



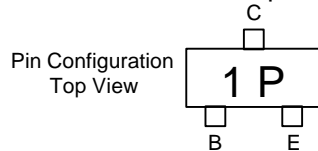
Micro Commercial Components
 21201 Itasca Street Chatsworth
 CA 91311
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MMBT2222A

NPN General Purpose Amplifier

Features

- Surface Mount SOT-23 Package
- Capable of 350mWatts of Power Dissipation



Electrical Characteristics @ 25°C Unless Otherwise Specified

| Symbol | Parameter | Min | Max | Units |
|----------------------------|--|-----|-----|-------|
| OFF CHARACTERISTICS | | | | |
| $V_{(BR)CEO}$ | Collector-Emmitter Breakdown Voltage* ($I_C=10\text{mAdc}$, $I_B=0$) | 40 | | Vdc |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage ($I_C=10\mu\text{Adc}$, $I_E=0$) | 75 | | Vdc |
| $V_{(BR)EBO}$ | Emmitter-Base Breakdown Voltage ($I_E=10\mu\text{Adc}$, $I_C=0$) | 6.0 | | Vdc |
| I_{BL} | Base Cutoff Current ($V_{CE}=60\text{Vdc}$, $V_{BE}=3.0\text{Vdc}$) | | 20 | nAdc |
| I_{CEX} | Collector Cutoff Current ($V_{CE}=60\text{Vdc}$, $V_{BE}=3.0\text{Vdc}$) | | 10 | nAdc |

ON CHARACTERISTICS

| | | | | |
|---------------|--|-----------------------|------------|-----|
| h_{FE} | DC Current Gain* ($I_C=0.1\text{mAdc}$, $V_{CE}=10\text{Vdc}$) ($I_C=1.0\text{mAdc}$, $V_{CE}=10\text{Vdc}$) ($I_C=10\text{mAdc}$, $V_{CE}=10\text{Vdc}$) ($I_C=150\text{mAdc}$, $V_{CE}=10\text{Vdc}$) ($I_C=150\text{mAdc}$, $V_{CE}=1.0\text{Vdc}$) ($I_C=500\text{mAdc}$, $V_{CE}=10\text{Vdc}$) | 35 50 75 100 | 300 | |
| $V_{CE(sat)}$ | Collector-Emmitter Saturation Voltage ($I_C=150\text{mAdc}$, $I_B=15\text{mAdc}$) ($I_C=500\text{mAdc}$, $I_B=50\text{mAdc}$) | | 0.3 1.0 | Vdc |
| $V_{BE(sat)}$ | Base-Emmitter Saturation Voltage ($I_C=150\text{mAdc}$, $I_B=15\text{mAdc}$) ($I_C=500\text{mAdc}$, $I_B=50\text{mAdc}$) | 0.6 | 1.2 2.0 | Vdc |

SMALL-SIGNAL CHARACTERISTICS

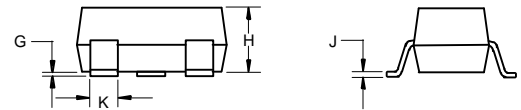
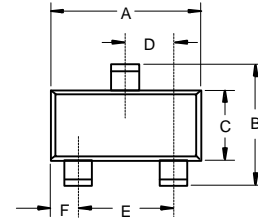
| | | | | |
|-----------|--|-----|-----|-----|
| f_T | Current Gain-Bandwidth Product ($I_C=20\text{mAdc}$, $V_{CE}=20\text{Vdc}$, $f=100\text{MHz}$) | 300 | | MHz |
| C_{obo} | Output Capacitance ($V_{CB}=10\text{Vdc}$, $I_E=0$, $f=1.0\text{MHz}$) | | 8.0 | pF |
| C_{ibo} | Input Capacitance ($V_{BE}=0.5\text{Vdc}$, $I_C=0$, $f=1.0\text{MHz}$) | | 25 | pF |
| NF | Noise Figure ($I_C=100\mu\text{Adc}$, $V_{CE}=10\text{Vdc}$, $R_S=1.0\text{k}\Omega$, $f=1.0\text{kHz}$) | | 4.0 | dB |

SWITCHING CHARACTERISTICS

| | | | | |
|-------|--------------|---|-----|----|
| t_d | Delay Time | $(V_{CC}=30\text{Vdc}$, $V_{BE}=0.5\text{Vdc}$) | 10 | ns |
| t_r | Rise Time | $(I_C=150\text{mAdc}$, $I_{B1}=15\text{mAdc}$) | 25 | ns |
| t_s | Storage Time | $(V_{CC}=30\text{Vdc}$, $I_C=150\text{mAdc}$) | 225 | ns |
| t_f | Fall Time | $I_{B1}=I_{B2}=15\text{mAdc}$ | 60 | ns |

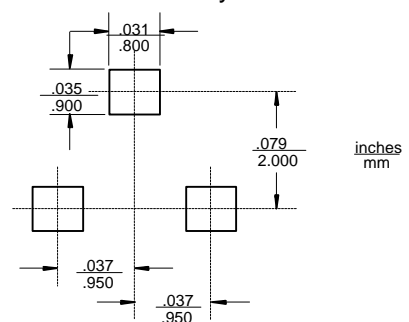
*Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2.0\%$

