

MMDT2222A

Dual NPN Small Signal Surface Mount Transistor

Description

The MMDT2222A is a Dual NPN Small Signal Surface Mount Transistor, providing the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost effectiveness. The SOT-363 package which has been designed to achieve very low on-state resistance providing also one of the best-in-class figure of merit (FOM)

Features

- Epitaxial planar die construction.
- Complementary PNP type available MMBT2907A.
- Ultra-small surface mount package.
- RoHS compliant package

Application

- Dual NPN small signal surface mount transistor

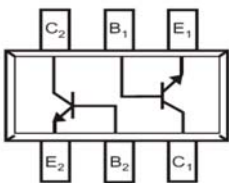
Packing & Order Information

3,000/Reel

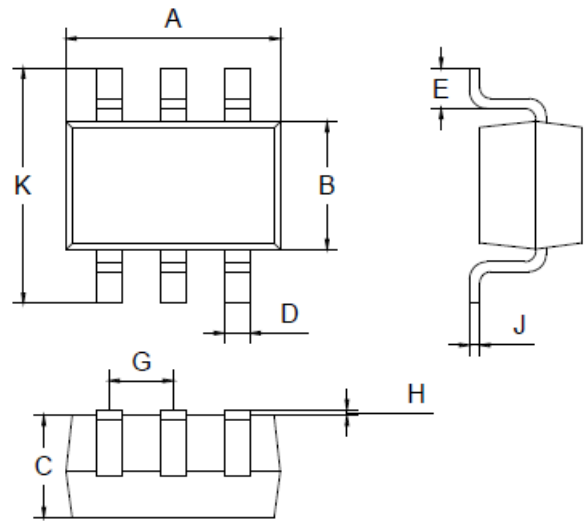


**RoHS
COMPLIANT**

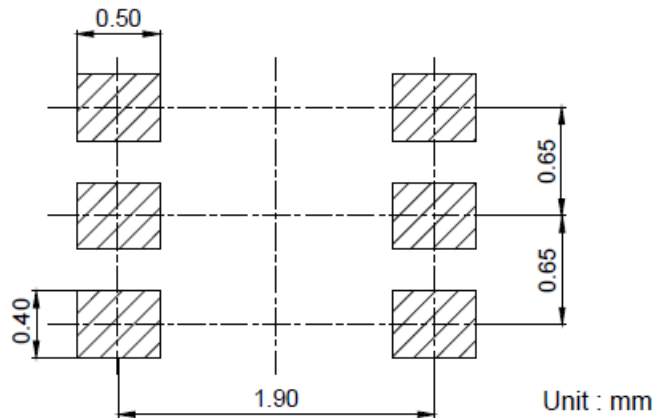
Graphic symbol



SOT-363



SOLDERING FOOTPRINT



Dimensions in mm

| SOT-363 | | |
|----------------------|--------------|------|
| Dim | Min | Max |
| A | 2.00 | 2.20 |
| B | 1.15 | 1.35 |
| C | 0.95 Typical | |
| D | 0.25 Typical | |
| E | 0.25 | 0.40 |
| G | 0.60 | 0.70 |
| H | 0.02 | 0.10 |
| J | 0.10 Typical | |
| K | 2.2 | 2.4 |
| All Dimensions in mm | | |

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MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

MAXIMUM RATING @ Ta=25°C unless otherwise specified

| Symbol | Parameter | Value | Unit |
|-----------------------------------|--|-------------|------|
| V _{CBO} | Collector-Base Voltage | 75 | V |
| V _{CEO} | Collector-Emitter Voltage | 40 | V |
| V _{EBO} | Emitter-Base Voltage | 6 | A |
| I _C | Collector Current -Continuous | 600 | mA |
| P _D | Collector Dissipation | 200 | mW |
| R _{θJA} | Thermal resistance junction to ambient | 625 | °C/W |
| T _j , T _{stg} | Junction and Storage Temperature | -55 to +150 | °C |

ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

| Symbol | Parameter | Test Conditions | MIN | MAX | UNIT |
|----------------------|--------------------------------------|--|-----|------------|----------|
| V _{(BR)CBO} | Collector-base breakdown voltage | I _C = 10μA , I _E = 0 | 75 | | V |
| V _{(BR)CEO} | Collector-emitter breakdown voltage | I _C = 10mA , I _B = 0 | 40 | | V |
| V _{(BR)EBO} | Emitter-base breakdown voltage | I _E = 10μA , I _C = 0 | 6 | | V |
| I _{CB0} | Collector cut-off current | V _{CB} = 60 V , I _E = 0 V _{CB} = 60 V , I _E = 0, T _A = 150°C | | 10 | nA μA |
| I _{CBX} | Collector cut-off current | V _{CE} = 60 V , V _{EB(off)} = 3.0 V | | 10 | nA |
| I _{EBO} | Emitter cut-off current | V _{EB} = 3 V , I _C = 0 | | 10 | nA |
| I _{BL} | Base Cut-off Current | V _{CE} = 60 V , V _{EB(off)} = 3.0 V | | 20 | nA |
| h _{FE} | DC current gain | V _{CE} = 10 V , I _C = 100μA | 35 | | - |
| | | V _{CE} = 10 V , I _C = 1.0 mA | 50 | | |
| | | V _{CE} = 10 V , I _C = 10 mA | 75 | | |
| | | V _{CE} = 10 V , I _C = 150 mA | 100 | 300 | |
| | | V _{CE} = 10 V , I _C = 500 mA | 40 | | |
| | | V _{CE} = 10 V , I _C = 10 mA , T _A = 55°C | 50 | | |
| | | V _{CE} = 1 V , I _C = 150 mA | 35 | | |
| V _{CE(sat)} | Collector-emitter saturation voltage | I _C = 500mA , I _B = 50mA I _C = 150mA , I _B = 15mA | | 1.0 0.3 | V |
| V _{BE(sat)} | Base-emitter saturation voltage | I _C = 500mA , I _B = 50mA I _C = 150mA , I _B = 15mA | 0.6 | 2.0 1.2 | V |
| f _T | Transition frequency | V _{CE} = 20 V , I _C = 20mA , f = 100MHz | 300 | | MHz |

