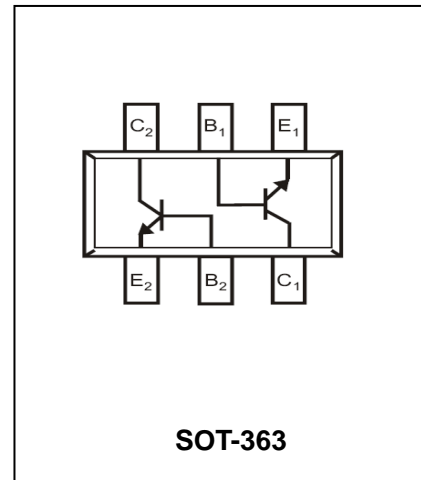


Dual NPN Small Signal Surface Mount Transistor

MMDT3904

FEATURES

- Epitaxial planar die construction.
- Ideal for low power amplification and switching.
- Ultra-small surface mount package
- Also available in lead free version.



APPLICATIONS

- General switching and amplification

ORDERING INFORMATION

| Type No. | Marking | Package Code |
|----------|---------|--------------|
| MMDT3904 | K6N | SOT-363 |

MAXIMUM RATING @ Ta=25°C unless otherwise specified

| SYMBOL | PARAMETER | VALUE | UNIT |
|------------------|---|---------|------|
| V _{CBO} | collector-base voltage | 60 | V |
| V _{CEO} | collector-emitter voltage | 40 | V |
| V _{EBO} | emitter-base voltage | 6 | V |
| I _C | collector current -continuous | 0.2 | A |
| P _{tot} | total power dissipation | 0.2 | W |
| R _{θJA} | Thermal Resistance, Junction to Ambient | 625 | °C/W |
| T _{stg} | storage temperature | 150 | °C |
| T _j | junction temperature | -55-150 | °C |

Dual NPN Small Signal Surface Mount Transistor **MMDT3904**

ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|---------------|--------------------------------------|--|------|------|------|
| $V_{(BR)CBO}$ | Collector-base breakdown voltage | $I_C=10\mu A, I_E=0$ | 60 | | V |
| $V_{(BR)CEO}$ | Collector-emitter breakdown voltage | $I_C=1mA, I_B=0$ | 40 | | V |
| $V_{(BR)EBO}$ | Emitter-base breakdown voltage | $I_E=10\mu A, I_C=0$ | 5 | | V |
| I_{CEX} | collector cut-off current | $V_{CE}=30V, V_{EB(OFF)}=3.0V$ | - | 50 | nA |
| I_{BL} | Base cut-off current | $V_{CE}=30V, V_{EB(OFF)}=3.0V$ | - | 50 | nA |
| h_{FE} | DC current gain | $V_{CE}=1V, I_C=0.1mA$ | 40 | - | |
| | | $V_{CE}=1V, I_C=1mA$ | 70 | - | |
| | | $V_{CE}=1V, I_C=10mA$ | 100 | 300 | |
| | | $V_{CE}=1V, I_C=50mA$ | 60 | - | |
| | | $V_{CE}=1V, I_C=100mA$ | 30 | - | |
| $V_{CE(sat)}$ | collector-emitter saturation voltage | $I_C=10mA, I_B=1mA$ | - | 200 | mV |
| | | $I_C=50mA, I_B=5mA$ | - | 300 | mV |
| $V_{BE(sat)}$ | base-emitter saturation voltage | $I_C=10mA, I_B=1mA$ | 650 | 850 | mV |
| | | $I_C=50mA, I_B=5mA$ | - | 950 | mV |
| C_{obo} | Output capacitance | $I_E=0, V_{CB}=5V, f=1MHz$ | - | 4 | pF |
| C_{ibo} | Input capacitance | $I_C=0, V_{EB}=0.5V, f=1MHz$ | - | 8 | pF |
| f_T | transition frequency | $I_C=10mA, V_{CE}=20V, f=100MHz$ | 300 | - | MHz |
| NF | noise figure | $I_C=0.1mA, V_{CE}=5V, R_S=1k\Omega, f=1kHz$ | - | 5 | dB |
| t_d | delay time | $V_{CC}=3V, V_{BE(off)}=-0.5V$ | - | 35 | ns |
| t_r | rise time | $I_C=10mA, I_{B1}=1mA$ | - | 35 | ns |
| t_s | storage time | $V_{CC}=3V, I_C=10mA$ | - | 200 | ns |
| t_f | fall time | $I_{B1}=I_{B2}=1mA$ | - | 50 | ns |

TYPICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified

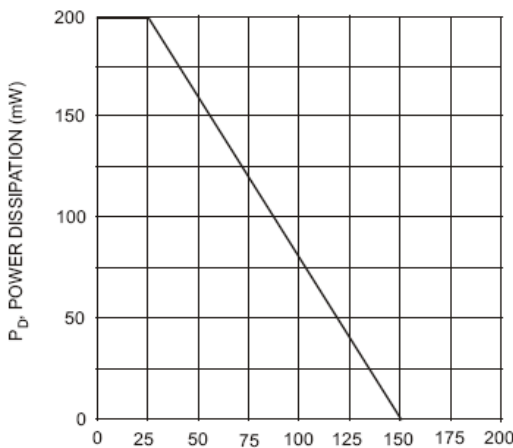


Fig. 1. Max Power Dissipation vs Ambient Temperature

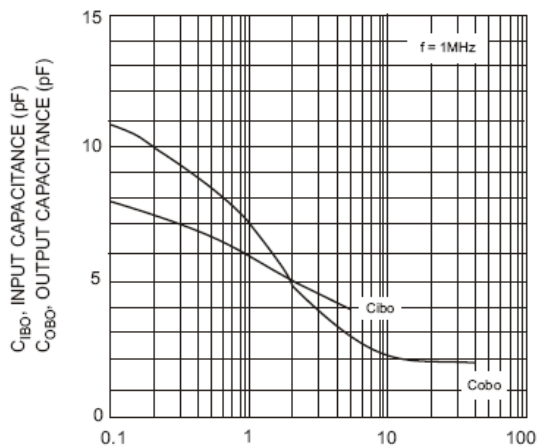


Fig. 2. Input and Output Capacitance vs. Collector-Base Voltage

Dual NPN Small Signal Surface Mount Transistor

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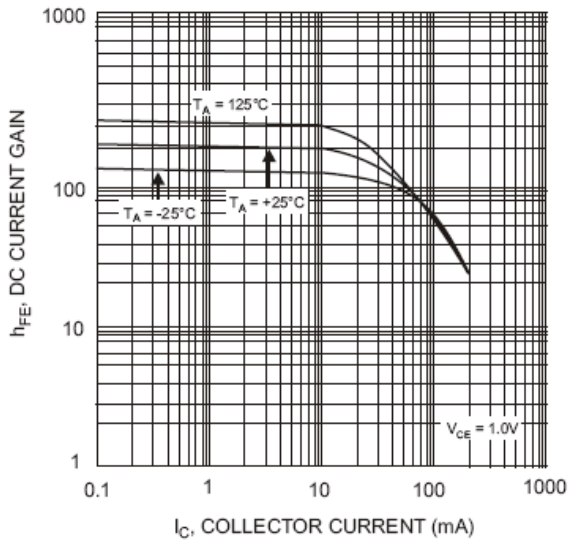


