

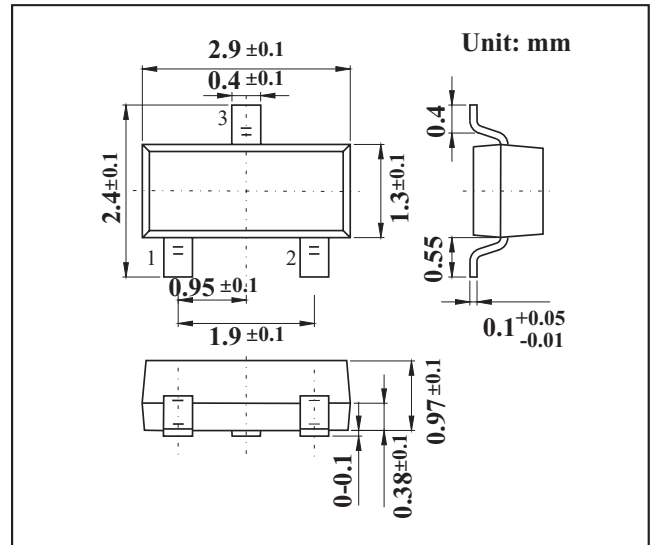
SOT-23 Plastic-Encapsulate Transistors

Features

- Low current (max. 100 mA).
- Low voltage (max. 65 V).
- NPN General Purpose Transistor

MECHANICAL DATA

- Case style: SOT-23 molded plastic
- Mounting position: any



MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

Parameter	Symbol	BC846	BC847	BC848	Unit
Collector-base voltage	V_{CB0}	80	50	30	V
Collector-emitter voltage	V_{CE0}	65	45	30	V
Emitter-base voltage	V_{EB0}	6	6	5	V
Collector current	I_C	100			mA
Peak collector current	I_{CM}	200			mA
Peak base current	I_{BM}	200			mA
Total power dissipation *	P_{tot}	250			mW
Junction temperature	T_J	150			°C
Storage temperature	T_{stg}	-65 to +150			°C
Operating ambient temperature	R_{amb}	-65 to +150			°C
Thermal resistance from junction to ambient *	$R_{th\ j-a}$	500			K/W

PACKAGE INFORMATION

Device	Package	Shipping
BC846 BC847 BC848	SOT-23	3000/Tape&Reel

* Transistor mounted on an FR4 printed-circuit board, standard footprint.

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = 30\text{ V}, I_E = 0$			15	nA
	I_{CBO}	$V_{CB} = 30\text{ V}, I_E = 0, T_J = 150^\circ\text{C}$			5	μA
Emitter cutoff current	I_{EBO}	$V_{EB} = 5\text{ V}, I_C = 0$			100	nA
DC current gain	BC846	h_{FE} $I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$	110		450	
	BC847		110		800	
	BC846A, BC847A		110	180	220	
	BC846B, BC847B, BC848B		200	290	450	
	BC847C		420	520	800	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$		90	250	mV
		$I_C = 100\text{ mA}; I_B = 5\text{ mA}; *$		200	600	mV
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$		700		mV
		$I_C = 100\text{ mA}; I_B = 5\text{ mA}; *$		900		mV
Base-emitter voltage	V_{BE}	$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$	580	660	700	mV
		$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}$			770	mV
Collector capacitance	C_C	$V_{CB} = 10\text{ V}; I_E = I_C = 0; f = 1\text{ MHz}$		2.5		pF
Transition frequency	f_T	$V_{CE} = 5\text{ V}; I_C = 10\text{ mA}; f = 100\text{ MHz}$	100			MHz
Noise figure	NF	$I_C = 200\mu\text{A}; V_{CE} = 5\text{ V}; R_s = 2\text{ k}\Omega; f = 1\text{ kHz}; B = 200\text{ Hz}$		2	10	dB

* Pulse test: $t_p \leq 300\mu\text{s}, \delta \leq 0.02$.

