DESCRIPTION

The BC847BL-Q is available in SOT-23 package.

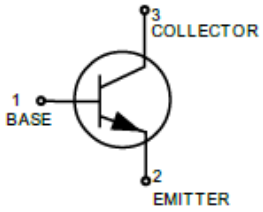
FEATURE

- AEC-Q101 qualified
- ESD Rating: Human Body Model: >4000 V, Machine Model: >400 V

ORDERING INFORMATION

Package Type	Part Number
SOT-23	BC847BL-Q
Note	SPQ: 3,000pcs/Reel
AiT provides all RoHS Compliant Products	

PIN DESCRIPTION



PIN#	DESCRIPTION
1	BASE
2	EMITTER
3	COLLECTOR

ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless otherwise noted.

V_{CEO}, Collector–Emitter Voltage		45V
V_{CBO}, Collector–Base Voltage		50V
V_{EBO}, Emitter–Base Voltage		6V
I_C, Collector Current — Continuous		100mA
P_D, Total Device Dissipation	@ T_A = 25℃	225mW
	Derate above 25℃	1.8mW/℃
$R_{\theta JA}$, Thermal Resistance, Junction–to–Ambient		556℃/W
P_D, Total Device Dissipation with Alumina Substrate (dimension: 0.4x0.3x0.024 mm)	@ T_A = 25℃	300mW
	Derate above 25℃	2.5mW/℃
$R_{\theta JA}$, Thermal Resistance, Junction–to–Ambient		417℃W
T_J, Junction Temperature Range		-55℃~+150℃
T_{STG}, Storage Temperature Range		-55℃~+150℃

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise noted.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
Collector–Emitter Breakdown Voltage	$V_{BR(CEO)}$	I_C = 10mA	45	-	-	V
Collector–Emitter Breakdown Voltage	$V_{BR(CES)}$	I_C = 10μA, V_{EB} =0	50	-	-	V
Collector–Base Breakdown Voltage	$V_{BR(CBO)}$	I_C = 10μA	50	-	-	V
Emitter–Base Breakdown Voltage	$V_{BR(EBO)}$	I_E = 1μA	6	-	-	V
Collector Cutoff Current	I_{CBO}	V_{CB}= 30V	-	-	15	nA
		V_{CB}= 30V, T_A=150℃	-	-	5	μA
Emitter-Base cut-off current	I_{EBO}	I_C=0, V_{EB}= 5V	-	-	100	nA
Collector-Emitter cutoff Current	I_{CEO}	V_{CE}= 45V, I_B=0	-	-	2	mA
ON CHARACTERISTICS						
DC Current Gain	h_{FE}	I_C = 2mA, V_{CE} = 5V	200	290	450	-
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_C= 10mA, I_B= 0.5mA	-	-	0.25	V
		I_C= 100mA, I_B= 5mA	-	-	0.60	
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	I_C= 10mA, I_B= 0.5mA	-	0.70	-	V
		I_C= 100mA, I_B= 5mA	-	0.90		
Base–Emitter Voltage	$V_{BE(on)}$	I_C= 2mA, I_B= 5mA	580	660	700	mV
		I_C= 10mA, I_B= 5mA	-	-	770	
SMALL-SIGNAL CHARACTERISTICS						
Output Capacitance	C_{obo}	V_{CB}= 10V, f=1MHz	-	-	4.5	pF
Current-Gain-Bandwidth Product	f_T	V_{CE}=5V, I_C=10mA, f=100MHz	100	-	-	MHz
Noise Figure	NF	I_C=0.2mA, V_{CE}=5V, R_S=2 kΩ, f=1kHz, B_W=200Hz	-	-	10	dB

TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. HFE vs. IC (VCE=5.0V)

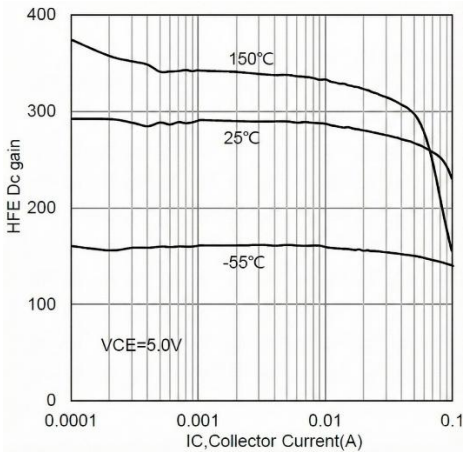


Fig 2. HFE vs. IC (VCE=10V)

