

NPN general purpose Transistor

BC846/847/848

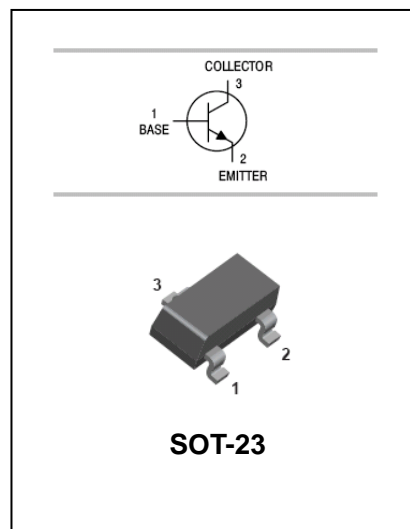
FEATURES

- High current gain.
- Excellent h_{FE} linearity .
- Low noise between 30Hz and 15kHz.
- For AF input stages and driver applications.



APPLICATIONS

- General purpose switching and amplification.



ORDERING INFORMATION

Type No.	Marking	Package Code
BC846A/B	1A/1B	SOT-23
BC847A/B/C	1E/1F/1G	SOT-23
BC848A/B/C	1J/1K/1L	SOT-23

MAXIMUM RATING @ Ta=25°C unless otherwise specified

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	BC846	80
		BC847	50
		BC848	30
V_{CEO}	Collector-Emitter Voltage	BC846	65
		BC847	45
		BC848	30
V_{EBO}	Emitter-Base Voltage	BC846	6
		BC847	6
		BC848	5
I_C	Collector Current -Continuous	0.1	A
P_C	Collector Dissipation	250	mW
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	417	°C/W
T_j, T_{stg}	Junction and Storage Temperature	-55 to +150	°C

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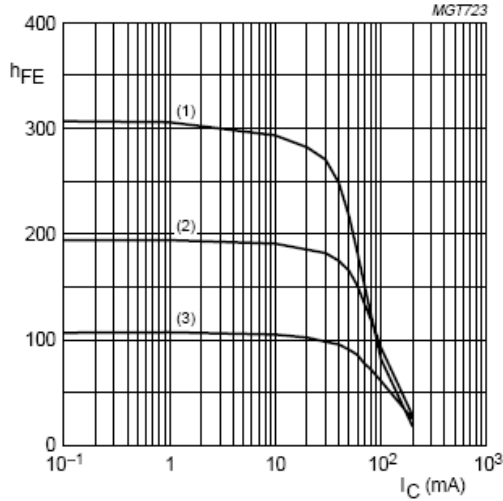
ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage BC846 BC847 BC848	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	80 50 30			V
Collector-emitter breakdown voltage BC846 BC847 BC848	$V_{(BR)CEO}$	$I_C=10mA, I_B=0$	65 45 30			V
Emitter-base breakdown voltage BC846 BC847 BC848	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	6 6 5			V
Collector-base cut-off current	I_{CBO}	$V_{CB}=30V, I_E=0$ $V_{CB}=30V, I_E=0, T_j=150^\circ C$			15 5	nA uA
Emitter-base cut-off current	I_{EBO}	$V_{EB}=5V, I_C=0$			100	nA
DC current gain BC846A,847A,848A BC846B,847B,848B BC847C,848C	h_{FE}	$V_{CE}=5V, I_C=10\mu A$		90 150 270		
DC current gain BC846A,847A,848A BC846B,847B,848B BC847C,848C	h_{FE}	$V_{CE}=5V, I_C=2mA$	110 200 420		220 450 800	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=10mA, I_B=0.5mA$ $I_C=100mA, I_B=5mA$		0.09 0.2	0.25 0.6	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=10mA, I_B=0.5mA$ $I_C=100mA, I_B=5mA$		0.7 0.9		V
Base-emitter voltage	$V_{BE(on)}$	$I_C=2mA, V_{CE}=5V$ $I_C=10mA, V_{CE}=5V$	0.58	0.66	0.7 0.77	V
Collector capacitance	C_C	$V_{CB}=10V, I_E=I_C=0,$ $f=1MHz$		2.5		pF
Transition frequency	f_T	$V_{CE}=5V, I_C=10mA$ $f=100MHz$	100			MHz

