



MMBTA42

SMALL SIGNAL NPN TRANSISTOR

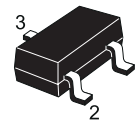
PRELIMINARY DATA

| Type | Marking |
|---------|---------|
| MMBTA42 | A42 |

- SILICON EPITAXIAL PLANAR NPN HIGH VOLTAGE TRANSISTOR
- MINIATURE SOT-23 PLASTIC PACKAGE FOR SURFACE MOUNTING CIRCUITS
- TAPE AND REEL PACKING
- THE PNP COMPLEMENTARY TYPE IS MMBTA92

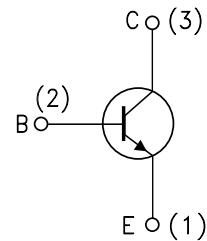
APPLICATIONS

- VIDEO AMPLIFIER CIRCUITS (RGB CATHODE CURRENT CONTROL)
- TELEPHONE WIRELINE INTERFACE (HOOK SWITCHES, DIALER CIRCUITS)



SOT-23

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|-----------|---|------------|------------------|
| V_{CBO} | Collector-Base Voltage ($I_E = 0$) | 300 | V |
| V_{CEO} | Collector-Emitter Voltage ($I_B = 0$) | 300 | V |
| V_{EBO} | Emitter-Base Voltage ($I_C = 0$) | 6 | V |
| I_C | Collector Current | 0.5 | A |
| I_{CM} | Collector Peak Current | 0.6 | A |
| P_{tot} | Total Dissipation at $T_C = 25\text{ }^\circ\text{C}$ | 350 | mW |
| T_{stg} | Storage Temperature | -65 to 150 | $^\circ\text{C}$ |
| T_j | Max. Operating Junction Temperature | 150 | $^\circ\text{C}$ |

MMBTA42

THERMAL DATA

| | | | | |
|---------------|-------------------------------------|-----|-------|-----------------------------|
| $R_{thj-amb}$ | Thermal Resistance Junction-Ambient | Max | 357.1 | $^{\circ}\text{C}/\text{W}$ |
|---------------|-------------------------------------|-----|-------|-----------------------------|

