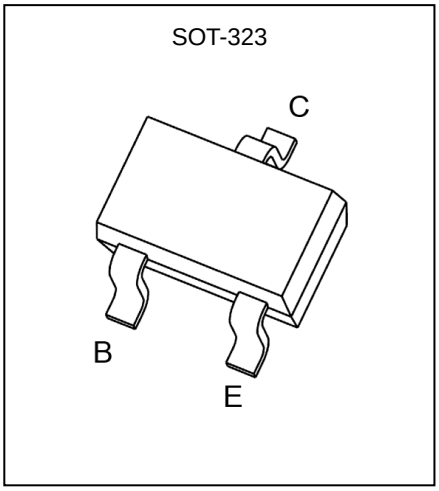
# MMST3904

## MMST3904 Transistor(NPN)




### Feature

- Epitaxial planar die construction

### Marking: K2N

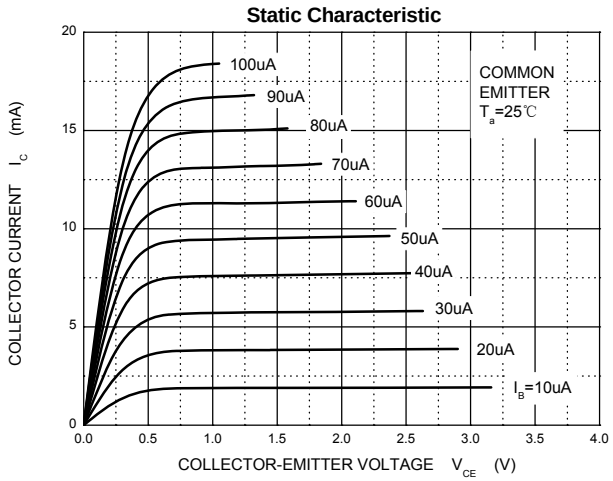
### MAXIMUM RATINGS ($T_a$=25℃ unless otherwise noted)

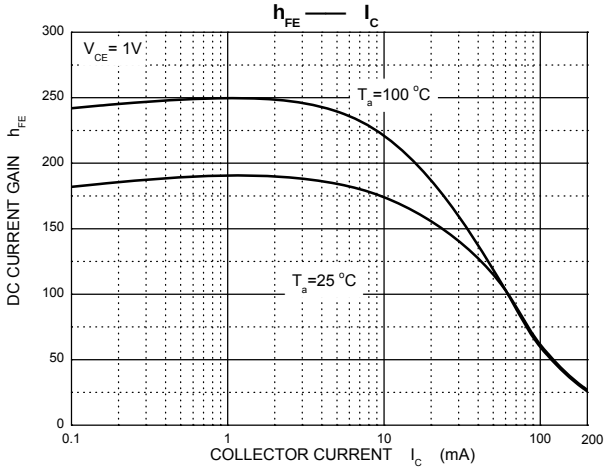
| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | 60 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | 40 | V |
| Emitter-Base Voltage | $V_{EBO}$ | 6 | V |
| Collector Current -Continuous | $I_C$ | 0.2 | A |
| Power Dissipation | $P_d$ | 0.2 | W |
| Junction Temperature | $T_J$ | 150 | ℃ |
| Storage Temperature | $T_{STG}$ | -55~ +150 | ℃ |

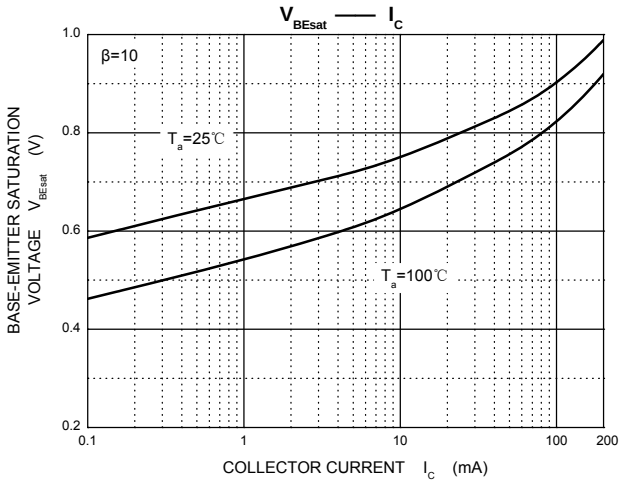
### ELECTRICAL CHARACTERISTICS($T_a$=25℃ unless otherwise noted)