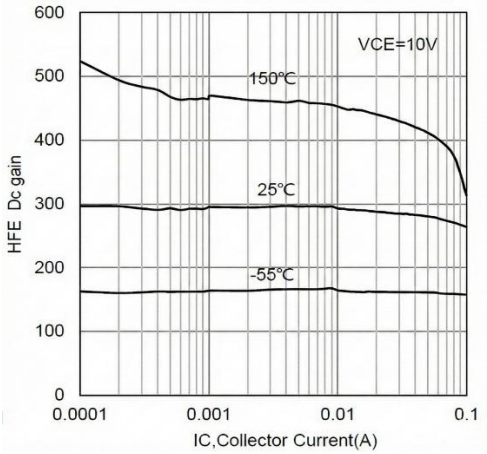


Fig 3. IC vs. VCE

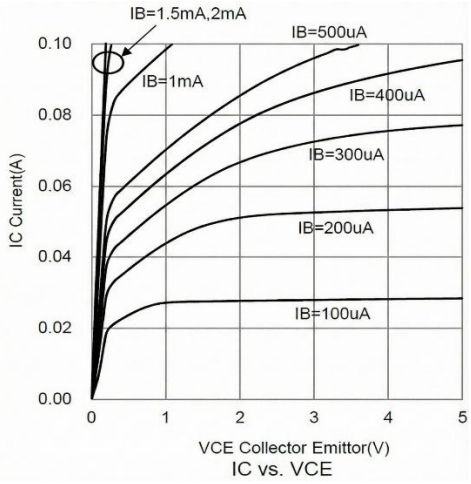


Fig 4. VCE vs. IB

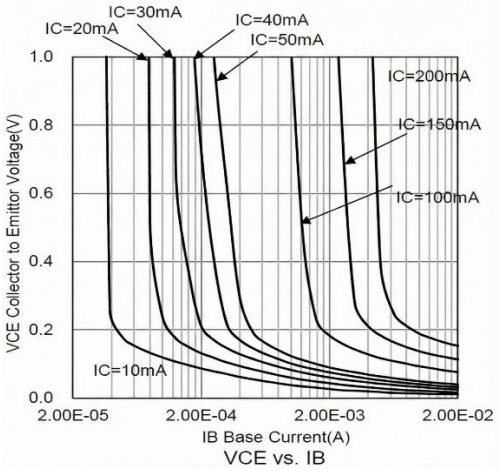


Fig 5. VBE (on) vs. IC

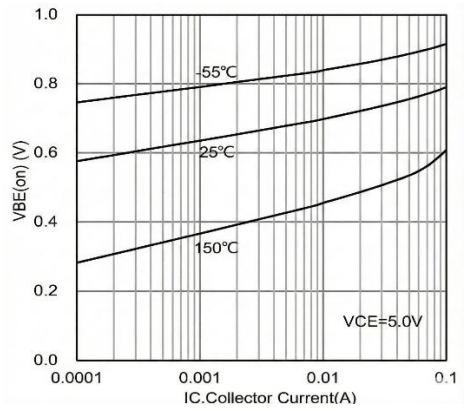


Fig 6. VBE (sat) vs. IC

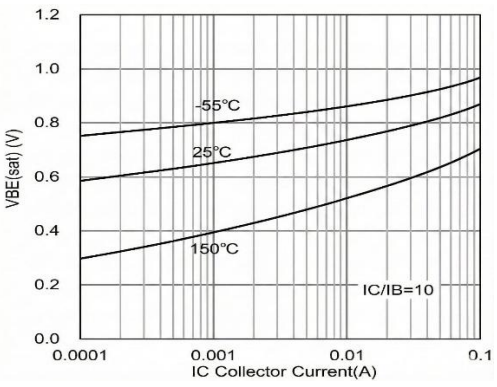


Fig 7. VCE (sat) vs. IC

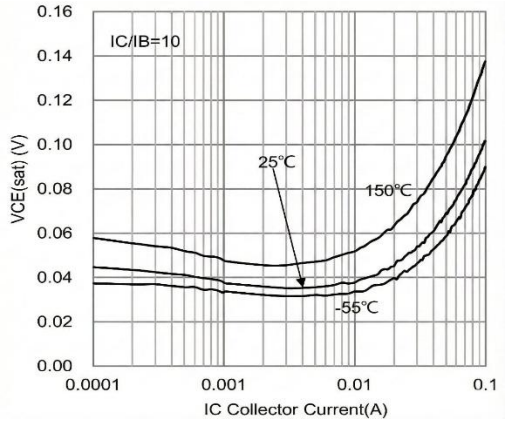
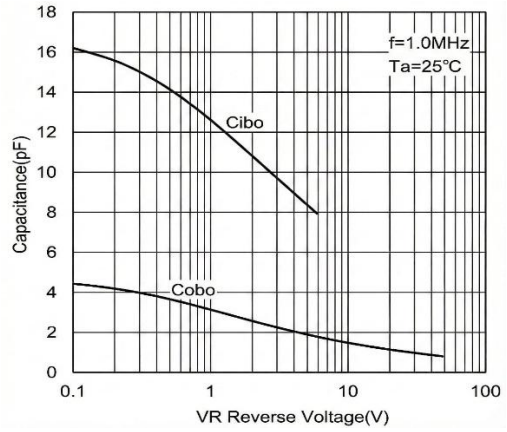
