

Plastic-Encapsulate Transistors

DUAL TRANSISTOR (NPN+NPN)

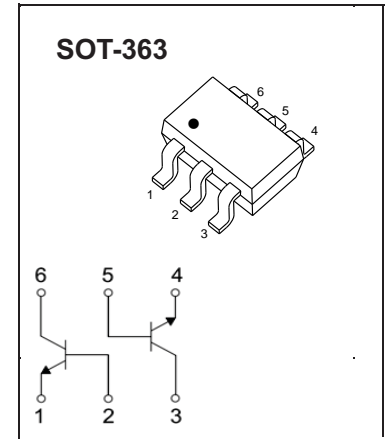
FEATURES

- Epitaxial Planar Die Construction
- Complementary PNP Type Available(MMDT5401)
- Ideal for Medium Power Amplification and Switching

MRKING:K4N

MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

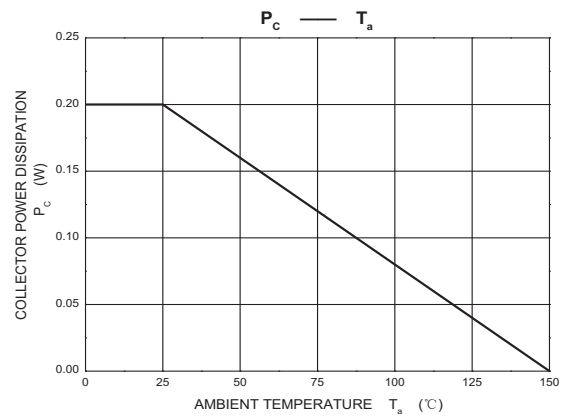
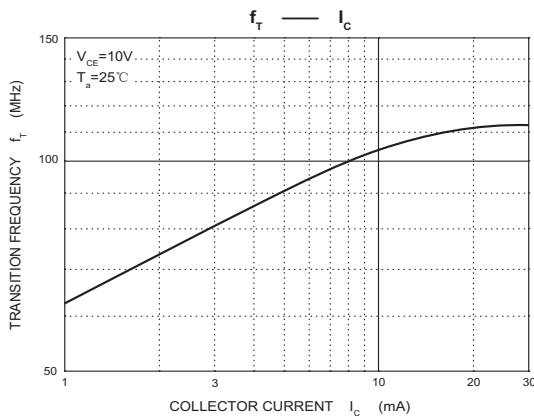
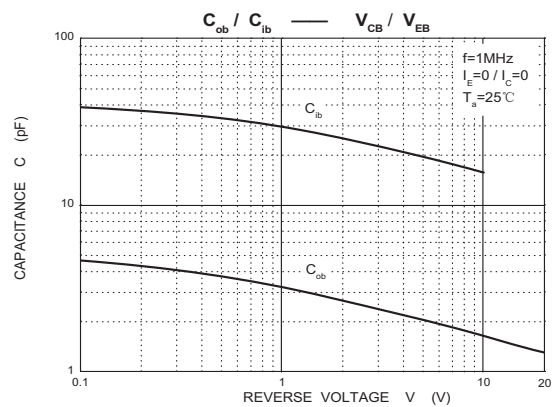
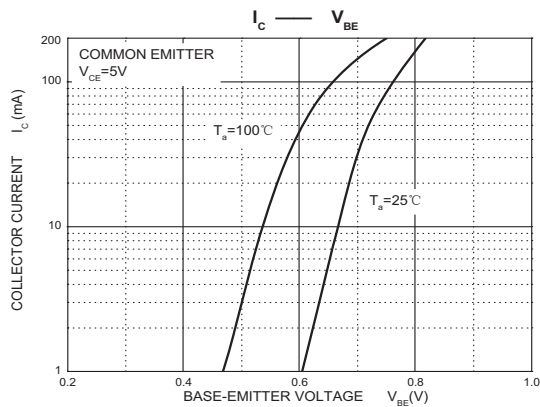
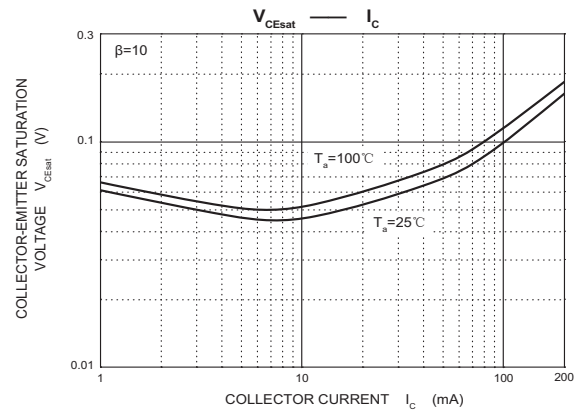
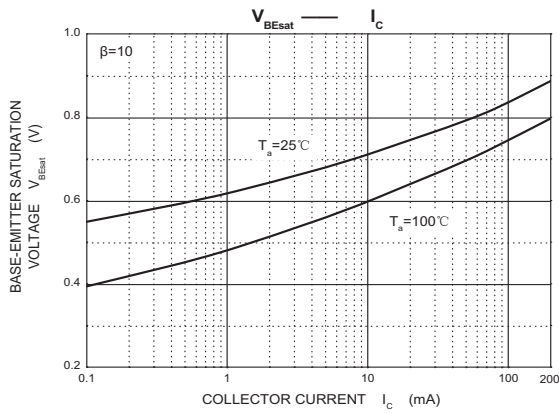