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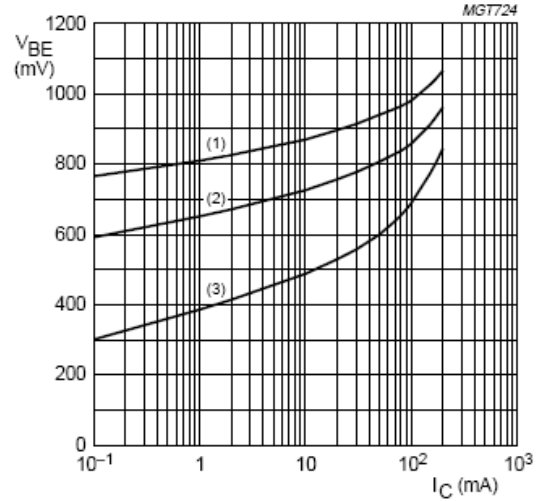
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TYPICAL CHARACTERISTICS @ $T_a=25^\circ\text{C}$ unless otherwise specified



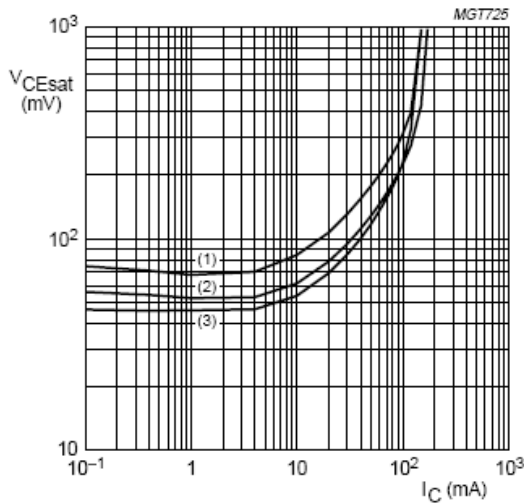
BC846A; $V_{CE} = 5\text{ V}$.
 (1) $T_{amb} = 150^\circ\text{C}$.
 (2) $T_{amb} = 25^\circ\text{C}$.
 (3) $T_{amb} = -55^\circ\text{C}$.

Fig.2 DC current gain as a function of collector current; typical values.



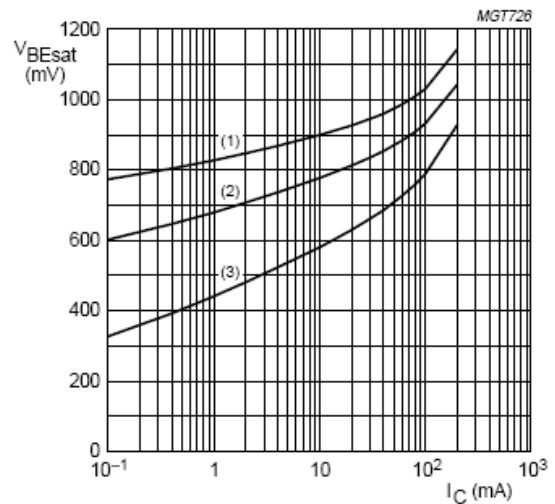
BC846A; $V_{CE} = 5\text{ V}$.
 (1) $T_{amb} = -55^\circ\text{C}$.
 (2) $T_{amb} = 25^\circ\text{C}$.
 (3) $T_{amb} = 150^\circ\text{C}$.

Fig.3 Base-emitter voltage as a function of collector current; typical values.



BC846A; $I_C/I_B = 20$.
 (1) $T_{amb} = 150^\circ\text{C}$.
 (2) $T_{amb} = 25^\circ\text{C}$.
 (3) $T_{amb} = -55^\circ\text{C}$.

Fig.4 Collector-emitter saturation voltage as a function of collector current; typical values.

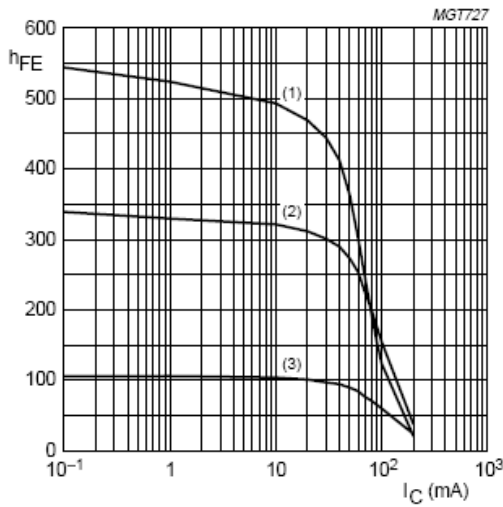


BC846A; $I_C/I_B = 10$.
 (1) $T_{amb} = -55^\circ\text{C}$.
 (2) $T_{amb} = 25^\circ\text{C}$.
 (3) $T_{amb} = 150^\circ\text{C}$.

