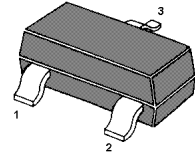


MMBT4240

NPN Silicon General Purpose Transistor



1. Base 2. Emitter 3. Collector
SOT-23 Plastic Package

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

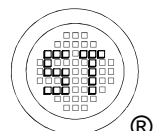
| Parameter | Symbol | Value | Unit |
|---------------------------|-----------|--|------------------|
| Collector Base Voltage | V_{CB0} | 40 | V |
| Collector Emitter Voltage | V_{CE0} | 40 | V |
| Emitter Base Voltage | V_{EB0} | 5 | V |
| Collector Current (DC) | I_C | 2 | A |
| Peak Collector Current | I_{CM} | 3 | A |
| Peak Base Current | I_{BM} | 300 | mA |
| Total Power Dissipation | P_{tot} | 350 ¹⁾ 480 ²⁾ | mW |
| Junction Temperature | T_j | 150 | $^\circ\text{C}$ |
| Storage Temperature Range | T_{stg} | - 65 to + 150 | $^\circ\text{C}$ |

Thermal Characteristics

| Parameter | Symbol | Max. | Unit |
|--|-----------------|--|---------------------------|
| Thermal Resistance - Junction to Ambient | $R_{\theta JA}$ | 357 ¹⁾ 260 ²⁾ | $^\circ\text{C}/\text{W}$ |

¹⁾ Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

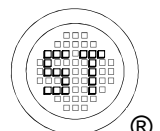
²⁾ Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate.



MMBT4240

Characteristics at $T_a = 25^\circ\text{C}$

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|--|---------------|------|------|------|------|
| DC Current Gain | | | | | |
| at $V_{CE} = 2\text{ V}$, $I_C = 100\text{ mA}$ | h_{FE} | 350 | - | - | - |
| at $V_{CE} = 2\text{ V}$, $I_C = 500\text{ mA}$ | h_{FE} | 300 | - | - | - |
| at $V_{CE} = 2\text{ V}$, $I_C = 1\text{ A}$ | h_{FE} | 250 | - | - | - |
| at $V_{CE} = 2\text{ V}$, $I_C = 2\text{ A}$ | h_{FE} | 80 | - | - | - |
| Collector Base Cutoff Current at $V_{CB} = 30\text{ V}$ | I_{CBO} | - | - | 100 | nA |
| Emitter Base Cutoff Current at $V_{EB} = 4\text{ V}$ | I_{EBO} | - | - | 100 | nA |
| Collector Emitter Saturation Voltage | | | | | |
| at $I_C = 100\text{ mA}$, $I_B = 1\text{ mA}$ | $V_{CE(sat)}$ | - | - | 70 | mV |
| at $I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$ | | - | - | 100 | |
| at $I_C = 750\text{ mA}$, $I_B = 15\text{ mA}$ | | - | - | 180 | |
| at $I_C = 1\text{ A}$, $I_B = 50\text{ mA}$ | | - | - | 180 | |
| at $I_C = 2\text{ A}$, $I_B = 200\text{ mA}$ | | - | - | 320 | |
| Base Emitter Saturation Voltage at $I_C = 2\text{ A}$, $I_B = 200\text{ mA}$ | $V_{BE(sat)}$ | - | - | 1.1 | V |
| Base Emitter Turn-on Voltage at $V_{CE} = 2\text{ V}$, $I_C = 100\text{ mA}$ | $V_{BE(on)}$ | - | - | 0.75 | V |
| Transition Frequency at $V_{CE} = 10\text{ V}$, $I_C = 100\text{ mA}$, $f = 100\text{ MHz}$ | f_T | 100 | 230 | - | MHz |
| Collector Output Capacitance at $V_{CB} = 10\text{ V}$, $f = 1\text{ MHz}$ | C_{ob} | - | 10 | 20 | pF |



