RECTRON SEMICONDUCTOR
TECHNICAL SPECIFICATION

BC859

SOT-23 Silicon Planar Epitaxial Transistors

TRANSISTORS(PNP)

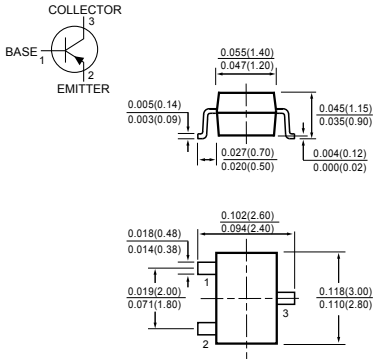
FEATURES

* 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

SOT-23



Dimensions in inches and (millimeters)

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

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 Rs = 2kΩ $-I_C$=200 µA; $-V_{CE}$ = 5 V; f = 30 Hz to 15 kHz f = 1 KHz; B = 200 Hz	F F	typ. 1,2 < 4 < 4	dB dB dB

VD 2009-11
REV:O

RATINGS (at T_A = 25°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 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 Tamb = 60 °C**	P_{tot}	-	250	mW
Storage temperature	Tstg	-55 to +150		°C
Junction temperature	T_J	-	150	°C

THERMAL CHARACTERISTICS

Tj= Px(Rth j–t+ Rh t–s+ Rth s–a) + Tamb

Thermal resistance

From junction to tab	Rth j–t	60	K/W
From tab to soldering points	Rth t–s	280	K/W
From soldering points to ambient**	Rth s–a	90	K/W

CHARACTERISTICS T_j = 25 °C unless otherwise specified

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

CHARACTERISTICS (T_j = 25 °C unless otherwise specified)

CHARACTERISTICS	SYMBOL		UNITS
Transition frequency at f = 100 MHz $-I_C$ = 10 mA ; $-V_{CE}$ = 5 V	f_T	> 100	MHz
Small–signal current gain at f = 1 kHz $-I_C$= 2 mA; $-V_{CE}$ = 5 V	h_{fe}	125 to 800	
Noise figure at R_S= 2 kΩ $-I_C$= 200 µA; $-V_{CE}$ = 5 V f = 30 Hz to 15 kHz f = 1 kHz; B = 200 Hz	 F F	 typ. 1.2 < 4 typ. 1 < 4	 dB dB dB dB
D.C. current gain $-I_C$= 2 mA; $-V_{CE}$ = 5 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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