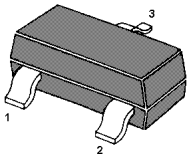
BC846…BC850

NPN Silicon Epitaxial Transistor

for switching and amplifier applications



1. Base 2. Emitter 3. Collector

SOT-23 Plastic Package

Absolute Maximum Ratings (T_a = 25℃)

Parameter		Symbol	Value	Unit
Collector Base Voltage	BC846	V_{CBO}	80	V
	BC847, BC850	V_{CBO}	50	V
	BC848, BC849	V_{CBO}	30	V
Collector Emitter Voltage	BC846	V_{CEO}	65	V
	BC847, BC850	V_{CEO}	45	V
	BC848, BC849	V_{CEO}	30	V
Emitter Base Voltage	BC846, BC847	V_{EBO}	6	V
	BC848, BC849, BC850	V_{EBO}	5	V
Collector Current		I_C	100	mA
Peak Collector Current		I_{CM}	200	mA
Power Dissipation		P_{tot}	300	mW
Junction Temperature		T_j	150	℃
Storage Temperature Range		T_{stg}	- 65 to + 150	℃

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction to Ambient [1)]	$R_{\theta JA}$	417	℃/W

[1)] Device mounted on FR-4 substrate PC board, with minimum recommended pad layout.

Dated: 08/07/2021 Rev: 04

Characteristics at T_a = 25℃

Parameter		Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at V_{CE} = 5 V, I_C = 2 mA	Current Gain Group A B C	h_{FE} h_{FE} h_{FE}	110 200 420	- - -	220 450 800	- - -
Collector Base Cutoff Current at V_{CB} = 30 V		I_{CBO}	-	-	15	nA
Collector Base Breakdown Voltage at I_C = 100 µA	BC846 BC847, BC850 BC848, BC849	$V_{(BR)CBO}$ $V_{(BR)CBO}$ $V_{(BR)CBO}$	80 50 30	- - -	- - -	V V V
Collector Emitter Breakdown Voltage at I_C = 2 mA	BC846 BC847, BC850 BC848, BC849	$V_{(BR)CEO}$ $V_{(BR)CEO}$ $V_{(BR)CEO}$	65 45 30	- - -	- - -	V V V
Collector Emitter Breakdown Voltage at I_C = 100 µA	BC846, BC847 BC848,BC849,BC850	$V_{(BR)EBO}$ $V_{(BR)EBO}$	6 5	- -	- -	V V
Collector Emitter Saturation Voltage at I_C = 10 mA, I_B = 0.5 mA at I_C = 100 mA, I_B = 5 mA		$V_{CE(sat)}$ $V_{CE(sat)}$	- -	- -	250 600	mV mV
Base Emitter On Voltage at V_{CE} = 5 V, I_C = 2 mA at V_{CE} = 5 V, I_C = 10 mA		$V_{BE(on)}$ $V_{BE(on)}$	580 -	- -	700 720	mV mV
Transition Frequency at V_{CE} = 5 V, I_C = 10 mA, f = 100 MHz		f_T	-	300	-	MHz
Output Capacitance at V_{CB} = 10 V, f = 1 MHz		C_{ob}	-	-	6	pF
Input Capacitance at V_{EB} = 0.5 V, f = 1 MHz		C_{ib}	-	9	-	pF