MMBT4240

Electrical Characteristics Curves

Fig. 1 Output Characteristics Curve

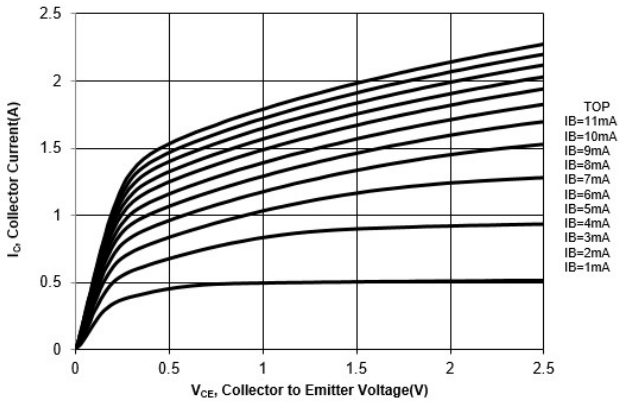


Fig. 2 Output Characteristics Curve

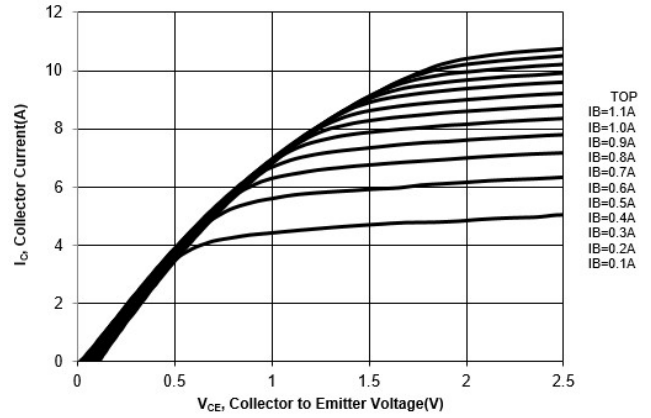


Fig. 3 Base to Emitter Voltage vs. Collector Current

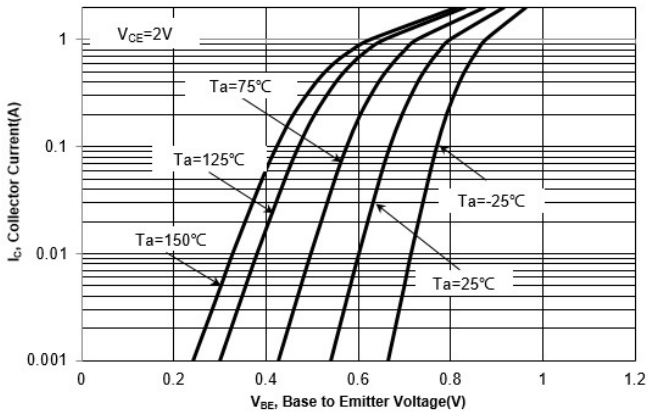
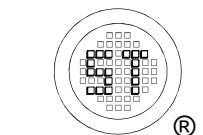
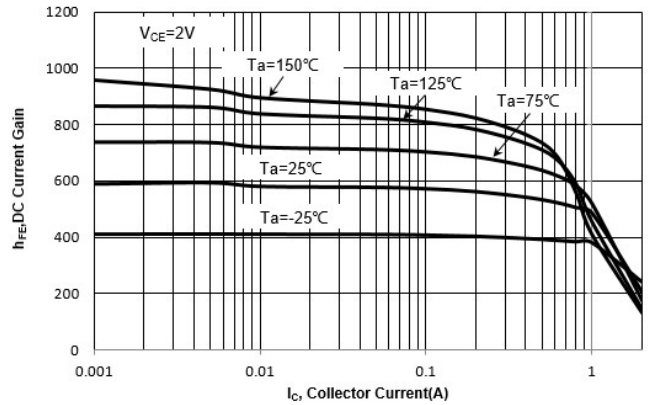


Fig. 4 DC Current Gain vs. Collector Current



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Electrical Characteristics Curves

