

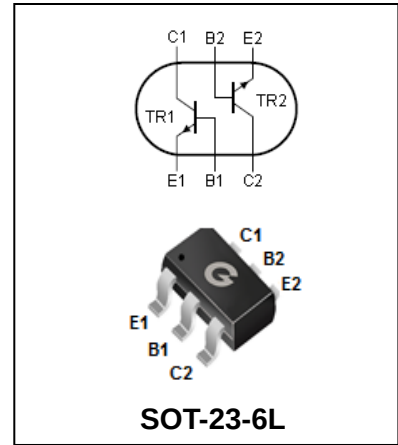
NPN General Purpose Amplifier

TBC817-16/25/40-6L

FEATURES

- High collector current & current gain
- Low collector-emitter saturation voltage
- Complementary PNP product available - TBC807-6L
- Halogen free
- Qualified to AEC-Q101 standards for high reliability

HF



APPLICATIONS

- General purpose in desktop & handheld systems
- Ideal for medium-power signal amplification and switching

ORDERING INFORMATION

Part Number	Marking	Package
TBC817-16-6L	6A	SOT-23-6L
TBC817-25-6L	6B	SOT-23-6L
TBC817-40-6L	6C	SOT-23-6L

MAXIMUM RATING (@ T_A = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	50	V
Collector-Emitter Voltage	V _{CEO}	45	V
Emitter-Base Voltage	V _{EBO}	5	V
Collector Current (Continuous)	I _C	500	mA
Collector Current (Peak)	I _{CM}	1	A
Power Dissipation (Per transistor) ^{*1}	P _D	370	mW
Power Dissipation (Per device) ^{*1}	P _D	600	mW
Thermal Resistance (Junction-to-Ambient) ^{*2}	R _{θJA}	208	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{STG}	-55 ~ +150	°C

Notes:

- 1、 Device mounted on an FR4 Printed-Circuit Board (PCB); single-sided copper; tin plated; mounting pad for collector 1 cm²
- 2、 Device mounted on an FR4 PCB; single-sided copper; tin-plated; mounting pad for collector 1 cm²

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ELECTRICAL CHARACTERISTICS (@ $T_A = 25^\circ\text{C}$ 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}	$V_{CB} = 25\text{V}, I_E = 0$	-	-	0.1	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 4\text{V}, I_C = 0$	-	-	0.1	μA
DC Current Gain	TBC817-16-6L TBC817-25-6L TBC817-40-6L	$V_{CE} = 1\text{V}, I_C = 100\text{mA}$	100	-	250	-
DC Current Gain	TBC817-16-6L TBC817-25-6L TBC817-40-6L		160	-	400	-
DC Current Gain	TBC817-40-6L		250	-	600	-
DC Current Gain	TBC817-16-6L TBC817-25-6L TBC817-40-6L	$V_{CE} = 1\text{V}, I_C = 300\text{mA}$	60	-	-	-
DC Current Gain	TBC817-16-6L TBC817-25-6L TBC817-40-6L		100	-	-	-
DC Current Gain	TBC817-40-6L		170	-	-	-
DC Current Gain	TBC817-40-6L	$V_{CE} = 1\text{V}, I_C = 500\text{mA}$	40	-	-	-
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 500\text{mA}, I_B = 50\text{mA}$	-	-	0.7	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 500\text{mA}, I_B = 50\text{mA}$	-	-	1.2	V
Transition frequency	f_T	$V_{CE} = 5\text{V}, I_C = 50\text{mA}$ $f = 100\text{MHz}$	-	170	-	MHz
Collector-Base Capacitance	C_{CB}	$V_{CB} = 10\text{V}, f = 1\text{MHz}$	-	6	-	pF

CLASSIFICATION OF H_{FE}

Rank	TBC817-16-6L	TBC817-25-6L	TBC817-40-6L
Range	100 ~ 250	160 ~ 400	250 ~ 600
Marking	6A	6B▪	6C

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TYPICAL CHARACTERISTICS (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

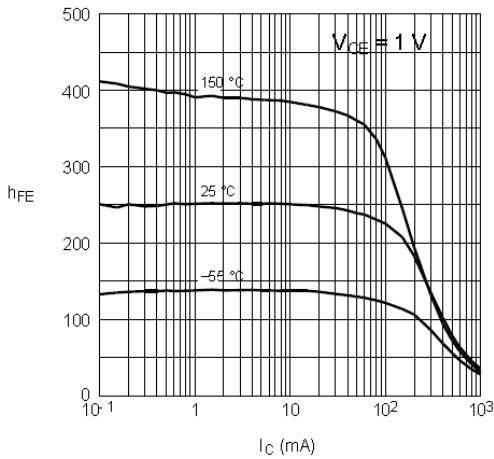


Fig. 1. DC current gain as a function of collector current; typical values

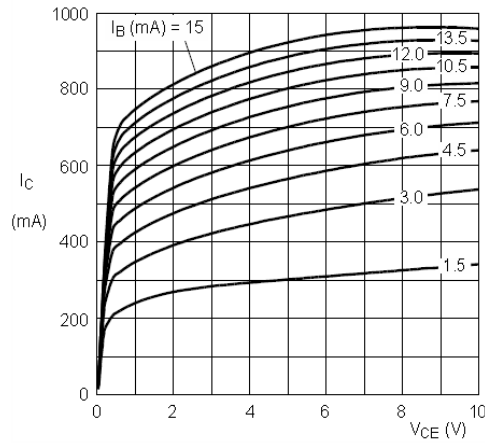


Fig. 2. Collector current as a function of collector-emitter voltage; typical values

