



## NPN General Purpose Amplifier

## MMBT2369A

### FEATURES

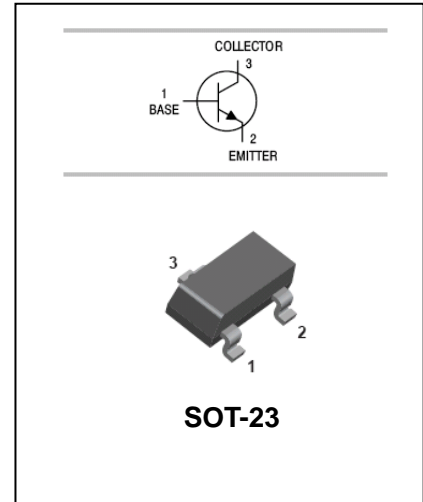
- Epitaxial planar die construction.
- Ultra-small surface mount package.



Lead-free

### APPLICATIONS

- Use as a medium power amplifier.



### ORDERING INFORMATION

| Type No.  | Marking | Package Code |
|-----------|---------|--------------|
| MMBT2369A | 1JA     | SOT-23       |

### MAXIMUM RATING @ Ta=25°C unless otherwise specified

| Symbol          | Parameter                               | Value       | Unit |
|-----------------|---|-------------|------|
| $V_{CBO}$       | Collector-Base Voltage                  | 40          | V    |
| $V_{CEO}$       | Collector-Emitter Voltage               | 15          | V    |
| $V_{EBO}$       | Emitter-Base Voltage                    | 4.5         | V    |
| $I_C$           | Collector Current -Continuous           | 200         | mA   |
| $P_C$           | Collector Dissipation                   | 300         | mW   |
| $R_{\theta JA}$ | Thermal resistance, junction to ambient | 417         | °C/W |
| $T_j, T_{stg}$  | Junction and Storage Temperature        | -55 to +150 | °C   |



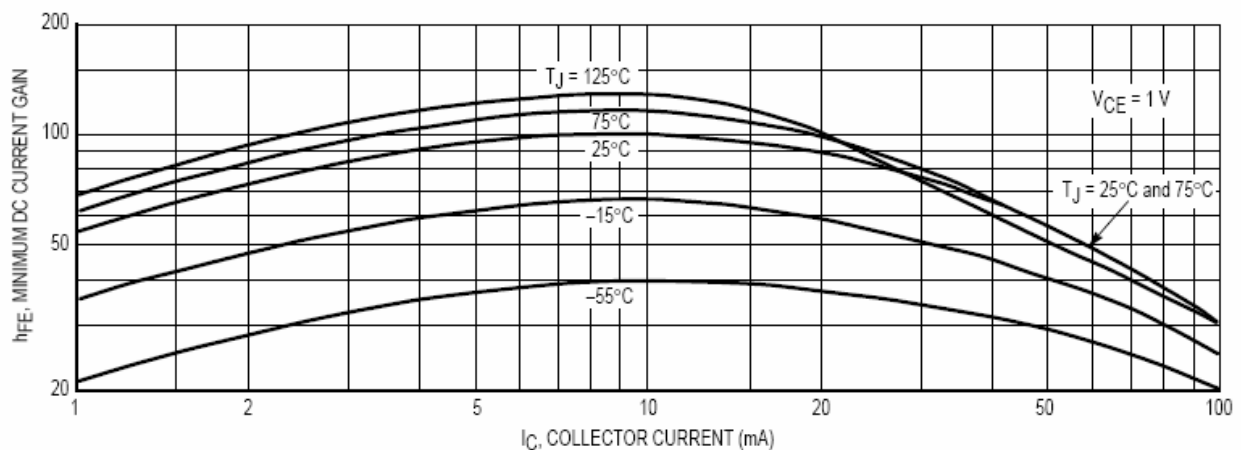
**NPN General Purpose Amplifier**

**MMBT2369A**

**ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified**

| Parameter                            | Symbol        | Test conditions   | MIN | TYP | MAX                 | UNIT    |
|--------------------------------------|---------------|---|-----|-----|---------------------|---------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | $I_C=10\mu A, I_E=0$  | 40  |     |                     | V       |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C=10mA, I_B=0$   | 15  |     |                     | V       |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E=10\mu A, I_C=0$  | 4.5 |     |                     | V       |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB}=20V, I_E=0$   |     |     | 0.4                 | $\mu A$ |
| Collector cut-off current            | $I_{CES}$     | $V_{CE}=20V, V_{BE}=0$  |     |     | 0.4                 | $\mu A$ |
| DC current gain                      | $h_{FE}$      | $V_{CE}=1.0V, I_C=10mA$   |     |     | 120                 |         |
|                                      |               | $V_{CE}=0.35V, I_C=10mA$  | 40  |     |                     |         |
|                                      |               | $V_{CE}=0.4V, I_C=30mA$   | 30  |     |                     |         |
|                                      |               | $V_{CE}=1.0V, I_C=100mA$  | 20  |     |                     |         |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=10mA, I_B=1.0mA$<br>$I_C=30mA, I_B=3.0mA$<br>$I_C=100mA, I_B=10mA$ |     |     | 0.2<br>0.25<br>0.5  | V       |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | $I_C=10mA, I_B=1.0mA$<br>$I_C=30mA, I_B=3.0mA$<br>$I_C=100mA, I_B=10mA$ | 0.7 |     | 0.85<br>1.15<br>1.6 | V       |
| Output capacitance                   | $C_{obo}$     | $V_{CB}=5V, I_E=0, f=1.0MHz$  |     |     | 4.0                 | pF      |
| Storage time                         | $t_s$         | $I_{B1}=I_{B2}=I_C=10mA$  |     | 5.0 | 13                  | ns      |
| Turn-on time                         | $t_{on}$      | $V_{CC}=3V, I_C=10mA,$<br>$I_{B1}=3mA$                                  |     | 8.0 | 12                  | ns      |
| Turn-off time                        | $t_{off}$     | $V_{CC}=3V, I_C=10mA,$<br>$I_{B1}=3mA, I_{B2}=1.5mA$                    |     | 10  | 18                  | ns      |

**TYPICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified**



**Figure 1 . Minimum Current Gain Characteristics**

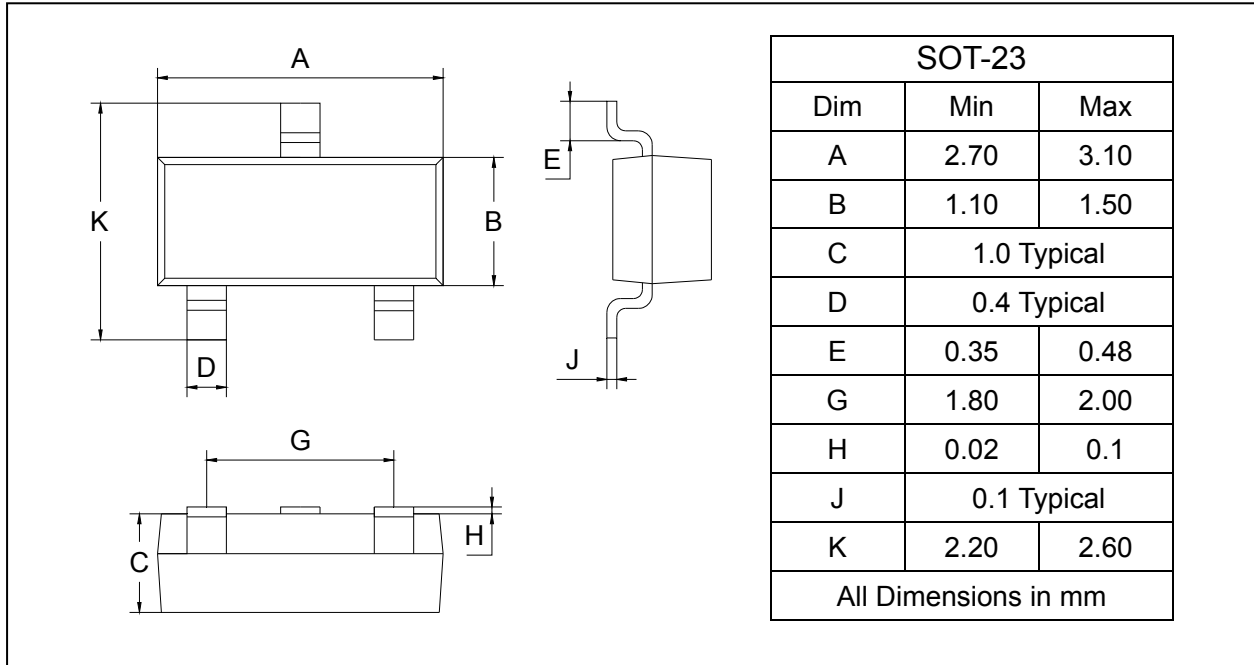
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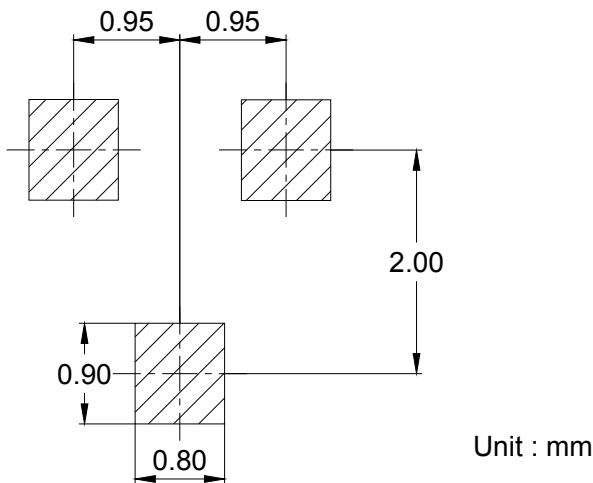
### PACKAGE OUTLINE

Plastic surface mounted package

SOT-23



### SOLDERING FOOTPRINT



### PACKAGE INFORMATION

| Device    | Package | Shipping       |
|-----------|---------|----------------|
| MMBT2369A | SOT-23  | 3000/Tape&Reel |