Fig.5 Base-emitter saturation voltage as a function of collector current; typical values.

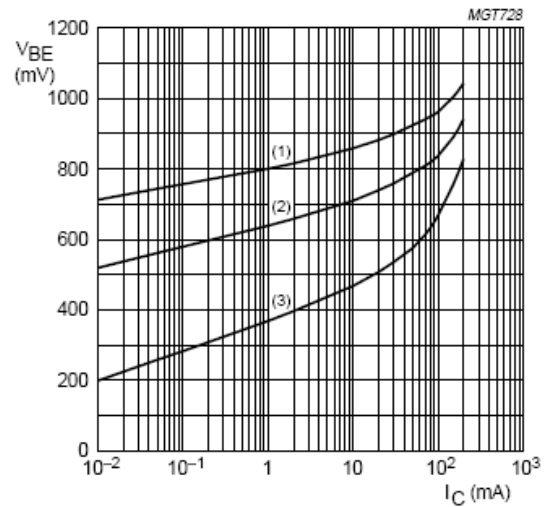
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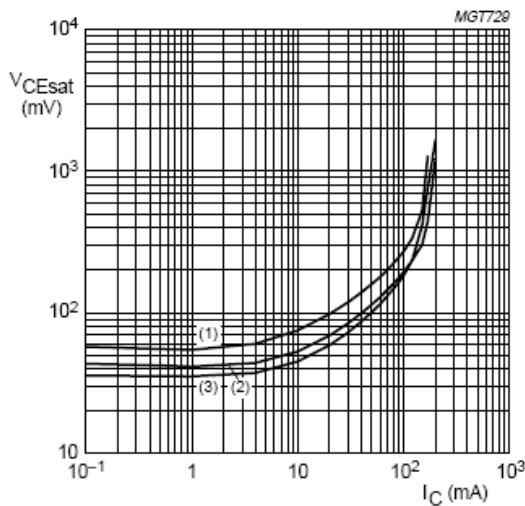
BC847B; $V_{CE} = 5\text{ V}$.
 (1) $T_{amb} = 150\text{ }^{\circ}\text{C}$.
 (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$.
 (3) $T_{amb} = -55\text{ }^{\circ}\text{C}$.

Fig.6 DC current gain as a function of collector current; typical values.



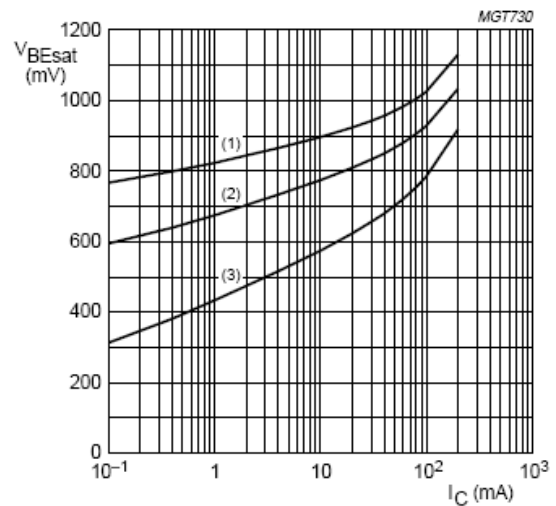
BC847B; $V_{CE} = 5\text{ V}$.
 (1) $T_{amb} = -55\text{ }^{\circ}\text{C}$.
 (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$.
 (3) $T_{amb} = 150\text{ }^{\circ}\text{C}$.

Fig.7 Base-emitter voltage as a function of collector current; typical values.



BC847B; $I_C/I_B = 20$.
 (1) $T_{amb} = 150\text{ }^{\circ}\text{C}$.
 (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$.
 (3) $T_{amb} = -55\text{ }^{\circ}\text{C}$.

Fig.8 Collector-emitter saturation voltage as a function of collector current; typical values.

