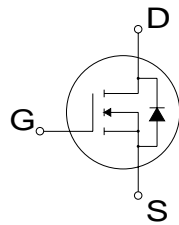
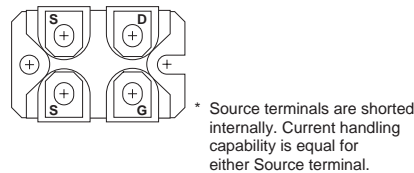
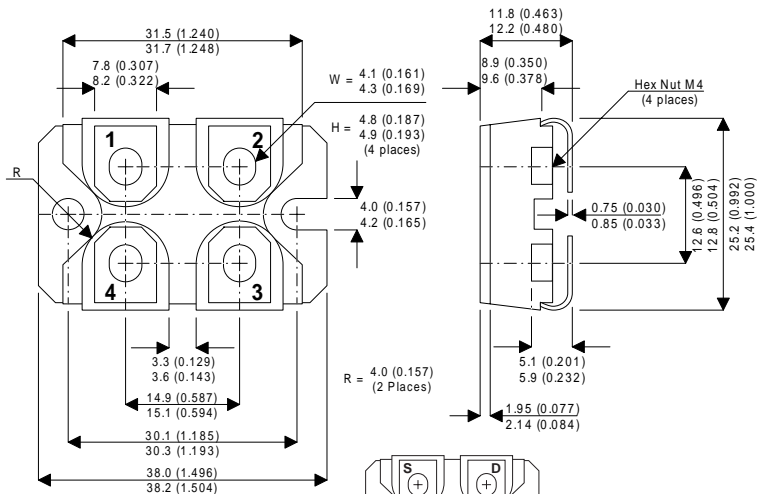


SOT-227 Package Outline.
Dimensions in mm (inches)



**N-CHANNEL
ENHANCEMENT MODE
HIGH VOLTAGE
POWER MOSFETS**

V_{DSS} 800V
I_{D(cont)} 44A
R_{DS(on)} 0.150Ω

- **Faster Switching**
- **Lower Leakage**
- **100% Avalanche Tested**
- **Popular SOT-227 Package**

StarMOS is a new generation of high voltage N-Channel enhancement mode power MOSFETs. This new technology minimises the JFET effect, increases packing density and reduces the on-resistance. StarMOS also achieves faster switching speeds through optimised gate layout.

ABSOLUTE MAXIMUM RATINGS (T_{case} = 25°C unless otherwise stated)

| | | | |
|-----------------------------------|--|------------|------|
| V _{DSS} | Drain – Source Voltage | 800 | V |
| I _D | Continuous Drain Current | 44 | A |
| I _{DM} | Pulsed Drain Current ¹ | 176 | A |
| V _{GS} | Gate – Source Voltage | ±30 | V |
| V _{GSM} | Gate – Source Voltage Transient | ±40 | |
| P _D | Total Power Dissipation @ T _{case} = 25°C | 700 | W |
| | Derate Linearly | 5.6 | W/°C |
| T _J , T _{STG} | Operating and Storage Junction Temperature Range | -55 to 150 | °C |
| T _L | Lead Temperature : 0.063" from Case for 10 Sec. | 300 | |
| I _{AR} | Avalanche Current ¹ (Repetitive and Non-Repetitive) | 44 | A |
| E _{AR} | Repetitive Avalanche Energy ¹ | 50 | mJ |
| E _{AS} | Single Pulse Avalanche Energy ² | 3600 | |

1) Repetitive Rating: Pulse Width limited by maximum junction temperature.

