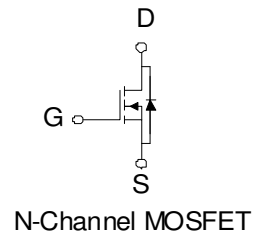
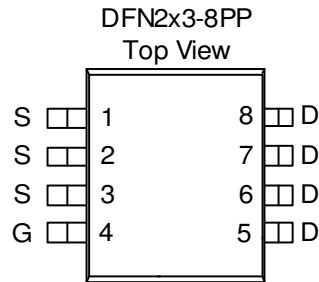
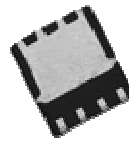


**N-Channel 80-V (D-S) MOSFET**

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.

| PRODUCT SUMMARY |                            |           |
|-----------------|----------------------------|-----------|
| $V_{DS}$ (V)    | $r_{DS(on)}$ m( $\Omega$ ) | $I_D$ (A) |
| 80              | 82 @ $V_{GS} = 10V$        | $\pm 5.4$ |
|                 | 115 @ $V_{GS} = 4.5V$      | $\pm 4.6$ |

- Low  $r_{DS(on)}$  provides higher efficiency and extends battery life
- Low thermal impedance copper leadframe DFN2x3-8PP saves board space
- Fast switching speed
- High performance trench technology



| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED) |                          |                |            |                  |
|-----------------------------------------------------------------------------|--------------------------|----------------|------------|------------------|
| Parameter                                                                   |                          | Symbol         | Limit      | Units            |
| Drain-Source Voltage                                                        |                          | $V_{DS}$       | 80         | V                |
| Gate-Source Voltage                                                         |                          | $V_{GS}$       | $\pm 20$   |                  |
| Continuous Drain Current <sup>a</sup>                                       | $T_A = 25^\circ\text{C}$ | $I_D$          | $\pm 5.4$  | A                |
|                                                                             | $T_A = 70^\circ\text{C}$ |                | $\pm 4.4$  |                  |
| Pulsed Drain Current <sup>b</sup>                                           |                          | $I_{DM}$       | $\pm 25$   |                  |
| Continuous Source Current (Diode Conduction) <sup>a</sup>                   |                          | $I_S$          | 2          | A                |
| Power Dissipation <sup>a</sup>                                              | $T_A = 25^\circ\text{C}$ | $P_D$          | 3.5        | W                |
|                                                                             | $T_A = 70^\circ\text{C}$ |                | 2          |                  |
| 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 <sub>A</sub> = 25°C UNLESS OTHERWISE NOTED) |                     |                                                                                                  |        |     |      |      |
|---------------------------------------------------------------|---------------------|--------------------------------------------------------------------------------------------------|--------|-----|------|------|
| Parameter                                                     | Symbol              | Test Conditions                                                                                  | Limits |     |      | Unit |
|                                                               |                     |                                                                                                  | Min    | Typ | Max  |      |
| Static                                                        |                     |                                                                                                  |        |     |      |      |
| Gate-Threshold Voltage                                        | V <sub>GS(th)</sub> | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250 uA                                      | 1      |     |      |      |
| Gate-Body Leakage                                             | I <sub>GSS</sub>    | V <sub>DS</sub> = 0 V, V <sub>GS</sub> = 20 V                                                    |        |     | ±100 | nA   |
| Zero Gate Voltage Drain Current                               | I <sub>DSS</sub>    | V <sub>DS</sub> = 80 V, V <sub>GS</sub> = 0 V                                                    |        |     | 1    | uA   |
|                                                               |                     | V <sub>DS</sub> = 80 V, V <sub>GS</sub> = 0 V, T <sub>J</sub> = 55°C                             |        |     | 10   |      |
| On-State Drain Current <sup>A</sup>                           | I <sub>D(on)</sub>  | V <sub>DS</sub> = 5 V, V <sub>GS</sub> = 10 V                                                    | 20     |     |      | A    |
| Drain-Source On-Resistance <sup>A</sup>                       | r <sub>DS(on)</sub> | V <sub>GS</sub> = 10 V, I <sub>D</sub> = 4.6 A                                                   |        |     | 86   | mΩ   |
|                                                               |                     | V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 3.9 A                                                  |        |     | 115  |      |
| Forward Tranconductance <sup>A</sup>                          | g <sub>fs</sub>     | V <sub>DS</sub> = 15 V, I <sub>D</sub> = 4.6 A                                                   |        | 11  |      | S    |
| Diode Forward Voltage                                         | V <sub>SD</sub>     | I <sub>S</sub> = 2.0 A, V <sub>GS</sub> = 0 V                                                    |        | 1.1 |      | V    |
| Dynamic <sup>b</sup>                                          |                     |                                                                                                  |        |     |      |      |
| Total Gate Charge                                             | Q <sub>g</sub>      | V <sub>DS</sub> = 30 V, V <sub>GS</sub> = 4.5 V,<br>I <sub>D</sub> = 4.6 A                       |        | 3.6 |      | nC   |
| Gate-Source Charge                                            | Q <sub>gs</sub>     |                                                                                                  |        | 1.8 |      |      |
| Gate-Drain Charge                                             | Q <sub>gd</sub>     |                                                                                                  |        | 1.3 |      |      |
| Turn-On Delay Time                                            | t <sub>d(on)</sub>  | V <sub>DD</sub> = 30 V, R <sub>L</sub> = 30 Ω , I <sub>D</sub> = 1 A,<br>V <sub>GEN</sub> = 10 V |        | 9   |      | nS   |
| Rise Time                                                     | t <sub>r</sub>      |                                                                                                  |        | 10  |      |      |
| Turn-Off Delay Time                                           | t <sub>d(off)</sub> |                                                                                                  |        | 21  |      |      |
| Fall-Time                                                     | t <sub>f</sub>      |                                                                                                  |        | 8   |      |      |

## Notes

- Pulse test: PW ≤ 300us duty cycle ≤ 2%.
- Guaranteed by design, not subject to production testing.

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