

SMALL SIGNAL NPN TRANSISTORS

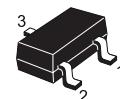
PRELIMINARY DATA

Type	Marking
BC847BW	1FW
BC847CW	1GW

- SILICON EPITAXIAL PLANAR NPN TRANSISTORS
- MINIATURE SOT-323 PLASTIC PACKAGE FOR SURFACE MOUNTING CIRCUITS
- TAPE AND REEL PACKING
- BC847BW - THE PNP COMPLEMENTARY TYPE IS BC857BW

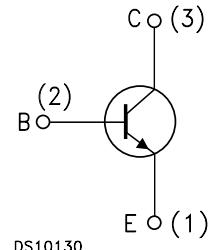
APPLICATIONS

- WELL SUITABLE FOR PORTABLE EQUIPMENT
- SMALL LOAD SWITCH TRANSISTORS WITH HIGH GAIN AND LOW SATURATION VOLTAGE



SOT-323

INTERNAL SCHEMATIC DIAGRAM



DS10130

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage ($I_E = 0$)	50	V
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	45	V
V_{EBO}	Emitter-Base Voltage ($I_C = 0$)	6	V
I_C	Collector Current	100	mA
I_{CM}	Collector Peak Current	200	mA
P_{tot}	Total Dissipation at $T_C = 25^\circ\text{C}$	200	mW
T_{stg}	Storage Temperature	-65 to 150	°C
T_j	Max. Operating Junction Temperature	150	°C

THERMAL DATA

$R_{thj-amb}$ •	Thermal Resistance Junction-Ambient	Max	625	$^{\circ}\text{C/W}$
• Device mounted on a PCB area of 1 cm ² .				

