

Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$ | I_D |
|---------------|-----------------|-------|
| -16V | 32mΩ@-4.5V | -7A |
| | 42mΩ@-2.5V | |
| | 67mΩ@-1.8V | |

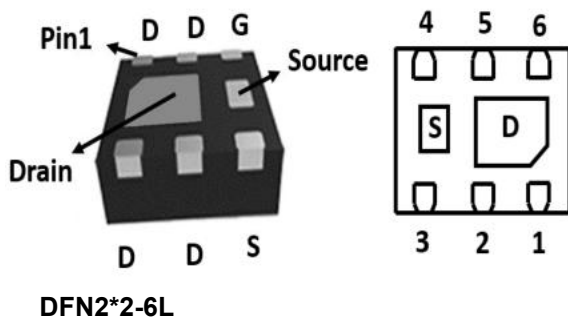
Feature

- Advanced trench process technology
- High density cell design for ultra low on-resistance
- Low Gate Charge
- Suffix“-Q1”for AEC-Q101

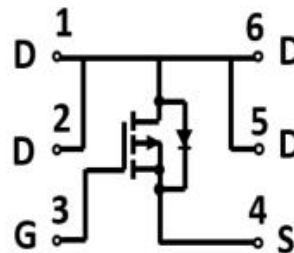
Application

- Battery protection
- Load switch
- Ultraportable applications

Package



Circuit diagram



Marking



Absolute maximum ratings (Ta=25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|--|------------------|------------|------|
| Drain-Source Voltage | V _{DS} | -16 | V |
| Gate-Source Voltage | V _{GS} | ±10 | V |
| Continuous Drain Current | I _D | -7 | A |
| Pulsed Drain Current | I _{DM} | -28 | A |
| Power Dissipation | P _D | 2.2 | W |
| Thermal Resistance Junction-to-Ambient | R _{θJA} | 56 | °C/W |
| Junction Temperature | T _J | 150 | °C |
| Storage Temperature | T _{STG} | -55 ~ +150 | °C |

Electrical characteristics (T_A=25 °C, unless otherwise noted)

| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|---|----------------------|---|------|------|------|------|
| Static Characteristics | | | | | | |
| Drain-source breakdown voltage | V _{(BR)DSS} | V _{GS} = 0V, I _D = -250μA | -16 | | | V |
| Zero gate voltage drain current | I _{DSS} | V _{DS} = -16V, V _{GS} = 0V | | | -1 | μA |
| Gate-body leakage current | I _{GSS} | V _{GS} = ±10V, V _{DS} = 0V | | | ±100 | nA |
| Gate threshold voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D = -250μA | -0.4 | | -1.0 | V |
| Drain-source on-resistance ¹⁾ | R _{DS(on)} | V _{GS} = -4.5V, I _D = -7.0A | | | 32 | mΩ |
| | | V _{GS} = -2.5V, I _D = -5.0A | | | 42 | |
| | | V _{GS} = -1.8V, I _D = -2.0A | | | 67 | |
| Dynamic characteristics²⁾ | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} = -9V, V _{GS} = 0V, f = 1MHz | | 820 | | pF |
| Output Capacitance | C _{oss} | | | 130 | | |
| Reverse Transfer Capacitance | C _{rss} | | | 83 | | |
| Total Gate Charge | Q _g | V _{DS} = -9V, V _{GS} = -4.5V, I _D = -7A | | 7.2 | | nC |
| Gate-Source Charge | Q _{gs} | | | 1.2 | | |
| Gate-Drain Charge | Q _{gd} | | | 1.6 | | |
| Turn-on delay time | t _{d(on)} | V _{DD} = -9V, V _{GS} = -4.5V, I _D = -1A R _{GEN} = 2.5Ω | | 15 | | nS |
| Turn-on rise time | t _r | | | 63 | | |
| Turn-off delay time | t _{d(off)} | | | 21 | | |
| Turn-off fall time | t _f | | | 12 | | |
| Source-Drain Diode characteristics | | | | | | |
| Diode Forward Current ¹⁾ | I _S | | | | -7 | A |
| Diode Forward voltage | V _{DS} | V _{GS} = 0V, I _S = -7A | | | -1.2 | V |

Notes:

- 1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%.
- 2) Guaranteed by design, not subject to production testing.

