

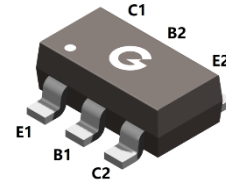
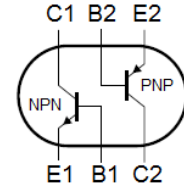
Features

- Epitaxial planar die construction
- Two internal isolated NPN/PNP transistors in one package
- Ultra-small surface mount package
- Halogen free
- Qualified to AEC-Q101 standards for high reliability

HF

Mechanical Data

- Case: SOT-23-6L
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208



SOT-23-6L

Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
TBC817DPN	SOT-23-6L	3000 pcs / Tape & Reel	N4

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

Parameter	Symbol	NPN	PNP	Unit
Collector-Base Voltage	V _{CBO}	50	-50	V
Collector-Emitter Voltage	V _{CEO}	45	-45	V
Emitter-Base Voltage	V _{EBO}	5	-5	V
Collector Current (Continuous)	I _C	0.5	-0.5	A
Collector Current (Pulse)	I _{CM}	1	-1	A

Thermal Characteristics

Parameter	Symbol	Value	Unit
Power Dissipation *1	P _D	600	mW
Thermal Resistance Junction-to-Air *3	R _{θJA}	182	°C/W
Thermal Resistance Junction-to-Case *3	R _{θJC}	107	°C/W
Thermal Resistance Junction-to-Lead *3	R _{θJL}	140	°C/W
Operating Junction Temperature	T _J	-55 ~ +150	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

Electrical Characteristics of NPN Transistor (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}, I_E = 0$	50	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10\text{mA}, I_B = 0$	45	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu\text{A}, I_C = 0$	5	-	-	V
Collector Cut-off Current	I_{CBO}	$V_{CB} = 25\text{V}, I_E = 0$	-	-	100	nA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 5\text{V}, I_C = 0$	-	-	100	nA
DC Current Gain ^{*2}	h_{FE}	$V_{CE} = 1\text{V}, I_C = 100\text{mA}$	160	-	400	-
		$V_{CE} = 1\text{V}, I_C = 500\text{mA}$	40	-	-	-
Collector-emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 500\text{mA}, I_B = 50\text{mA}$	-	-	0.7	V
Base-emitter Voltage	$V_{BE(ON)}$	$V_{CE} = 1\text{V}, I_C = 500\text{mA}$	-	-	1.2	V
Transition Frequency	f_T	$I_C = 50\text{mA}, V_{CE} = 5\text{V}$	-	170	-	MHz
Collector Output Capacitance	C_{OBO}	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$	-	6	-	pF

Electrical Characteristics of PNP Transistor (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = -10\mu\text{A}, I_E = 0$	-50	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = -10\text{mA}, I_B = 0$	-45	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = -10\mu\text{A}, I_C = 0$	-5	-	-	V
Collector Cut-off Current	I_{CBO}	$V_{CB} = -25\text{V}, I_E = 0$	-	-	-100	nA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = -5\text{V}, I_C = 0$	-	-	-100	nA
DC Current Gain	h_{FE}	$V_{CE} = -1\text{V}, I_C = -100\text{mA}$	160	-	400	-
		$V_{CE} = -1\text{V}, I_C = -500\text{mA}$	40	-	-	-
Collector-emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -500\text{mA}, I_B = -50\text{mA}$	-	-	-0.7	V
Base-emitter Voltage	$V_{BE(ON)}$	$V_{CE} = -1\text{V}, I_C = -500\text{mA}$	-	-	-1.2	V
Transition Frequency	f_T	$I_C = -10\text{mA}, V_{CE} = -5\text{V}$	-	200	-	MHz
Collector Output Capacitance	C_{OBO}	$V_{CB} = -10\text{V}, I_E = 0, f = 1\text{MHz}$	-	-	10	pF

Notes:

1. Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 1 cm^2
2. Pulse test: $t_p \leq 300\mu\text{s}$; $\delta \leq 0.02$
3. The data tested by surface mounted on a $25.4\text{mm} \times 25.4\text{mm} \times 1\text{mm}$ FR4-epoxy P.C.B

Ratings and Characteristic Curves-NPN (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

