



Micro Commercial Components



Micro Commercial Components
 20736 Marilla Street Chatsworth
 CA 91311
 Phone: (818) 701-4933
 Fax: (818) 701-4939

MMDT2222A

Features

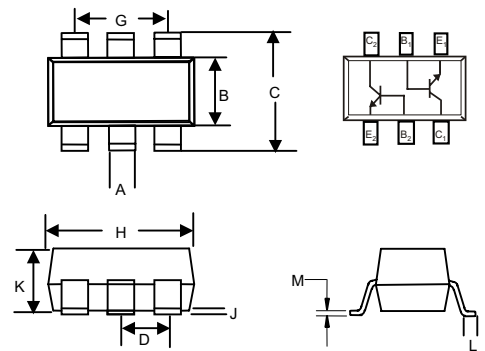
- Halogen free available upon request by adding suffix "-HF"
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Epitaxial Die Construction
- Small Surface Mount Package
- Marking:K1P
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

NPN Plastic-Encapsulate Transistors

Maximum Ratings @ 25°C Unless Otherwise Specified

| Symbol | Rating | Rating | Unit |
|------------------|--|-------------|------|
| V _{CEO} | Collector-Emitter Voltage | 40 | V |
| V _{CBO} | Collector-Base Voltage | 75 | V |
| V _{EBO} | Emitter-Base Voltage | 6 | V |
| I _C | Collector Current-Continuous | 0.6 | A |
| P _C | Collector Dissipation | 0.15 | W |
| R _{θJA} | Thermal Resistance Junction to Ambient | 833 | °C/W |
| T _J | Operating Junction Temperature | -55 to +150 | °C |
| T _{STG} | Storage Temperature | -55 to +150 | °C |

SOT-363



Electrical Characteristics @ 25°C Unless Otherwise Specified

| Symbol | Parameter | Min | Typ | Max | Units |
|----------------------|---|-----------------------------------|-----|------------|-------|
| V _{(BR)CEO} | Collector-Emitter Breakdown Voltage (I _C =10mAdc, I _B =0) | 40 | --- | --- | Vdc |
| V _{(BR)CBO} | Collector-Base Breakdown Voltage (I _C =10uAdc, I _E =0) | 75 | --- | --- | Vdc |
| V _{(BR)EBO} | Collector-Emitter Breakdown Voltage (I _E =10uAdc, I _C =0) | 6 | --- | --- | Vdc |
| I _{CBO} | Collector Cutoff Current (V _{CB} =60Vdc, I _E =0Vdc) | --- | --- | 10 | nAdc |
| I _{CEX} | Collector Cutoff Current (V _{CE} =60Vdc, V _{EB(OFF)} =3Vdc) | --- | --- | 10 | nAdc |
| I _{EBO} | Emitter Cutoff Current (V _{EB} =3Vdc, I _C =0Vdc) | --- | --- | 10 | nAdc |
| I _{BL} | Base Cutoff Current (V _{CE} =60Vdc, V _{EB(OFF)} =3Vdc) | --- | --- | 20 | nAdc |
| h _{FE} | DC Current Gain (I _C =0.1mAdc, V _{CE} =10Vdc) (I _C =1mAdc, V _{CE} =10Vdc) (I _C =10mAdc, V _{CE} =10Vdc) (I _C =150mAdc, V _{CE} =10Vdc) (I _C =500mAdc, V _{CE} =10Vdc) (I _C =150mAdc, V _{CE} =1Vdc) | 35 50 75 100 40 35 | --- | --- | --- |
| V _{CE(sat)} | Collector-Emitter Saturation Voltage (I _C =150mAdc, I _B =15mAdc) (I _C =500mAdc, I _B =50mAdc) | --- | --- | 0.3 1.0 | Vdc |
| V _{BE(sat)} | Base-Emitter Saturation Voltage (I _C =150mAdc, I _B =15mAdc) (I _C =500mAdc, I _B =50mAdc) | 0.6 --- | --- | 1.2 2.0 | Vdc |