Fig. 5 V_{BESAT} vs. Collector Current

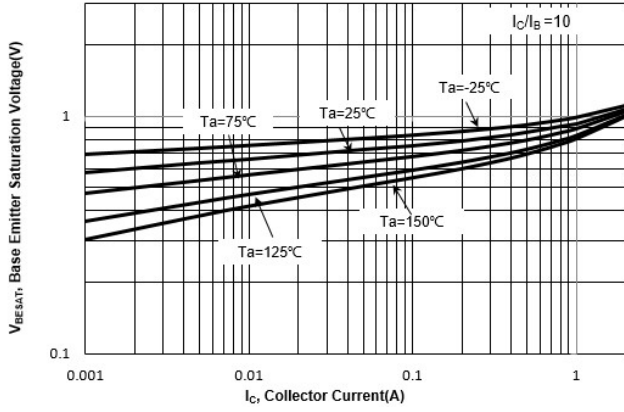


Fig. 6 V_{CESAT} vs. Collector Current

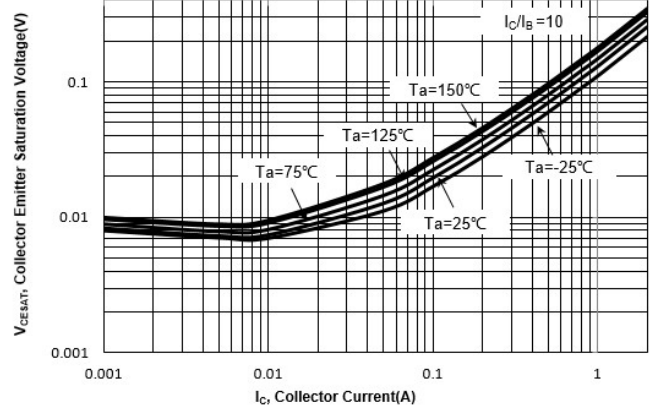
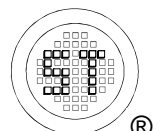
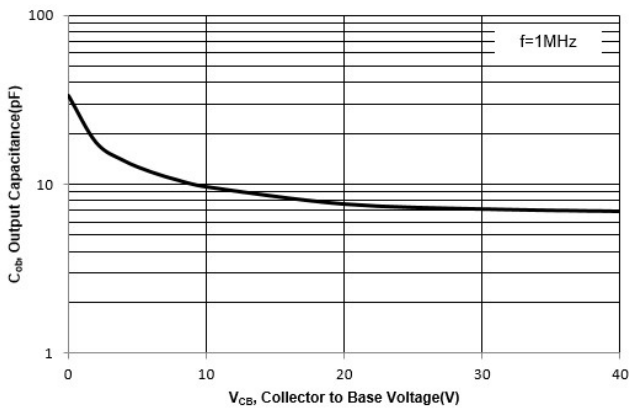


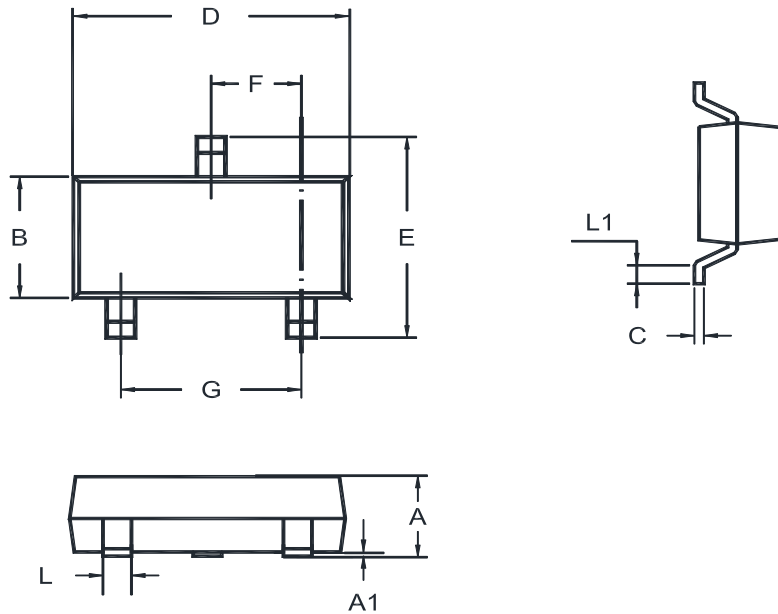
Fig. 7 Output Capacitance



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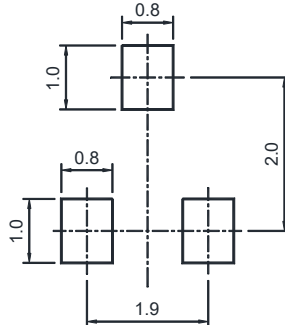
Package Outline (Dimensions in mm)

SOT-23



| Unit | A | A1 | B | C | D | E | F | G | L | L1 |
|------|------|-------|------|------|------|-----|------|------|------|-----|
| mm | 1.20 | 0.100 | 1.40 | 0.19 | 3.04 | 2.6 | 1.02 | 2.04 | 0.51 | 0.2 |
| | 0.89 | 0.013 | 1.20 | 0.08 | 2.80 | 2.2 | 0.89 | 1.78 | 0.37 | MIN |

Recommended Soldering Footprint



Packing information

| Package | Tape Width (mm) | Pitch | | Reel Size | | Per Reel Packing Quantity |
|---------|-----------------|---------|---------------|-----------|------|---------------------------|
| | | mm | inch | mm | inch | |
| SOT-23 | 8 | 4 ± 0.1 | 0.157 ± 0.004 | 178 | 7 | 3,000 |

Marking information

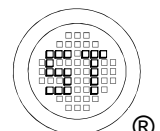
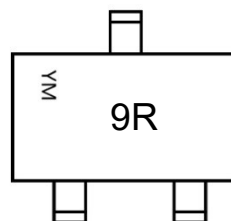
"9R" = Part No.

"YM" = Date Code Marking

"Y" = Year

"M" = Month

Font type: Arial



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[MMSZ5230BQ-13-F](#) [MMSZ5232BQ-13-F](#) [BZX84C7V5](#) [3SMAJ5945B-TP](#) [3SMAJ5947B-TP](#) [3SMBJ5941B-TP](#) [DZ2S240M0L](#) [SMAZ27-](#)
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