



Micro Commercial Components

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MMDT4401

NPN Plastic-Encapsulate Transistors

Features

- Ultra-Small Surface Mount Package
- Epitaxial Planar Die Construction
- Case Material: Molded Plastic. UL Flammability Classification Rating 94-0 and MSL Rating 1
- Marking: K2X

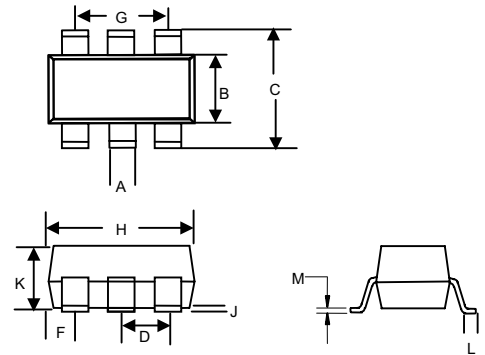
Maximum Ratings @ 25°C Unless Otherwise Specified

| Symbol | Rating | Rating(NPN) | Unit |
|------------------|--------------------------------|-------------|------|
| V _{CEO} | Collector-Emitter Voltage | 40 | V |
| V _{CBO} | Collector-Base Voltage | 60 | V |
| V _{EBO} | Emitter-Base Voltage | 6 | V |
| I _C | Collector Current-Continuous | 0.6 | A |
| P _C | Collector Dissipation | 0.2 | W |
| T _J | Operating Junction Temperature | -55 to +150 | °C |
| T _{STG} | Storage Temperature | -55 to +150 | °C |

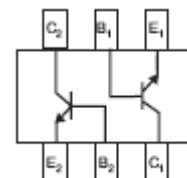
Electrical Characteristics @ 25°C Unless Otherwise Specified

| Symbol | Parameter | Min | Max | Units |
|----------------------|--|--|-------------|--------|
| V _{(BR)CEO} | Collector-Emitter Breakdown Voltage (I _C =1mA, I _B =0) | 40 | --- | Vdc |
| V _{(BR)CBO} | Collector-Base Breakdown Voltage (I _C =100µA, I _E =0) | 60 | --- | Vdc |
| V _{(BR)EBO} | Collector-Emitter Breakdown Voltage (I _E =100µA, I _C =0) | 6 | --- | Vdc |
| I _{CBO} | Collector Cutoff Current (V _{CB} =50Vdc, I _E =0) | --- | 0.1 | µA |
| I _{EBO} | Emitter Cutoff Current (V _{EB} =-5Vdc, I _C =0) | --- | 0.1 | µA |
| h _{FE} | DC Current Gain (I _C =0.1mA, V _{CE} =1Vdc) | 20 | --- | --- |
| | (I _C =1mA, V _{CE} =1Vdc) | 40 | --- | |
| | (I _C =10mA, V _{CE} =1Vdc) | 80 | --- | |
| | (I _C =150mA, V _{CE} =1Vdc) | 100 | 300 | |
| | (I _C =500mA, V _{CE} =2Vdc) | 40 | --- | |
| V _{CE(sat)} | Collector-Emitter Saturation Voltage (I _C =150mA, I _B =15mA) (I _C =500mA, I _B =50mA) | --- | 0.4 0.75 | Vdc |
| V _{BE(sat)} | Base-Emitter Saturation Voltage (I _C =150mA, I _B =15mA) (I _C =500mA, I _B =50mA) | 0.75 | 0.95 1.2 | Vdc |
| f _T | Current Gain-Bandwidth Product (V _{CE} =10.0Vdc, I _C =20mA, f=100MHz) | 250 | --- | MHz |
| C _{ob} | Output Capacitance (V _{CB} =5Vdc, f=1.0MHz, I _E =0) | --- | 6.5 | pF |
| t _d | Delay Time | V _{CC} =30V, I _C =150mA, V _{BE} =2.00V, I _{B1} =15.00mA | | 15 ns |
| t _r | Rise Time | --- | | 20 ns |
| t _s | Storage Time | V _{CC} =30V, I _C =150mA, I _{B1} =-I _{B2} =15mA | | 225 ns |
| t _f | Fall Time | --- | | 30 ns |