2) Starting T_J = 25°C, L = 3.72mH, R_G = 25Ω, Peak I_L = 44A

STATIC ELECTRICAL RATINGS ($T_{case} = 25^{\circ}C$ unless otherwise stated)

| | Characteristic | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|--|--|------|------|-----------|----------|
| BV_{DSS} | Drain – Source Breakdown Voltage | $V_{GS} = 0V, I_D = 250\mu A$ | 800 | | | V |
| I_{DSS} | Zero Gate Voltage Drain Current ($V_{GS} = 0V$) | $V_{DS} = V_{DSS}$ | | | 100 | μA |
| | | $V_{DS} = 0.8V_{DSS}, T_C = 125^{\circ}C$ | | | 500 | |
| I_{GSS} | Gate – Source Leakage Current | $V_{GS} = \pm 30V, V_{DS} = 0V$ | | | ± 100 | nA |
| $V_{GS(TH)}$ | Gate Threshold Voltage | $V_{DS} = V_{GS}, I_D = 5mA$ | 2 | | 4 | V |
| $I_{D(ON)}$ | On State Drain Current ² | $V_{DS} > I_{D(ON)} \times R_{DS(ON)} \text{ Max}$ $V_{GS} = 10V$ | 44 | | | A |
| $R_{DS(ON)}$ | Drain – Source On State Resistance ² | $V_{GS} = 10V, I_D = 0.5 I_D [\text{Cont.}]$ | | | 0.150 | Ω |

DYNAMIC CHARACTERISTICS

| | Characteristic | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------|--------------------------------|--|------|-------|------|------|
| C_{iss} | Input Capacitance | $V_{GS} = 0V$ | | 15300 | | pF |
| C_{oss} | Output Capacitance | $V_{DS} = 25V$ | | 1450 | | |
| C_{rss} | Reverse Transfer Capacitance | $f = 1MHz$ | | 740 | | |
| Q_g | Total Gate Charge ³ | $V_{GS} = 10V$ | | 690 | | nC |
| Q_{gs} | Gate – Source Charge | $V_{DD} = 0.5 V_{DSS}$ | | 55 | | |
| Q_{gd} | Gate – Drain (“Miller”) Charge | $I_D = I_D [\text{Cont.}] @ 25^{\circ}C$ | | 350 | | |
| $t_{d(on)}$ | Turn-on Delay Time | $V_{GS} = 15V$ | | 22 | | ns |
| t_r | Rise Time | $V_{DD} = 0.5 V_{DSS}$ | | 20 | | |
| $t_{d(off)}$ | Turn-off Delay Time | $I_D = I_D [\text{Cont.}] @ 25^{\circ}C$ | | 96 | | |
| t_f | Fall Time | $R_G = 0.6\Omega$ | | 15 | | |

SOURCE – DRAIN DIODE RATINGS AND CHARACTERISTICS

| | Characteristic | Test Conditions | Min. | Typ. | Max. | Unit |
|----------|------------------------------------|---|------|------|------|---------|
| I_S | Continuous Source Current | (Body Diode) | | | 44 | A |
| I_{SM} | Pulsed Source Current ¹ | (Body Diode) | | | 176 | |
| V_{SD} | Diode Forward Voltage ² | $V_{GS} = 0V, I_S = -I_D [\text{Cont.}]$ | | | 1.3 | V |
| t_{rr} | Reverse Recovery Time | $I_S = -I_D [\text{Cont.}], di_S / dt = 100A/\mu s$ | | 1000 | | ns |
| Q_{rr} | Reverse Recovery Charge | $I_S = -I_D [\text{Cont.}], di_S / dt = 100A/\mu s$ | | 34 | | μC |

THERMAL CHARACTERISTICS

| | Characteristic | Min. | Typ. | Max. | Unit |
|-----------------|---------------------|------|------|------|---------------|
| $R_{\theta JC}$ | Junction to Case | | | 0.18 | $^{\circ}C/W$ |
| $R_{\theta JA}$ | Junction to Ambient | | | 40 | |

1) Repetitive Rating: Pulse Width limited by maximum junction temperature.

2) Pulse Test: Pulse Width < 380 μs , Duty Cycle < 2%

3) See MIL-STD-750 Method 3471



CAUTION — Electrostatic Sensitive Devices. Anti-Static Procedures Must Be Followed.