## PNP General Purpose Amplifier



## Features

- Epoxy meets UL-94 V-0 flammability rating
-Moisure Sensitivity Level 1
-Marking:2L
-Maximum Rantings ( $\mathbf{T a = 2 5}{ }^{\circ} \mathrm{C}$ )

| Item | Symbol | Unit | Conditions | Value |
| :--- | :---: | :---: | :---: | :---: |
| Collector-Emitter Voltage* | $\mathrm{V}_{\mathrm{CEO}}$ | V | $\mathrm{I}_{\mathrm{C}}=-1.0 \mathrm{mAdc}, \mathrm{I}_{\mathrm{B}}=0$ | -160 |
| Collector-Base Voltage | $\mathrm{V}_{\mathrm{CBO}}$ | V | $\mathrm{I}_{\mathrm{C}}=-100 \mathrm{uAdc}, \mathrm{I}_{\mathrm{E}}=0$ | -180 |
| Emitter-Base Voltage | $\mathrm{V}_{\mathrm{EBO}}$ | V | $\mathrm{I}_{\mathrm{E}}=-10 \mathrm{uAdc}, \mathrm{I}_{\mathrm{C}}=0$ | -6.0 |
| Collector Current | $\mathrm{I}_{\mathrm{C}}$ | mA |  | 600 |
| Power Dissipation | $\mathrm{P}_{\mathrm{D}}$ | mW |  | 300 |
| Operation Junction Temperature | $\mathrm{T}_{\mathrm{J}}$ | ${ }^{\circ} \mathrm{C}$ |  | -55 to +150 |
| Storage Temperature | $\mathrm{T}_{\text {STG }}$ | ${ }^{\circ} \mathrm{C}$ |  | -55 to +150 |

MMBT5401
-Electrical Characteristics ( $\mathrm{Ta}_{\mathrm{a}}=25^{\circ} \mathrm{C}$ )

| Item | Symbol | Unit | Conditions | Min | Max |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Collector-Emitter Voltage* | $\mathrm{V}_{\text {CEO }}$ | V | $\mathrm{I}_{\mathrm{C}}=-1.0 \mathrm{mAdc}, \mathrm{I}_{\mathrm{B}}=0$ | -160 |  |
| Collector-Base Voltage | $\mathrm{V}_{\text {cbo }}$ | V | $I_{C}=-100 u A d c, I_{E}=0$ | -180 |  |
| Emitter-Base Voltage | $V_{\text {EBO }}$ | V | $I_{E}=-10 u A d c, I_{C}=0$ | -6.0 |  |
| Collector Cutoff Current | $\mathrm{I}_{\text {CBO }}$ | nA | $V_{C B}=-120 \mathrm{Vdc}$ |  | -50 |
| Collector Cutoff Current | $I_{\text {EB } 0}$ | nA | $\mathrm{V}_{\mathrm{CE}}=-4.0 \mathrm{Vdc}$ |  | -50 |
| DC Current Gain | $\mathrm{h}_{\text {FE }}$ |  | $\mathrm{I}_{\mathrm{C}}=-1.0 \mathrm{~mA} \mathrm{~V}_{\text {CE }}=-5.0 \mathrm{Vdc}$ | 80 |  |
|  |  |  | $\mathrm{I}_{\mathrm{C}}=-10 \mathrm{~mA} \mathrm{~V}_{\text {CE }}=-5.0 \mathrm{Vdc}$ | 100 | 300 |
|  |  |  | $\mathrm{I}_{\mathrm{C}}=-50 \mathrm{~mA} \mathrm{~V}_{\text {CE }}=-5.0 \mathrm{Vdc}$ | 50 |  |
| Collector-Emitter Saturation Voltage | $\mathrm{V}_{\text {CE(sat) }}$ | V | $\mathrm{I}_{\mathrm{C}}=50 \mathrm{~mA} \mathrm{I}_{\mathrm{B}}=5.0 \mathrm{~mA}$ |  | -0.5 |
| Base-Emitter Saturation Voltage | $V_{B E \text { (sat) }}$ | V | $\mathrm{I}_{\mathrm{C}}=50 \mathrm{~mA} \mathrm{I}_{\mathrm{B}}=5.0 \mathrm{~mA}$ |  | -1.0 |

■Small-signal Characteristics ( $\mathrm{Ta}=25^{\circ} \mathrm{C}$ )

| Item | Symbol | Unit | Conditions | Min | Max |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Current Gain-Bandwidth Product | $f_{T}$ | MHz | $\mathrm{I}_{\mathrm{C}}=10 \mathrm{mAdc}, \mathrm{V}_{\mathrm{CE}}=5.0 \mathrm{Vdc}, \mathrm{f}=30 \mathrm{MHz}$ | 100 | 300 |

## _Ordering Information (Example)

| PREFERED P/N | PACKING <br> CODE | UNIT WEIGHT(g) | MINIMUM <br> PACKAGE(pcs) | INNER BOX <br> QUANTITY(pcs) | OUTER CARTON <br> QUANTITY(pcs) | DELIVERY MODE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| MMBT5401 | F2 | Approximate 0.008 | 3000 | 30000 | 120000 | 7 "reel |

## ■Characteristics(Typical)









MMBT5401
_SOT-23 Package Outline Dimensions


| Syabol | Disensions In Xillimeters |  | Dimensions In Inches |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Min | Max | Min | Max |
| A | 0.900 | 1. 150 | 0.035 | 0.045 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.050 | 0. 035 | 0.041 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0. 100 | 0.200 | 0.004 | 0.008 |
| D | 2. 800 | 3.000 | 0.110 | 0.118 |
| E | 1. 200 | 1. 400 | 0.047 | 0.055 |
| E1 | 2.250 | 2. 550 | 0.089 | 0. 100 |
| e | 0.950 TVP |  | 0.037TYP |  |
| el | 1. 800 | 2.000 | 0.071 | 0.079 |
| L | $0.550 R E F$ |  | 0.022REF |  |
| L1 | 0. 300 | 0.500 | 0.012 | 0.020 |
| - | $0{ }^{*}$ | $8^{*}$ | $0{ }^{*}$ | $8^{*}$ |

## ■SOT-23Suggested Pad Layout



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