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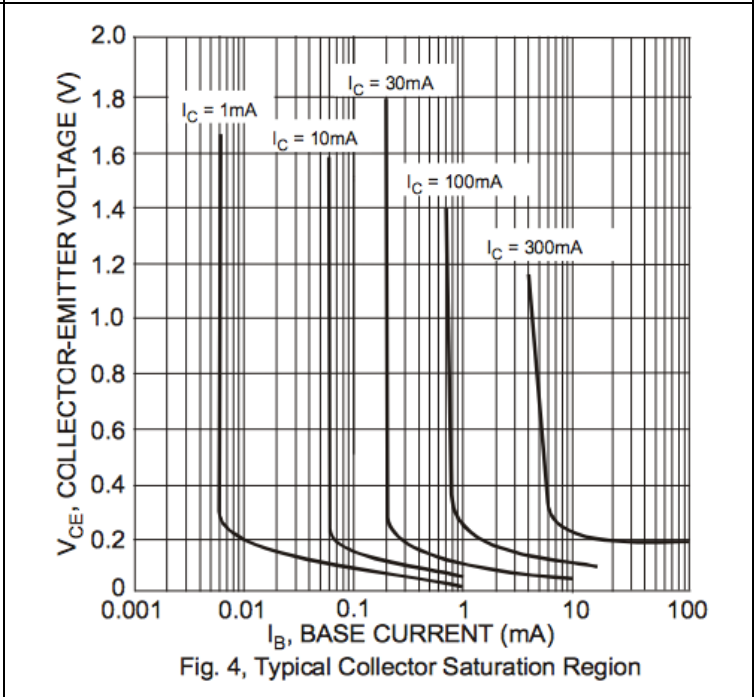
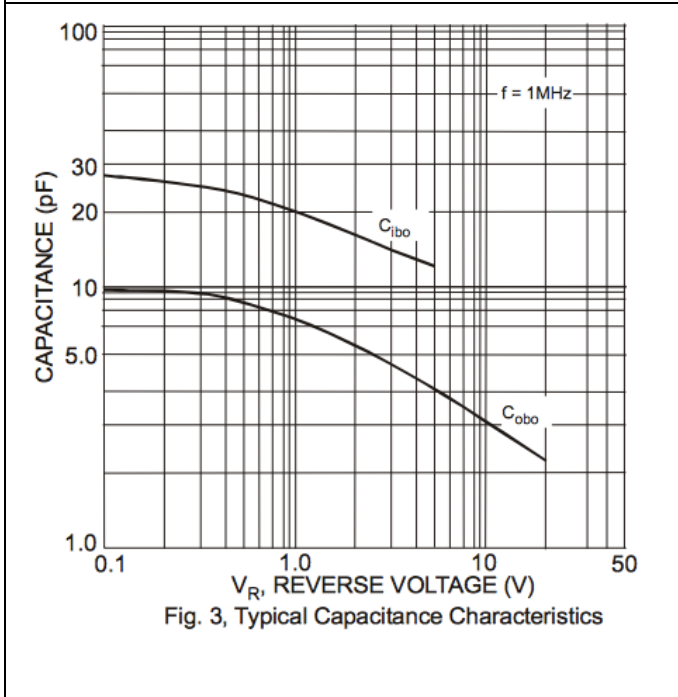
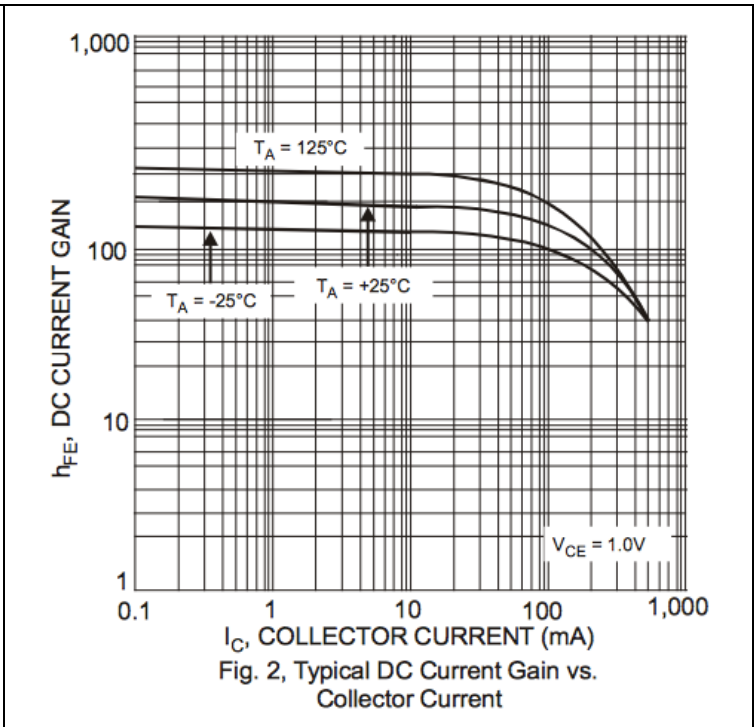
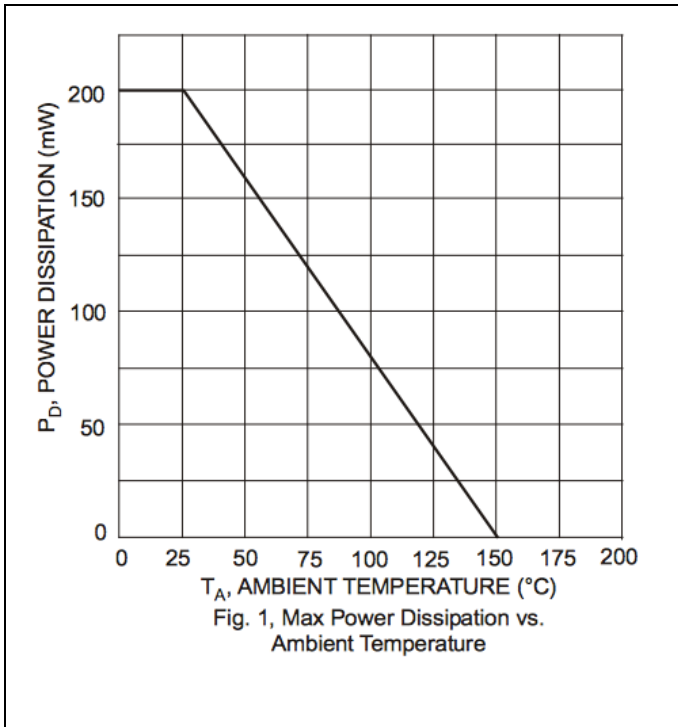
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ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

| Symbol | Parameter | Test Conditions | MIN | MAX | UNIT |
|------------------|--------------------|---|-----|-----|------|
| C _{obo} | Output capacitance | V _{CB} = 10 V , I _E = 0 , f = 1.0MHz | | 8 | pF |
| C _{ibo} | Input capacitance | V _{EB} = 0.5 V , I _C = 0 , f = 1.0MHz | | 25 | pF |
| NF | Noise Figure | V _{CE} = 10 V , f = 1.0kHz, I _C = 100μA , R _S = 1.0kΩ | | 4 | dB |
| t _d | Delay time | V _{CC} = 30 V , V _{BE(off)} = -0.5 V | | 10 | ns |
| t _r | Rise time | I _C = 150mA , I _{B1} = 15mA | | 25 | ns |
| t _s | Storage time | V _{CC} = 30 V , I _C = 150mA | | 225 | ns |
| t _f | Fall time | I _{B1} = -I _{B2} = 15mA | | 60 | ns |

