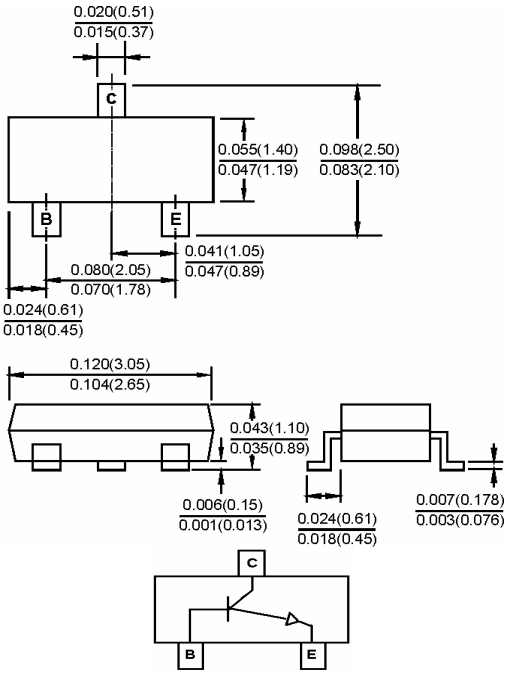
TAIWAN SEMICONDUCTOR

RoHS COMPLIANCE

BC846A,B
BC847A,B,C
BC848A,B,C

0.2 Watts NPN Plastic-Encapsulate Transistors

SOT-23



Dimensions in inches and (millimeters)

Features

- ✧ Ideally suited for automatic insertion
- ✧ Epitaxial planar die construction
- ✧ For switching, AF driver and amplifier applications
- ✧ Complementary NPN type available(BC856)
- ✧ Qualified to AEC-Q101 standards for high reliability

Mechanical Data

- ✧ Case: SOT-23, Molded plastic
- ✧ Case material: molded plastic. UL flammability classification rating 94V-0
- ✧ Moisture sensitivity: Level 1 per J-STD-020C
- ✧ Terminals: Solderable per MIIL-STD-202, Method 208
- ✧ Lead free plating
- ✧ Marking & Polarity: See diagram
- ✧ Weight: 0.008 gram (approx.)

Maximum Ratings T_A=25 °C unless otherwise specified

Type Number		Symbol	BC846	BC847	BC848	Units
Collector-base breakdown voltage	I_C=10uA, I_E=0	V_{CBO}	80	50	30	V
Collector-emitter breakdown voltage	I_C=10mA, I_B=0	V_{CEO}	65	45	30	V
Collector current		I_{CM}	0.1			A
Power dissipation (Tamb=25°C) (Note 1)		P_{CM}	0.2			W
Emitter-base breakdown voltage	I_E=10uA, I_C=0	V_{EBO}	6			V
Collector cut-off current	V_{CB}=70V I_E=0	I_{CBO}	0.1			uA
	V_{CB}=50V I_E=0			0.1		
	V_{CB}=30V I_E=0				0.1	
Collector cut-off current	V_{CE}=60V I_B=0	I_{CEO}	0.1			uA
	V_{CE}=45V I_B=0			0.1		
	V_{CE}=30V I_B=0				0.1	
Emitter cut-off current	V_{EB}=5V I_C=0	I_{EBO}	0.1			uA
Collector-emitter saturation voltage	I_C=100mA, I_B=5mA	V_{CE}(sat)	0.5			V
Base-emitter saturation voltage	I_C=100mA, I_B=5mA	V_{BE}(sat)	1.1			V
Base-emitter voltage	V_{CE}=5V I_C=2mA	V_{BE}	700			mV
	V_{CE}=5V I_C=10mA		770			
Transition frequency	V_{CE}=5V I_C=10mA f=100MHz	f_T	100			MHz
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to + 150			°C

Type Number		Symbol	Min	Max	Units
DC current gain BC846A,847A,848A	V_{CE}=5V I_C=2mA	$H_{FE(1)}$	110	220	
BC846B,847B,848B			200	450	
BC847C / BC848C			420	800	

DEVICE MARKING

BC846A=1A, BC846B=1B, BC847A=1E, BC847B=1F, BC847C=1G, BC848A=1J, BC848B=1K, BC848C=1L

Note 1: Transistor mounted on an FR4 Printed-circuit board.

