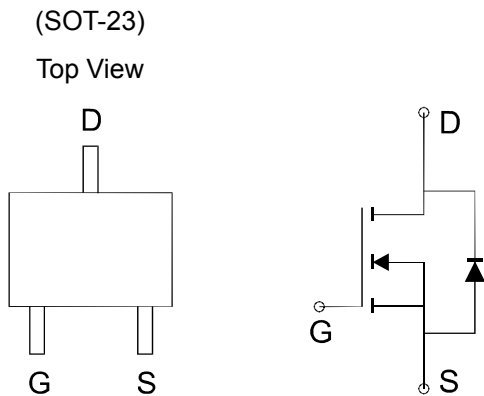


N-Channel MOSFET

GENERAL DESCRIPTION

The ME2N7002E is the N-Channel enhancement mode field effect transistors are produced using high cell density DMOS technology. These products have been designed to minimize on-state resistance while provide rugged, reliable, and fast switching performance. They can be used in most applications requiring up to 300mA DC and can deliver pulsed currents up to 1.2A. These products are particularly suited for low voltage, low current applications such as small servo motor control, power MOSFET gate drivers, and other switching applications.

PIN CONFIGURATION



FEATURES

- 60V / 0.50A , $R_{DS(ON)} = 5.0\Omega @ V_{GS}=10V$
- 60V / 0.30A , $R_{DS(ON)} = 5.5\Omega @ V_{GS}=4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23 package design

APPLICATIONS

- High density cell design for low $R_{DS(ON)}$
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability.
- The soldering temperature and time shall not exceed 260°C for more than 10 seconds.

Maximum ratings and electrical characteristic

Ratings at 25°C ambient temperature unless otherwise specified

| Symbol | PARAMETER | | Typical | Units |
|-----------------|--|------------------|------------|-------|
| V_{DSS} | Drain-Source Voltage | | 60 | V |
| V_{GSS} | Gate-Source Voltage - Continuous | | ± 20 | V |
| V_{GSS} | Gate-Source Voltage - Non Repetitive ($t_p < 50\mu s$) | | ± 40 | V |
| I_D | Drain Current - Continuous ($T_J=150^\circ C$) | $T_A=25^\circ C$ | 300 | mA |
| | - Pulsed (Note 1) | | 1200 | |
| P_D | Power Dissipation | $T_A=25^\circ C$ | 350 | mW |
| T_J, T_{STG} | Operating and Storage Temperature Range | | -55 ~ +150 | °C |
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient | | 375 | °C/W |

Note :

