

NPN Transistor



General Description:

NPN general purpose transistors in Surface-Mounted Device (SMD) plastic packages

Features:

- General-purpose transistors
- SMD plastic packages
- Two different gain selections
- 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

Max. Ratings & Characteristics : $T_A = 25^{\circ}\text{C}$ unless otherwise specified

Parameter	Symbol	Value	Unit
Collector - Base Voltage	V_{CBO}	80	V
Collector - Emitter Voltage	V_{CEO}	65	V
Emitter - Base Voltage	V_{EBO}	6	V
Collector Current - Continuous	I_C	0.1	A
Collector Dissipation	P_C	250	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	$^{\circ}\text{C/W}$
Junction and Storage Temperature	T_J, T_{STG}	-55 to +150	$^{\circ}\text{C}$

Max. Ratings & Characteristics : $T_A = 25^{\circ}\text{C}$ unless otherwise specified

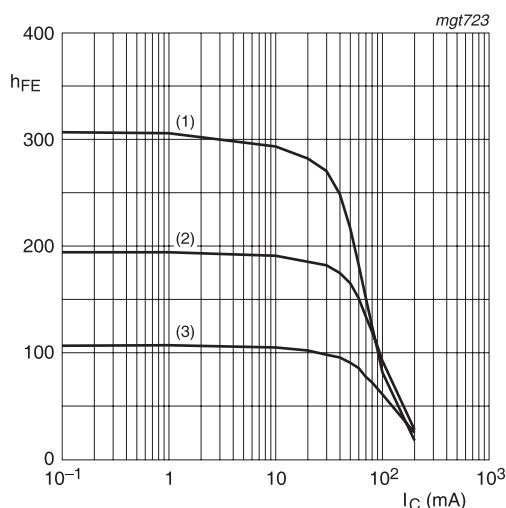
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector - Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = -10\mu\text{A}$ $I_E = 0$	80	-	-	V
Collector - Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = -10\text{mA}$ $I_B = 0$	65	-	-	V
Emitter - Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 10\mu\text{A}$ $I_C = 0$	6	-	-	V

Max. Ratings & Characteristics : $T_A = 25^\circ\text{C}$ unless otherwise specified (Cont.)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Collector Base Cut-off Current	I_{CBO}	$V_{CB} = 30\text{V}, I_E = 0$ $V_{CB} = 30\text{V}, I_E = 0, T_J = 150^\circ\text{C}$	-	-	15 5	nA uA
Emitter Base Cut-off Current	I_{EBO}	$V_{EB} = -5\text{V}, I_C = 0$	-	-	100	μA
DC Current Gain BC846A BC846B	h_{FE}	$V_{CE} = 5\text{V}, I_C = -2\text{mA}$	-	90 150	-	-
DC Current Gain BC846 BC846A BC846B	h_{FE}	$V_{CE} = 5\text{V}, I_C = 10\mu\text{A}$	110 110 200	-	450 220 450	-
Collector - Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C = 10\text{mA}, I_B = 0.5\text{mA}$ $I_C = 10\text{mA}, I_B = 5\text{mA}$	-	0.09 0.2	0.25 0.6	V
Base - Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C = 10\text{mA}, I_B = 0.5\text{mA}$ $I_C = 100\text{mA}, I_B = 5\text{mA}$	-	0.7 0.9		V
Base Emitter Voltage	$V_{BE(ON)}$	$I_C = 2\text{mA}, V_{CE} = 5\text{V}$ $I_C = 10\text{mA}, V_{CE} = 5\text{V}$	0.58 -	0.66 -	0.7 0.77	V
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

