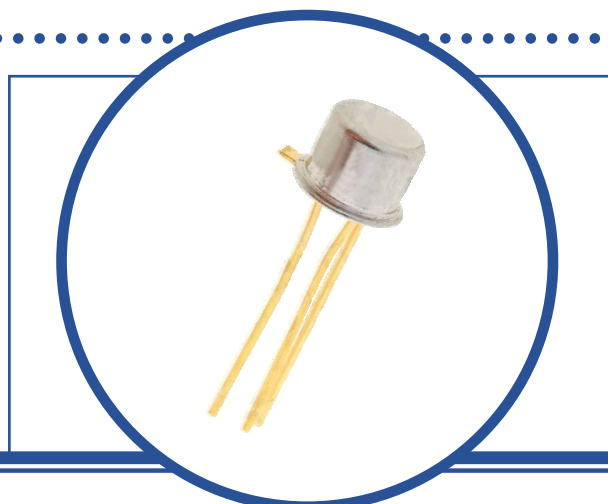


N-CHANNEL ENHANCEMENT MODE MOSFET

VN10KE

- Low $R_{DS(on)}$, $V_{GS(th)}$, C_{ISS} And Fast Switching Speeds
- Hermetic TO-52 Metal package.
- Ideally Suited For Power Supply Circuits, Switching And Driver (Relay, Solenoid, Lamp etc..) Applications
- Screening Options Available



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise stated)

| | | | |
|-----------|-------------------------------------|---------------------------------|-----------------------------|
| V_{DS} | Drain – Source Voltage | | 60V |
| V_{GS} | Gate – Source Voltage | | +15V, -0.3V |
| I_D | Continuous Drain Current | $T_A = 25^\circ\text{C}$ | 0.17A |
| | | $T_A = 100^\circ\text{C}$ | 0.11A |
| I_{DM} | Pulsed Drain Current ⁽¹⁾ | | 1.0A |
| P_D | Total Power Dissipation at | $T_A = 25^\circ\text{C}$ | 312.5mW |
| | | Derate Above 25°C | 2.5mW/ $^\circ\text{C}$ |
| T_J | Operating Temperature Range | | -55 to $+150^\circ\text{C}$ |
| T_{stg} | Storage Temperature Range | | -55 to $+150^\circ\text{C}$ |

THERMAL PROPERTIES

| Symbols | Parameters | Min. | Typ. | Max. | Units |
|-----------------|---|------|------|------|--------------------|
| $R_{\theta JA}$ | Thermal Resistance, Junction To Ambient | | | 400 | $^\circ\text{C/W}$ |

Notes

(1) Repetitive Rating: Pulse width limited by maximum junction temperature

N-CHANNEL ENHANCEMENT MODE MOSFET VN10KE

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

| Symbols | Parameters | Test Conditions | Min. | Typ. | Max. | Units |
|--------------------|---|---|------|------|------|---------------|
| BV_{DSS} | Drain-Source Breakdown Voltage | $V_{GS} = 0$ $I_D = 100\mu\text{A}$ | 60 | | | V |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS} = V_{GS}$ $I_D = 1.0\text{mA}$ | 0.8 | | 2.5 | V |
| I_{GSS} | Gate-Source Leakage Current | $V_{GS} = 15\text{V}$ $V_{DS} = 0\text{V}$ | | | 100 | nA |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{DS} = 48\text{V}$ $V_{GS} = 0$ | | | 10 | μA |
| | | $T_J = 125^\circ\text{C}$ | | | 500 | |
| $I_{D(ON)}^{(2)}$ | On-State Drain Current | $V_{DS} = 10\text{V}$ $V_{GS} = 10\text{V}$ | 0.75 | | | A |
| $R_{DS(on)}^{(2)}$ | Static Drain-Source On-State Resistance | $V_{GS} = 5\text{V}$ $I_D = 0.2\text{A}$ | | | 7.5 | Ω |
| | | $V_{GS} = 10\text{V}$ $I_D = 0.5\text{A}$ | | | 5 | |
| | | $T_J = 125^\circ\text{C}$ | | | 9 | |
| $g_{fs}^{(2)}$ | Forward Transconductance | $V_{DS} = 10\text{V}$ $I_D = 0.5\text{A}$ | 100 | | | m Ω |
| $g_{os}^{(2)}$ | Common Source Output Conductance | $V_{DS} = 7.5\text{V}$ $I_D = 50\text{mA}$ | | 0.2 | | |

DYNAMIC CHARACTERISTICS

| | | | | | | |
|--------------|------------------------------|---|--|--|----|----|
| C_{iss} | Input Capacitance | $V_{GS} = 0$ | | | 60 | pF |
| C_{oss} | Output Capacitance | $V_{DS} = 25\text{V}$ | | | 25 | |
| C_{rss} | Reverse Transfer Capacitance | $f = 1.0\text{MHz}$ | | | 5 | |
| $t_{d(on)}$ | Turn-On Delay Time | $V_{DD} = 15\text{V}$, $R_L = 23\Omega$, $R_G = 50\Omega$ | | | 10 | ns |
| $t_{d(off)}$ | Turn-Off Delay Time | $I_D = 1.0\text{A}$, $V_{GEN} = 10\text{V}$ | | | 10 | |

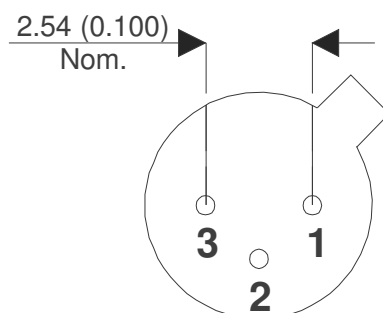
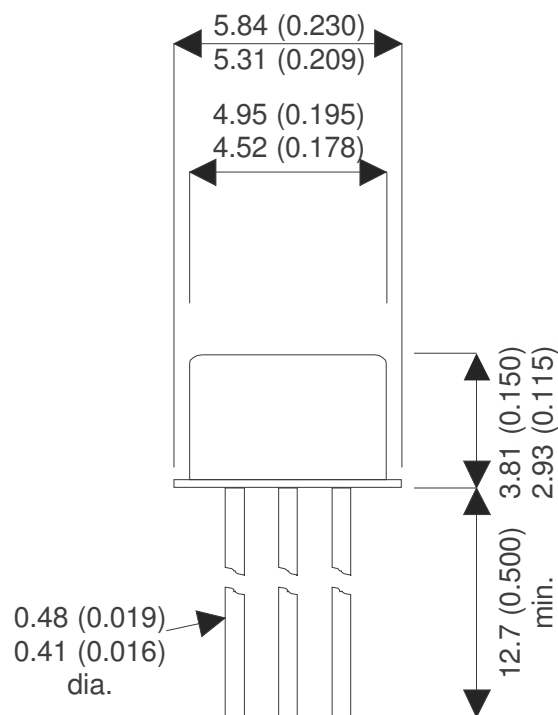
Notes

(2) Pulse Width $\leq 300\mu\text{s}$, $\delta \leq 2\%$

N-CHANNEL ENHANCEMENT MODE MOSFET VN10KE

MECHANICAL DATA

Dimensions in mm (inches)



TO-52 PACKAGE (TO-206AC) Underside View

Pin 1 - Source

Pin 2 - Gate

Pin 3 - Case & Drain