Fig. 3, Typical DC Current Gain vs Collector Current

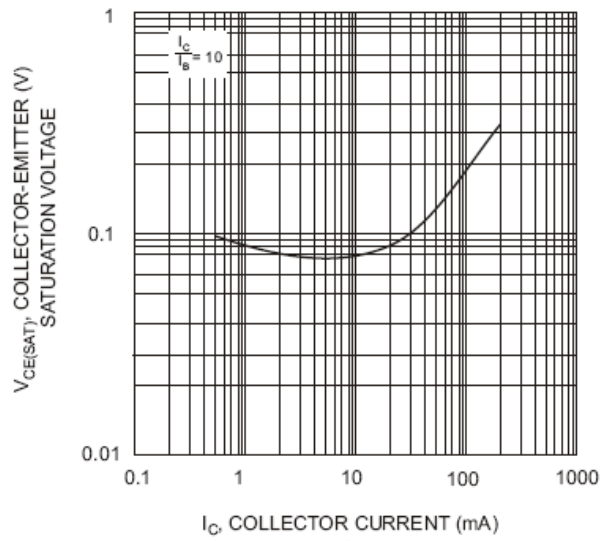


Fig. 4, Typical Collector-Emitter Saturation Voltage vs. Collector Current

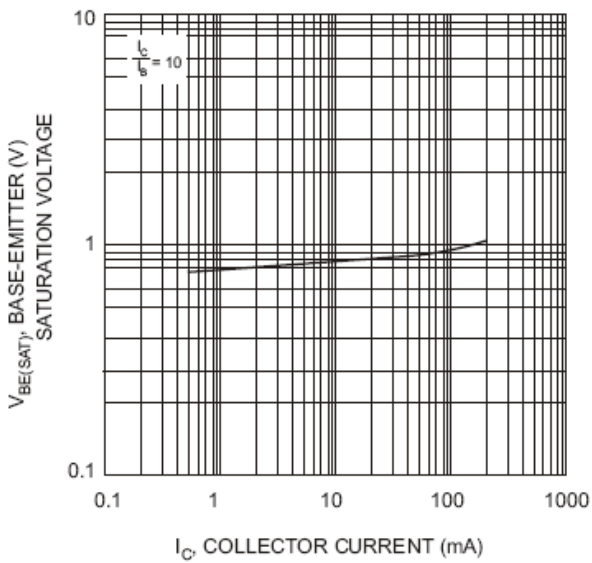


Fig. 5, Typical Base-Emitter Saturation Voltage vs. Collector Current

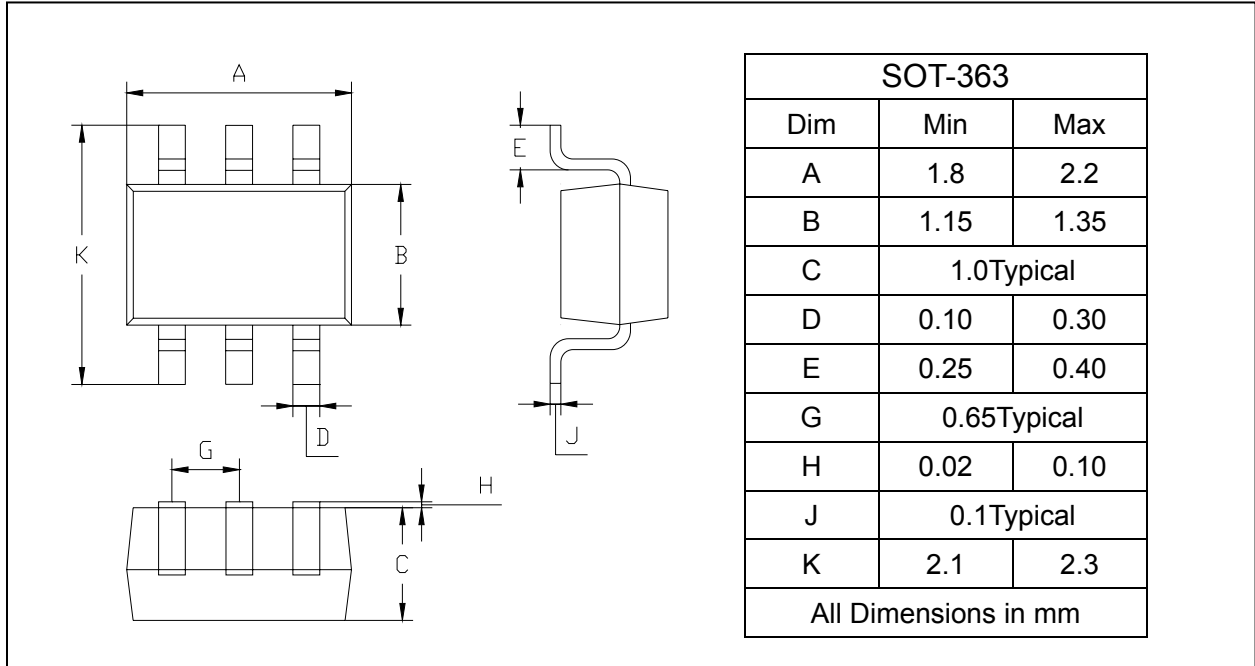
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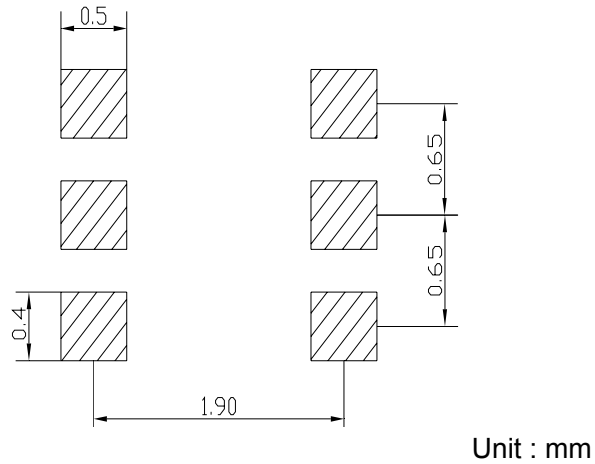
PACKAGE OUTLINE

Plastic surface mounted package

SOT-363



SOLDERING FOOTPRINT



PACKAGE INFORMATION

| Device | Package | Shipping |
|----------|---------|----------------|
| MMDT3904 | SOT-363 | 3000/Tape&Reel |

www.s-manuals.com