1. Pulse width limited by safe operating area

N-Channel MOSFET

Maximum ratings and electrical characteristic

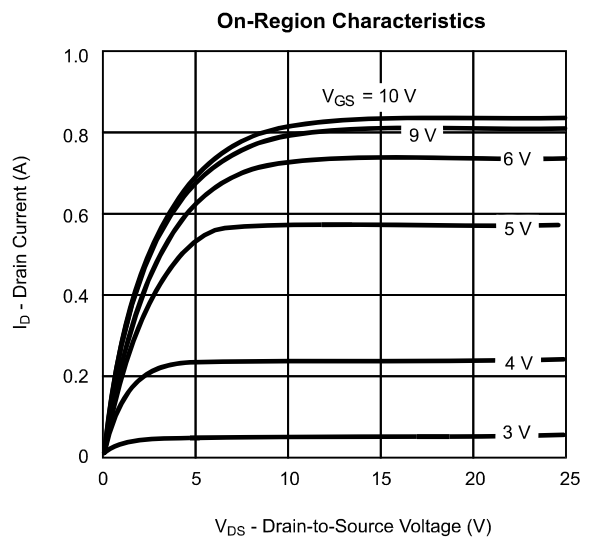
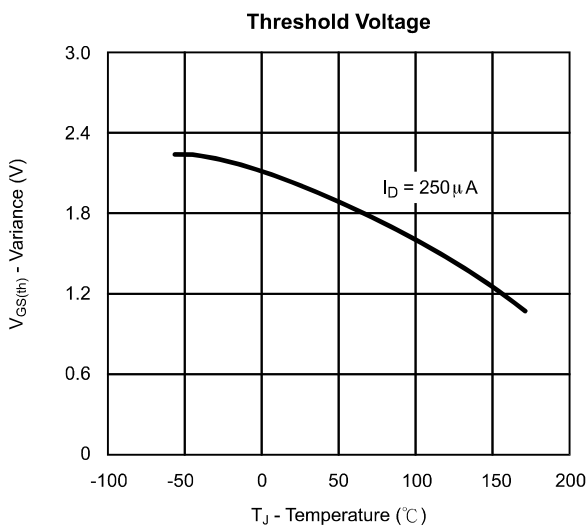
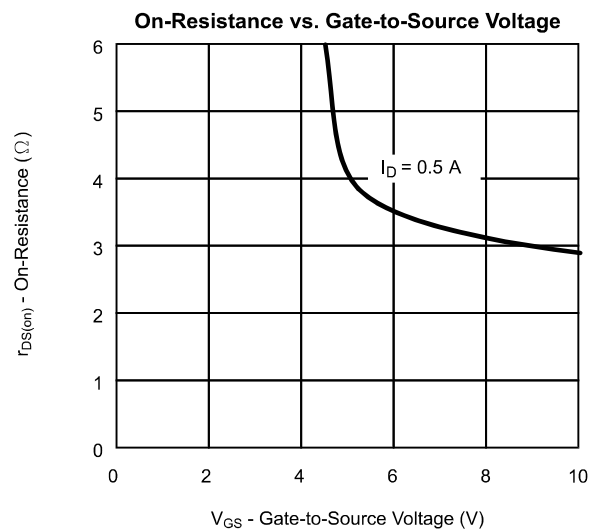
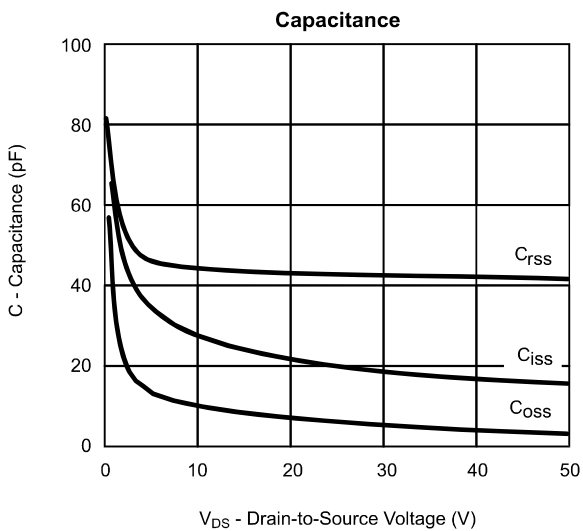
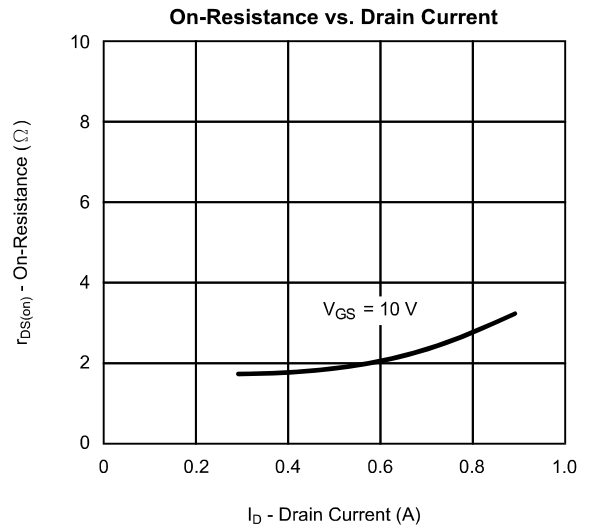
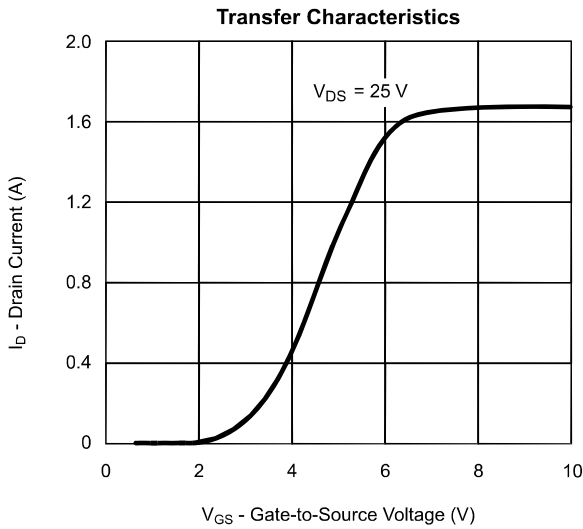
Ratings at 25°C ambient temperature unless otherwise specified