SOT-363



| DIM | DIMENSIONS | | | | NOTE |
|-----|------------|------|-------------|------|------|
| | INCHES | | MM | | |
| | MIN | MAX | MIN | MAX | |
| A | .004 | .012 | 0.10 | 0.30 | |
| B | .045 | .053 | 1.15 | 1.35 | |
| C | .079 | .087 | 2.00 | 2.20 | |
| D | .026 | | 0.65Nominal | | |
| F | .012 | .016 | 0.30 | 0.40 | |
| H | .071 | .087 | 1.80 | 2.20 | |
| J | --- | .004 | --- | 0.10 | |
| K | .035 | .039 | 0.90 | 1.00 | |
| L | .010 | .016 | 0.25 | 0.40 | |
| M | .004 | .016 | 0.10 | 0.25 | |



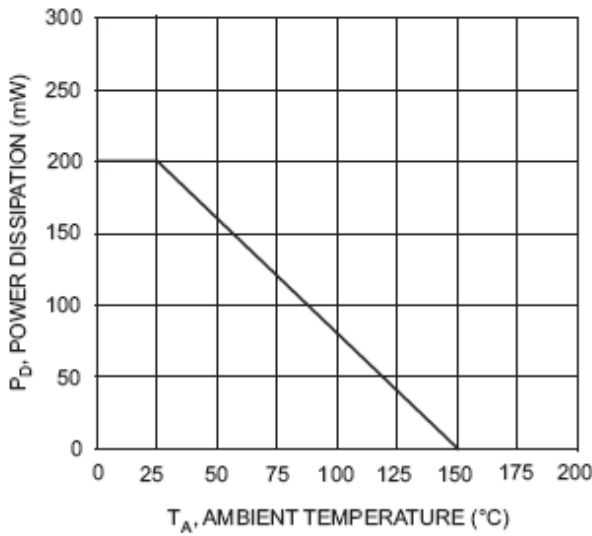


Fig. 1 Max Power Dissipation vs Ambient Temperature

