

FEATURES

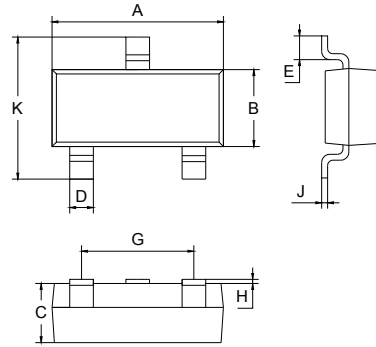
- High current gain.
- Excellent h_{FE} linearity .
- Low noise between 30Hz and 15kHz.
- For AF input stages and driver applications.

APPLICATIONS

- General purpose switching and amplification.

ORDERING INFORMATION

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



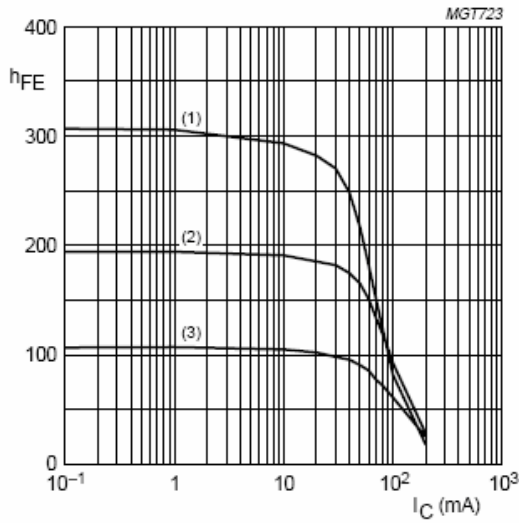
| SOT-23 | | |
|----------------------|-------------|------|
| Dim | Min | Max |
| A | 2.70 | 3.10 |
| B | 1.10 | 1.50 |
| C | 1.0 Typical | |
| D | 0.4 Typical | |
| E | 0.35 | 0.48 |
| G | 1.80 | 2.00 |
| H | 0.02 | 0.1 |
| J | 0.1 Typical | |
| K | 2.20 | 2.60 |
| All Dimensions in mm | | |

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 |

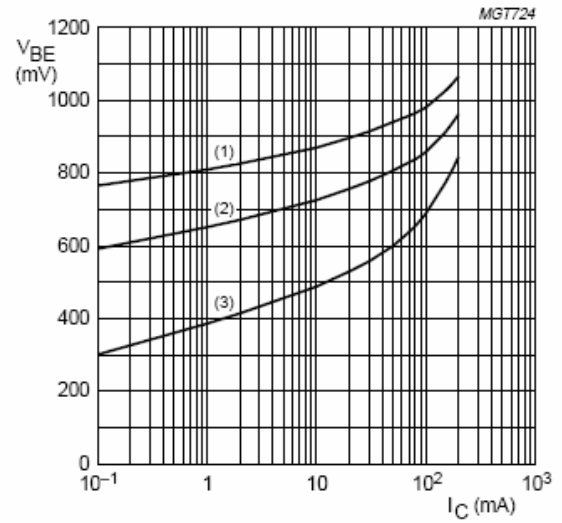
ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

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

TYPICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified


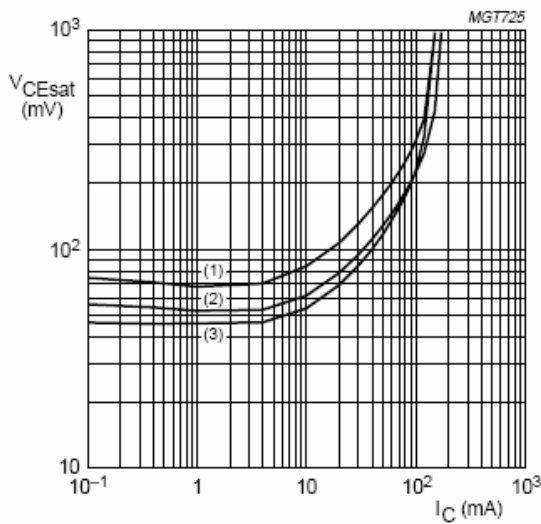
BC846A; $V_{CE} = 5\text{ V}$.
 (1) $T_{amb} = 150\text{ }^{\circ}\text{C}$.
 (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$.
 (3) $T_{amb} = -55\text{ }^{\circ}\text{C}$.

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



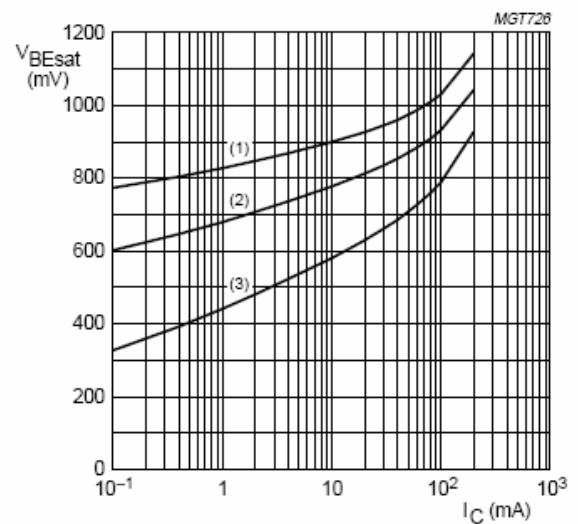
BC846A; $V_{CE} = 5\text{ V}$.
 (1) $T_{amb} = -55\text{ }^{\circ}\text{C}$.
 (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$.
 (3) $T_{amb} = 150\text{ }^{\circ}\text{C}$.

