

SOT-23 Silicon Planar Epitaxial Transistors
TRANSISTORS(PNP)

FEATURES

- * Ideally suited for automatic insertion
- * For switching and AF amplifier applications

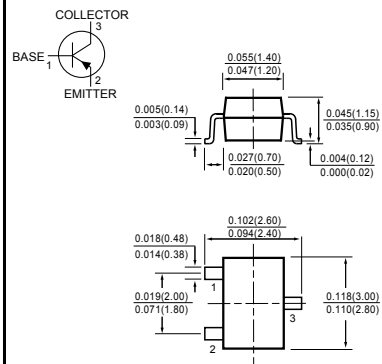
MECHANICAL DATA

- * Epoxy: UL 94V-O rate flame retardant
- * Lead: MIL-STD-202E method 208C guaranteed
- * Mounting position: Any
- * Marking: BC859=4D

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

SOT-23



Dimensions in inches and (millimeters)

ABSOLUTE MAXIMUM RATINGS

CHARACTERISTICS	SYMBOL	VALUE	UNITS
Collector-emitter voltage (+V _{BE} = 1V)	-V _{CEX}	max. 30	V
Collector-emitter voltage (open base)	-V _{CEO}	max. 30	V
Collector current (peak value)	-I _{CM}	max. 200	mA
Total power dissipation up to Tamb= 60 °C	P _{tot}	max. 250	mW
Junction Temperature	T _J	max. 150	°C
Small-signal current gain -I _C = 2 mA; -V _{CE} = 5 V; f = 1 kHz	h _{fe}	>125 < 900	
Transition frequency -I _C =10 mA; -V _{CE} = 5 V; f = 100 MHz	f _T	>100	MHz
Noise figure at R _s = 2kΩ -I _C =200 μA; -V _{CE} = 5 V; f = 30 Hz to 15 kHz	F	typ. 1,2 < 4	dB dB
f = 1 KHz; B = 200 Hz	F	< 4	dB

RATINGS (at $T_A = 25^{\circ}\text{C}$ unless otherwise specified)

Limiting values

CHARACTERISTICS	SYMBOL	MIN	MAX	UNITS
Collector–base voltage (open emitter)	$-V_{CBO}$	-	30	V
Collector–emitter voltage ($+V_{BE} = 1\text{ V}$)	$-V_{CEX}$	-	30	V
Collector–emitter voltage (open base)	$-V_{CEO}$	-	30	V
Emitter–base voltage (open collector)	$-V_{EBO}$	-	5	V
Collector current (d.c.)	$-I_C$	-	100	mA
Collector current (peak value)	$-I_{CM}$	-	200	mA
Emitter current (peak value)	I_{EM}	-	200	mA
Base current (peak value)	$-I_{BM}$	-	200	mA
Total power dissipation up to $T_{amb} = 60^{\circ}\text{C}^{**}$	P_{tot}	-	250	mW
Storage temperature	T_{stg}	-55 to +150		$^{\circ}\text{C}$
Junction temperature	T_J	-	150	$^{\circ}\text{C}$

THERMAL CHARACTERISTICS

$$T_J = P_x(R_{th\ j-t} + R_{th\ t-s} + R_{th\ s-a}) + T_{amb}$$

Thermal resistance

From junction to tab	$R_{th\ j-t}$	60	K/W
From tab to soldering points	$R_{th\ t-s}$	280	K/W
From soldering points to ambient**	$R_{th\ s-a}$	90	K/W

CHARACTERISTICS $T_J = 25^{\circ}\text{C}$ unless otherwise specified

Collector cut-off current $I_E = 0$; $-V_{CB} = 30\text{V}$; $T_J = 25^{\circ}\text{C}$	$-I_{CBO}$	typ. 1 < 15	nA
$T_J = 150^{\circ}\text{C}$	$-I_{CBO}$	< 4	nA mA
Base–emitter voltage $-I_C = 2\text{ mA}$; $-V_{CE} = 5\text{ V}$	$-V_{BE}$	typ. 650	mV
$-I_C = 10\text{ mA}$; $-V_{CE} = 5\text{ V}$	$-V_{BE}$	600 to 750 < 820	mV mV
Saturation voltages $-I_C = 10\text{ mA}$; $-I_B = 0,5\text{ mA}$	$-V_{CEsat}$	typ. 75 < 300	mV mV
	$-V_{BEsat}$	typ. 700	mV
$-I_C = 100\text{ mA}$; $-I_B = 5\text{ mA}$	$-V_{CEsat}$	typ. 250 < 650	mV mV
	$-V_{BEsat}$	typ. 850	mV
Collector capacitance at $f = 1\text{ MHz}$ $-I_E = I_E = 0$; $-V_{CB} = 10\text{ V}$	C_c	typ. 4.5	pF

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

CHARACTERISTICS	SYMBOL		UNITS
Transition frequency at $f = 100\text{ MHz}$ $-I_C = 10\text{ mA}$; $-V_{CE} = 5\text{ V}$	f_T	> 100	MHz
Small-signal current gain at $f = 1\text{ kHz}$ $-I_C = 2\text{ mA}$; $-V_{CE} = 5\text{ V}$	h_{fe}	125 to 800	
Noise figure at $R_s = 2\text{ k}\Omega$ $-I_C = 200\text{ }\mu\text{A}$; $-V_{CE} = 5\text{ V}$ $f = 30\text{ Hz}$ to 15 kHz $f = 1\text{ kHz}$; $B = 200\text{ Hz}$	F F	typ. 1.2 < 4 typ. 1 < 4	dB dB dB dB
D.C. current gain $-I_C = 2\text{ mA}$; $-V_{CE} = 5\text{ mA}$; total range A selections B selections C selections	h_{FE} h_{FE} h_{FE} h_{FE}	125 to 800 125 to 250 220 to 475 420 to 800	

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