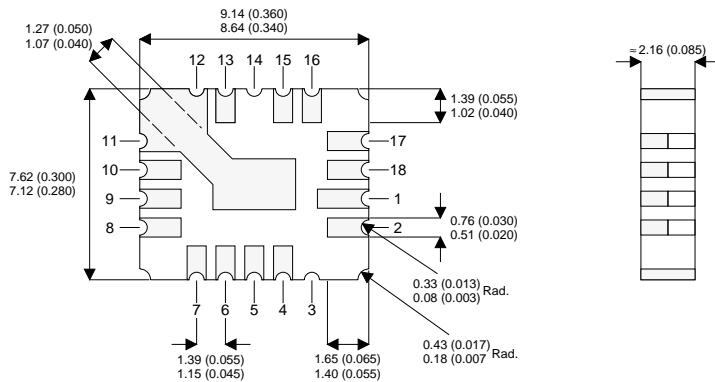


MECHANICAL DATA
Dimensions in mm (inches)



**N-CHANNEL
POWER MOSFET**

| | |
|---------------|-------------|
| V_{DSS} | 500V |
| $I_{D(cont)}$ | 1.5A |
| $R_{DS(on)}$ | 3.0Ω |

FEATURES

- HERMETICALLY SEALED
- DYNAMIC dv/dt RATING
- AVALANCHE ENERGY RATING
- SIMPLE DRIVE REQUIREMENTS

LCC4 CERAMIC SURFACE MOUNT PACKAGE

Underside View

| | |
|----------------------------------|----------------------|
| Pads 6, 7, 8, 9, 10, 11, 12, 13. | Source |
| Pads 4,5 | Gate |
| Pads 1,2,15,16,17,18 | Drain |
| Pads 3,14 | Not Connected |

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

| | | |
|------------------|--|-------------------------|
| V_{GS} | Gate – Source Voltage | $\pm 20V$ |
| I_D | Continuous Drain Current ($V_{GS} = 10V, T_{case} = 25^{\circ}C$) | 1.5A |
| I_D | Continuous Drain Current ($V_{GS} = 10V, T_{case} = 100^{\circ}C$) | 1A |
| I_{DM} | Pulsed Drain Current ¹ | 6.5A |
| P_D | Power Dissipation @ $T_{case} = 25^{\circ}C$ | 20W |
| | Linear Derating Factor | 0.16W/ $^{\circ}C$ |
| E_{AS} | Single Pulse Avalanche Energy ² | 0.11mJ |
| dv/dt | Peak Diode Recovery ³ | 3.5V/ns |
| T_J, T_{stg} | Operating and Storage Temperature Range | -55 to +150 $^{\circ}C$ |
| $R_{\theta JC}$ | Thermal Resistance Junction to Case | 6.25 $^{\circ}C/W$ |
| $R_{\theta JCA}$ | Thermal Resistance Junction-to-Ambient | 175 $^{\circ}C/W$ |

Notes

- 1) Pulse Test: Pulse Width $\leq 300\mu s, \delta \leq 2\%$
- 2) @ $V_{DD} = 50V, L \geq 570\mu H, R_G = 25\Omega, Peak I_L = 14A, Starting T_J = 25^{\circ}C$
- 3) @ $I_{SD} \leq 14A, di/dt \leq 140A/\mu s, V_{DD} \leq BV_{DSS}, T_J \leq 150^{\circ}C, Suggested R_G = 7.5\Omega$

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

ELECTRICAL CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

| Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|--|------------|------|-----------------------------|
| STATIC ELECTRICAL RATINGS | | | | | |
| BV_{DSS} | Drain – Source Breakdown Voltage | $V_{GS} = 0$ $I_D = 1\text{mA}$ | 500 | | V |
| $\frac{\Delta BV_{DSS}}{\Delta T_J}$ | Temperature Coefficient of Breakdown Voltage | Reference to 25°C $I_D = 1\text{mA}$ | | 0.43 | $\text{V}/^{\circ}\text{C}$ |
| $R_{DS(on)}$ | Static Drain – Source On–State Resistance | $V_{GS} = 10\text{V}$ $I_D = 1\text{A}$ | | 3 | Ω |
| | | $V_{GS} = 10\text{V}$ $I_D = 1.5\text{A}$ | | 3.45 | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS} = V_{GS}$ $I_D = 250\mu\text{A}$ | 2 | 4 | V |
| g_{fs} | Forward Transconductance | $V_{DS} \geq 15\text{V}$ $I_{DS} = 1\text{A}$ | 1 | | $\text{S}(\bar{v})$ |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{GS} = 0$ $V_{DS} = 0.8BV_{DSS}$ $T_J = 125^{\circ}\text{C}$ | | 25 | μA |
| | | | | 250 | |
| I_{GSS} | Forward Gate – Source Leakage | $V_{GS} = 20\text{V}$ | | 100 | nA |
| I_{GSS} | Reverse Gate – Source Leakage | $V_{GS} = -20\text{V}$ | | -100 | |
| DYNAMIC CHARACTERISTICS | | | | | |
| C_{iss} | Input Capacitance | $V_{GS} = 0$ | | 350 | pF |
| C_{oss} | Output Capacitance | $V_{DS} = 25\text{V}$ | | 80 | |
| C_{rss} | Reverse Transfer Capacitance | $f = 1\text{MHz}$ | | 35 | |
| Q_g | Total Gate Charge | $V_{GS} = 10\text{V}$ $I_D = 1.5\text{A}$ $V_{DS} = 0.5BV_{DS}$ | 7.3 | 16.7 | nC |
| Q_{gs} | Gate – Source Charge | $I_D = 1.5\text{A}$ | 0.1 | 3 | nC |
| Q_{gd} | Gate – Drain (“Miller”) Charge | $V_{DS} = 0.5BV_{DS}$ | 3.7 | 8.7 | |
| $t_{d(on)}$ | Turn–On Delay Time | $V_{DD} = 250\text{V}$ $I_D = 1.5\text{A}$ $R_G = 7.5\Omega$ | | 40 | ns |
| t_r | Rise Time | | | 30 | |
| $t_{d(off)}$ | Turn–Off Delay Time | | | 60 | |
| t_f | Fall Time | | | 30 | |
| SOURCE – DRAIN DIODE CHARACTERISTICS | | | | | |
| I_S | Continuous Source Current | | | 1.5 | A |
| I_{SM} | Pulse Source Current ² | | | 6.5 | |
| V_{SD} | Diode Forward Voltage | $I_S = 1.5\text{A}$ $T_J = 25^{\circ}\text{C}$ $V_{GS} = 0$ | | 1.2 | V |
| t_{rr} | Reverse Recovery Time | $I_F = 1.5\text{A}$ $T_J = 25^{\circ}\text{C}$ | | 900 | ns |
| Q_{rr} | Reverse Recovery Charge | $d_i / d_t \leq 100\text{A}/\mu\text{s}$ $V_{DD} \leq 50\text{V}$ | | 5.9 | μC |
| t_{on} | Forward Turn–On Time | | Negligible | | |
| PACKAGE CHARACTERISTICS | | | | | |
| L_D | Internal Drain Inductance (from centre of drain pad to die) | | 5.0 | | nH |
| L_S | Internal Source Inductance (from centre of source pad to end of source bond wire) | | 15.0 | | |

Notes 1) Pulse Test: Pulse Width $\leq 300\mu\text{s}$, $\delta \leq 2\%$ 2) Repetitive Rating – Pulse width limited by maximum junction temperature.

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.