RATINGS AND CHARACTERISTIC CURVES (BC846A, B ; BC847A, B, C ; BC848A, B, C)

FIG.1- NORMALIZED DC CURRENT GAIN

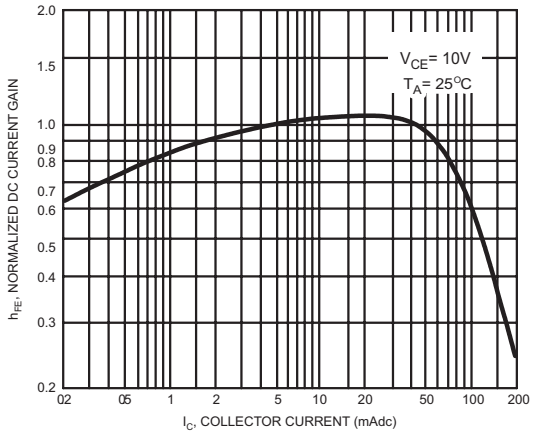


FIG.2- "SATURATION" AND "ON" VOLTAGES

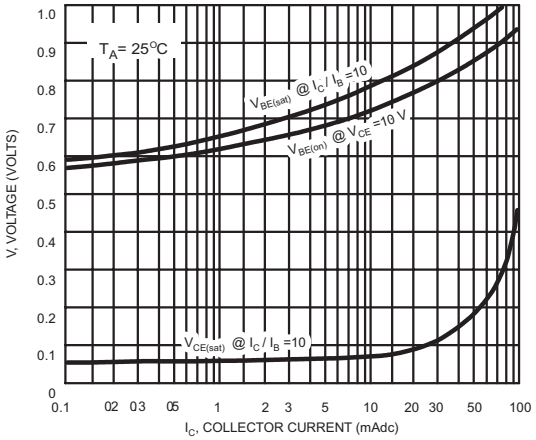


FIG.3- COLLECTOR SATURATION REGION

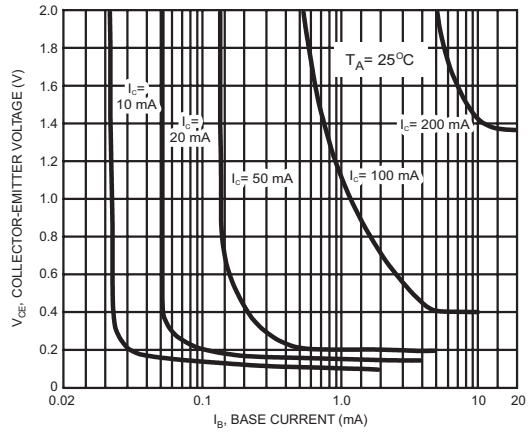


FIG.4- BASE-EMITTER TEMPERATURE COEFFICIENT

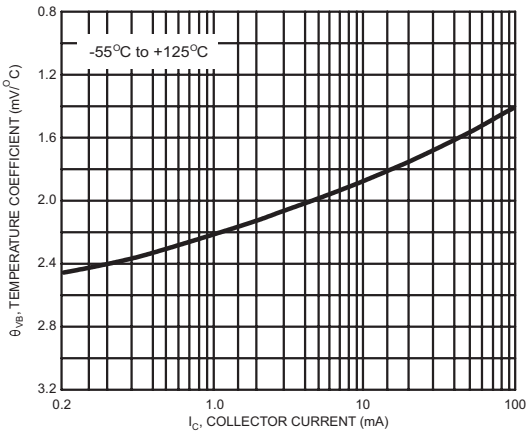


FIG.5- CAPACITANCES

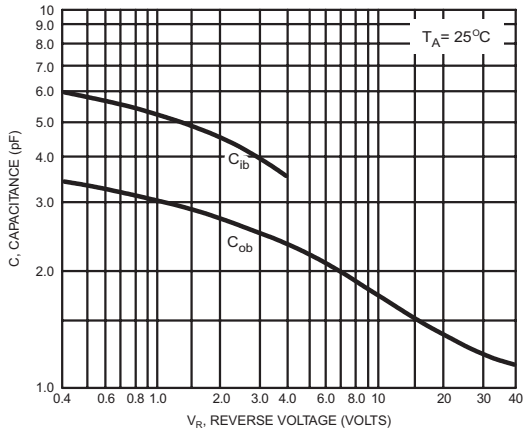
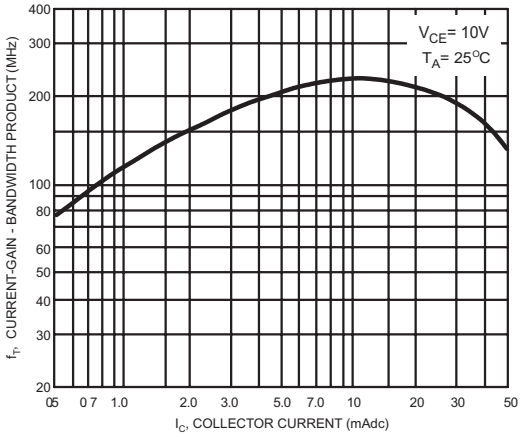