• Device mounted on a PCB area of 1 cm^2

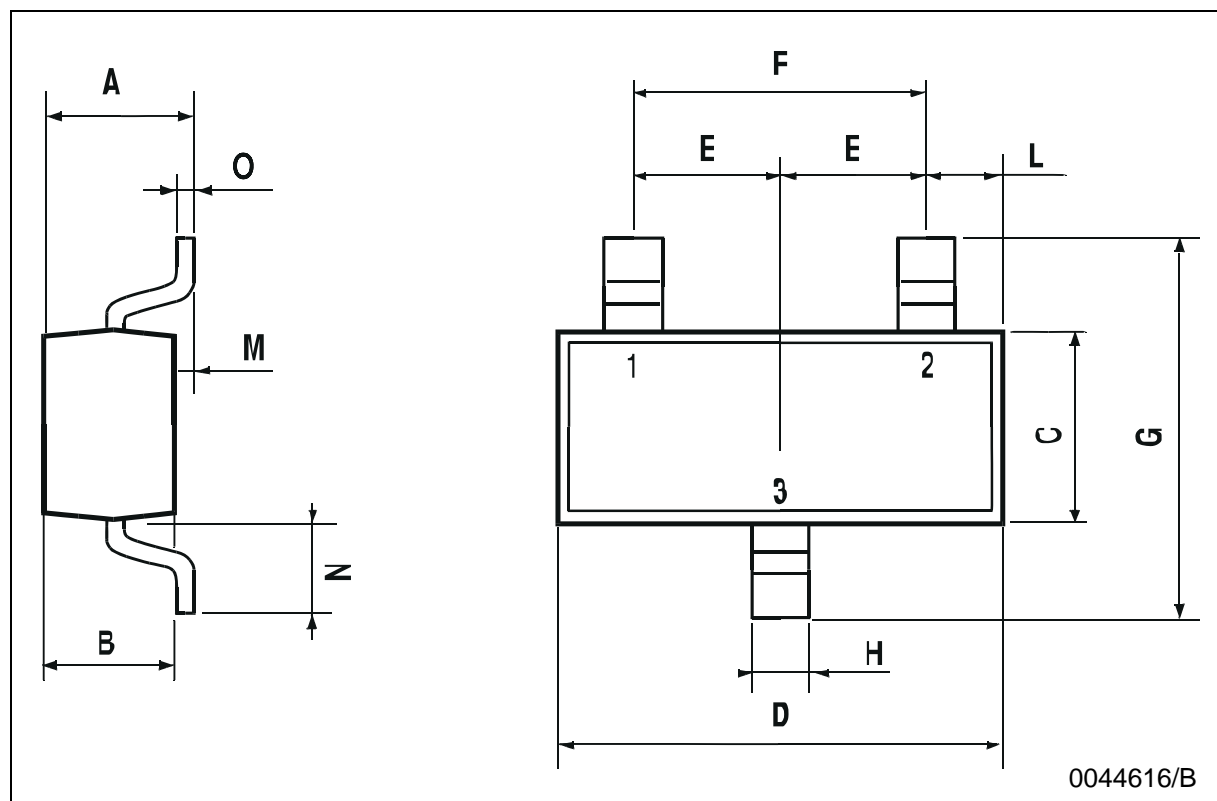
ELECTRICAL CHARACTERISTICS ($T_{case} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|-----------------|---|--|----------------|------|------|------|
| I_{CBO} | Collector Cut-off Current ($I_E = 0$) | $V_{CB} = 200\text{ V}$ | | | 100 | nA |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage ($I_E = 0$) | $I_C = 100\text{ }\mu\text{A}$ | 300 | | | V |
| $V_{(BR)CEO}^*$ | Collector-Emitter Breakdown Voltage ($I_B = 0$) | $I_C = 1\text{ mA}$ | 300 | | | V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage ($I_C = 0$) | $I_E = 100\text{ }\mu\text{A}$ | 6 | | | V |
| $V_{CE(sat)}^*$ | Collector-Emitter Saturation Voltage | $I_C = 20\text{ mA}$ $I_B = 2\text{ mA}$ | | | 0.5 | V |
| $V_{BE(sat)}^*$ | Base-Emitter Saturation Voltage | $I_C = 20\text{ mA}$ $I_B = 2\text{ mA}$ | | | 0.9 | V |
| h_{FE}^* | DC Current Gain | $I_C = 1\text{ mA}$ $V_{CE} = 10\text{ V}$ $I_C = 10\text{ mA}$ $V_{CE} = 10\text{ V}$ $I_C = 30\text{ mA}$ $V_{CE} = 10\text{ V}$ | 25 40 40 | | | |
| f_T | Transition Frequency | $I_C = 10\text{ mA}$ $V_{CE} = 20\text{ V}$ $f = 20\text{ MHz}$ | 50 | | | MHz |
| C_{CBO} | Collector-Base Capacitance | $I_E = 0$ $V_{CB} = 10\text{ V}$ $f = 1\text{ MHz}$ | | 6 | | pF |
| C_{EBO} | Emitter-Base Capacitance | $I_C = 0$ $V_{EB} = 2\text{ V}$ $f = 1\text{ MHz}$ | | 22 | | pF |

* Pulsed: Pulse duration = $300\text{ }\mu\text{s}$, duty cycle $\leq 1.5\%$

SOT-23 MECHANICAL DATA

| DIM. | mm | | | mils | | |
|------|------|------|------|-------|------|------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 0.85 | | 1.1 | 33.4 | | 43.3 |
| B | 0.65 | | 0.95 | 25.6 | | 37.4 |
| C | 1.20 | | 1.4 | 47.2 | | 55.1 |
| D | 2.80 | | 3 | 110.2 | | 118 |
| E | 0.95 | | 1.05 | 37.4 | | 41.3 |
| F | 1.9 | | 2.05 | 74.8 | | 80.7 |
| G | 2.1 | | 2.5 | 82.6 | | 98.4 |
| H | 0.38 | | 0.48 | 14.9 | | 18.8 |
| L | 0.3 | | 0.6 | 11.8 | | 23.6 |
| M | 0 | | 0.1 | 0 | | 3.9 |
| N | 0.3 | | 0.65 | 11.8 | | 25.6 |
| O | 0.09 | | 0.17 | 3.5 | | 6.7 |



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