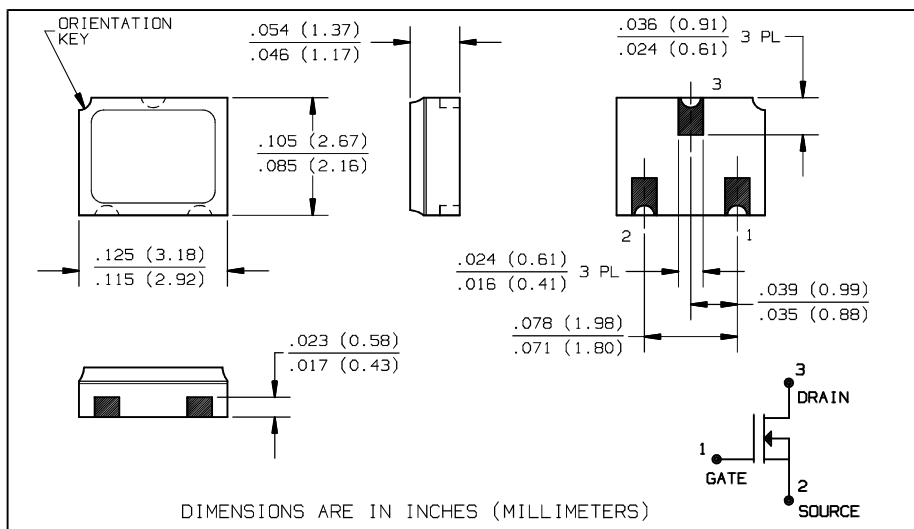


N-Channel Enhancement Mode MOS Transistor Type HCT7000M, HCT7000MTX, HCT7000MTXV



Features

- 200mA I_D
- Ultra small surface mount package
- $R_{DS(ON)} < 5\Omega$
- Pin-out compatible with most SOT23 MOSFETS

Description

The HCT7000M is a high performance enhancement mode N-channel MOS transistor chip packaged in the ultra small 3 pin ceramic LCC package. Electrical characteristics are similar to those of the JEDEC 2N7000. The pin-out and footprint matches that of most enhancement mode MOS transistors built in SOT23 plastic packages.

The HCT7000M is available processed to TX and TXV levels per MIL-PRF-19500. Order HCT7000MTX or HCT7000MTXV. Typical screening and lot acceptance tests are provided on page 13-4. TX and TXV products receive a V_{GS} HTRB at 24 V for 48 hrs. at 150° C and a V_{DS} HTRB at 48 V for 260 hrs. at 150° C.

Absolute Maximum Ratings

| | |
|--|-----------------------|
| Drain-Source Voltage | 60 V |
| Gate-Source Voltage | ±40 V |
| Drain Current | 200 mA |
| Power Dissipation ($T_A = 25^\circ C$) | 300 mW |
| Power Dissipation ($T_S^{(1)} = 25^\circ C$) | 600 mW ⁽²⁾ |
| Operating and Storage Temperature | -55° C to +150° C |
| Thermal Resistance $R_{\theta JC}$ | 100° C/W |
| Thermal Resistance $R_{\theta JA}$ | 583° C/W |

Notes:

- (1) T_S = Substrate temperature that the chip carrier is mounted on.
- (2) This rating is provided as an aid to designers. It is dependent upon mounting material and methods and is not measurable as an outgoing test.

Types HCT7000M, HCT7000MTX, HCT7000MTXV

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

| SYMBOL | PARAMETER | MIN | MAX | UNITS | TEST CONDITION |
|--------------|---------------------------------|-----|----------|---------------|--|
| V_{DSS} | Drain-Source Voltage | 60 | | V | $V_{GS} = 0\text{ V}, I_D = 10\ \mu\text{A}$ |
| $V_{GS(TH)}$ | Gate Threshold Voltage | .8 | 3.0 | V | $V_{DS} = V_{GS}, I_D = 1\ \text{mA}$ |
| I_{GSS} | Gate Leakage | | ± 10 | nA | $V_{DS} = 0\ \text{V}, V_{GS} = \pm 15\ \text{V}$ |
| I_{DSS} | Zero Gate Voltage Drain Current | | 1 | μA | $V_{GS} = 0\ \text{V}, V_{DS} = 48\ \text{V}$ |
| $I_{D(ON)}$ | On-State Drain Current | 75 | | mA | $V_{DS} = 10\ \text{V}, V_{GS} = 4.5\ \text{V}$ |
| $R_{DS(ON)}$ | Drain-Source on-Resistance | | 5 | Ω | $V_{GS} = 10\ \text{V}, I_D = 0.5\ \text{A}$ |
| $V_{DS(ON)}$ | Drain-Source on-Voltage | | 2.5 | V | $V_{GS} = 10\ \text{V}, I_D = 0.5\ \text{A}$ |
| G_{fs} | Forward Transconductance | 100 | | mS | $V_{DS} = 10\ \text{V}, I_D = 0.2\ \text{A}$ |
| C_{iss} | Input Capacitance | | 60 | pF | $V_{DS} = 25\ \text{V}, V_{GS} = 0\ \text{V}, f = 1\ \text{MHz}$ |
| C_{oss} | Output Capacitance | | 25 | pF | |
| C_{rss} | Reverse Transfer Capacitance | | 5 | pF | |
| $t_{(on)}$ | Turn-on Time | | 10 | ns | $V_{DD} = 15\ \text{V}, I_D = 0.5\ \text{A}, V_{gen} = 10\ \text{V}, R_g = 25\ \Omega$ |
| $t_{(off)}$ | Turn-off Time | | 10 | ns | |

HI-REL
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MOUNT

Optek reserves the right to make changes at any time in order to improve design and to supply the best product possible.

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