Micro Commercial Components

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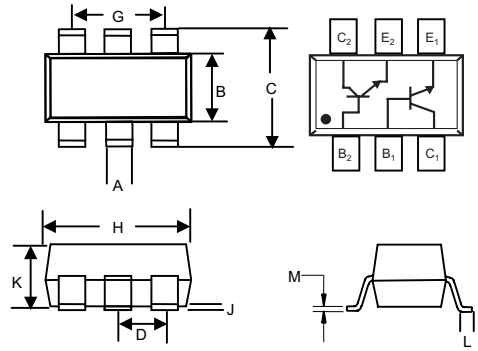
# DMMT3904

## NPN Small Signal Transistors

## Features

- Epitaxial Planar Die Construction
- Ultra-small surface mount package
- Available in RoHs compliant version
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)
- Epoxy meets UL 94 V-0 flammability rating
- Moisure Sensitivity Level 1
- Marking:K4A

SOT-363




## Maximum Ratings

| Symbol | Rating | Rating | Unit |
|---|---|---|---|
| $V_{CEO}$ | Collector-Emitter Voltage | 40 | V |
| $V_{CBO}$ | Collector-Base Voltage | 60 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 5.0 | V |
| $I_C$ | Collector Current-Continuous (1) | 200 | mA |
| $P_C$ | Power dissipation (1) | 200 | mW |
| $R_{THJA}$ | Thermal Resistance | 625 | °C/W |
| $T_J$ | Junction Temperature | -55 to +150 | °C |
| $T_{STG}$ | Storage Temperature | -55 to +150 | °C |

## Electrical Characteristics @ 25°C Unless Otherwise Specified

| Symbol | Parameter | Min | Max | Units |
|---|---|---|---|---|
| **OFF CHARACTERISTICS (2)** | | | | |
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage ($I_C$=1.0mAdc, $I_B$=0) | 40 | --- | Vdc |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage ($I_C$=10uAdc, $I_E$=0) | 60 | --- | Vdc |
| $V_{(BR)EBO}$ | Collector-Emitter Breakdown Voltage ($I_E$=10uAdc, $I_C$=0) | 5.0 | --- | Vdc |
| $I_{CEX}$ | Collector-Base Cutoff Current ($V_{CE}$=30Vdc, $V_{EB(OFF)}$=3.0Vdc) | --- | 50 | nAdc |
| $I_{BL}$ | Emitter-Base Cutoff Current ($V_{CE}$=30Vdc, $V_{EB(OFF)}$=3.0Vdc) | --- | 50 | nAdc |
| **ON CHARACTERISTICS (2)** | | | | |
| $h_{FE}$ | DC Current Gain<br>($I_C$=100uAdc, $V_{CE}$=1.0Vdc)<br>($I_C$=1.0mAdc, $V_{CE}$=1.0Vdc)<br>($I_C$=10mAdc, $V_{CE}$=1.0Vdc)<br>($I_C$=50mAdc, $V_{CE}$=1.0Vdc)<br>($I_C$=100mAdc, $V_{CE}$=1.0Vdc) | <br>40<br>70<br>100<br>60<br>30 | <br>---<br>---<br>300<br>---<br>--- | --- |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage<br>($I_C$=10mAdc, $I_B$=1.0mAdc)<br>($I_C$=50mAdc, $I_B$=5.0mAdc) | <br>--- | <br>0.20<br>0.30 | Vdc |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage<br>($I_C$=10mAdc, $I_B$=1.0mAdc)<br>($I_C$=50mAdc, $I_B$=5.0mAdc) | <br>0.65<br>--- | <br>0.85<br>0.95 | Vdc |

Note: 1. Valid provided that terminals are kept at ambient temperature.