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



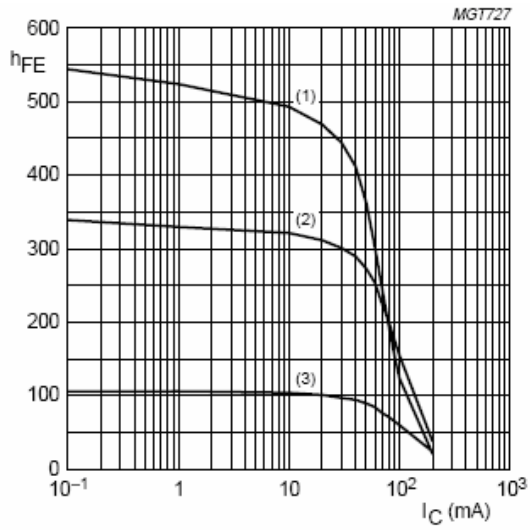
BC846A; $I_C/I_B = 20$.
 (1) $T_{amb} = 150\text{ }^{\circ}\text{C}$.
 (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$.
 (3) $T_{amb} = -55\text{ }^{\circ}\text{C}$.

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



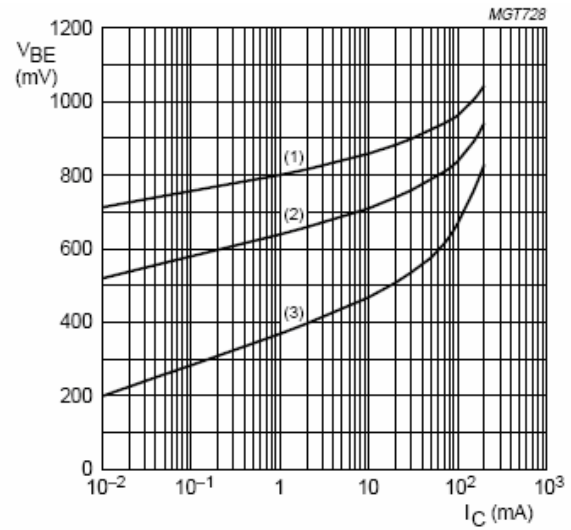
BC846A; $I_C/I_B = 10$.
 (1) $T_{amb} = -55\text{ }^{\circ}\text{C}$.
 (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$.
 (3) $T_{amb} = 150\text{ }^{\circ}\text{C}$.

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



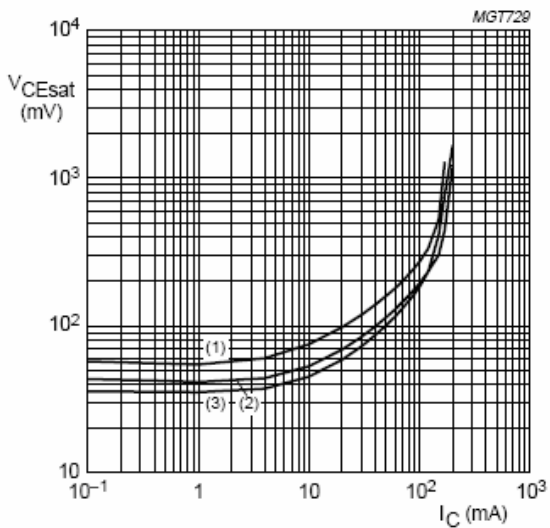
BC847B; $V_{CE} = 5\text{ V}$.
 (1) $T_{amb} = 150\text{ }^{\circ}\text{C}$.
 (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$.
 (3) $T_{amb} = -55\text{ }^{\circ}\text{C}$.

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



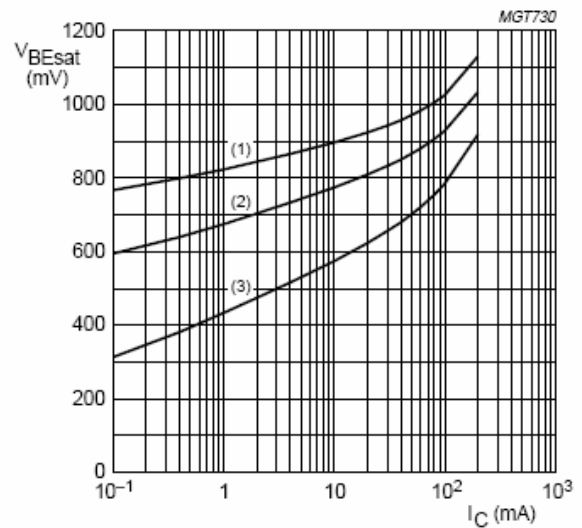
BC847B; $V_{CE} = 5\text{ V}$.
 (1) $T_{amb} = -55\text{ }^{\circ}\text{C}$.
 (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$.
 (3) $T_{amb} = 150\text{ }^{\circ}\text{C}$.