| DIM | DIMENSIONS | | | | NOTE |
|-----|------------|------|-------------|------|------|
| | INCHES | | MM | | |
| A | .006 | .014 | 0.15 | 0.35 | |
| B | .045 | .053 | 1.15 | 1.35 | |
| C | .085 | .096 | 2.15 | 2.45 | |
| D | .026 | | 0.65Nominal | | |
| G | .047 | .055 | 1.20 | 1.40 | |
| H | .071 | .087 | 1.80 | 2.20 | |
| J | --- | .004 | --- | 0.10 | |
| K | .035 | .043 | 0.90 | 1.10 | |
| L | .010 | .018 | 0.26 | 0.46 | |
| M | .003 | .006 | 0.08 | 0.15 | |

MMDT2222A



Micro Commercial Components™

Electrical Characteristics @ 25°C Unless Otherwise Specified

| Symbol | Parameter | Min | Typ | Max | Units | |
|----------|---|--|-----|-----|-------|----|
| f_T | Transition Frequency ($V_{CE}=20V_{dc}$, $I_C=20mA_{dc}$, $f=100MHz$) | 300 | --- | --- | MHz | |
| C_{ob} | Output Capacitance ($V_{CB}=10V_{dc}$, $f=1.0MHz$, $I_E=0$) | --- | --- | 8 | pF | |
| NF | Noise Figure ($V_{CE}=10V$, $I_C=0.1mA$, $f=1KHz$, $R_S=1k\Omega$, $BW=200Hz$) | --- | --- | 4 | dB | |
| t_d | Delay Time | $V_{CC}=30V$, $I_C=150mA$, $V_{BE(off)}=-0.5V$, $I_{B1}=15mA$ | | --- | 10 | ns |
| t_r | Rise Time | $V_{CC}=30V$, $I_C=150mA$, $I_{B1}=I_{B2}=15mA$ | | --- | 25 | ns |
| t_s | Storage Time | $V_{CC}=30V$, $I_C=150mA$, $I_{B1}=I_{B2}=15mA$ | | --- | 225 | ns |
| t_f | Fall Time | $V_{CC}=30V$, $I_C=150mA$, $I_{B1}=I_{B2}=15mA$ | | --- | 60 | ns |