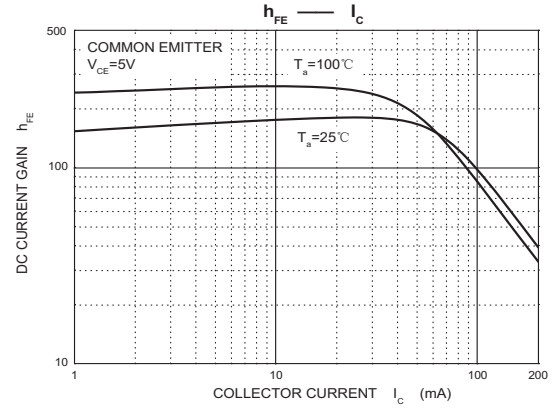
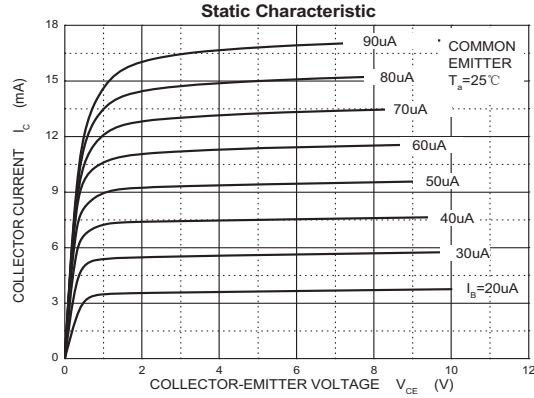
| Symbol | Parameter | Value | Units |
|-----------|-------------------------------|---------|--------------------|
| V_{CBO} | Collector- Base Voltage | 180 | V |
| V_{CEO} | Collector-Emitter Voltage | 160 | V |
| V_{EBO} | Emitter-Base Voltage | 6 | V |
| I_C | Collector Current -Continuous | 0.2 | A |
| P_C | Collector Power Dissipation | 0.2 | W |
| T_J | Junction Temperature | 150 | $^{\circ}\text{C}$ |
| T_{stg} | Storage Temperature | -55-150 | $^{\circ}\text{C}$ |