Typical Characteristics : $T_A = 25^\circ\text{C}$ unless otherwise specified

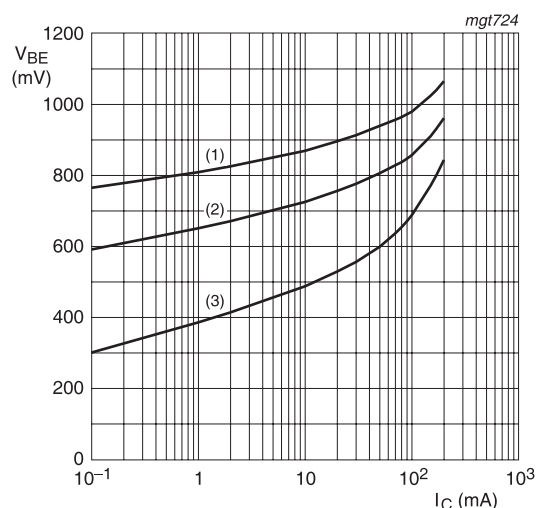
Ratings & Characteristic Curves



$V_{CE} = 5\text{V}$

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

Selection A : DC current gain as a function of collector current; typical values

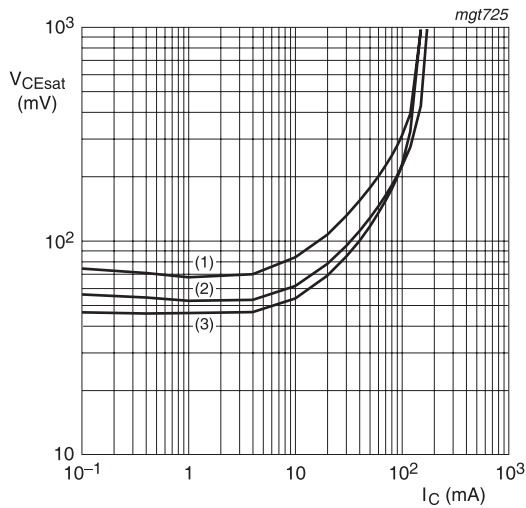


$V_{CE} = 5\text{V}$

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

Selection A : Base-emitter voltage as a function of collector current; typical values

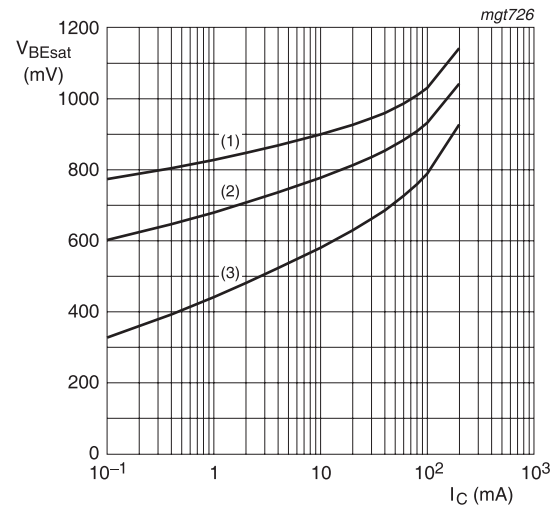
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$$I_C/I_B = 20$$

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

Selection A : Collector-emitter saturation voltage as a function of collector current; typical values



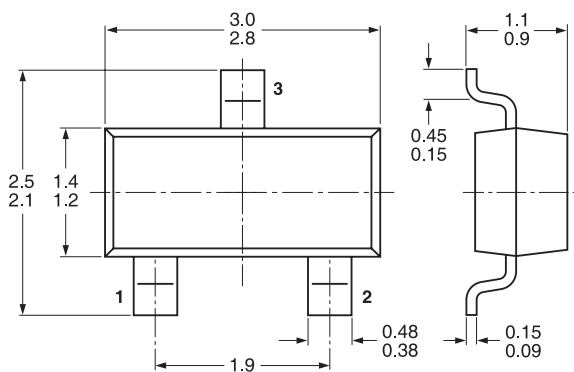
$$I_C/I_B = 10$$

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

Selection A : Base-emitter saturation voltage as a function of collector current; typical values

Package Outline

Plastic surface mounted package



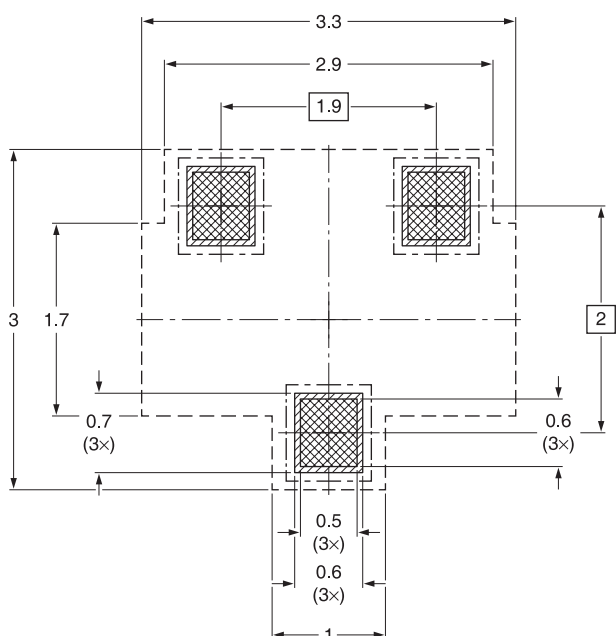
Dimensions : Millimetres

Package outline SOT23

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Soldering Footprint



-  solder lands
-  solder resist
-  solder paste
-  occupied area

Dimensions : Millimetres

Reflow soldering footprint SOT23

Package Information :

Device	Package	Shipping
BC846 BC846A BC846B	SOT-23	3,000 / Tape & Reel

Part Number Table

Description	Part Number
Transistor, NPN, 0.1A, 65V, SOT23	BC846
	BC846A
	BC846B

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