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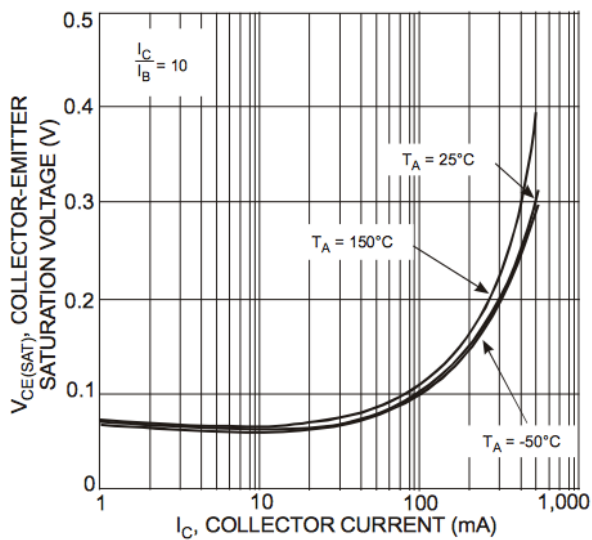


Fig. 5, Typical Collector-Emitter Saturation Voltage vs. Collector Current

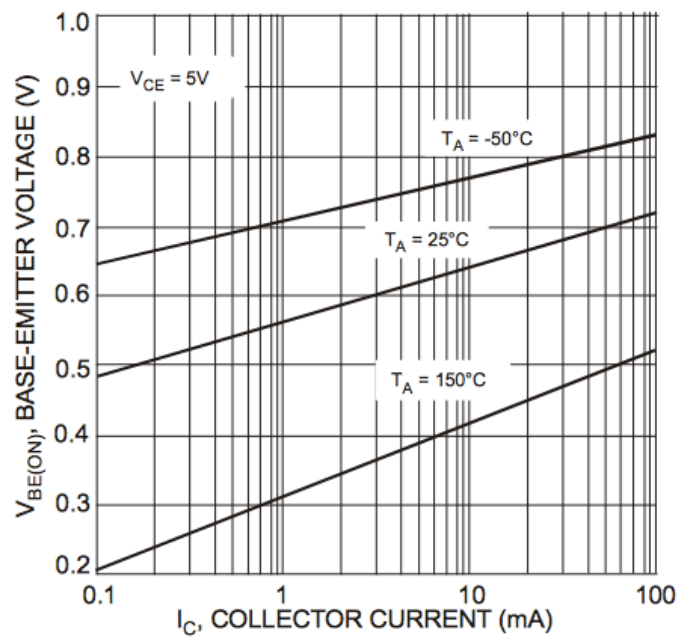


Fig. 6, Typical Base-Emitter Voltage vs. Collector Current

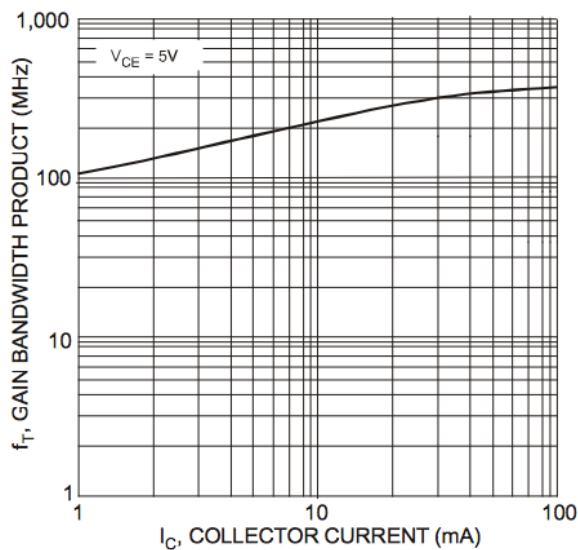


Fig. 7, Typical Gain Bandwidth Product vs. Collector Current

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