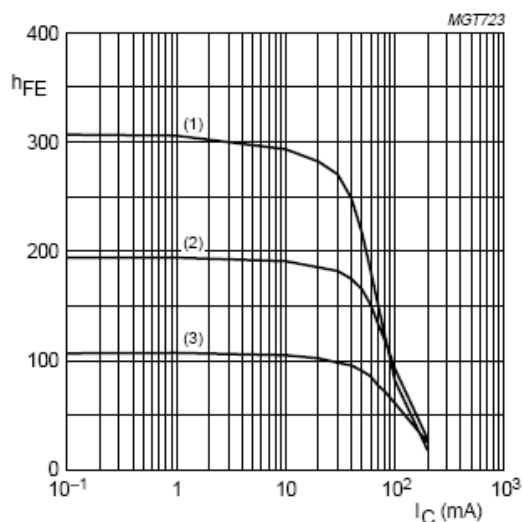
hFE Classification

TYPE	BC846	BC846A	BC846B
Marking	1D	1A	1B

TYPE	BC847	BC847A	BC847B	BC847C
Marking	1H	1E	1F	1G

TYPE	BC848
Marking	1K

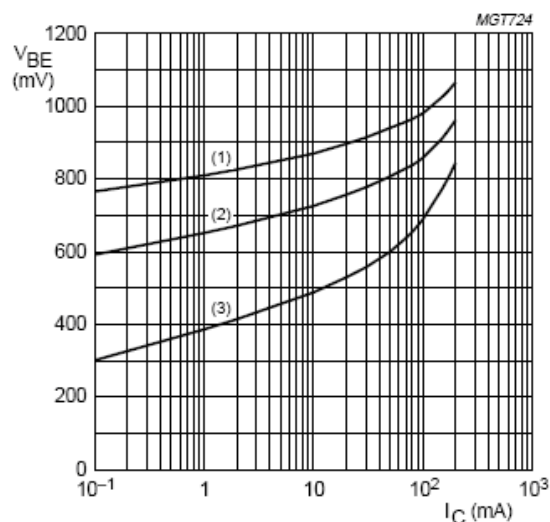
RATINGS AND CHARACTERISTIC CURVES



BC846A; $V_{CE} = 5\text{ V}$.

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

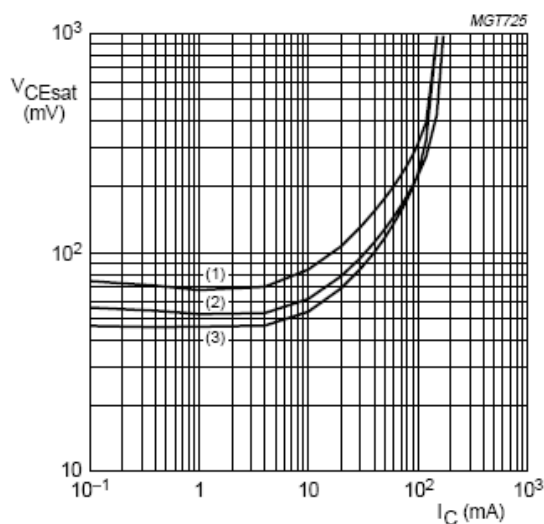
Fig.1 DC current gain as a function of collector current; typical values.



BC846A; $V_{CE} = 5\text{ V}$.

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

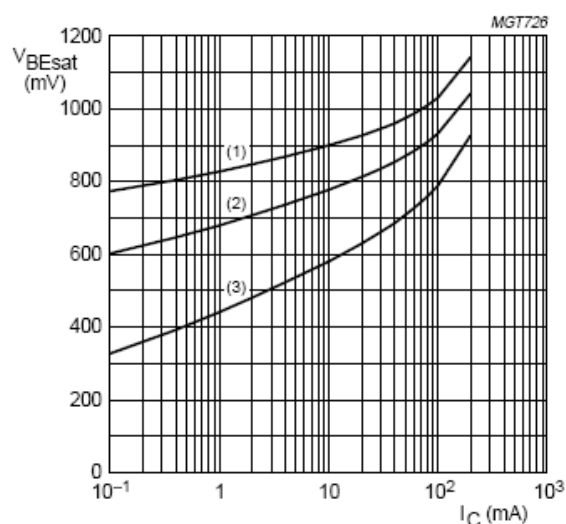
Fig.2 Base-emitter voltage as a function of collector current; typical values.



BC846A; $I_C/I_B = 20$.

- (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.3 Collector-emitter saturation voltage as a function of collector current; typical values.

