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**Micro Commercial Components** 

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# **MMST4401**

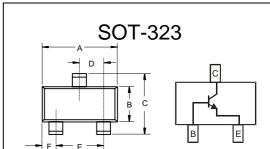
## **Features**

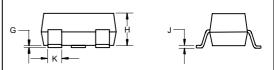
- Halogen free available upon request by adding suffix "-HF"
- Power dissipation: 200mW (T<sub>amb</sub>=25 °C)
- Collector current: 0.6A
- Marking: K3X
- Operating and Storage junction temperature range
- -55°C to + 150°C • Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Epoxy meets UL 94 V-0 flammability rating
- Moisure Sensitivity Level 1

## Electrical Characteristics @ 25°C Unless Otherwise Specified

| Symbol                             | Parameter  |  | Min | Max  | Units |  |  |  |
|------------------------------------|--|--|-----|------|-------|--|--|--|
| OFF CHARACTERISTICS <sup>(2)</sup> |  |  |     |      |       |  |  |  |
| $V_{(BR)CEO}$                      | Collector-Emitte<br>(I <sub>C</sub> =1.0mAdc,  | 40   |     | Vdc  |       |  |  |  |
| $V_{(BR)CBO}$                      | Collector-Base I<br>(I <sub>C</sub> =100uAdc,  | 60   |     | Vdc  |       |  |  |  |
| $V_{(BR)EBO}$                      | Collector-Emitte<br>(I <sub>E</sub> =100uAdc,  | 6.0  |     | Vdc  |       |  |  |  |
| I <sub>CBO</sub>                   | Collector Cutoff<br>(V <sub>CB</sub> =35Vdc, I   |  | 0.1 | μAdc |       |  |  |  |
| I <sub>CEO</sub>                   | Collector Cutoff Current<br>(V <sub>CE</sub> =35Vdc, I <sub>B</sub> =0Vdc)                   |  |     | 0.1  | μAdc  |  |  |  |
| I <sub>EBO</sub>                   | Emitter Cutoff C<br>(V <sub>EB</sub> =5Vdc, I <sub>C</sub> =0                                |  | 0.1 | μAdc |       |  |  |  |
| h <sub>FE</sub>                    | DC Current Gain  |  |     |      |       |  |  |  |
|                                    | (I <sub>C</sub> =150mAdc, V <sub>CE</sub> =1.0Vdc)   |  | 100 | 300  |       |  |  |  |
|                                    | (I <sub>C</sub> =500mAdc,  | 40   |     |      |       |  |  |  |
| $V_{\text{CE(sat)}}$               | Collector-Emitte<br>(I <sub>C</sub> =150mAdc,  |  | 0.4 | Vdc  |       |  |  |  |
| $V_{BE(sat)}$                      | Base-Emitter Saturation Voltage (I <sub>C</sub> =150mAdc, I <sub>B</sub> =15mAdc)            |  |     | 0.95 | Vdc   |  |  |  |
| f⊤                                 | Current Gain-Bandwidth Product<br>(V <sub>CE</sub> =10Vdc, I <sub>C</sub> =20mAdc, f=100MHz) |  | 250 |      | MHz   |  |  |  |
| C <sub>ob</sub>                    | Output Capacitance<br>(V <sub>CB</sub> =10Vdc, f=1.0MHz, I <sub>E</sub> =0)                  |  |     | 6.5  | pF    |  |  |  |
| t <sub>d</sub>                     | Delay Time   | V <sub>CC</sub> =30V,I <sub>C</sub> =150uA,  |     | 15   | ns    |  |  |  |
| t <sub>r</sub>                     | Rise Time  | $V_{BE(off)}=2V,I_{B1}=15mA$                 |     | 20   | ns    |  |  |  |
| t <sub>s</sub>                     | Storage Time   | V <sub>CC</sub> =30V, I <sub>C</sub> =150mA, |     | 225  | ns    |  |  |  |
| t <sub>f</sub>                     | Fall Time  | I <sub>B1</sub> =I <sub>B2</sub> =15mA       |     | 30   | ns    |  |  |  |

# NPN Small Signal Transistors





| DIMENSIONS |              |      |             |      |      |  |  |
|------------|--------------|------|-------------|------|------|--|--|
|            | INCHES       |      | MM          |      |      |  |  |
| DIM        | MIN          | MAX  | MIN         | MAX  | NOTE |  |  |
| Α          | .071         | .087 | 1.80        | 2.20 |      |  |  |
| В          | .045         | .053 | 1.15        | 1.35 |      |  |  |
| С          | .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 |      |  |  |
| Н          | .035         | .039 | .90         | 1.00 |      |  |  |
| J          | .004         | .010 | .100        | .250 |      |  |  |
| K          | .006         | .016 | .15         | .40  |      |  |  |

## Suggested Solder Pad Layout



#### **Micro Commercial Components**

## **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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