

Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$ | I_D |
|---------------|-----------------|-------|
| -16V | 32mΩ@-4.5V | -6A |
| | 45mΩ@-2.5V | |

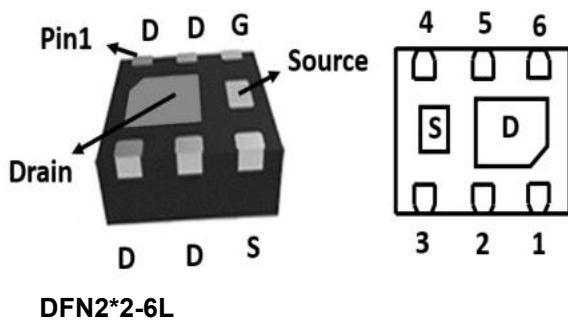
Feature

- Trench Technology
- Supper high density cell design
- Excellent ON resistance for higher DC current
- Extremely Low Threshold Voltage
- Suffix "-Q1" for AEC-Q101

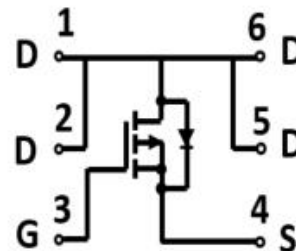
Application

- Driver for Relay, Solenoid, Motor, LED etc.
- DC-DC converter circuit
- Power Switch
- Load Switch
- Charging

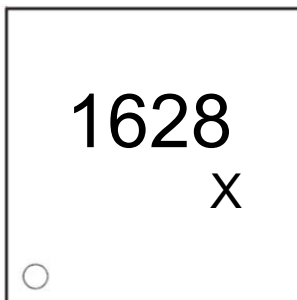
Package



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 | -6 | A |
| Pulsed Drain Current ¹⁾ | I_{DM} | -24 | A |
| Power Dissipation | P_D | 1.4 | W |
| Thermal Resistance Junction-to-Ambient | $R_{\theta JA}$ | 88 | °C/W |
| Junction Temperature | T_J | 150 | °C |
| Storage Temperature | T_{STG} | -55 ~ +150 | °C |

Electrical characteristics (Ta=25 °C unless otherwise noted)

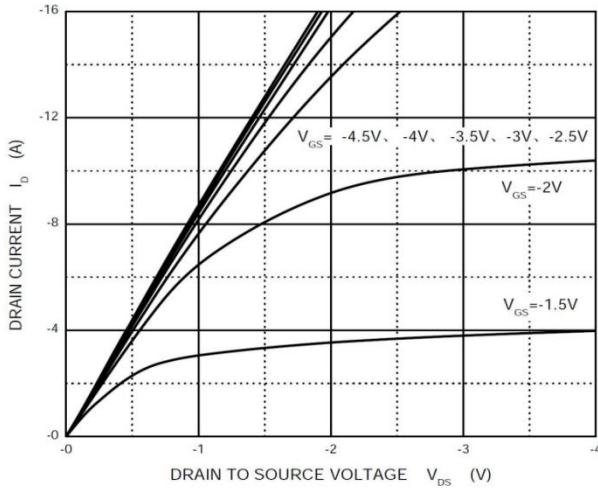
| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|---|---------------|--|------|------|------|------|
| Static Characteristics | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = -250\mu A$ | -16 | | | V |
| Zero gate voltage drain current | I_{DSS} | $V_{DS} = -16V, V_{GS} = 0V$ | | | -1 | μA |
| Gate-body leakage current | I_{GSS} | $V_{GS} = \pm 10V, V_{DS} = 0V$ | | | ±100 | nA |
| Gate threshold voltage | $V_{GS(th)}$ | $V_{DS} = V_{GS}, I_D = -250\mu A$ | -0.4 | -0.7 | -1.0 | V |
| Drain-source on-resistance | $R_{DS(on)}$ | $V_{GS} = -4.5V, I_D = -3.5A$ | | 28 | 32 | mΩ |
| | | $V_{GS} = -2.5V, I_D = -3.0A$ | | 38 | 45 | |
| Dynamic characteristics²⁾ | | | | | | |
| Input Capacitance | C_{iss} | $V_{GS} = 0V, V_{DS} = -4V, f = 1MHz$ | | 740 | | pF |
| Output Capacitance | C_{oss} | | | 290 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 190 | | |
| Total Gate Charge | Q_g | $V_{DS} = -2.5V, V_{GS} = -4.5V, I_D = -4.1A$ | | 4.5 | | nC |
| Gate-Source Charge | Q_{gs} | | | 1.2 | | |
| Gate-Drain Charge | Q_{gd} | | | 1.6 | | |
| Turn-on delay time | $t_{d(on)}$ | $V_{DS} = -4V, V_{GS} = -4.5V, R_L = 1.2\Omega, R_G = 1\Omega$ | | 13 | | nS |
| Turn-on rise time | t_r | | | 35 | | |
| Turn-off delay time | $t_{d(off)}$ | | | 32 | | |
| Turn-off fall time | t_f | | | 10 | | |
| Source-Drain Diode characteristics | | | | | | |
| Diode Forward voltage | V_{SD} | $V_{GS} = 0V, I_S = -1.0A$ | | | -1.2 | V |