| Symbol | Ratings | Test Conditions | Min | Typ | Max | Units |
|----------------------------------|-----------------------------------|---|-----|------------|----------|----------|
| OFF CHARACTERISTICS | | | | | | |
| BV_{DSS} | Drain-Source Breakdown Voltage | $V_{GS} = 0V, I_D = 250\mu A$ | 60 | - | - | V |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{DS} = 60V, V_{GS} = 0V$ $V_{DS} = 60V, V_{GS} = 0V$ $T_J = 125^\circ C$ | - | - | 1 10 | μA |
| I_{GSSF} | Gate-Body Leakage, Forward | $V_{DS} = 0V, V_{GS} = 20V$ | - | - | 100 | nA |
| I_{GSSR} | Gate-Body Leakage, Reverse | $V_{DS} = 0V, V_{GS} = -20V$ | - | - | -100 | nA |
| ON CHARACTERISTIC (Note1) | | | | | | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{GS} = V_{DS}, I_D = 250\mu A$ | 1 | 1.7 | 2.5 | V |
| $R_{DS(ON)}$ | Static Drain-Source On-Resistance | $V_{GS} = 10V, I_D = 500mA$ $V_{GS} = 4.5V, I_D = 300mA$ | - | 2.5 3.3 | 5 5.5 | Ω |
| I_{SD} | Source-drain Current | | - | - | 0.35 | A |
| $I_{SDM(2)}$ | Source-drain Current (pulsed) | | - | - | 1.4 | A |
| $G_{FS(1)}$ | Forward Trans-conductance | $V_{DS} = 10V, I_D = 500mA$ | - | 0.6 | - | S |
| $V_{SD(1)}$ | Diode Forward Voltage | $V_{GS} = 0V, I_S = 0.12mA$ | - | 0.85 | 1.5 | V |
| DYNAMIC CHARACTERISTICS | | | | | | |
| C_{ISS} | Input Capacitance | $V_{DS} = 25V, V_{GS} = 0V,$ $F = 1.0MHz$ | - | 43 | - | pF |
| C_{OSS} | Output Capacitance | | - | 20 | - | |
| C_{RSS} | Reverse Transfer Capacitance | | - | 6 | - | |
| Q_G | Total Gate Charge | $V_{DD} = 30V, I_D = 1A, V_{GS} = 5V$ | - | 1.4 | 2.0 | nC |
| Q_{GS} | Gate-Source Charge | | - | 0.8 | - | |
| Q_{GD} | Gate-Drain Charge | | - | 0.5 | - | |
| $TD_{(ON)}$ | Turn-On Time | $V_{DD} = 30V, R_G = 4.7\Omega,$ $I_D = 500mA, V_{GS} = 4.5V$ | - | 6 | - | nS |
| T_R | | | - | 5 | - | |
| $TD_{(OFF)}$ | Turn-Off Time | | - | 15 | - | |
| T_R | | | - | 6 | - | |