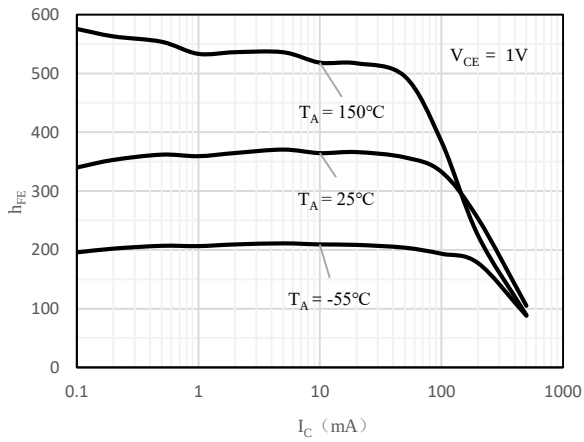


Fig 1 h_{FE} vs. I_C

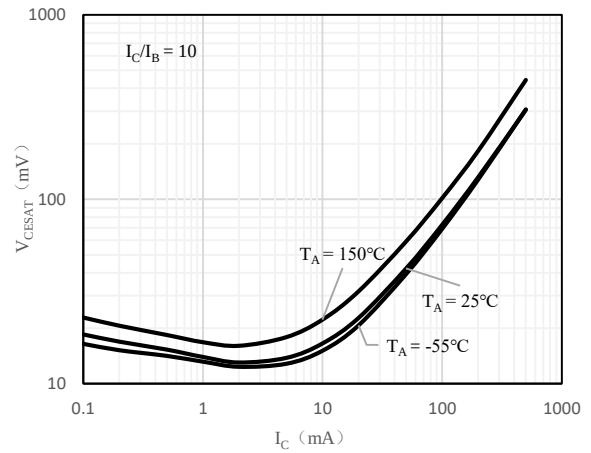


Fig 2 $V_{CE(sat)}$ vs. I_C

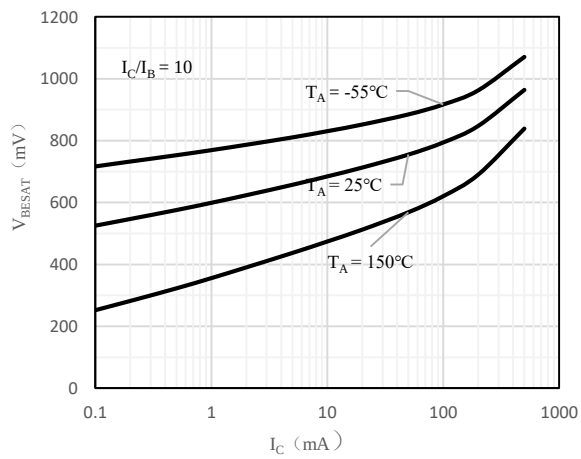


Fig 3 $V_{BE(sat)}$ vs. I_C

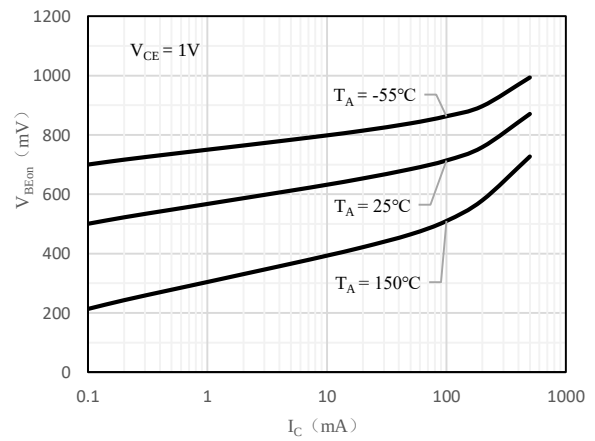


Fig 4 $V_{BE(on)}$ vs. I_C

Ratings and Characteristic Curves-PNP (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