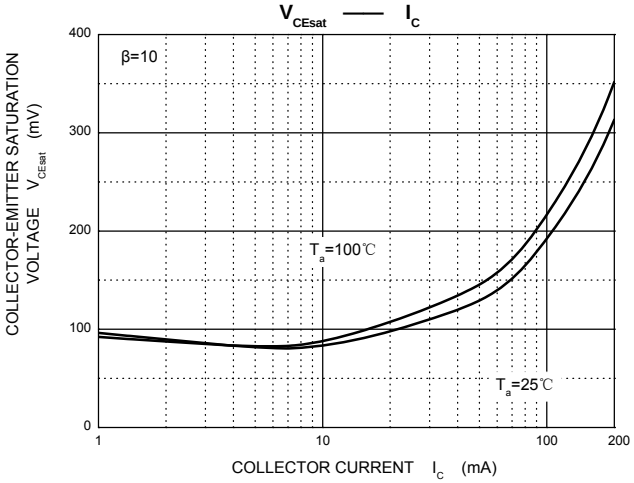
| Parameter | Symbol | Test Condition | Min | Max | Unit |
|---|---|---|---|---|---|
| **Collector-base breakdown voltage** | $V_{(BR)CBO}$ | $I_C$=10μA ,$I_E$=0 | 60 | | V |
| **Collector-emitter breakdown voltage** | $V_{(BR)CEO}$ | $I_C$=1mA , $I_B$=0 | 40 | | V |
| **Emitter-base breakdown voltage** | $V_{(BR)EBO}$ | $I_E$=10μA,$I_C$=0 | 6 | | V |
| **Collector cut-off current** | $I_{CEO}$ | $V_{CE}$=30V, $I_B$=0V | | 100 | nA |
| **Baes cut-off current** | $I_{CBO}$ | $V_{CB}$=60V, $I_E$=0V | | 100 | nA |
| **Emitter cut-off current** | $I_{EBO}$ | $V_{EB}$=6V, $I_C$=0 | | 100 | nA |
| **DC current gain** | $h_{FE}$ | $V_{CE}$=1V, $I_C$=100μA | 40 | | |
| | | $V_{CE}$=1V, $I_C$=1mA | 70 | | |
| | | $V_{CE}$=1V, $I_C$=10mA | 100 | 300 | |
| | | $V_{CE}$=1V, $I_C$=50mA | 60 | | |
| **Collector-emitter saturation voltage** | $V_{CE(sat)}$ | $I_C$=10mA, $I_B$=1mA | | 0.25 | V |
| | | $I_C$=50mA, $I_B$=5mA | | 0.3 | V |
| **Base-emitter saturation voltage** | $V_{BE(sat)}$ | $I_C$=10mA, $I_B$=1mA | | 0.85 | V |
| | | $I_C$=50mA, $I_B$=5mA | | 0.95 | V |
| **Transition frequency** | $f_T$ | $V_{CE}$= 20V, $I_C$=10mA,f=100MHz | 300 | | MHZ |
| **Delay time** | $t_d$ | $V_{CC}$=3V, $V_{BE(off)}$=0.5V $I_C$=10mA, $I_{B1}$=1mA | | 35 | ns |
| **Rise time** | $t_r$ | | | 35 | ns |
| **Storage time** | $t_s$ | $V_{CC}$=3V, $I_C$=10mA, $I_{B1}$= $I_{B2}$=1mA | | 225 | ns |
| **Fall time** | $t_f$ | | | 75 | ns |