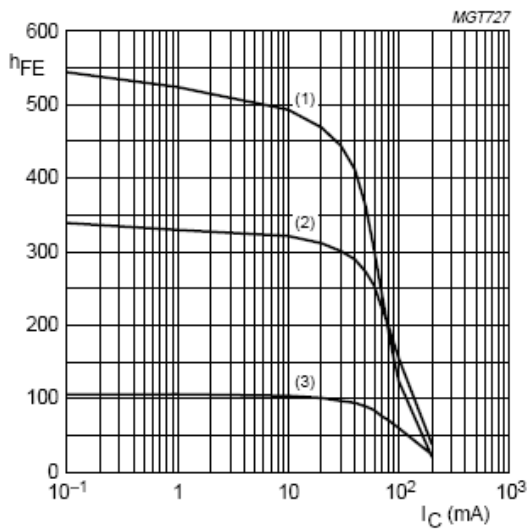


BC846A; $I_C/I_B = 10$.

- (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.4 Base-emitter saturation voltage as a function of collector current; typical values.

RATINGS AND CHARACTERISTIC CURVES



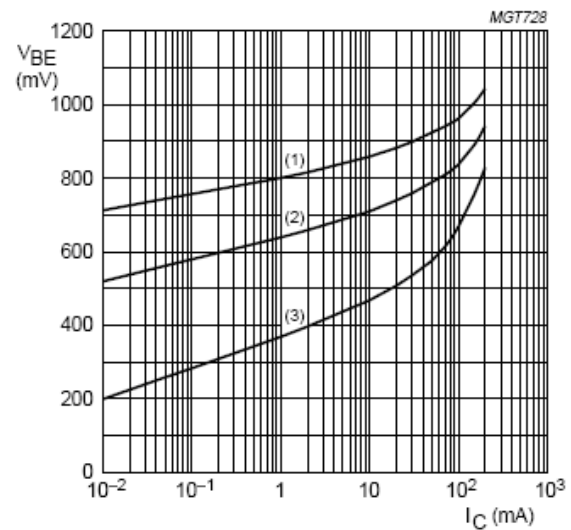
BC847B; $V_{CE} = 5\text{ V}$.

(1) $T_{amb} = 150^\circ\text{C}$.

(2) $T_{amb} = 25^\circ\text{C}$.

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

Fig.5 DC current gain as a function of collector current; typical values.



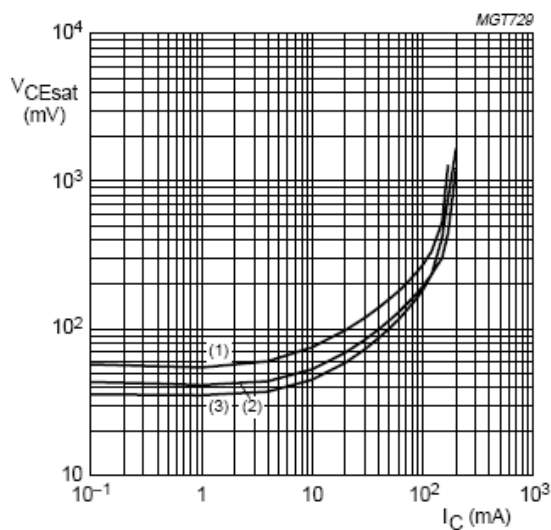
BC847B; $V_{CE} = 5\text{ V}$.

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

(2) $T_{amb} = 25^\circ\text{C}$.

(3) $T_{amb} = 150^\circ\text{C}$.

Fig.6 Base-emitter voltage as a function of collector current; typical values.



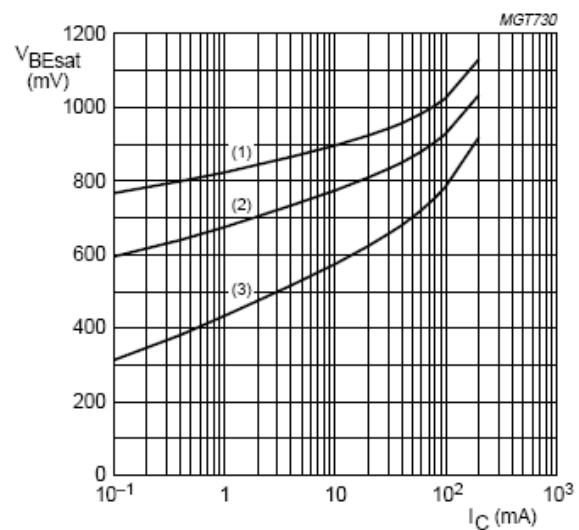
BC847B; $I_C/I_B = 20$.

(1) $T_{amb} = 150^\circ\text{C}$.

(2) $T_{amb} = 25^\circ\text{C}$.

