



Micro Commercial Components



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## MMSTA42

### NPN Small Signal Transistors

### Features

- Halogen free available upon request by adding suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Epitaxial Planar Die Construction
- Ideal for Medium Power Amplification and Switching
- Ultra-small surface mount package
- Marking : K3M
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

### Maximum Ratings

- Maximum Thermal Resistance: 625°C/W Junction To Ambient

| Symbol    | Rating                                          | Rating      | Unit |
|-----------|-------------------------------------------------|-------------|------|
| $V_{CEO}$ | Collector-Emitter Voltage                       | 300         | V    |
| $V_{CBO}$ | Collector-Base Voltage                          | 300         | V    |
| $V_{EBO}$ | Emitter-Base Voltage                            | 6.0         | V    |
| $I_C$     | Collector Current-Continuous <sup>(1) (3)</sup> | 200         | mA   |
| $P_C$     | Power dissipation <sup>(1)</sup>                | 200         | mW   |
| $T_J$     | Junction Temperature                            | -55 to +150 | °C   |
| $T_{STG}$ | Storage Temperature                             | -55 to +150 | °C   |

### Electrical Characteristics @ 25°C Unless Otherwise Specified

| Symbol | Parameter | Min | Max | Units |
|--------|-----------|-----|-----|-------|
|--------|-----------|-----|-----|-------|

#### OFF CHARACTERISTICS

|               |                                                                     |     |     |      |
|---------------|---------------------------------------------------------------------|-----|-----|------|
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage<br>( $I_C=1.0mA$ , $I_B=0$ )    | 300 | --- | Vdc  |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage<br>( $I_C=100\mu A$ , $I_E=0$ )    | 300 | --- | Vdc  |
| $V_{(BR)EBO}$ | Collector-Emitter Breakdown Voltage<br>( $I_E=100\mu A$ , $I_C=0$ ) | 6.0 | --- | Vdc  |
| $I_{CBO}$     | Collector-Base Cutoff Current<br>( $V_{CB}=200V$ , $I_E=0$ )        | --- | 100 | nAdc |
| $I_{EBO}$     | Emitter-Base Cutoff Current<br>( $V_{CE}=6.0V$ , $I_C=0$ )          | --- | 100 | nAdc |

#### ON CHARACTERISTICS<sup>(2)</sup>

|               |                                                                                                                     |                |     |     |
|---------------|---------------------------------------------------------------------------------------------------------------------|----------------|-----|-----|
| $h_{FE}$      | DC Current Gain<br>( $I_C=1.0mA$ , $V_{CE}=10V$ )<br>( $I_C=10mA$ , $V_{CE}=10V$ )<br>( $I_C=30mA$ , $V_{CE}=10V$ ) | 25<br>40<br>40 | --- | --- |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage<br>( $I_C=20mA$ , $I_B=2.0mA$ )                                                | ---            | 0.5 | Vdc |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage<br>( $I_C=20mA$ , $I_B=2.0mA$ )                                                     | ---            | 0.9 | Vdc |

#### SMALL SIGNAL CHARACTERISTICS

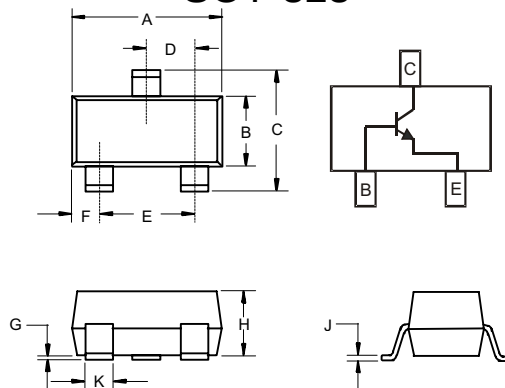
|          |                                                                              |     |     |     |
|----------|------------------------------------------------------------------------------|-----|-----|-----|
| $f_T$    | Current-Gain-Bandwidth Product<br>( $V_{CE}=20V$ , $f=100MHz$ , $I_C=10mA$ ) | 50  | --- | MHz |
| $C_{CB}$ | Collector-Base Capacitance<br>( $V_{CB}=20V$ , $f=1.0MHz$ , $I_E=0$ )        | --- | 3.0 | pF  |

Note: 1. Valid provided that terminals are kept at ambient temperature.

2. Pulse test: Pulse width<300us, duty cycle<2%

3. When operated within safe operating area constraints.

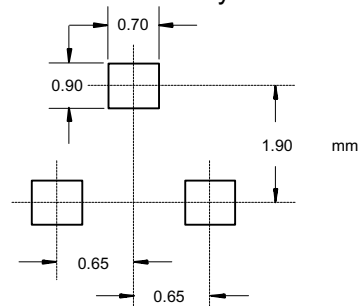
### SOT-323



#### DIMENSIONS

| DIM | INCHES       |      | MM          |      | NOTE |
|-----|--------------|------|-------------|------|------|
|     | MIN          | MAX  | MIN         | MAX  |      |
| A   | .071         | .087 | 1.80        | 2.20 |      |
| B   | .045         | .053 | 1.15        | 1.35 |      |
| C   | .083         | .096 | 2.10        | 2.45 |      |
| D   | .026 Nominal |      | 0.65Nominal |      |      |
| E   | .047         | .055 | 1.20        | 1.40 |      |
| F   | .012         | .016 | .30         | .40  |      |
| G   | .000         | .004 | .000        | .100 |      |
| H   | .035         | .039 | .90         | 1.00 |      |
| J   | .004         | .010 | .100        | .250 |      |
| K   | .006         | .016 | .15         | .40  |      |

#### Suggested Solder Pad Layout



## Ordering Information :

| Device         | Packing               |
|----------------|-----------------------|
| Part Number-TP | Tape&Reel; 3Kpcs/Reel |

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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