Typical Characteristics

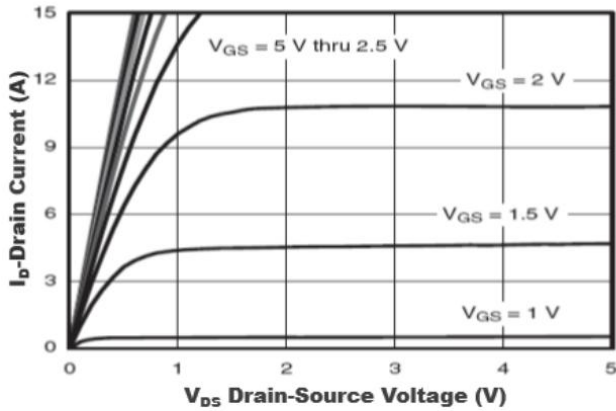


Figure1. Output Characteristics

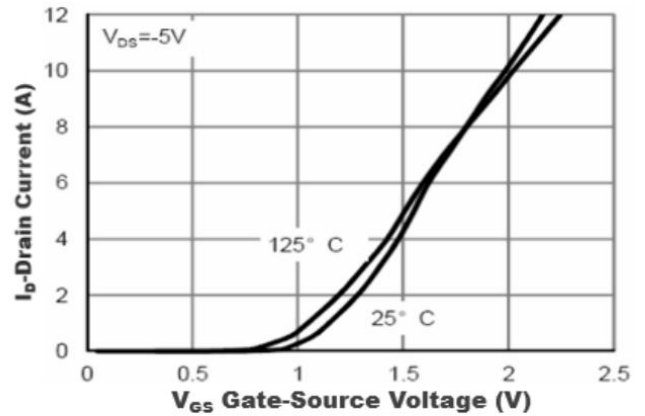


Figure2. Transfer Characteristics

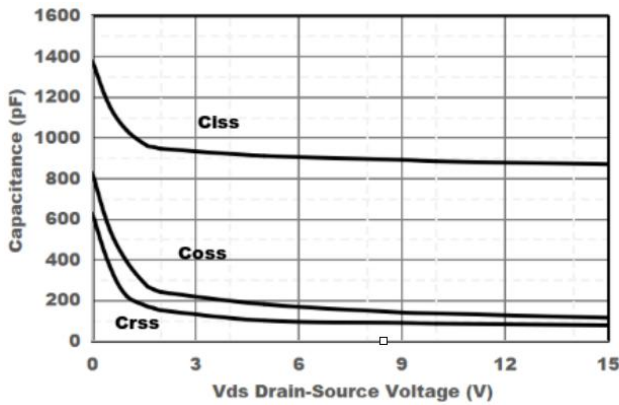


Figure3. Capacitance Characteristics

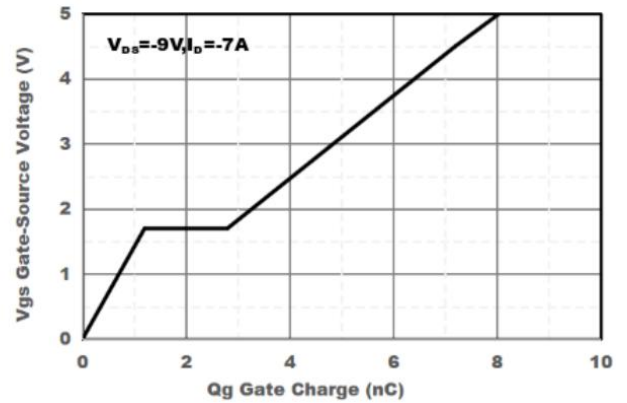


Figure4. Gate Charge

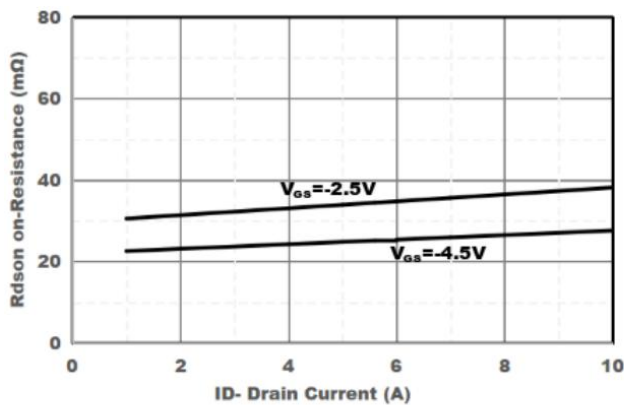


Figure5. Drain-Source on Resistance

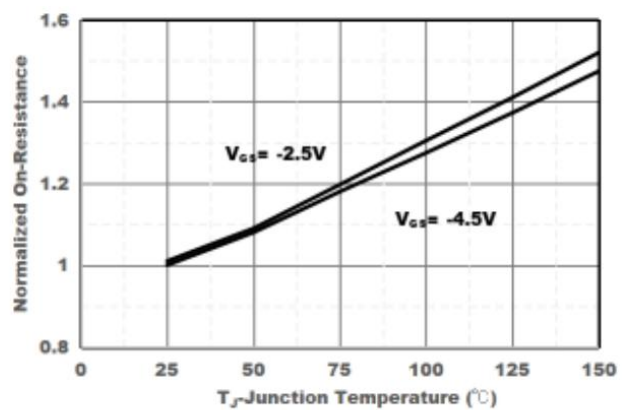


Figure6. Drain-Source on Resistance

Typical Characteristics

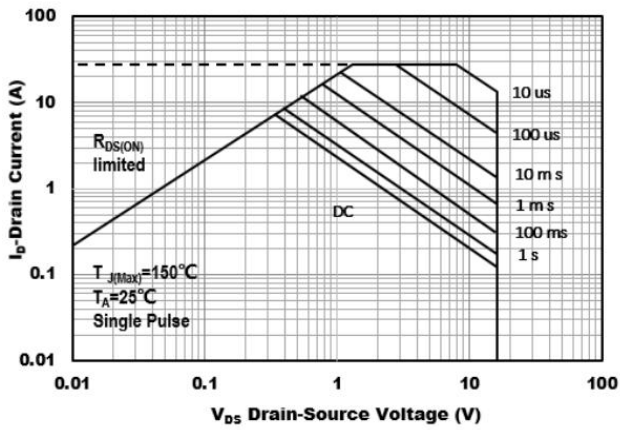


Figure7. Safe Operation Area

