

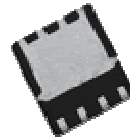
## P-Channel 100-V (D-S) MOSFET

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low  $r_{DS(on)}$  and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

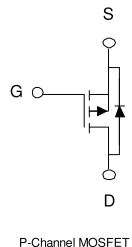
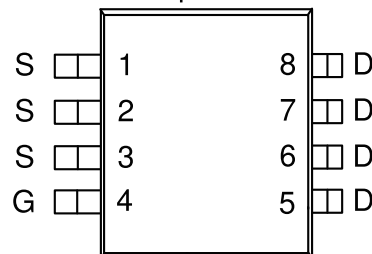
- Low  $r_{DS(on)}$  provides higher efficiency and extends battery life
- Low thermal impedance copper leadframe DFN3x3-8PP saves board space
- Fast switching speed
- High performance trench technology



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**



DFN3x3-8PP  
Top View



### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

| Parameter                                                 |                          | Symbol         | Maximum    | Units            |
|-----------------------------------------------------------|--------------------------|----------------|------------|------------------|
| Drain-Source Voltage                                      |                          | $V_{DS}$       | -100       | V                |
| Gate-Source Voltage                                       |                          | $V_{GS}$       | $\pm 20$   |                  |
| Continuous Drain Current <sup>a</sup>                     | $T_A = 25^\circ\text{C}$ | $I_D$          | -3         | A                |
|                                                           | $T_A = 70^\circ\text{C}$ |                | -2.5       |                  |
| Pulsed Drain Current <sup>b</sup>                         |                          | $I_{DM}$       | $\pm 50$   |                  |
| Continuous Source Current (Diode Conduction) <sup>a</sup> |                          | $I_S$          | -2.1       | A                |
| Power Dissipation <sup>a</sup>                            | $T_A = 25^\circ\text{C}$ | $P_D$          | 3.5        | W                |
|                                                           | $T_A = 70^\circ\text{C}$ |                | 2.0        |                  |
| Operating Junction and Storage Temperature Range          |                          | $T_J, T_{stg}$ | -55 to 150 | $^\circ\text{C}$ |

### THERMAL RESISTANCE RATINGS

| Parameter                                |                         | Symbol          | Maximum | Units              |
|------------------------------------------|-------------------------|-----------------|---------|--------------------|
| Maximum Junction-to-Ambient <sup>a</sup> | $t \leq 10 \text{ sec}$ | $R_{\theta JA}$ | 35      | $^\circ\text{C/W}$ |
|                                          | Steady State            |                 | 81      | $^\circ\text{C/W}$ |

#### Notes

- Surface Mounted on 1" x 1" FR4 Board.
- Pulse width limited by maximum junction temperature

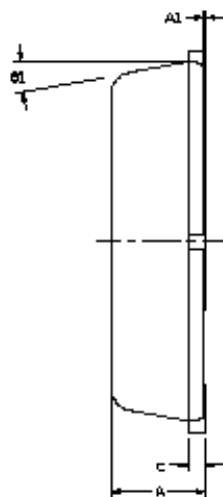
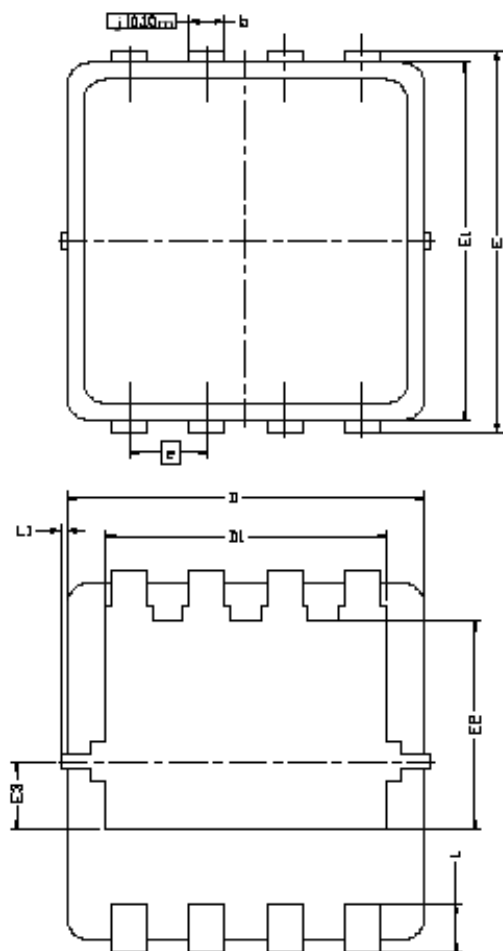
**SPECIFICATIONS ( $T_A = 25^\circ\text{C}$  UNLESS OTHERWISE NOTED)**

