Thermal Resistance Junction-to-Lead *1	$R_{\theta JL}$	181	°C/W
Operating 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 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	60	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1mA, I_B = 0	50	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E = 50μA, I_C = 0	7	-	-	V
Collector Cut-off Current	I_{CBO}	V_{CB} = 60V, I_E = 0	-	-	0.1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 7V, I_C = 0	-	-	0.1	μA
DC Current Gain	h_{FE}	V_{CE} = 6V, I_C = 1mA	120	-	560	-
Collector-emitter Saturation Voltage	$V_{CE(sat)}$	I_{CE} = 50mA, I_B = 5mA	-	-	0.4	V
Base-emitter Voltage	$V_{BE(ON)}$	V_{CE} = 6V, I_C = 1mA	0.5	-	0.8	V
Transition Frequency	f_T	I_C = 2mA, V_{CE} = 12V f = 100MHz	-	180	-	MHz
Collector Output Capacitance	C_{ob}	V_{CB} = 12V, I_E = 0, f = 1MHZ	-	-	3.5	pF

Classification of h_{FE}

Rank	Q	R	S
Range	120-270	180-390	270-560
Marking	BQ	BR	BS

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

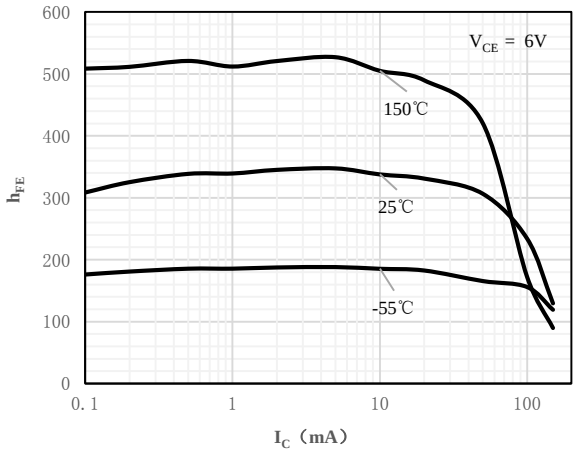


Fig 1 h_{FE} vs. I_C

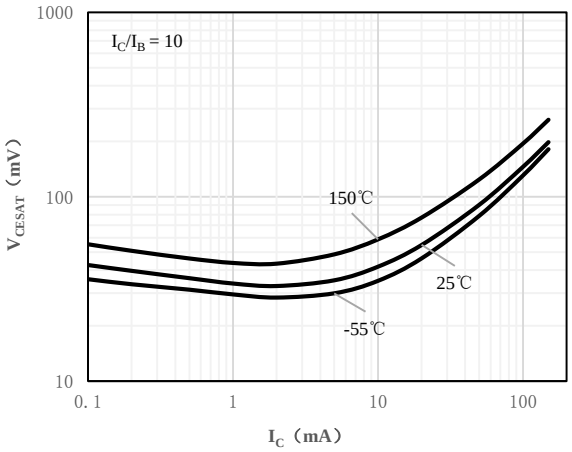


Fig 2 $V_{CE(sat)}$ vs. I_C

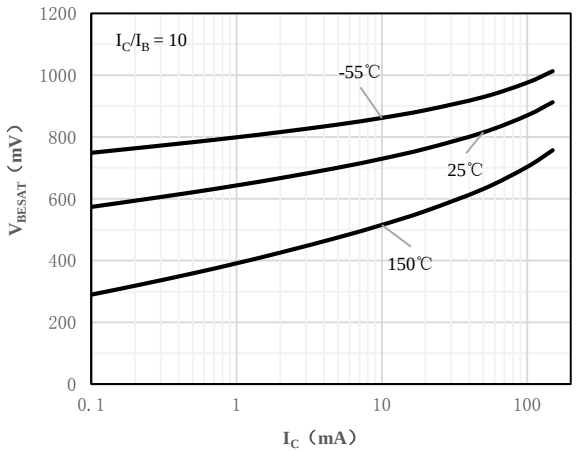


Fig 3 $V_{BE(sat)}$ vs. I_C

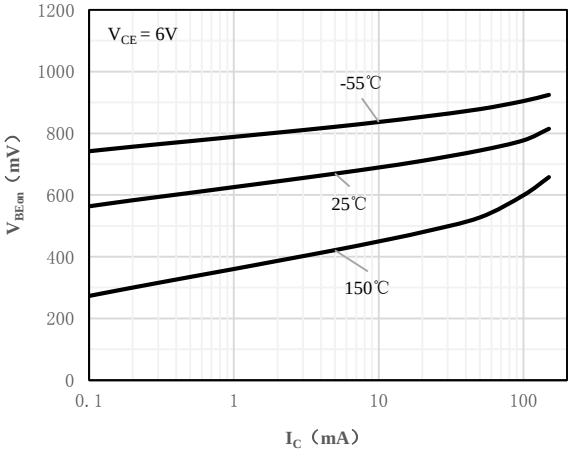


Fig 4 $V_{BE(ON)}$ vs. I_C

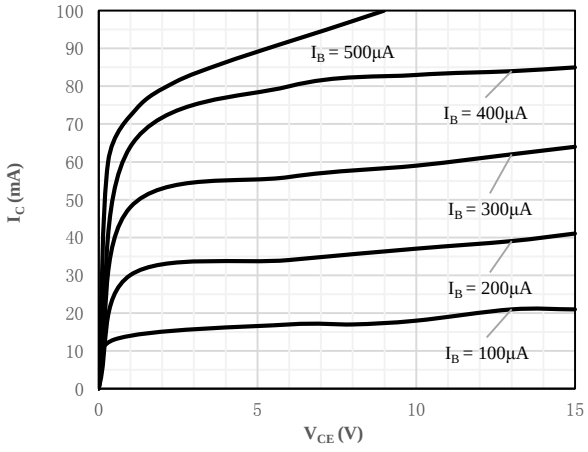


Fig 5 I_C vs. V_{CE}

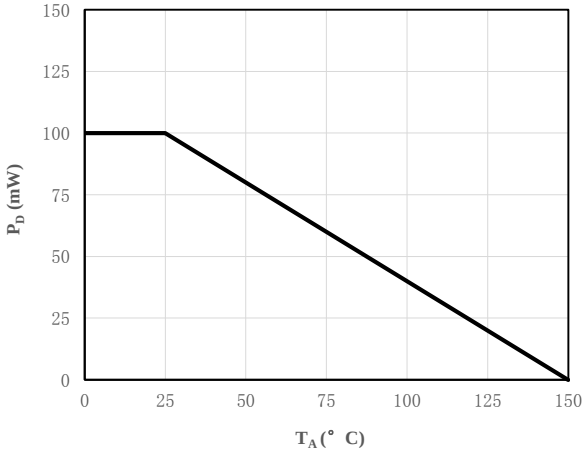


Fig 6 P_D vs. T_A

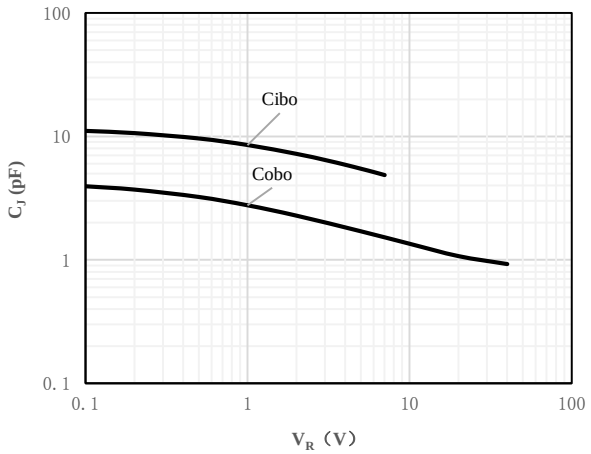
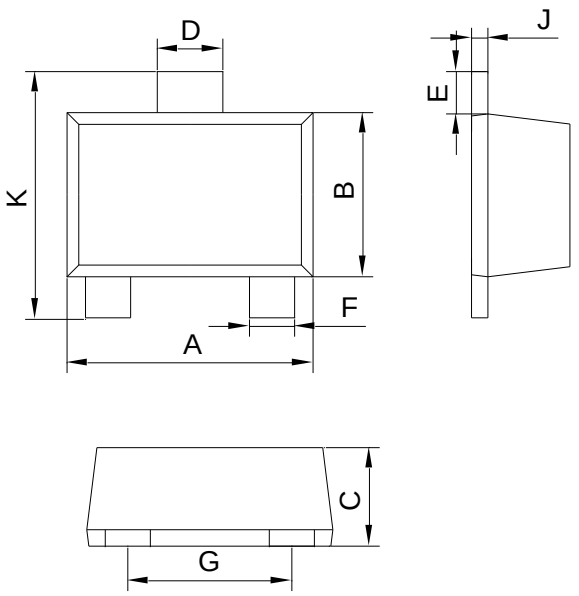


Fig 7 C_J vs. V_R

Package Outline Dimensions (Unit: mm)



SOT-723		
Dimension	**Min.**	**Max.**
A	1.10	1.30
B	0.70	0.90
C	0.40	0.54
D	0.22	0.42
E	0.10	0.30
F	0.12	0.32
G	0.70	0.90
J	0.08	0.15
K	1.10	1.30

Mounting PAD Layout (Unit: mm)

SOT-723

