Micro Commercial Components

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# MMBT4403

## PNP General Purpose Amplifier

## Features

- Operating and Storage Junction Temperatures: -55℃ to 150℃
- Capable of 350mWatts of Power Dissipation
- Surface Mount SOT-23 Package
- Ic=-600mA
- 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
- Marking:2T/M3A

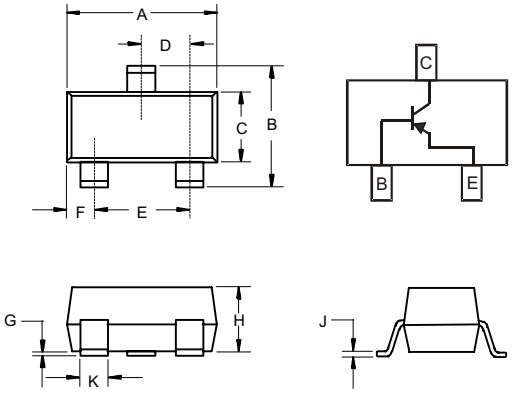
## Electrical Characteristics @ 25°C Unless Otherwise Specified

| Symbol | Parameter | Min | Max | Units |
|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | |
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage* ($I_C$=1.0mAdc, $I_B$=0) | 40 | | Vdc |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage ($I_C$=100μAdc, $I_E$=0) | 40 | | Vdc |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage ($I_E$=100μAdc, $I_C$=0) | 5.0 | | Vdc |
| $I_{BL}$ | Base Cutoff Current ($V_{CE}$=30Vdc, $V_{BE}$=3.0Vdc) | | 0.1 | μAdc |
| $I_{CEX}$ | Collector Cutoff Current ($V_{CE}$=30Vdc, $V_{BE}$=3.0Vdc) | | 0.1 | μAdc |
| **ON CHARACTERISTICS** | | | | |
| $h_{FE}$ | DC Current Gain* ($I_C$=0.1mAdc, $V_{CE}$=1.0Vdc)<br>($I_C$=1.0mAdc, $V_{CE}$=1.0Vdc)<br>($I_C$=10mAdc, $V_{CE}$=1.0Vdc)<br>($I_C$=150mAdc, $V_{CE}$=2.0Vdc)<br>($I_C$=500mAdc, $V_{CE}$=2.0Vdc) | 30<br>60<br>100<br>100<br>20 | 300 | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage ($I_C$=150mAdc, $I_B$=15mAdc)<br>($I_C$=500mAdc, $I_B$=50mAdc) | | 0.4<br>0.75 | Vdc |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage ($I_C$=150mAdc, $I_B$=15mAdc)<br>($I_C$=500mAdc, $I_B$=50mAdc) | 0.75 | 0.95<br>1.30 | Vdc |
| **SMALL-SIGNAL CHARACTERISTICS** | | | | |
| $f_T$ | Current Gain-Bandwidth Product ($I_C$=20mAdc, $V_{CE}$=10Vdc, f=100MHz) | 200 | | MHz |
| $C_{cb}$ | Output Capacitance ($V_{CB}$=10Vdc, $I_E$=0, f=1.0MHz) | | 8.5 | pF |
| $C_{eb}$ | Input Capacitance ($V_{EB}$=0.5Vdc, $I_C$=0, f=1.0MHz) | | 30.0 | pF |

| **SWITCHING CHARACTERISTICS** | | | | |
|---|---|---|---|---|
| $t_d$ | Delay Time | ($V_{CC}$=3.0Vdc, $V_{BE}$=2.0Vdc | 15 | ns |
| $t_r$ | Rise Time | $I_C$=150mAdc, $I_{B1}$=15mAdc) | 20 | ns |
| $t_s$ | Storage Time | ($V_{CC}$=3.0Vdc, $I_C$=150mAdc | 225 | ns |
| $t_f$ | Fall Time | $I_{B1}$=$I_{B2}$=15mAdc) | 30 | ns |