| Parameter                               | Symbol       | Test Conditions                                                                                             | Limits |      |          | Unit          |
|-----------------------------------------|--------------|-------------------------------------------------------------------------------------------------------------|--------|------|----------|---------------|
|                                         |              |                                                                                                             | Min    | Typ  | Max      |               |
| Static                                  |              |                                                                                                             |        |      |          |               |
| Gate-Threshold Voltage                  | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = -250 \text{ }\mu\text{A}$                                                           | -1     |      |          | V             |
| Gate-Body Leakage                       | $I_{GSS}$    | $V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$                                                           |        |      | $\pm 10$ | $\mu\text{A}$ |
| Zero Gate Voltage Drain Current         | $I_{DSS}$    | $V_{DS} = -80 \text{ V}, V_{GS} = 0 \text{ V}$                                                              |        |      | -1       | $\mu\text{A}$ |
|                                         |              | $V_{DS} = -80 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 55^{\circ}\text{C}$                                    |        |      | -5       |               |
| On-State Drain Current <sup>A</sup>     | $I_{D(on)}$  | $V_{DS} = -5 \text{ V}, V_{GS} = -10 \text{ V}$                                                             | -50    |      |          | A             |
| Drain-Source On-Resistance <sup>A</sup> | $r_{DS(on)}$ | $V_{GS} = -10 \text{ V}, I_D = -1 \text{ A}$                                                                |        |      | 269      | m $\Omega$    |
|                                         |              | $V_{GS} = -5.5 \text{ V}, I_D = -1 \text{ A}$                                                               |        |      | 289      |               |
| Forward Tranconductance <sup>A</sup>    | $g_{fs}$     | $V_{DS} = -15 \text{ V}, I_D = -1 \text{ A}$                                                                |        | 29   |          | S             |
| Diode Forward Voltage                   | $V_{SD}$     | $I_S = 2.5 \text{ A}, V_{GS} = 0 \text{ V}$                                                                 |        | -0.8 |          | V             |
| Dynamic <sup>b</sup>                    |              |                                                                                                             |        |      |          |               |
| Total Gate Charge                       | $Q_g$        | $V_{DS} = -15 \text{ V}, V_{GS} = -5.5 \text{ V},$<br>$I_D = -1 \text{ A}$                                  |        | 8    |          | nC            |
| Gate-Source Charge                      | $Q_{gs}$     |                                                                                                             |        | 3    |          |               |
| Gate-Drain Charge                       | $Q_{gd}$     |                                                                                                             |        | 3    |          |               |
| Input Capacitance                       | $C_{iss}$    | $V_{DS}=-15\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$                                                       |        | 1300 |          | pF            |
| Output Capacitance                      | $C_{oss}$    |                                                                                                             |        | 130  |          |               |
| Reverse Transfer Capacitance            | $C_{rss}$    |                                                                                                             |        | 70   |          |               |
| Turn-On Delay Time                      | $t_{d(on)}$  | $V_{DD} = -15 \text{ V}, R_L = 6 \text{ }\Omega \text{ ,}$<br>$I_D = -1 \text{ A}, V_{GEN} = -10 \text{ V}$ |        | 5    |          | nS            |
| Rise Time                               | $t_r$        |                                                                                                             |        | 4    |          |               |
| Turn-Off Delay Time                     | $t_{d(off)}$ |                                                                                                             |        | 60   |          |               |
| Fall-Time                               | $t_f$        |                                                                                                             |        | 40   |          |               |

## Notes

- Pulse test:  $PW \leq 300 \mu\text{s}$  duty cycle  $\leq 2\%$ .
- Guaranteed by design, not subject to production testing.

# Package Information



| DIM. | MILLIMETERS |       |       | INCHES    |        |        |
|------|-------------|-------|-------|-----------|--------|--------|
|      | MIN         | NOM   | MAX   | MIN       | NOM    | MAX    |
| A    | 0.700       | 0.80  | 0.900 | 0.0276    | 0.0315 | 0.0354 |
| A1   | 0.00        | ---   | 0.05  | 0.000     | ---    | 0.002  |
| b    | 0.24        | 0.30  | 0.35  | 0.009     | 0.012  | 0.014  |
| c    | 0.10        | 0.152 | 0.25  | 0.004     | 0.006  | 0.010  |
| D    | 3.00 BSC    |       |       | 0.118 BSC |        |        |
| D1   | 2.35 BSC    |       |       | 0.093 BSC |        |        |
| E    | 3.20 BSC    |       |       | 0.126 BSC |        |        |
| E1   | 3.00 BSC    |       |       | 0.118 BSC |        |        |
| E2   | 1.75 BSC    |       |       | 0.069 BSC |        |        |
| E3   | 0.575 BSC   |       |       | 0.023 BSC |        |        |
| e    | 0.65 BSC    |       |       | 0.026 BSC |        |        |
| L    | 0.30        | 0.40  | 0.50  | 0.0118    | 0.0157 | 0.0197 |
| L1   | 0           | ---   | 0.100 | 0         | ---    | 0.004  |
| Ø1   | 0°          | 10°   | 12°   | 0°        | 10°    | 12°    |