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

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



BC847B; $I_C/I_B = 10$.

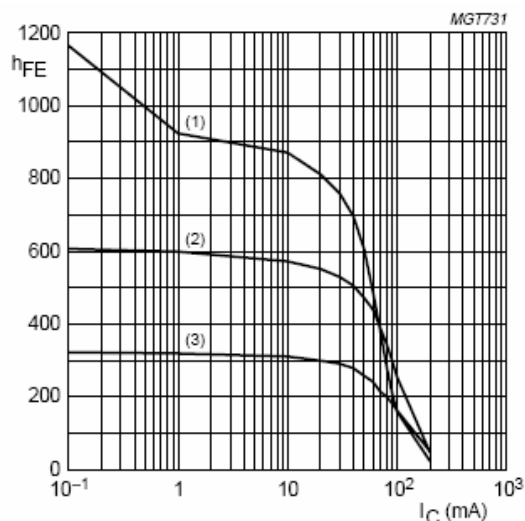
(1) $T_{amb} = -55^\circ\text{C}$.

(2) $T_{amb} = 25^\circ\text{C}$.

(3) $T_{amb} = 150^\circ\text{C}$.

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

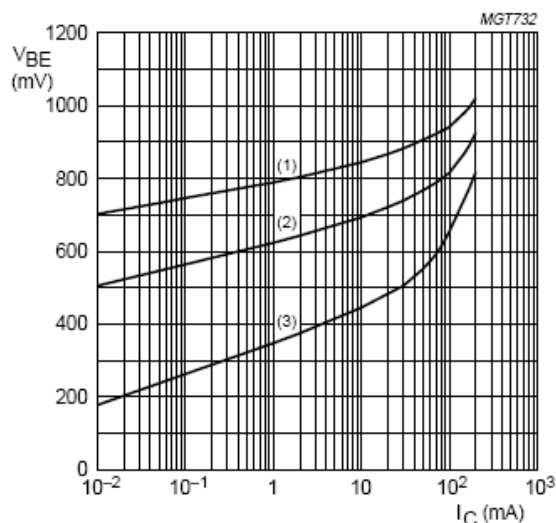
RATINGS AND CHARACTERISTIC CURVES



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

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

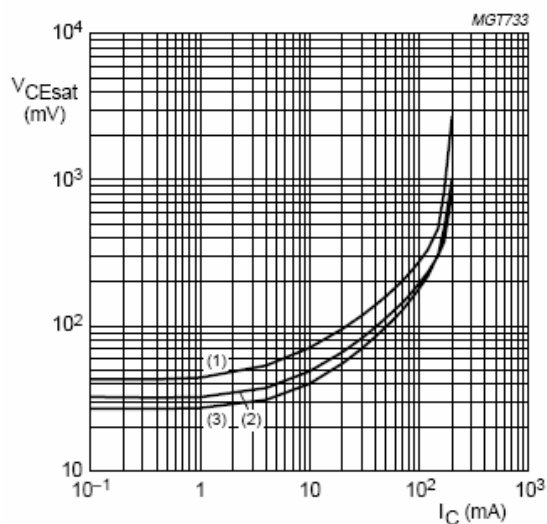
Fig.9 DC current gain as a function of collector current; typical values.



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

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

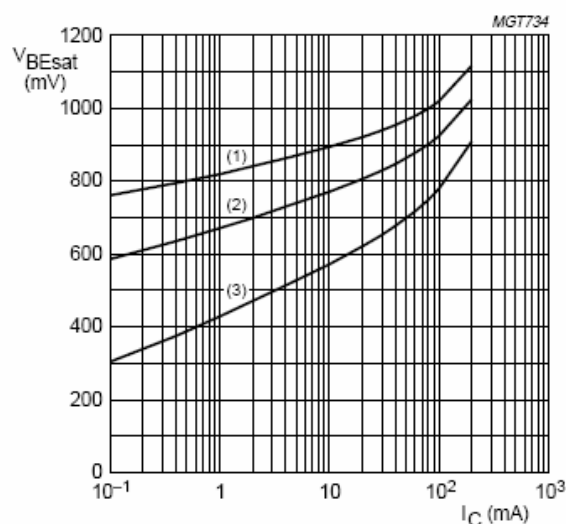
Fig.10 Base-emitter voltage as a function of collector current; typical values.



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.11 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.12 Base-emitter saturation voltage as a function of collector current; typical values.