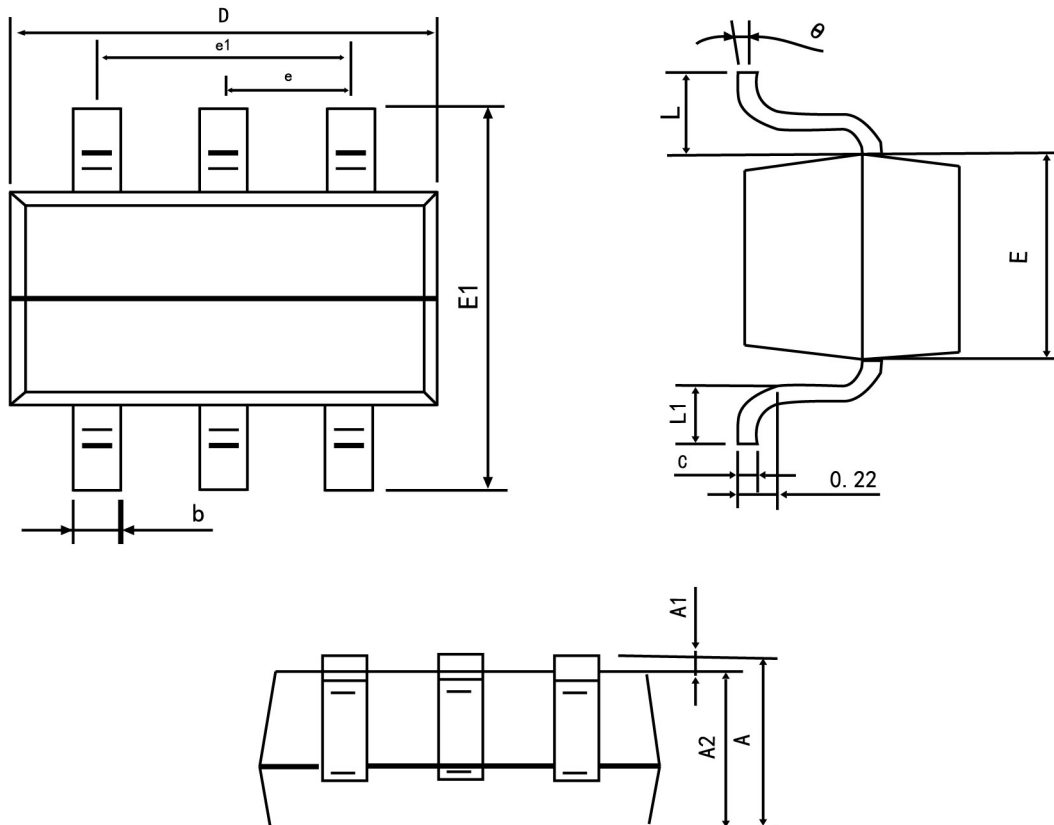
ELECTRICAL CHARACTERISTICS ($T_a=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|--------------------------------------|----------------|--|-----|-----|------|---------------|
| Collector-base breakdown voltage | $V_{(BR)CBO}$ | $I_C=100\mu\text{A}, I_E=0$ | 180 | | | V |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | $I_C=1\text{mA}, I_B=0$ | 160 | | | V |
| Emitter-base breakdown voltage | $V_{(BR)EBO}$ | $I_E=10\mu\text{A}, I_C=0$ | 6 | | | V |
| Collector cut-off current | I_{CBO} | $V_{CB}=120\text{V}, I_E=0$ | | | 0.05 | μA |
| Emitter cut-off current | I_{EBO} | $V_{EB}=4\text{V}, I_C=0$ | | | 0.05 | μA |
| DC current gain | $h_{FE(1)}$ | $V_{CE}=5\text{V}, I_C=1\text{mA}$ | 80 | | | |
| | $h_{FE(2)}$ | $V_{CE}=5\text{V}, I_C=10\text{mA}$ | 100 | | 300 | |
| | $h_{FE(3)}$ | $V_{CE}=5\text{V}, I_C=50\text{mA}$ | 30 | | | |
| Collector-emitter saturation voltage | $V_{CE(sat)1}$ | $I_C=10\text{mA}, I_B=1\text{mA}$ | | | 0.15 | V |
| | $V_{CE(sat)2}$ | $I_C=50\text{mA}, I_B=5\text{mA}$ | | | 0.2 | V |
| Base-emitter saturation voltage | $V_{BE(sat)1}$ | $I_C=10\text{mA}, I_B=1\text{mA}$ | | | 1 | V |
| | $V_{BE(sat)2}$ | $I_C=50\text{mA}, I_B=5\text{mA}$ | | | 1 | V |
| Transition frequency | f_T | $V_{CE}=10\text{V}, I_C=10\text{mA}, f=100\text{MHz}$ | 100 | | 300 | MHz |
| Output Capacitance | C_{ob} | $V_{CB}=10\text{V}, I_E=0, f=1\text{MHz}$ | | | 6 | pF |
| Noise Figure | NF | $V_{CE}=5\text{V}, I_C=0.2\text{mA}, R_S=1\text{K}\Omega, f=1\text{kHz}$ | | | 8 | dB |

Typical Characteristics



SOT-363-Package Outline Dimensions



| Symbol | Dimension in Millimeters | |
|----------|--------------------------|-------|
| | Min | Max |
| A | 0.900 | 1.100 |
| A1 | 0.000 | 0.100 |
| A2 | 0.900 | 1.000 |
| b | 0.150 | 0.350 |
| c | 0.080 | 0.150 |
| D | 2.000 | 2.200 |
| E | 1.150 | 1.350 |
| E1 | 2.150 | 2.450 |
| e | 0.650 TYP | |
| e1 | 1.200 | 1.400 |
| L | 0.525 REF | |
| L1 | 0.260 | 0.460 |
| θ | 0° | 8° |