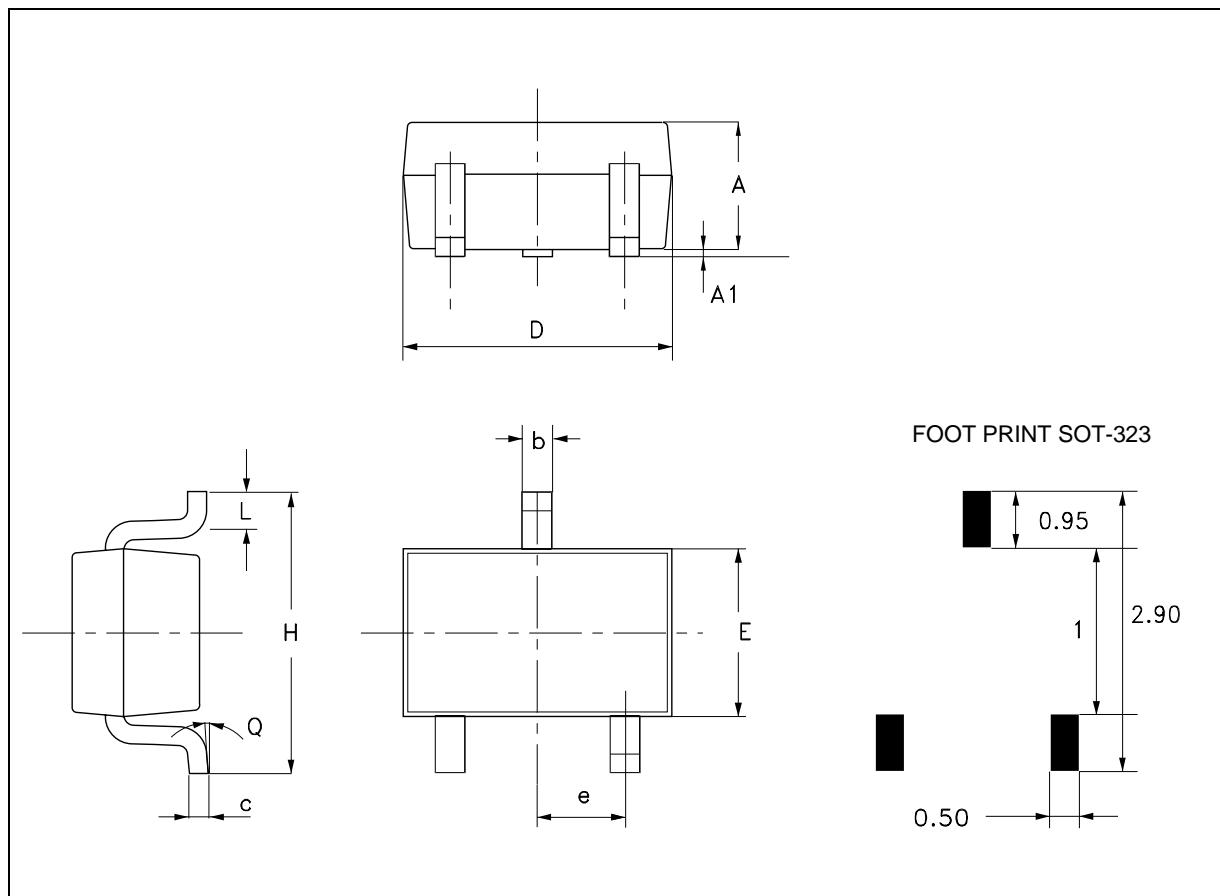
ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current ($I_E = 0$)	$V_{CB} = 30 \text{ V}$ $V_{CB} = 30 \text{ V}$ $T_C = 150^{\circ}\text{C}$			15 5	nA μA
I_{EBO}	Emitter Cut-off Current ($I_C = 0$)	$V_{EB} = 5 \text{ V}$			100	nA
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ($I_E = 0$)	$I_C = 10 \mu\text{A}$	50			V
$V_{(BR)CEO}^*$	Collector-Emitter Breakdown Voltage ($I_B = 0$)	$I_C = 2 \text{ mA}$	45			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ($I_C = 0$)	$I_E = 10 \mu\text{A}$	6			V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 10 \text{ mA}$ $I_B = 0.5 \text{ mA}$ $I_C = 100 \text{ mA}$ $I_B = 5 \text{ mA}$		0.09 0.2	0.25 0.6	V V
$V_{BE(sat)}^*$	Base-Emitter Saturation Voltage	$I_C = 10 \text{ mA}$ $I_B = 0.5 \text{ mA}$ $I_C = 100 \text{ mA}$ $I_B = 5 \text{ mA}$		0.7 0.9		V V
$V_{BE(on)}^*$	Base-Emitter On Voltage	$I_C = 2 \text{ mA}$ $V_{CE} = 5 \text{ V}$ $I_C = 10 \text{ mA}$ $V_{CE} = 5 \text{ V}$	0.58	0.66	0.7 0.77	V V
h_{FE}^*	DC Current Gain	$I_C = 10 \mu\text{A}$ $V_{CE} = 5 \text{ V}$ for BC847BW for BC847CW $I_C = 2 \text{ mA}$ $V_{CE} = 5 \text{ V}$ for BC847BW for BC847CW		150 270 200 420	450 800	
f_T	Transition Frequency	$I_C = 10 \text{ mA}$ $V_{CE} = 5 \text{ V}$ $f = 100\text{MHz}$	100			MHz
C_{CBO}	Collector-Base Capacitance	$I_E = 0$ $V_{CB} = 10 \text{ V}$ $f = 1 \text{ MHz}$		2.5		pF
NF	Noise Figure	$V_{CE} = 5 \text{ V}$ $I_C = 0.2 \text{ mA}$ $f = 1\text{KHz}$ $\Delta f = 200 \text{ Hz}$ $R_G = 2 \text{ K}\Omega$		2	10	dB

* Pulsed: Pulse duration = 300 μs , duty cycle $\leq 2\%$

SOT-323 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	0.8		1.1	0.031		0.043
A1	0		0.1	0		0.003
b	0.25		0.4	0.009		0.015
c	0.1		0.26	0.004		0.010
D	1.8	2.0	2.2	0.070	0.078	0.086
E	1.15	1.25	1.35	0.045	0.049	0.053
e		0.65			0.025	
H	1.8	2.1	2.4	0.070	0.082	0.094
L	0.1	0.2	0.3	0.004	0.007	0.011
Q	0		10°	0		10°



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