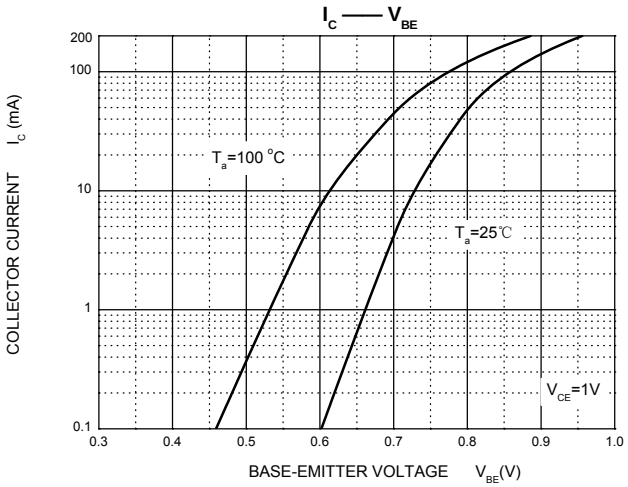
## Typical Characteristics

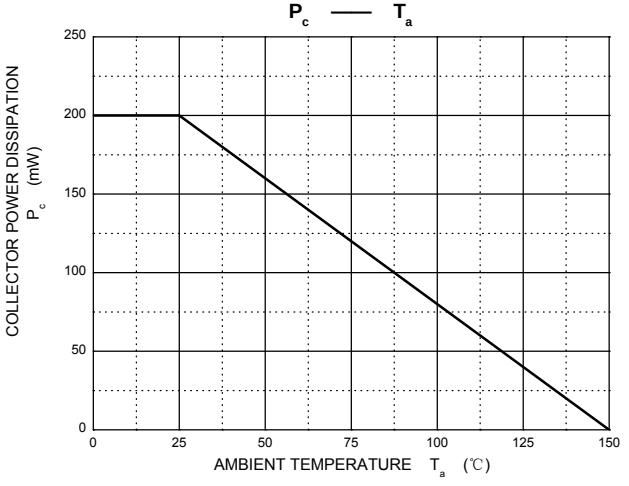


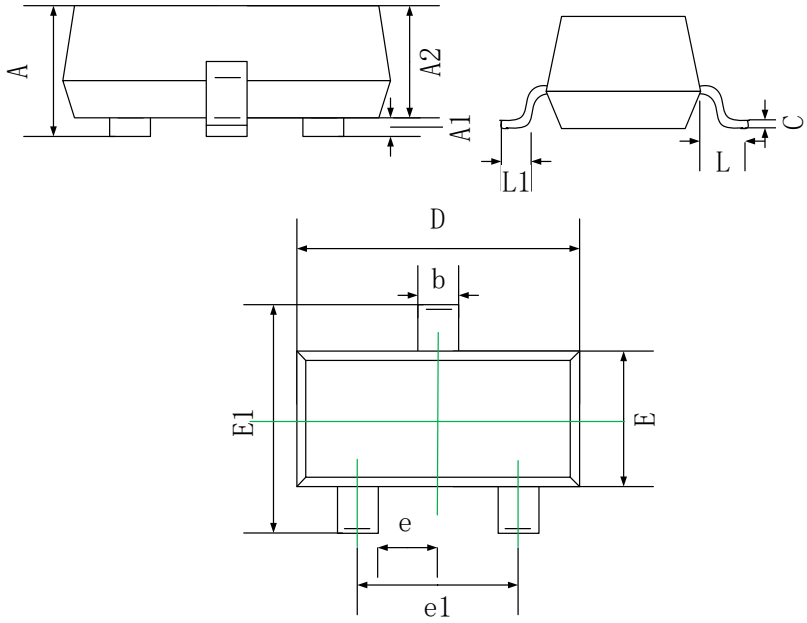



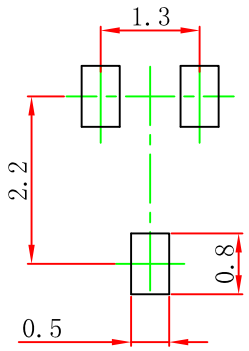



## SOT-323 Package Information




| Symbol | Dimensions In Millimeters | |
|---|---|---|
| | Min. | Max. |
| A | 0.90 | 1.10 |
| A1 | 0.00 | 0.10 |
| A2 | 0.90 | 1.00 |
| b | 0.30 | 0.50 |
| c | 0.10 | 0.15 |
| D | 2.00 | 2.20 |
| E | 1.15 | 1.35 |
| E1 | 2.15 | 2.40 |
| e | 0.650 TYP. | |
| e1 | 1.20 | 1.40 |
| L | 0.525 REF. | |
| L1 | 0.26 | 0.46 |

## SOT-323 Suggested Pad Layout




Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.