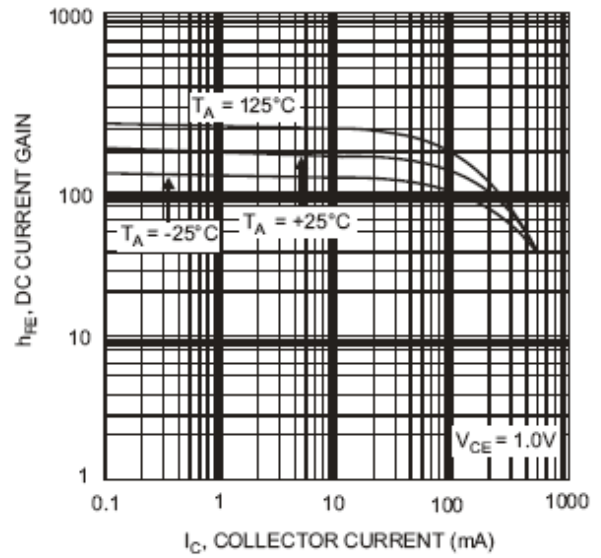


Fig. 2 Typical DC Current Gain vs Collector Current

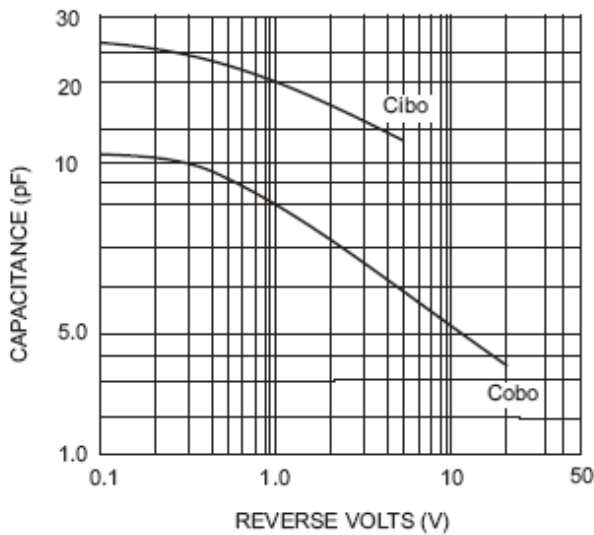


Fig. 3 Typical Capacitance

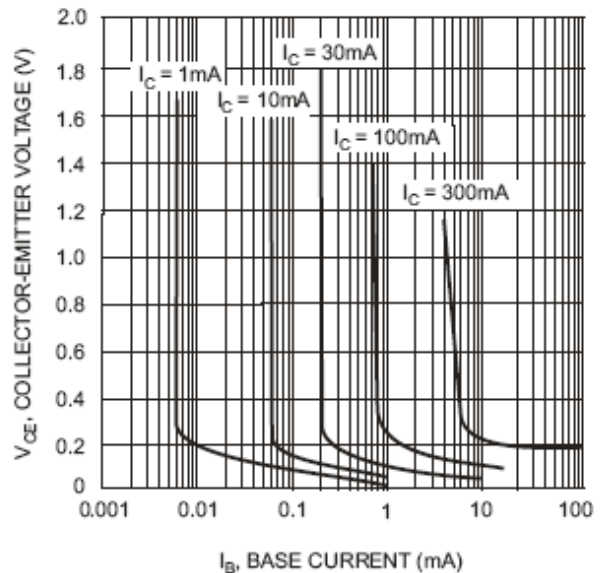


Fig. 4 Typical Collector Saturation Region

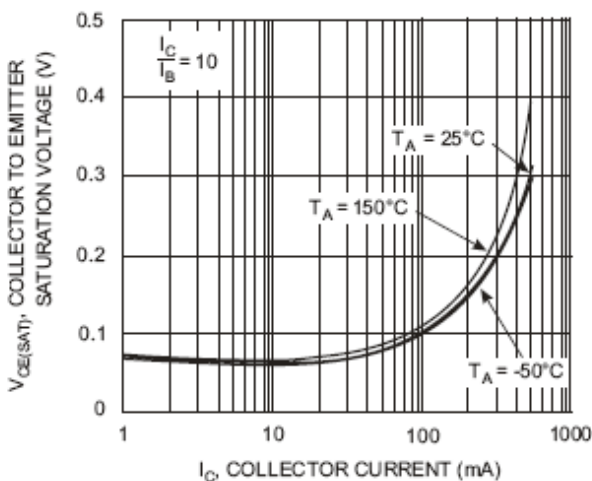


Fig. 5 Collector Emitter Saturation Voltage vs. Collector Current

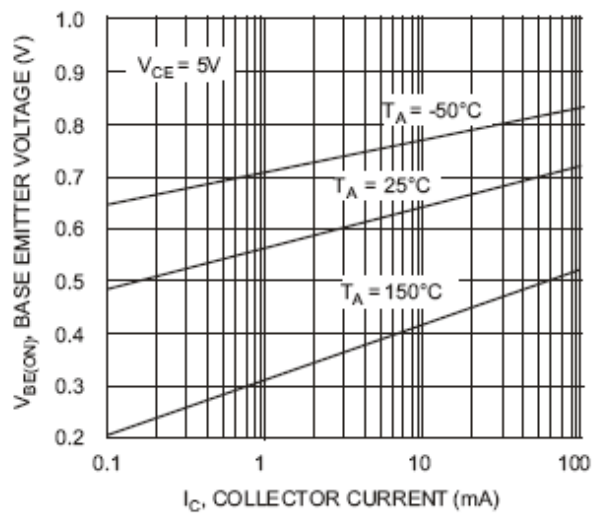


Fig. 6 Base Emitter Voltage vs. Collector Current



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Ordering Information

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

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