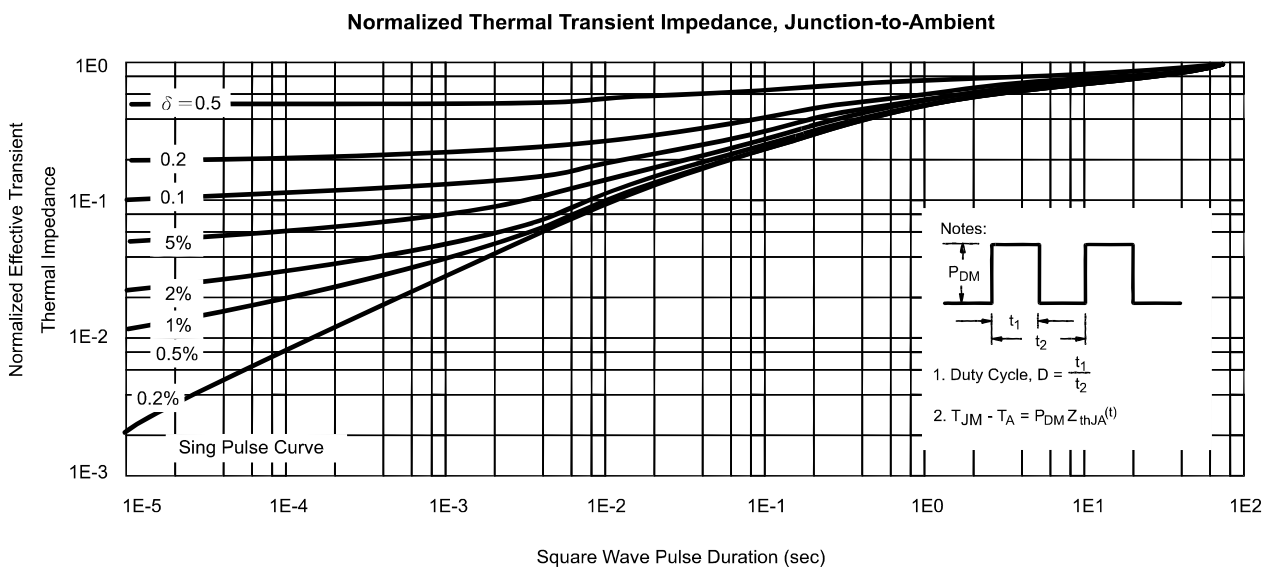
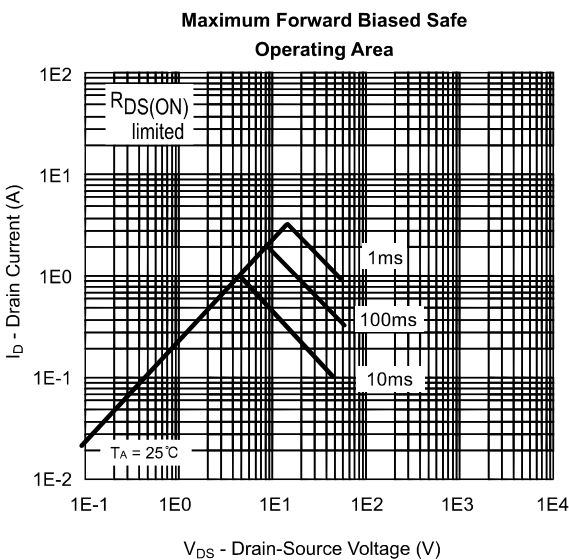
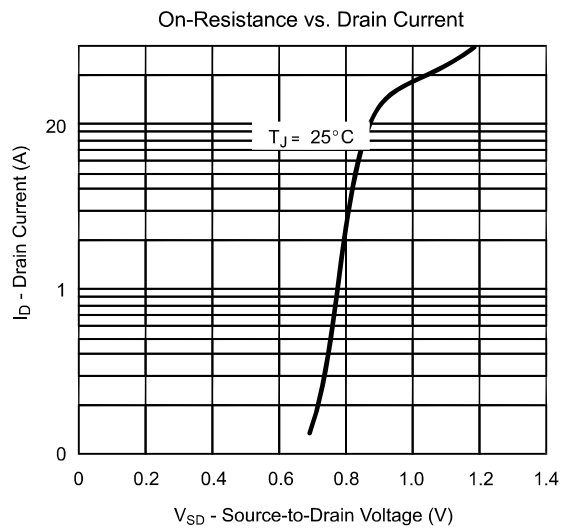
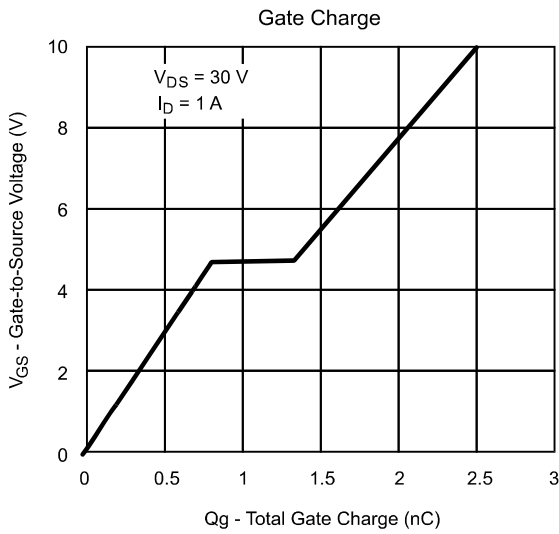
(1) Pulsed: Pulse duration = 300 μs , duty cycle 1.5 %.