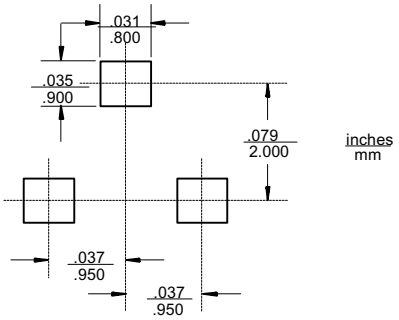
*Pulse Width ≤ 300μs, Duty Cycle≤ 2.0%

SOT-23

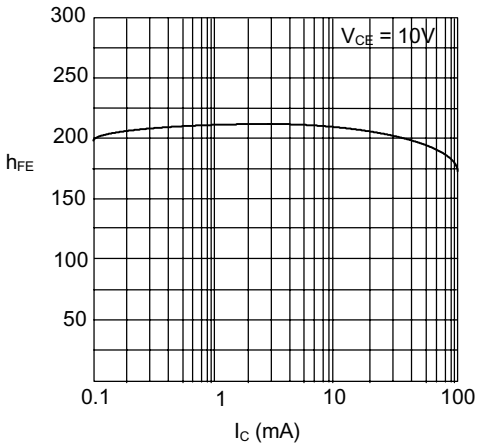



| DIMENSIONS | | | | | |
|---|---|---|---|---|---|
| | INCHES | | MM | | |
| DIM | MIN | MAX | MIN | MAX | NOTE |
| A | .110 | .120 | 2.80 | 3.04 | |
| B | .083 | .098 | 2.10 | 2.64 | |
| C | .047 | .055 | 1.20 | 1.40 | |
| D | .035 | .041 | .89 | 1.03 | |
| E | .070 | .081 | 1.78 | 2.05 | |
| F | .018 | .024 | .45 | .60 | |
| G | .0005 | .0039 | .013 | .100 | |
| H | .035 | .044 | .89 | 1.12 | |
| J | .003 | .007 | .085 | .180 | |
| K | .015 | .020 | .37 | .51 | |