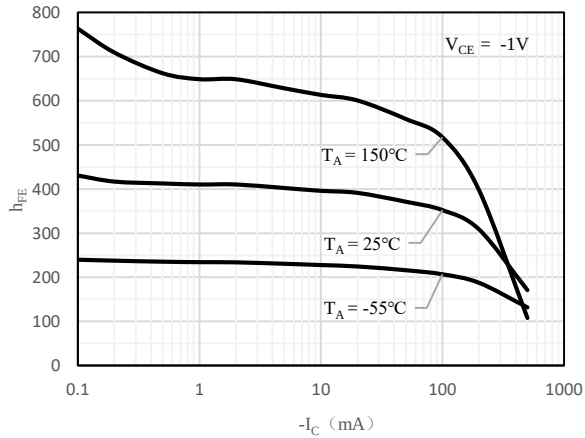


Fig 1 h_{FE} vs. I_C

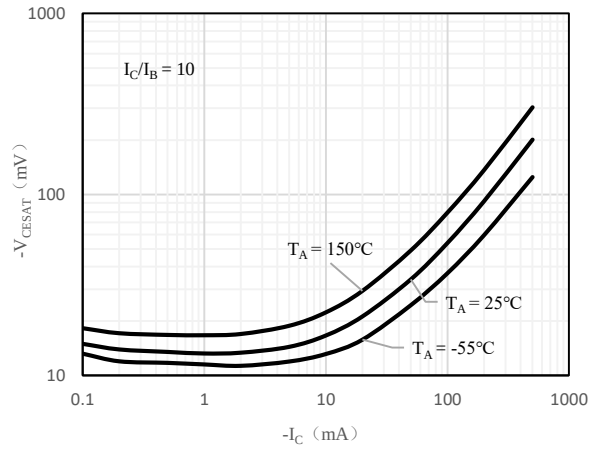


Fig 2 $V_{CE(sat)}$ vs. I_C

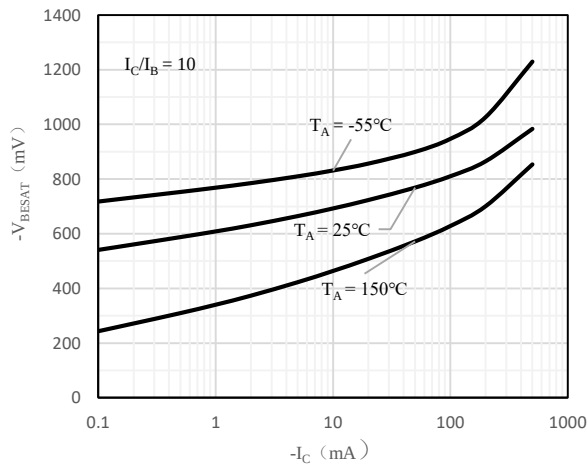


Fig 3 $V_{BE(sat)}$ vs. I_C

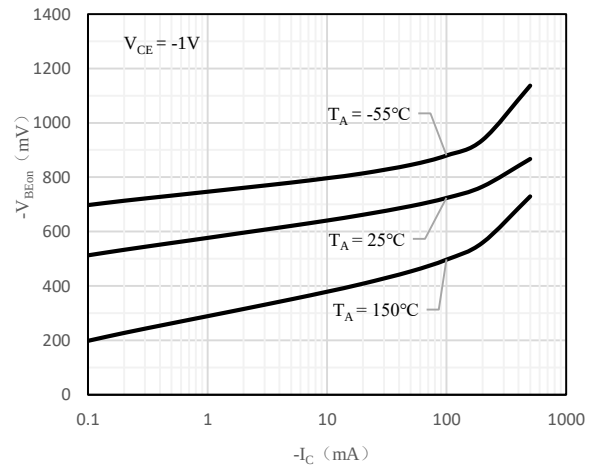