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



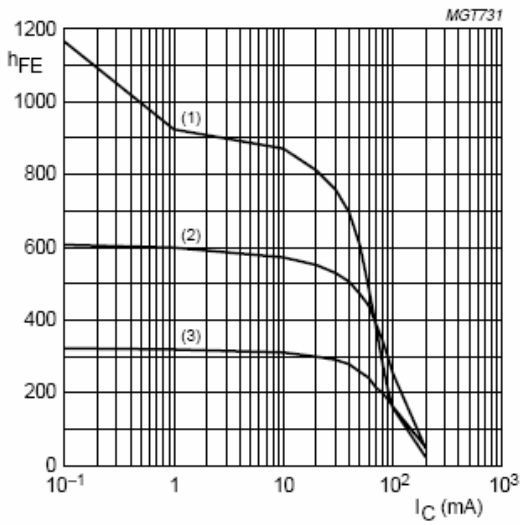
BC847B; $I_C/I_B = 20$.
 (1) $T_{amb} = 150\text{ }^{\circ}\text{C}$.
 (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$.
 (3) $T_{amb} = -55\text{ }^{\circ}\text{C}$.

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



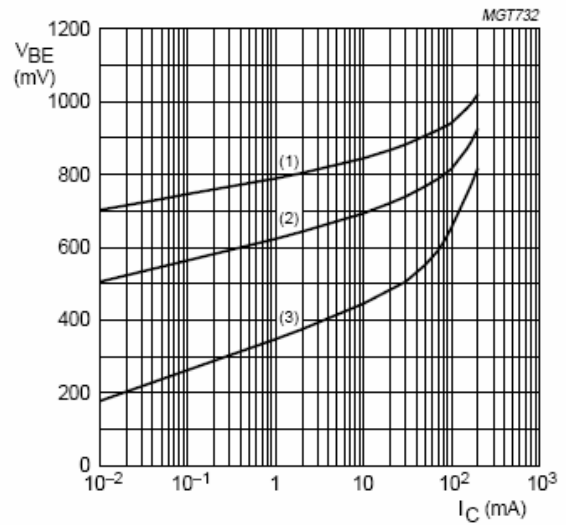
BC847B; $I_C/I_B = 10$.
 (1) $T_{amb} = -55\text{ }^{\circ}\text{C}$.
 (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$.
 (3) $T_{amb} = 150\text{ }^{\circ}\text{C}$.

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



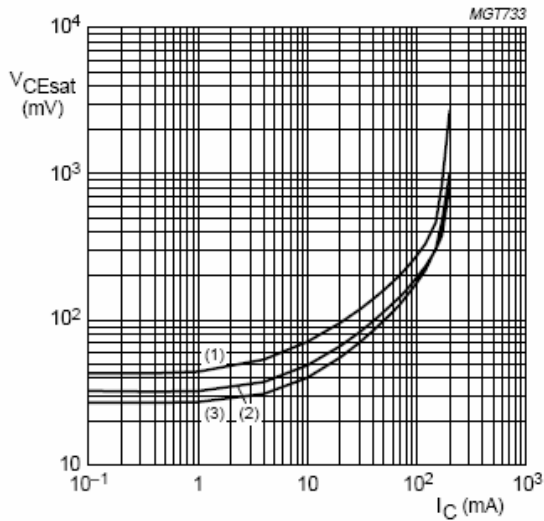
BC847C; $V_{CE} = 5\text{ V}$.
 (1) $T_{amb} = 150\text{ }^{\circ}\text{C}$.
 (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$.
 (3) $T_{amb} = -55\text{ }^{\circ}\text{C}$.

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



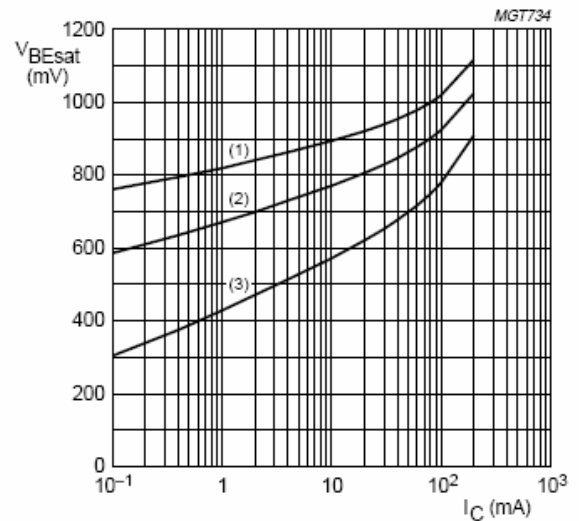
BC847C; $V_{CE} = 5\text{ V}$.
 (1) $T_{amb} = -55\text{ }^{\circ}\text{C}$.
 (2) $T_{amb} = 25\text{ }^{\circ}\text{C}$.
 (3) $T_{amb} = 150\text{ }^{\circ}\text{C}$.

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.

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