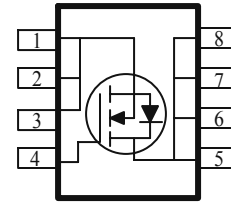


N-Channel 30-V (D-S) MOSFET

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(Ω) | I_D (A) |
| 30 | 13.5 @ $V_{GS} = 4.5V$ | 13 |
| | 20 @ $V_{GS} = 2.5V$ | 11 |

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



| ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ UNLESS OTHERWISE NOTED) | | | |
|---|--------------------|------------|------------|
| Parameter | Symbol | Limit | Units |
| Drain-Source Voltage | V_{DS} | 30 | V |
| Gate-Source Voltage | V_{GS} | ± 12 | |
| Continuous Drain Current ^a | $T_A = 25^\circ C$ | ± 13 | A |
| | $T_A = 70^\circ C$ | ± 11 | |
| Pulsed Drain Current ^b | I_{DM} | ± 50 | |
| Continuous Source Current (Diode Conduction) ^a | I_S | 2.3 | A |
| Power Dissipation ^a | $T_A = 25^\circ C$ | 3.1 | W |
| | $T_A = 70^\circ C$ | 2.2 | |
| Operating Junction and Storage Temperature Range | T_J, T_{stg} | -55 to 150 | $^\circ C$ |

| THERMAL RESISTANCE RATINGS | | | |
|--|------------------------|-----------------|-----------------|
| Parameter | Symbol | Maximum | Units |
| Maximum Junction-to-Case ^a | $t \leq 5 \text{ sec}$ | $R_{\theta JC}$ | 25 $^\circ C/W$ |
| Maximum Junction-to-Ambient ^a | $t \leq 5 \text{ sec}$ | $R_{\theta JA}$ | 50 $^\circ C/W$ |

Notes

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

| SPECIFICATIONS (T _A = 25°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 μA | 1 | | | V |
| Gate-Body Leakage | I _{GSS} | V _{DS} = 0 V, V _{GS} = 12 V | | | ±100 | nA |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} = 24 V, V _{GS} = 0 V | | | 1 | μA |
| | | V _{DS} = 24 V, V _{GS} = 0 V, T _J = 55°C | | | 25 | |
| On-State Drain Current ^A | I _{D(on)} | V _{DS} = 5 V, V _{GS} = 10 V | 20 | | | A |
| Drain-Source On-Resistance ^A | r _{DS(on)} | V _{GS} = 10 V, I _D = 10 A | | | 13.5 | mΩ |
| | | V _{GS} = 4.5 V, I _D = 8 A | | | 20 | |
| | | V _{GS} = 10 V, I _D = 15 A, T _J = 55°C | | | 15 | |
| Forward Transconductance ^A | g _s | V _{DS} = 15 V, I _D = 10 A | | 40 | | S |
| Diode Forward Voltage | V _{SD} | I _S = 2.3 A, V _{GS} = 0 V | | 0.7 | | V |
| Dynamic^b | | | | | | |
| Total Gate Charge | Q _g | V _{DS} = 15 V, V _{GS} = 4.5 V, I _D = 10 A | | 12.5 | | nC |
| Gate-Source Charge | Q _{gs} | | | 2.6 | | |
| Gate-Drain Charge | Q _{gd} | | | 4.6 | | |
| Switching | | | | | | |
| Turn-On Delay Time | t _{d(on)} | V _{DD} = 25 V, R _L = 25 Ω, I _D = 1 A, V _{GEN} = 10 V | | 20 | | nS |
| Rise Time | t _r | | | 9 | | |
| Turn-Off Delay Time | t _{d(off)} | | | 70 | | |
| Fall-Time | t _f | | | 20 | | |

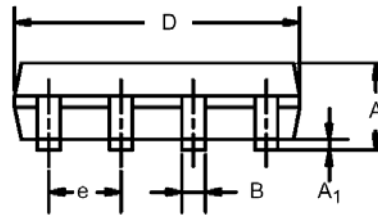
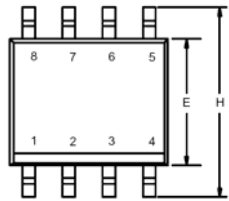
Notes

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

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Package Information

SO-8: 8LEAD



| Dim | MILLIMETERS | | INCHES | |
|----------------|-------------|------|-----------|-------|
| | Min | Max | Min | Max |
| A | 1.35 | 1.75 | 0.053 | 0.069 |
| A ₁ | 0.10 | 0.20 | 0.004 | 0.008 |
| B | 0.35 | 0.51 | 0.014 | 0.020 |
| C | 0.19 | 0.25 | 0.0075 | 0.010 |
| D | 4.80 | 5.00 | 0.189 | 0.196 |
| E | 3.80 | 4.00 | 0.150 | 0.157 |
| e | 1.27 BSC | | 0.050 BSC | |
| H | 5.80 | 6.20 | 0.228 | 0.244 |
| h | 0.25 | 0.50 | 0.010 | 0.020 |
| L | 0.50 | 0.93 | 0.020 | 0.037 |
| q | 0° | 8° | 0° | 8° |