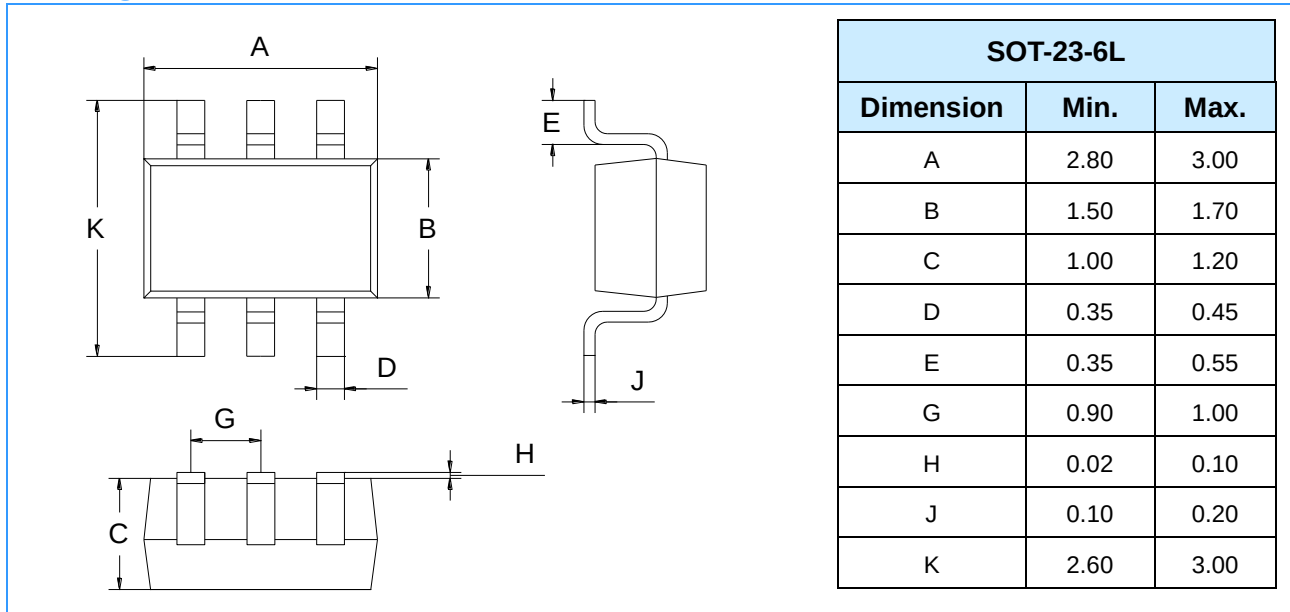
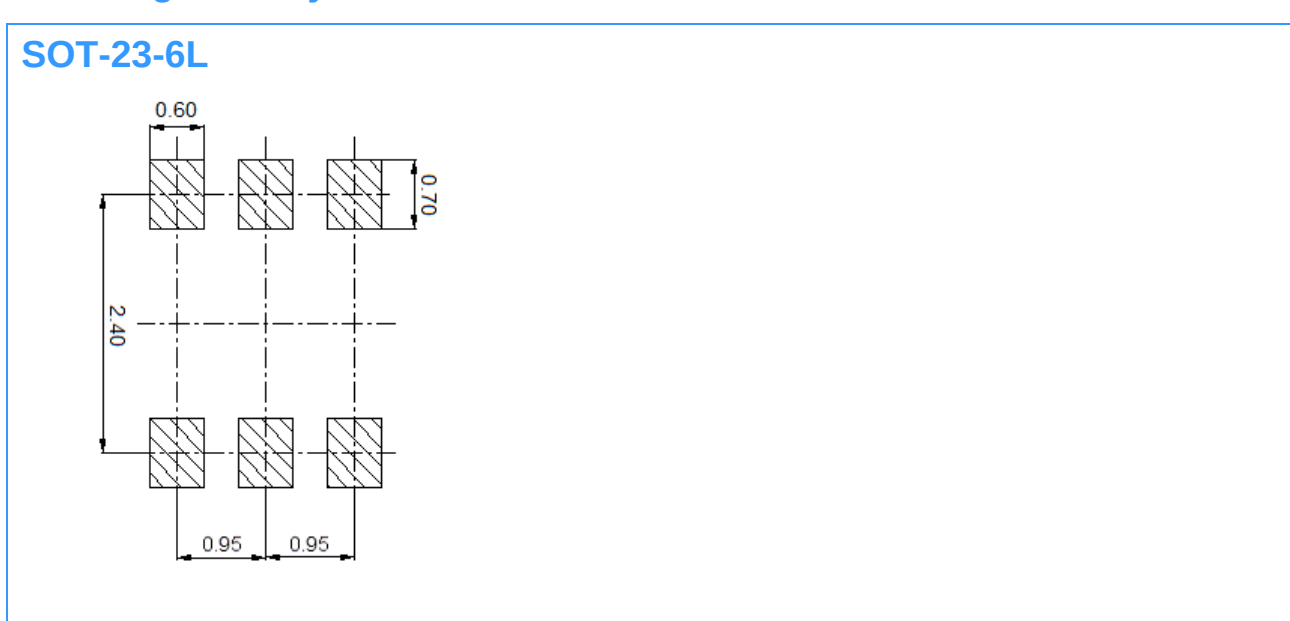


Fig 4 $V_{BE(on)}$ vs. I_C

Package Outline Dimensions (Unit: mm)



Mounting Pad Layout (Unit: mm)



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