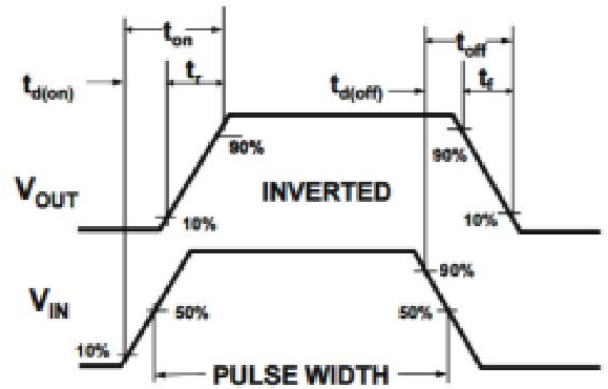
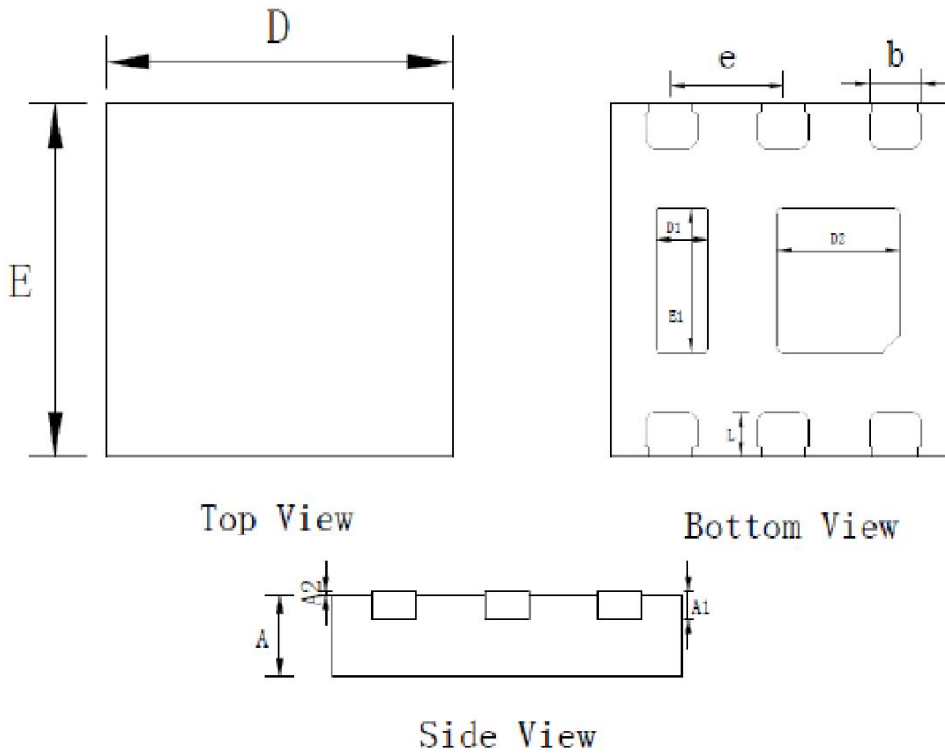


Figure8. Switching wave

DFN2*2-6L Package Information



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.400 | 0.500 | 0.016 | 0.020 |
| A1 | 0.150 REF | | 0.006 REF | |
| A2 | 0.000 | 0.050 | 0.000 | 0.002 |
| L | 0.200 | 0.300 | 0.008 | 0.012 |
| b | 0.250 | 0.350 | 0.010 | 0.014 |
| D | 1.950 | 2.050 | 0.077 | 0.081 |
| E | 1.950 | 2.050 | 0.077 | 0.081 |
| e | 0.650 BSC | | 0.260 BSC | |
| D2 | 0.610 | 0.810 | 0.024 | 0.032 |
| D1 | 0.200 | 0.400 | 0.008 | 0.016 |
| E1 | 0.710 | 0.910 | 0.028 | 0.036 |