(2) Pulse width limited by safe operating area.

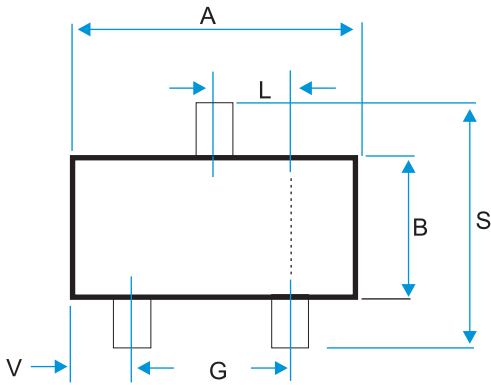
Typical Characteristics (T_J = 25°C Noted)



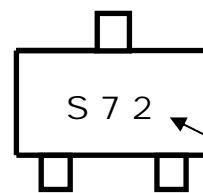
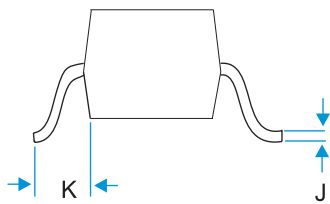
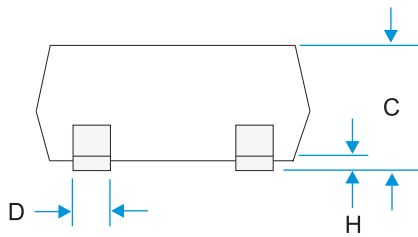
Typical Characteristics (T_J = 25°C Noted)



SOT-23 Package Outline



| DIM | MILLIMETERS | |
|-----|-------------|------|
| | MIN | MAX |
| A | 2.70 | 3.1 |
| B | 1.20 | 1.6 |
| C | 0.9 | 1.3 |
| D | 0.35 | 0.50 |
| G | 1.70 | 2.10 |
| H | 0.013 | 0.15 |
| J | 0.085 | 0.2 |
| K | 0.45 | 0.7 |
| L | 0.89 | 1.02 |
| S | 2.20 | 2.80 |
| V | 0.45 | 0.60 |



Body Marking Code :
 1. : S72
 2. : 702