Electrical Characteristics Curves

Fig. 1 Output Characteristics Curve

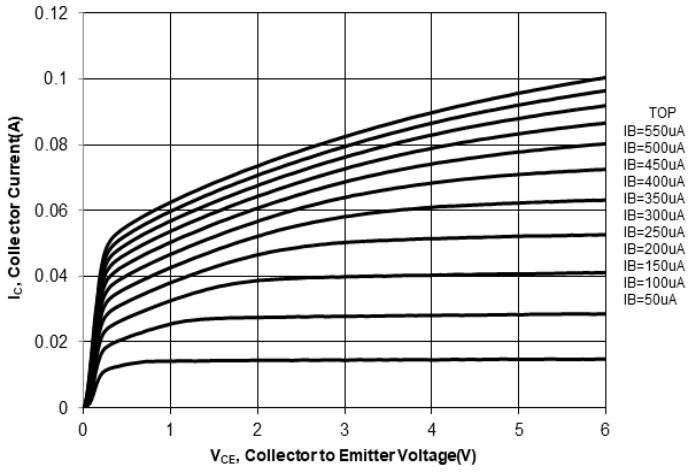


Fig. 2 Output Characteristics Curve

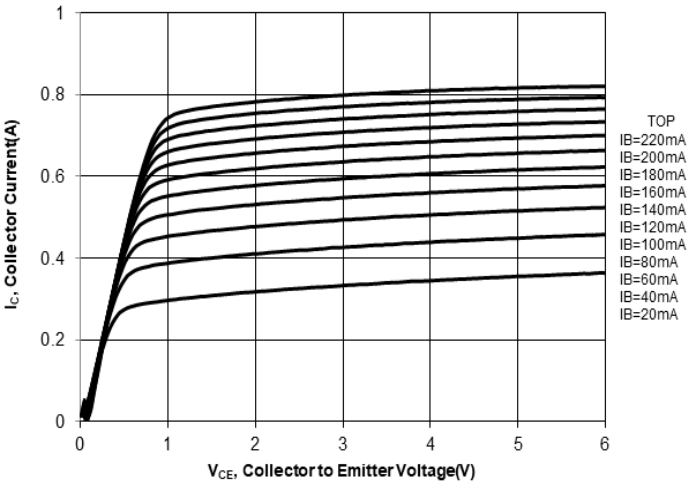


Fig. 3 Collector Current vs. V_{BE}

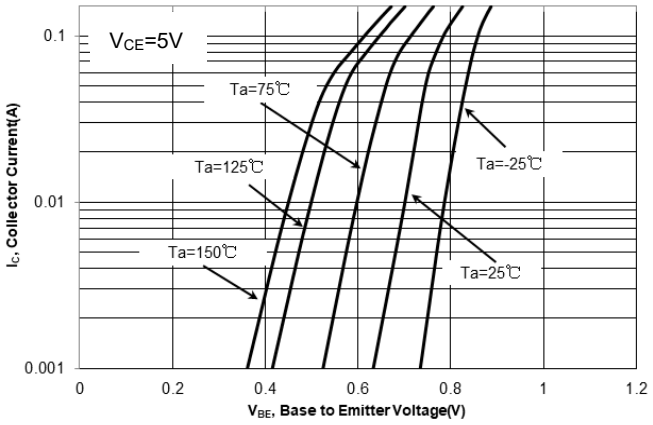
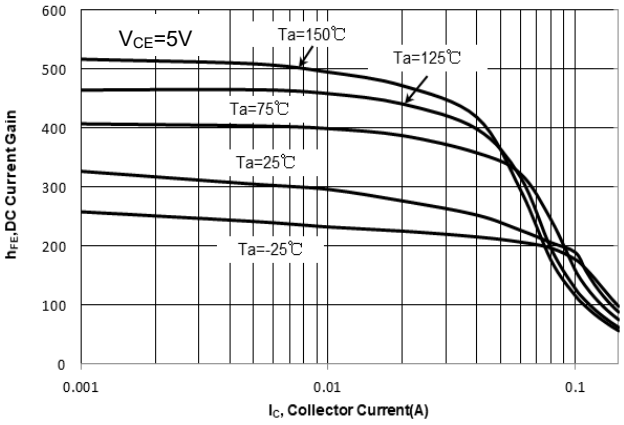