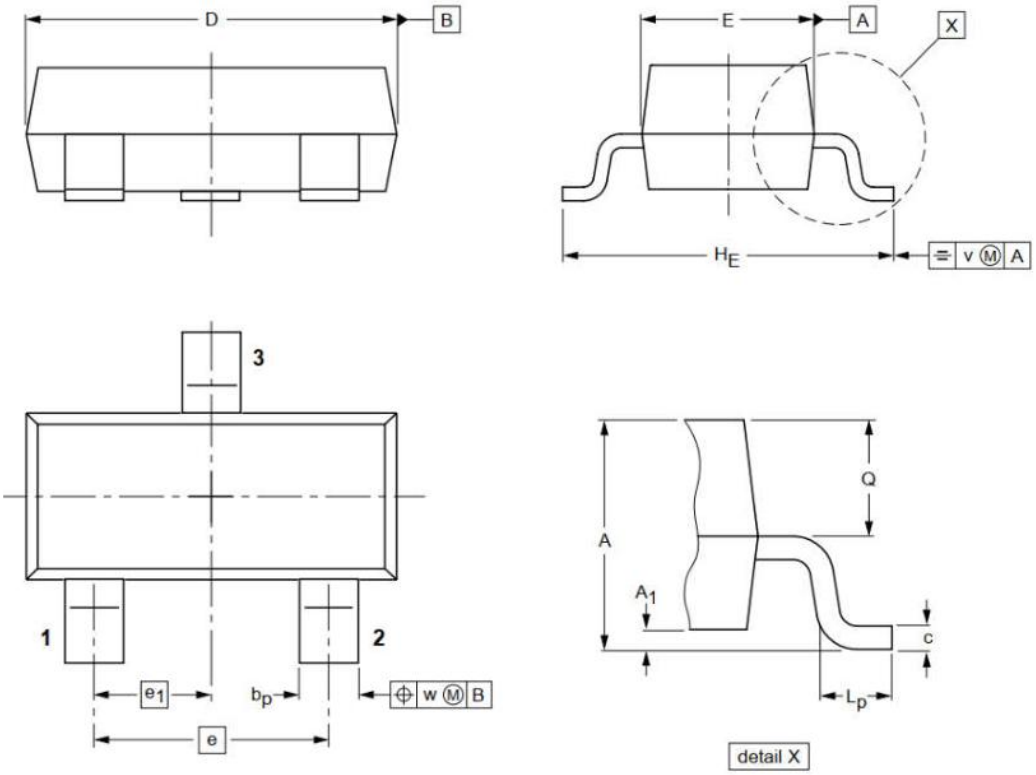


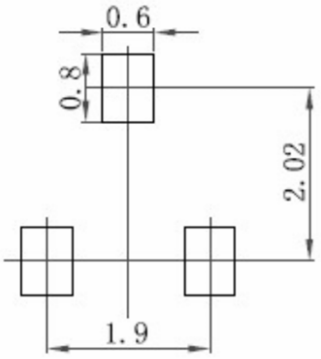
Fig 8. Capacitance



PACKAGE INFORMATION

Dimension in SOT-23 Package (Unit: mm)





The recommended mounting pad size

SYMBOL	MIN	MAX
A	0.900	1.150
A1	0.100	
bp	0.380	0.480
C	0.090	0.150
D	2.800	3.000
E	1.200	1.400
E	1.900	
E1	0.950	
H_E	2.100	2.550
Lp	0.150	0.450
Q	0.450	0.550
V	0.200	
W	0.100	

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