

SOT-363 Plastic-Encapsulate Transistors

MMDT4401DW DUAL TRANSISTOR (NPN+NPN)

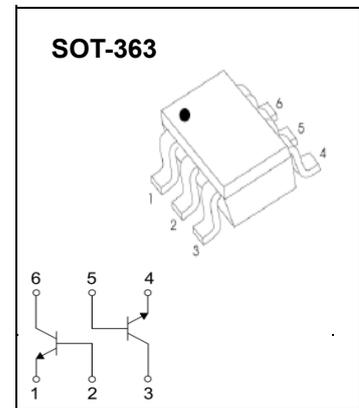
FEATURES

- Epitaxial Planar Die Construction
- Ideal for Low Power Amplification and Switching

MRKING:K2X

Maximum Ratings ($T_a = 25^\circ\text{C}$ unless otherwise specified)

| Symbol | Parameter | Value | Units |
|-----------------|---|-------------|---------------------------|
| V_{CB0} | Collector-Base Voltage | 60 | V |
| V_{CEO} | Collector-Emitter Voltage | 40 | V |
| V_{EBO} | Emitter-Base Voltage | 6 | V |
| I_C | Collector Current -Continuous | 0.6 | A |
| P_C | Collector Power Dissipation | 0.2 | W |
| $R_{\theta JA}$ | Thermal Resistance from Junction to Ambient | 625 | $^\circ\text{C}/\text{W}$ |
| T_J | Junction Temperature | 150 | $^\circ\text{C}$ |
| T_{stg} | Storage Temperature | -55 to +150 | $^\circ\text{C}$ |



NPN 4401 ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Test conditions | Min | Max | Unit |
|--------------------------------------|----------------|---|------|------|---------------|
| Collector-base breakdown voltage | $V_{(BR)CBO}$ | $I_C = 100 \mu\text{A}, I_E = 0$ | 60 | | V |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | $I_C = 1\text{mA}, I_B = 0$ | 40 | | V |
| Emitter-base breakdown voltage | $V_{(BR)EBO}$ | $I_E = 100 \mu\text{A}, I_C = 0$ | 6 | | V |
| Collector cut-off current | I_{CBO} | $V_{CB} = 50\text{V}, I_E = 0$ | | 0.1 | μA |
| Collector cut-off current | I_{CEO} | $V_{CE} = 35\text{V}, I_B = 0$ | | 0.5 | μA |
| Emitter cut-off current | I_{EBO} | $V_{EB} = 5\text{V}, I_C = 0$ | | 0.1 | μA |
| DC current gain | $h_{FE(1)}$ | $V_{CE} = 1\text{V}, I_C = 0.1\text{mA}$ | 20 | | |
| | $h_{FE(2)}$ | $V_{CE} = 1\text{V}, I_C = 1\text{mA}$ | 40 | | |
| | $h_{FE(3)}$ | $V_{CE} = 1\text{V}, I_C = 10\text{mA}$ | 80 | | |
| | $h_{FE(4)}$ | $V_{CE} = 1\text{V}, I_C = 150\text{mA}$ | 100 | 300 | |
| | $h_{FE(5)}$ | $V_{CE} = 2\text{V}, I_C = 500\text{mA}$ | 40 | | |
| Collector-emitter saturation voltage | $V_{CE(sat)1}$ | $I_C = 150\text{mA}, I_B = 15\text{mA}$ | | 0.4 | V |
| | $V_{CE(sat)2}$ | $I_C = 500\text{mA}, I_B = 50\text{mA}$ | | 0.75 | V |
| Base-emitter saturation voltage | $V_{BE(sat)1}$ | $I_C = 150\text{mA}, I_B = 15\text{mA}$ | 0.75 | 0.95 | V |
| | $V_{BE(sat)2}$ | $I_C = 500\text{mA}, I_B = 50\text{mA}$ | | 1.2 | V |
| Transition frequency | f_T | $V_{CE} = 10\text{V}, I_C = 20\text{mA}, f = 100\text{MHz}$ | 250 | | MHz |
| Output capacitance | C_{ob} | $V_{CB} = 5\text{V}, I_E = 0, f = 1\text{MHz}$ | | 6.5 | pF |
| Delay time | t_d | $V_{CC} = 30\text{V}$ | | 15 | nS |
| Rise time | t_r | $V_{BE} = 2\text{V}, I_C = 150\text{mA}, I_{B1} = 15\text{mA}$ | | 20 | nS |
| Storage time | t_s | $V_{CC} = 30\text{V}, I_C = 150\text{mA}, I_{B1} = -I_{B2} = 15\text{mA}$ | | 225 | nS |
| Fall time | t_f | | | 30 | nS |