Fig 4. DC Current Gain vs. Collector Current



Electrical Characteristics Curves

Fig 5. $V_{BE(sat)}$ vs. Collector Current

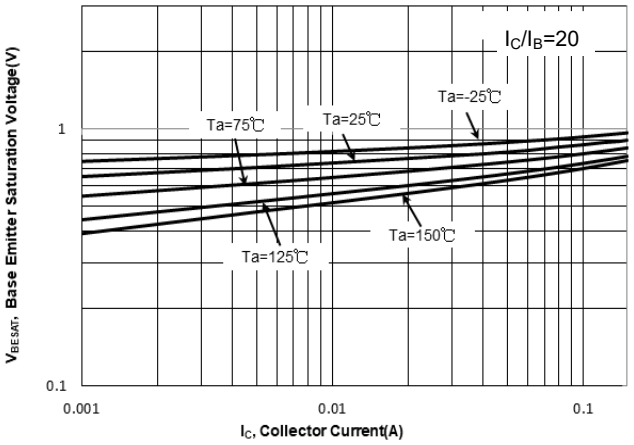


Fig 6. $V_{CE(sat)}$ vs. Collector Current

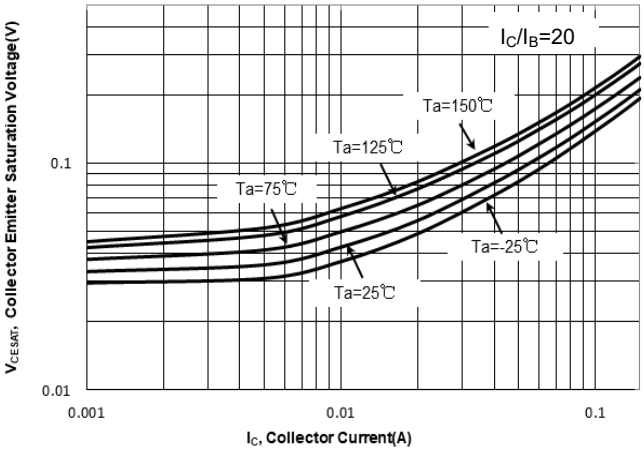


Fig 7. Capacitance

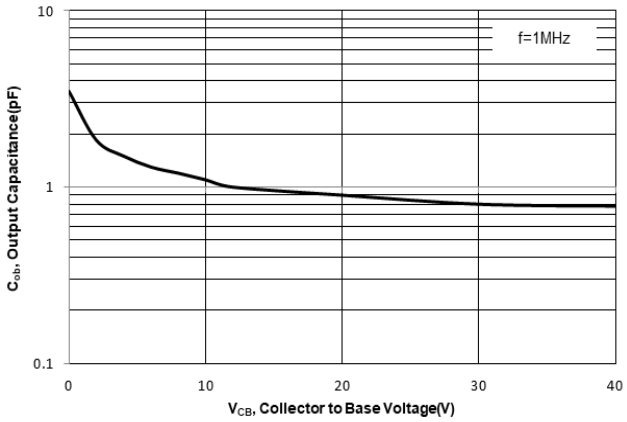
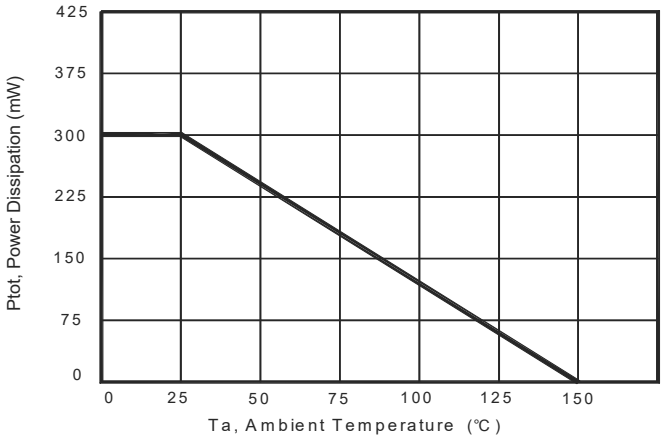
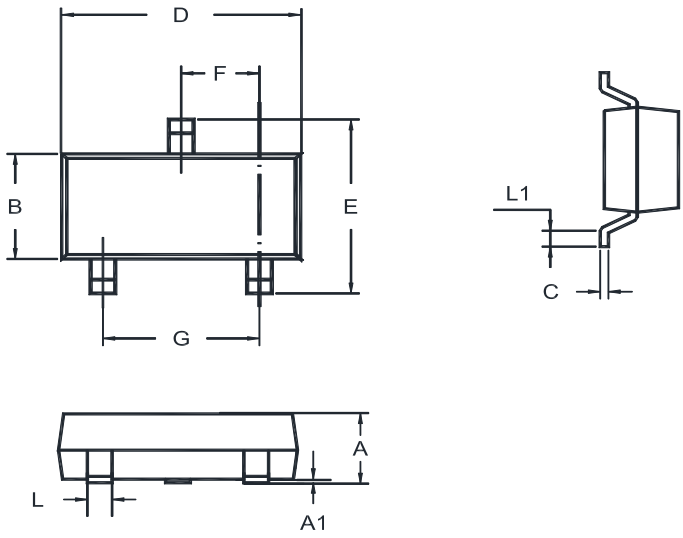


Fig 8. Power Derating Curve



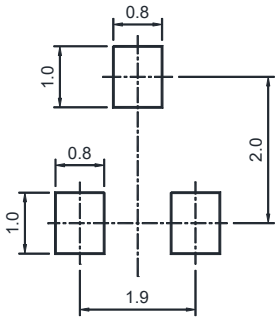
Package Outline (Dimensions in mm)

SOT-23



Unit	A	A1	B	C	D	E	F	G	L	L1
mm	1.20 0.89	0.100 0.013	1.40 1.20	0.19 0.08	3.04 2.80	2.6 2.2	1.02 0.89	2.04 1.78	0.51 0.37	0.2 MIN

Recommended Soldering Footprint



Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-23	8	4 ± 0.1	0.157 ± 0.004	178	7	3,000

Marking information

" ** " = Part No.

"YM" = Date Code Marking

"Y" = Year

"M" = Month

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