SOT-23

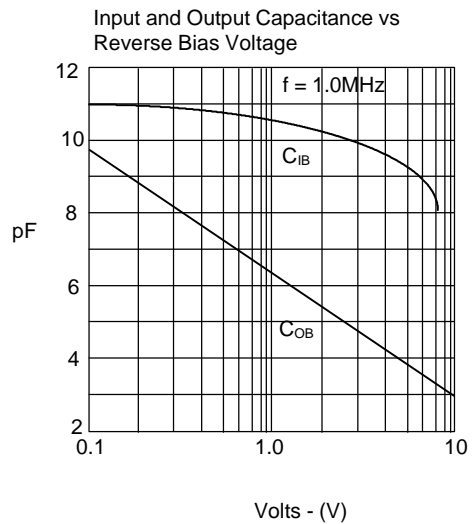
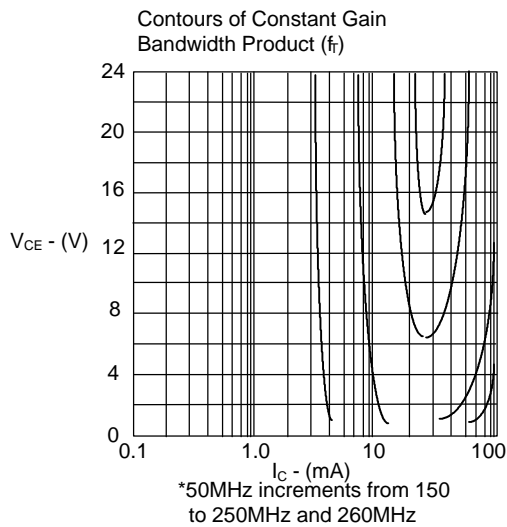
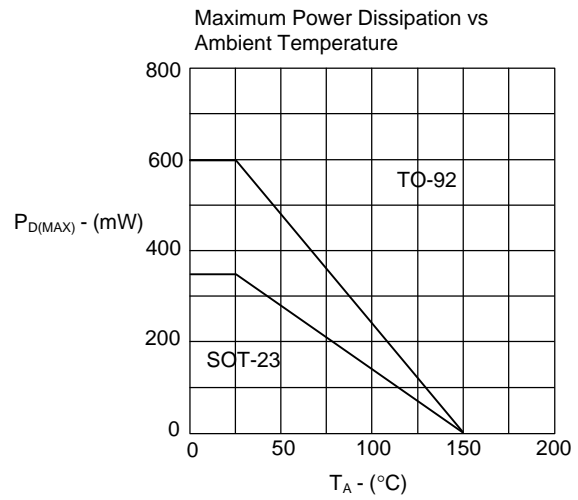
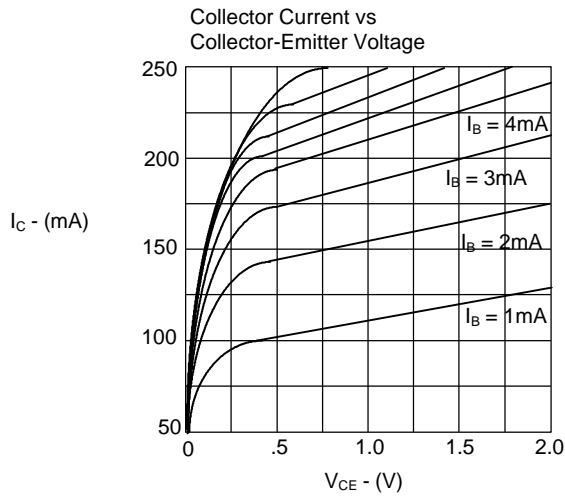
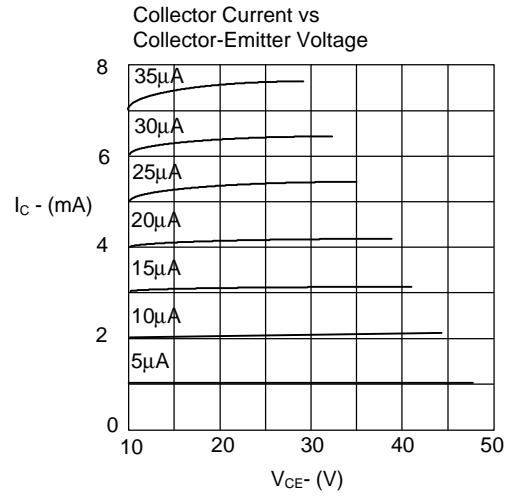
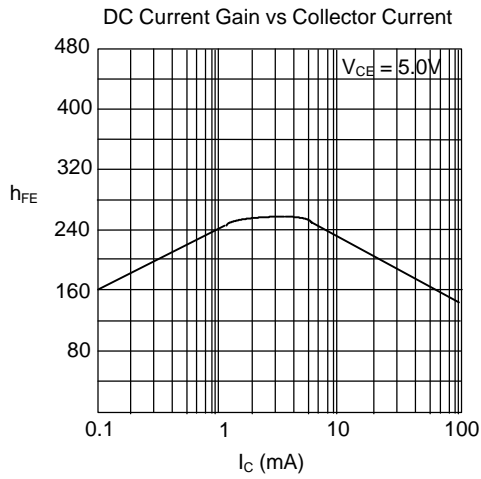


| DIM | INCHES | | MM | | NOTE |
|-----|--------|-------|------|------|------|
| | MIN | MAX | MIN | MAX | |
| A | .110 | .120 | 2.80 | 3.04 | |
| B | .083 | .098 | 2.10 | 2.64 | |
| C | .047 | .055 | 1.20 | 1.40 | |
| D | .035 | .041 | .89 | 1.03 | |
| E | .070 | .081 | 1.78 | 2.05 | |
| F | .018 | .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



MMBT2222A



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