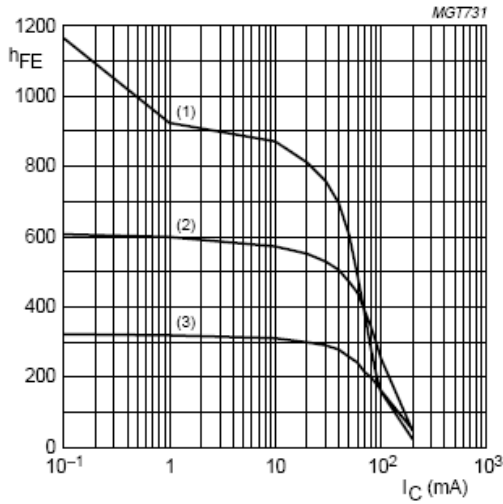


BC847B; $I_C/I_B = 10$.
 (1) $T_{amb} = -55\text{ }^{\circ}\text{C}$.
 (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$.
 (3) $T_{amb} = 150\text{ }^{\circ}\text{C}$.

Fig.9 Base-emitter saturation voltage as a function of collector current; typical values.

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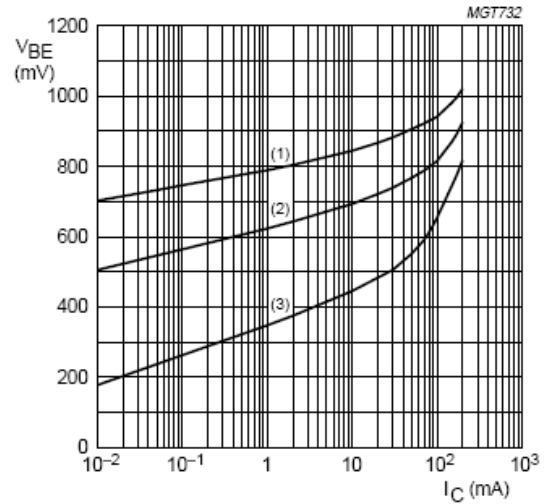
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BC847C; $V_{CE} = 5\text{ V}$.

- (1) $T_{amb} = 150\text{ }^{\circ}\text{C}$.
- (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$.
- (3) $T_{amb} = -55\text{ }^{\circ}\text{C}$.

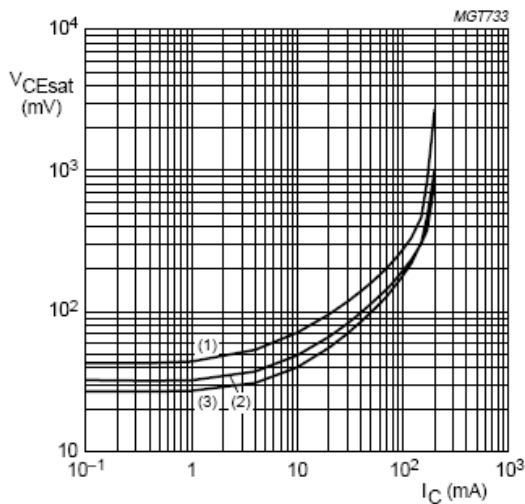
Fig.10 DC current gain as a function of collector current; typical values.



BC847C; $V_{CE} = 5\text{ V}$.

- (1) $T_{amb} = -55\text{ }^{\circ}\text{C}$.
- (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$.
- (3) $T_{amb} = 150\text{ }^{\circ}\text{C}$.

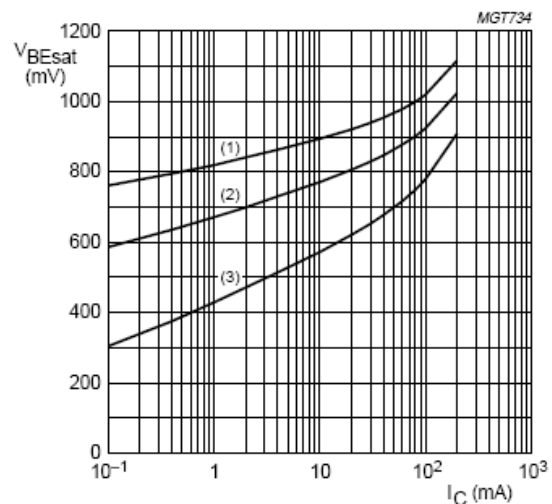
Fig.11 Base-emitter voltage as a function of collector current; typical values.



BC847C; $I_C/I_B = 20$.

- (1) $T_{amb} = 150\text{ }^{\circ}\text{C}$.
- (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$.
- (3) $T_{amb} = -55\text{ }^{\circ}\text{C}$.