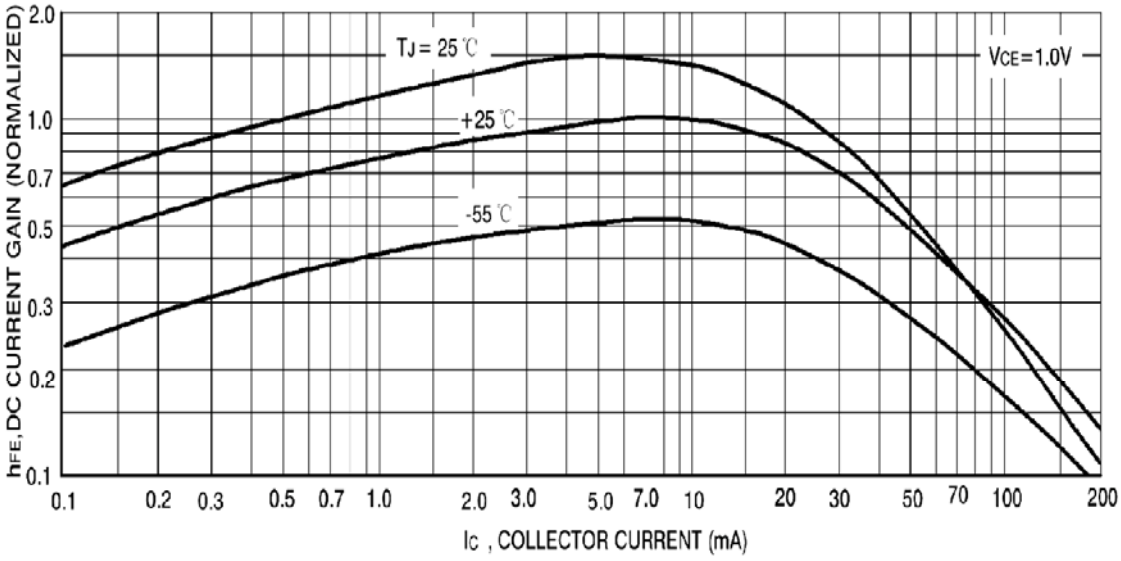
| DIMENSIONS | | | | | |
|---|---|---|---|---|---|
| | INCHES | | MM | | |
| DIM | MIN | MAX | MIN | MAX | NOTE |
| A | .006 | .014 | 0.15 | 0.35 | |
| B | .045 | .053 | 1.15 | 1.35 | |
| C | .085 | .096 | 2.15 | 2.45 | |
| D | .026 | | 0.65Nominal | | |
| G | .047 | .055 | 1.20 | 1.40 | |
| H | .071 | .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 | |

## SMALL SIGNAL CHARACTERISTICS

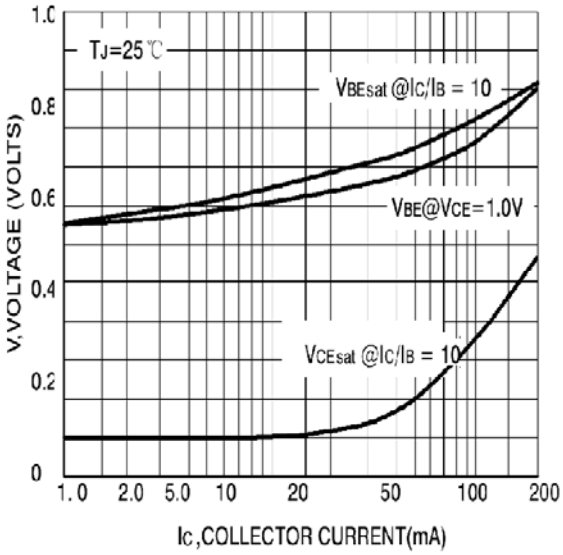
| | | | | |
|---|---|---|---|---|
| $C_{obo}$ | Output Capacitance ($V_{CB}$=5.0Vdc, f=1.0MHz, $I_E$=0) | --- | 4.0 | pF |
| $f_T$ | Current Gain-Bandwidth Product ($V_{CE}$=20Vdc, $I_C$=10mAdc, f=100MHz) | 300 | --- | MHz |

## SWITCHING CHARACTERISTICS

| | | | | | |
|---|---|---|---|---|---|
| $t_d$ | Delay Time | $V_{CC}$=3.0Vdc, $I_C$=10mAdc, VBE(off)=-0.5Vdc, $I_{B1}$=1.0mAdc | --- | 35 | ns |
| $t_r$ | Rise Time | | --- | 35 | ns |
| $t_s$ | Storage Time | $V_{CC}$=3.0Vdc, $I_C$=10mAdc, $I_{B1}$=$I_{B2}$=1.0mAdc | --- | 200 | ns |
| $t_f$ | Fall Time | | --- | 50 | ns |




DC CURRENT GAIN




"ON"VOLTAGES

## Ordering Information :

| Device | Packing |
|---|---|
| Part Number-TP | Tape&Reel;3Kpcs/Reel |

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