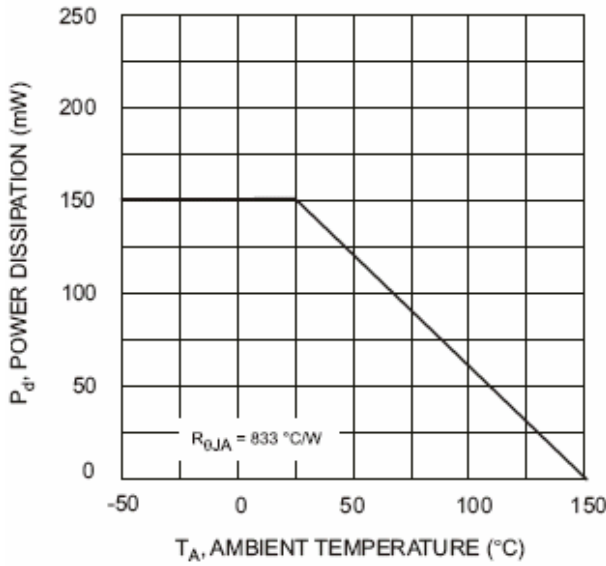


Fig. 1, Derating Curve - Total

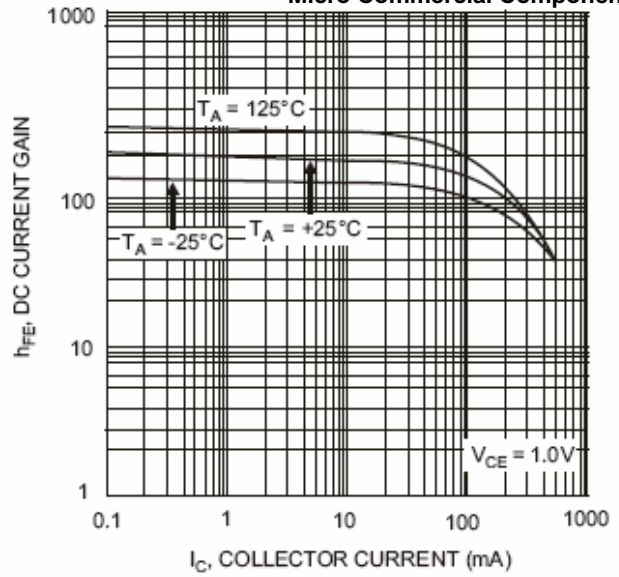


Fig. 2 Typical DC Current Gain vs Collector Current

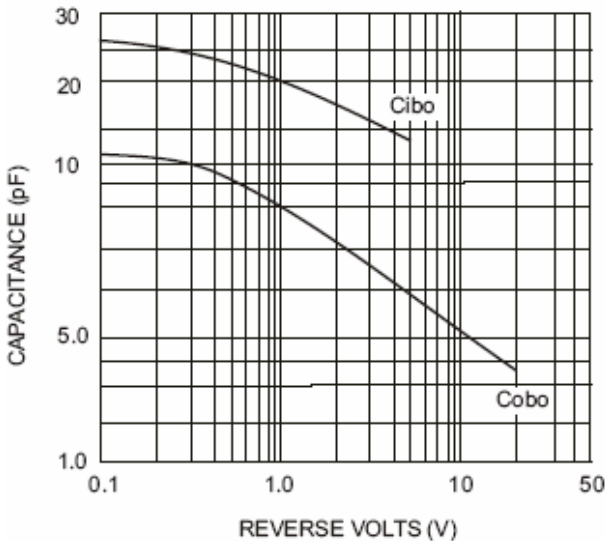


Fig. 3 Typical Capacitance

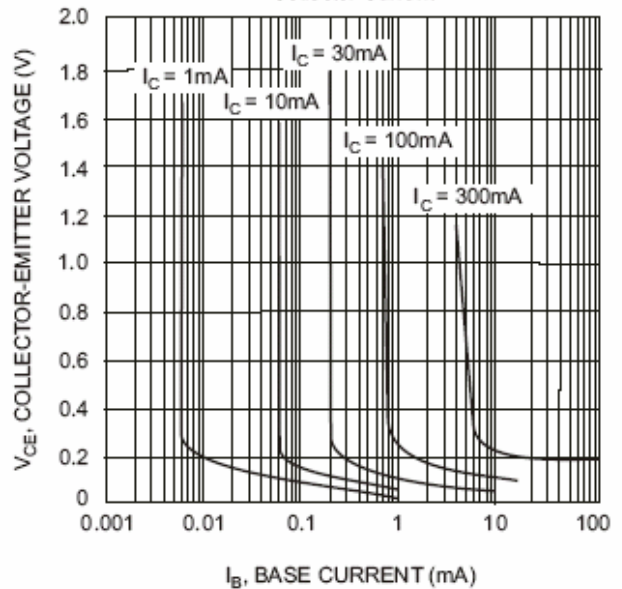


Fig. 4 Typical Collector Saturation Region

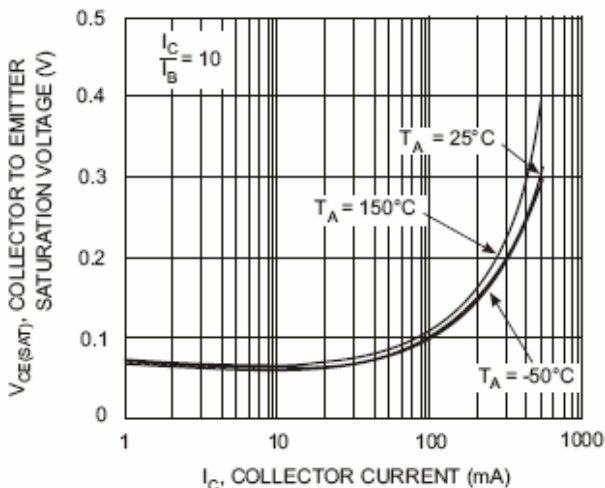


Fig. 5 Collector Emitter Saturation Voltage vs. Collector Current

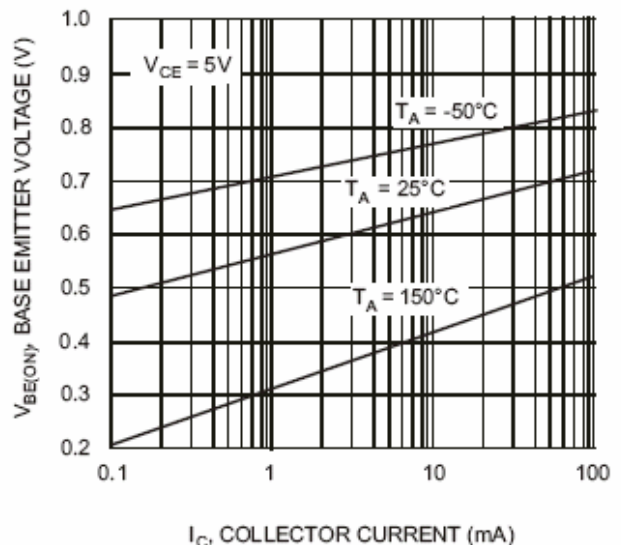


Fig. 6 Base Emitter Voltage vs. Collector Current

MMDT2222A

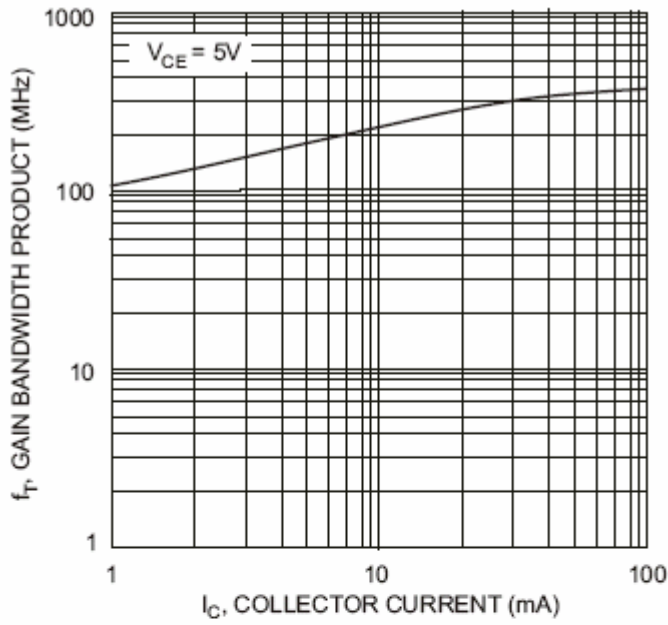


Fig. 7 Gain Bandwidth Product vs. Collector Current



TM

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

IMPORTANT NOTICE

Micro Commercial Components Corp. reserves the right to make changes without further notice to any product herein to make corrections, modifications, enhancements, improvements, or other changes. **Micro Commercial Components Corp.** does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products in such applications shall assume all risks of such use and will agree to hold **Micro Commercial Components Corp.** and all the companies whose products are represented on our website, harmless against all damages.

LIFE SUPPORT

MCC's products are not authorized for use as critical components in life support devices or systems without the express written approval of Micro Commercial Components Corporation.

CUSTOMER AWARENESS

Counterfeiting of semiconductor parts is a growing problem in the industry. Micro Commercial Components (MCC) is taking strong measures to protect ourselves and our customers from the proliferation of counterfeit parts. MCC strongly encourages customers to purchase MCC parts either directly from MCC or from Authorized MCC Distributors who are listed by country on our web page cited below. Products customers buy either from MCC directly or from Authorized MCC Distributors are genuine parts, have full traceability, meet MCC's quality standards for handling and storage. **MCC will not provide any warranty coverage or other assistance for parts bought from Unauthorized Sources.** MCC is committed to combat this global problem and encourage our customers to do their part in stopping this practice by buying direct or from authorized distributors.

www.mccsemi.com