Fig.12 Collector-emitter saturation voltage as a function of collector current; typical values.



BC847C; $I_C/I_B = 10$.

- (1) $T_{amb} = -55\text{ }^{\circ}\text{C}$.
- (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$.
- (3) $T_{amb} = 150\text{ }^{\circ}\text{C}$.

Fig.13 Base-emitter saturation voltage as a function of collector current; typical values.

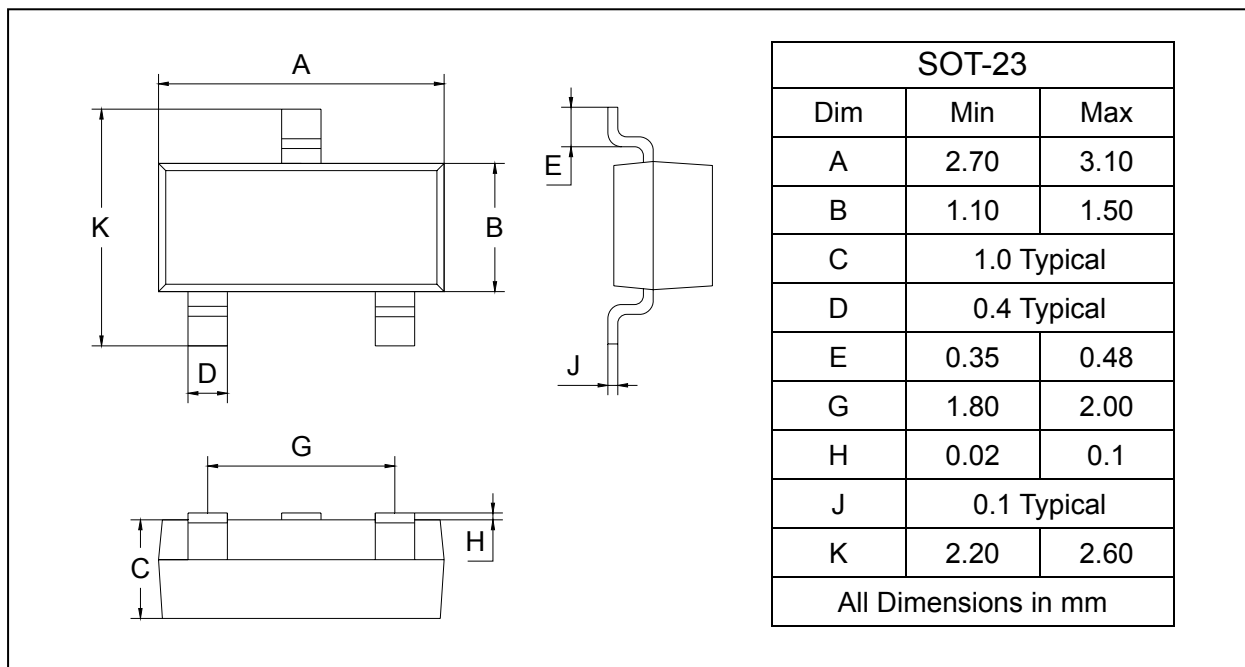
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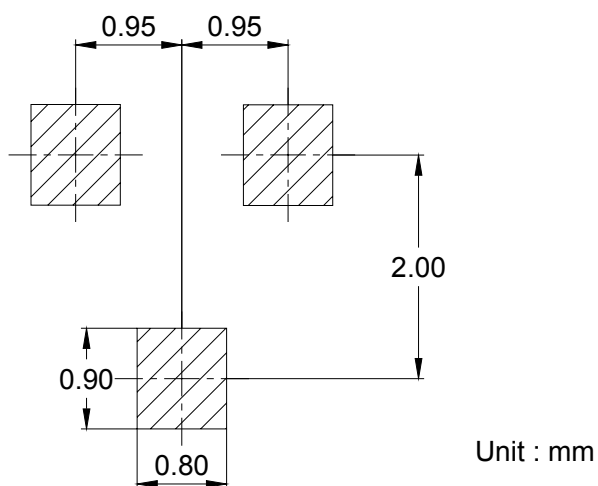
PACKAGE OUTLINE

Plastic surface mounted package

SOT-23



SOLDERING FOOTPRINT



PACKAGE INFORMATION

Device	Package	Shipping
BC846/847/848	SOT-23	3000/Tape&Reel