FIG.6- CURRENT-GAIN - BANDWIDTH PRODUCT



RATINGS AND CHARACTERISTIC CURVES (BC846A, B ; BC847A, B, C ; BC848A, B, C)

FIG.7- DC CURRENT GAIN

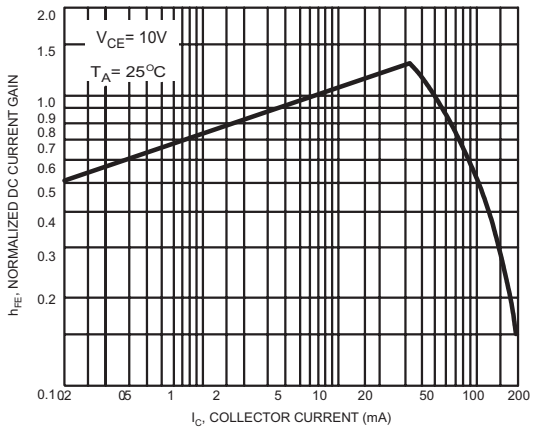


FIG.8- "ON" VOLTAGES

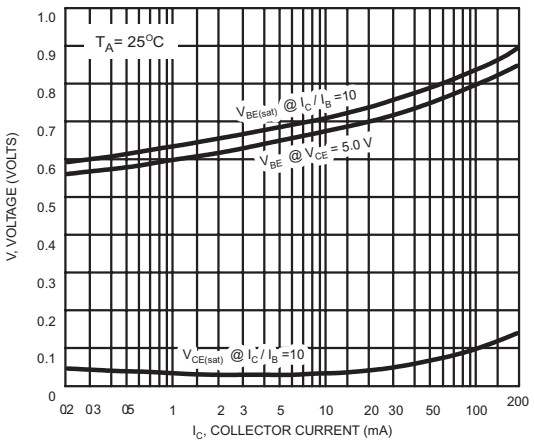


FIG.9- COLLECTOR SATURATION REGION

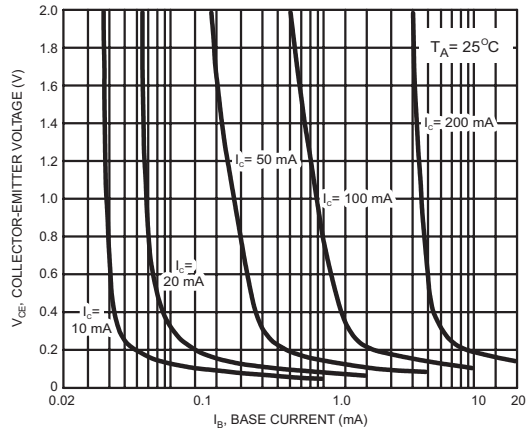


FIG.10- BASE-EMITTER TEMPERATURE COEFFICIENT

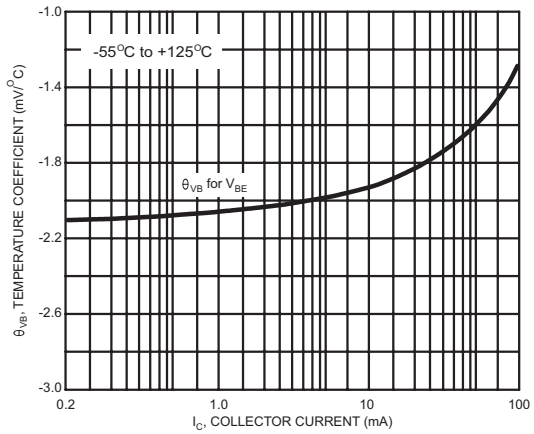


FIG.11- CAPACITANCES

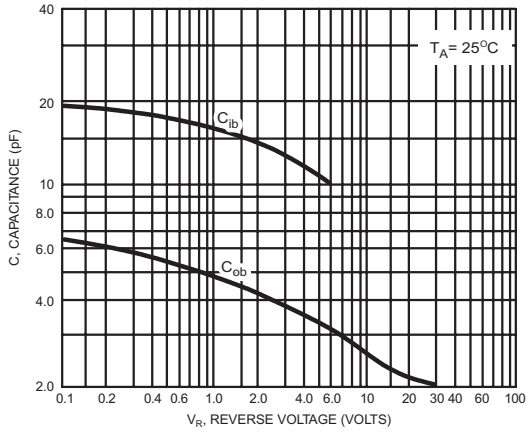


FIG.12- CURRENT-GAIN - BANDWIDTH PRODUCT