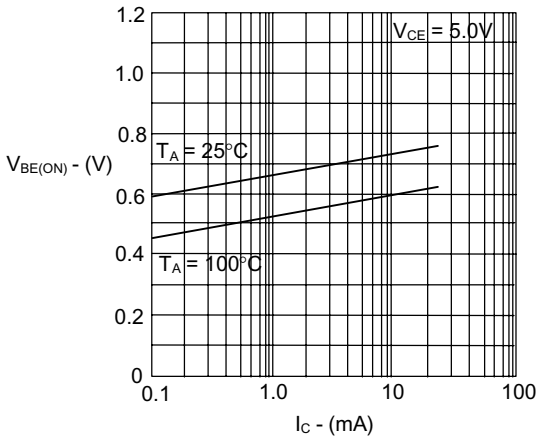
Suggested Solder Pad Layout



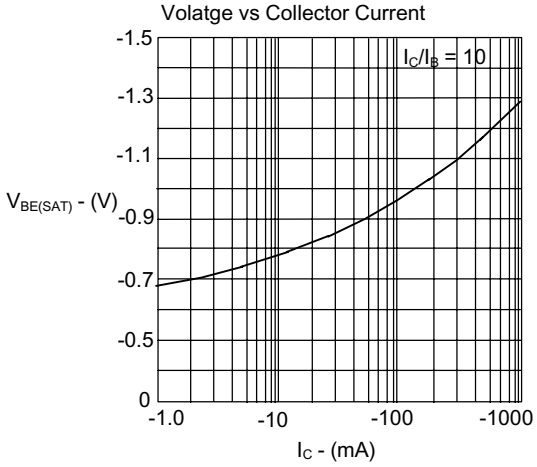
DC Current Gain vs Collector Current



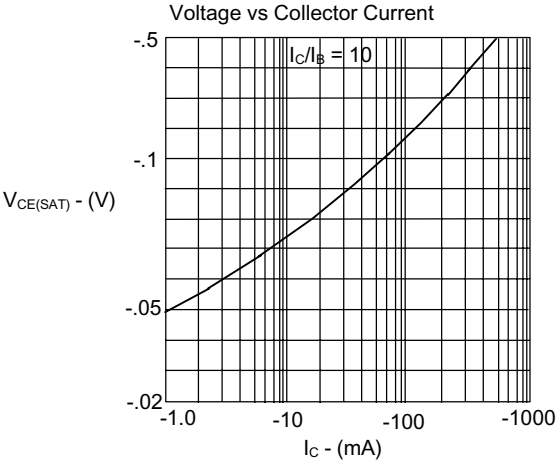

Base-Emitter ON Voltage vs Collector Current



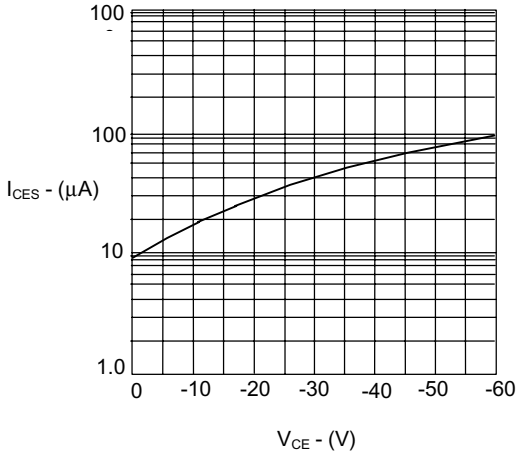

Pulsed Base Saturation Volatge vs Collector Current



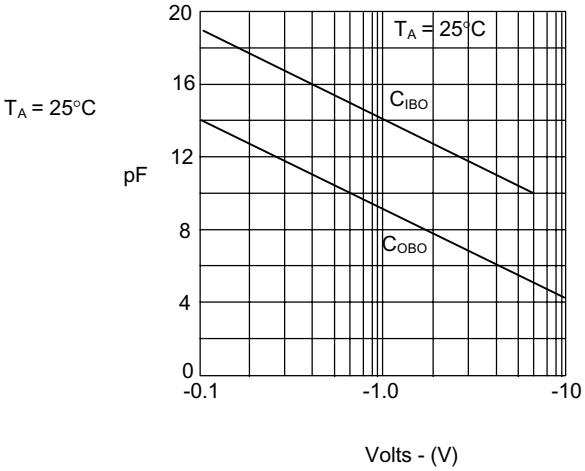

Pulsed Collector Saturation Voltage vs Collector Current



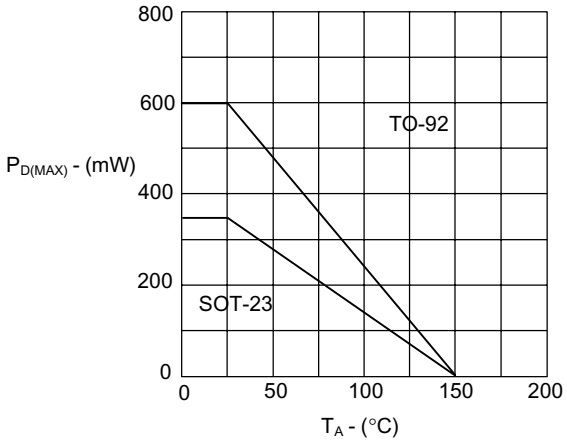

Collector Reverse Current vs Reverse Bias Voltage



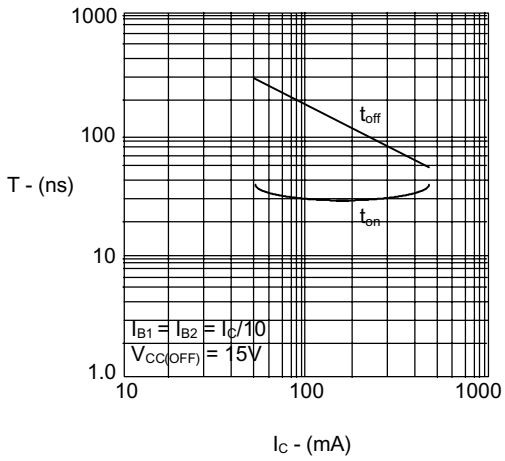

Input and Output Capacitances vs Reverse Bias Voltage



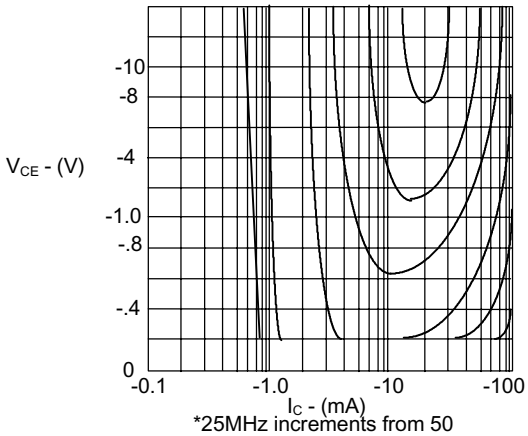
Maximum Power Dissipation vs Ambient Temperature




Turn On and Turn Off Times vs Collector Current

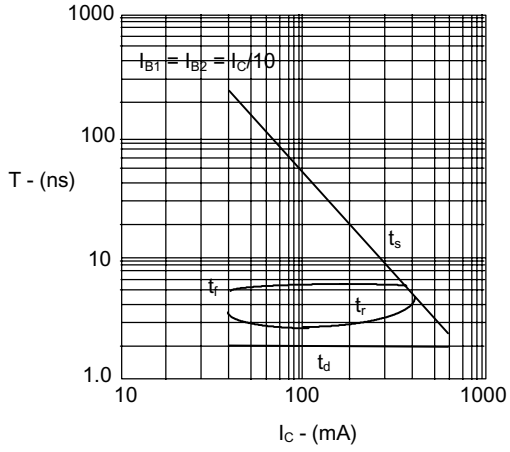



Contours of Constant Gain Bandwidth Product ($f_T$)




*25MHz increments from 50 to 200MHz

Switching Times vs Collector Current



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## Ordering Information :

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

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|---|
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