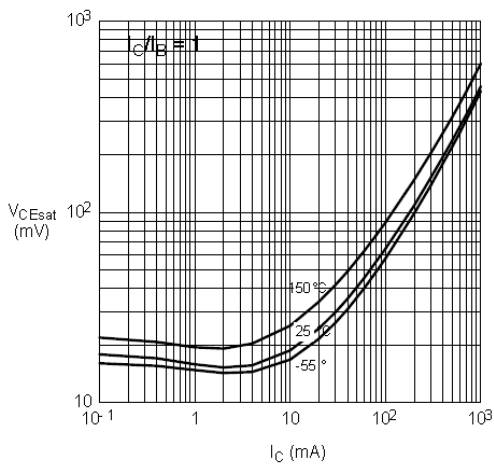


Fig. 3. Collector-emitter saturation voltage as a function of collector current; typical values

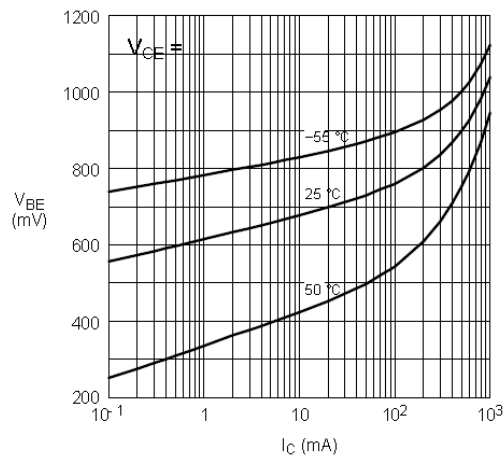


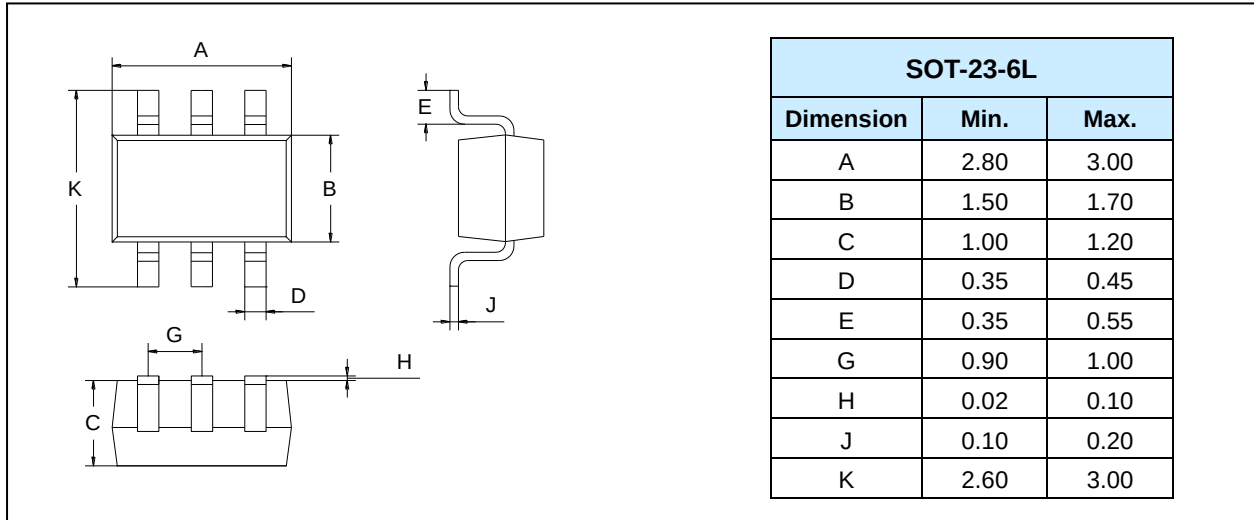
Fig. 4. Base-emitter voltage as a function of collector current; typical values

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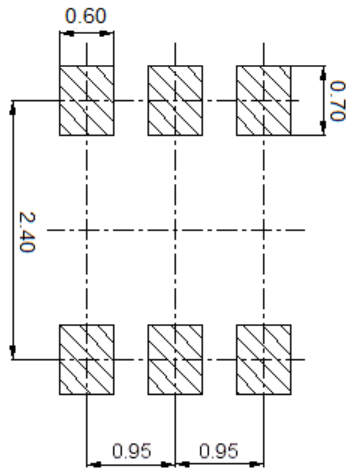
TBC817-16/25/40-6L

PACKAGE OUTLINE (Unit: mm)

Plastic surface mounted package



MOUNTING PAD LAYOUT (Unit: mm)



PACKAGE INFORMATION

Part Number	Package	Shipping
TBC817-16/25/40-6L	SOT-23-6L	3000pcs / Tape & Reel

NPN General Purpose Amplifier

TBC817-16/25/40-6L

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CHANGE RECORD

Revision	Date	Modification
P	2021-08-03	The First Edition