



Micro Commercial Components

Micro Commercial Components  
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**MMS9012-L**

**MMS9012-H**

**Features**

- Halogen free available upon request by adding suffix "-HF"
- SOT-23 Plastic-Encapsulate Transistors
- Capable of 0.3Watts(Tamb=25°C) of Power Dissipation.
- Collector-current 0.5A
- Collector-base Voltage 40V
- Operating and storage junction temperature range: -55°C to +150°C
- Marking : 2T1
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

**PNP Silicon  
 Plastic-Encapsulate  
 Transistor**

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

| Symbol                     | Parameter   | Min | Max | Units        |
|----------------------------|---|-----|-----|--------------|
| <b>OFF CHARACTERISTICS</b> |   |     |     |              |
| $V_{(BR)CBO}$              | Collector-Base Breakdown Voltage<br>( $I_C=100\mu A_{dc}$ , $I_E=0$ ) | 40  | --- | Vdc          |
| $V_{(BR)CEO}$              | Collector-Emitter Breakdown Voltage<br>( $I_C=0.1mA_{dc}$ , $I_B=0$ ) | 25  | --- | Vdc          |
| $V_{(BR)EBO}$              | Emitter-Base Breakdown Voltage<br>( $I_E=100\mu A_{dc}$ , $I_C=0$ )   | 5.0 | --- | Vdc          |
| $I_{CBO}$                  | Collector Cutoff Current<br>( $V_{CB}=40V_{dc}$ , $I_E=0$ )           | --- | 0.1 | $\mu A_{dc}$ |
| $I_{CEO}$                  | Collector Cutoff Current<br>( $V_{CE}=20V_{dc}$ , $I_B=0$ )           | --- | 0.1 | $\mu A_{dc}$ |
| $I_{EBO}$                  | Emitter Cutoff Current<br>( $V_{EB}=5.0V_{dc}$ , $I_C=0$ )            | --- | 0.1 | $\mu A_{dc}$ |

**ON CHARACTERISTICS**

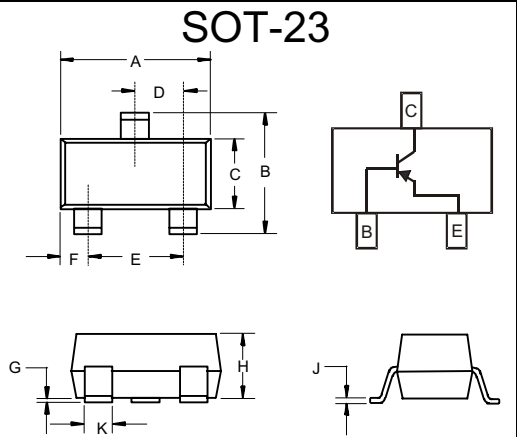
|               |  |     |     |     |
|---------------|--|-----|-----|-----|
| $h_{FE(1)}$   | DC Current Gain<br>( $I_C=50mA_{dc}$ , $V_{CE}=1.0V_{dc}$ )                    | 120 | 350 | --- |
| $h_{FE(2)}$   | DC Current Gain<br>( $I_C=500mA_{dc}$ , $V_{CE}=1.0V_{dc}$ )                   | 40  | --- | --- |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage<br>( $I_C=500mA_{dc}$ , $I_B=50mA_{dc}$ ) | --- | 0.6 | Vdc |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage<br>( $I_C=500mA_{dc}$ , $I_B=50mA_{dc}$ )      | --- | 1.2 | Vdc |
| $V_{EB}$      | Base- Emitter Voltage<br>( $I_E=100mA_{dc}$ )                                  | --- | 1.4 | Vdc |

**SMALL-SIGNAL CHARACTERISTICS**

|       |  |     |     |     |
|-------|--|-----|-----|-----|
| $f_T$ | Transistor Frequency<br>( $I_C=20mA_{dc}$ , $V_{CE}=6.0V_{dc}$ , $f=30MHz$ ) | 150 | --- | MHz |
|-------|--|-----|-----|-----|

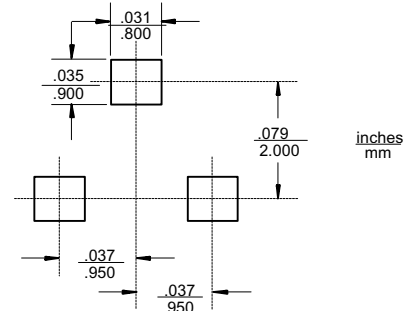
**CLASSIFICATION OF  $h_{FE(1)}$**

|       |         |         |
|-------|---------|---------|
| Rank  | L       | H       |
| Range | 120-200 | 200-350 |



| DIM | INCHES |       | MM   |      | NOTE |
|-----|--------|-------|------|------|------|
|     | MIN    | MAX   | MIN  | MAX  |      |
| A   | .110   | .120  | 2.80 | 3.04 |      |
| B   | .083   | .104  | 2.10 | 2.64 |      |
| C   | .047   | .055  | 1.20 | 1.40 |      |
| D   | .035   | .041  | .89  | 1.03 |      |
| E   | .070   | .081  | 1.78 | 2.05 |      |
| F   | .018   | .024  | .45  | .60  |      |
| G   | .0005  | .0039 | .013 | .100 |      |
| H   | .035   | .044  | .89  | 1.12 |      |
| J   | .003   | .007  | .085 | .180 |      |
| K   | .015   | .020  | .37  | .51  |      |

**Suggested Solder Pad Layout**





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### 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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