Notes:

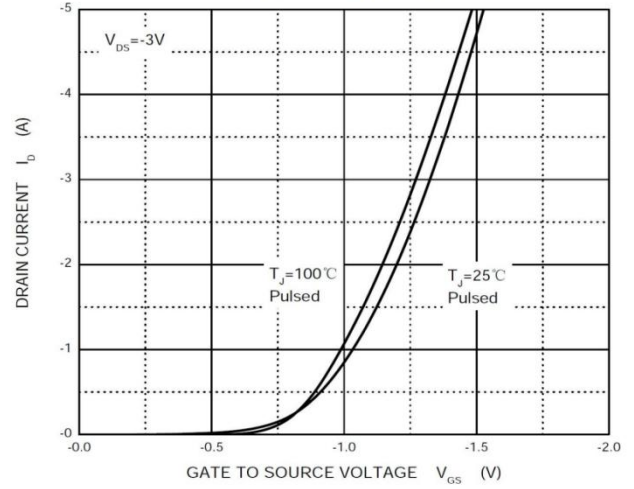
- 1) Repetitive Rating: Pulse width limited by maximum junction temperature.
- 2) Dynamic characteristics Guaranteed by design, not subject to production testing.

Typical Characteristics

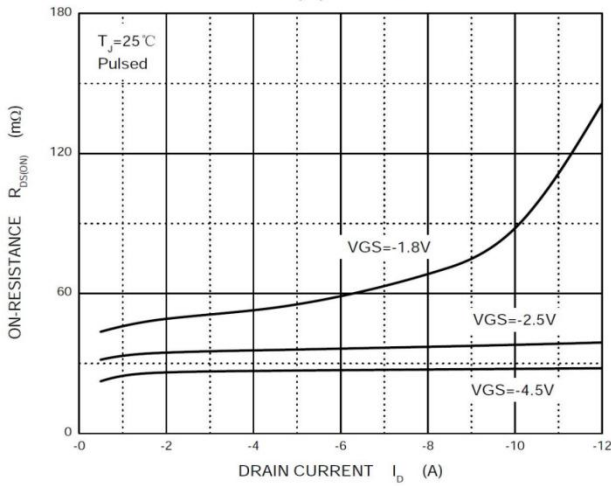
Output Characteristics



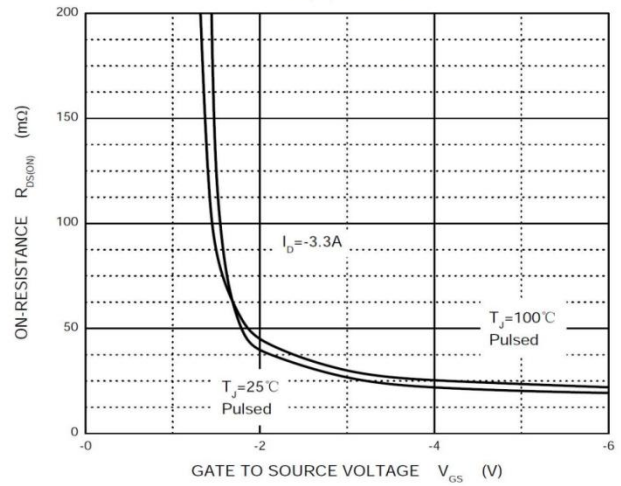
Transfer Characteristics



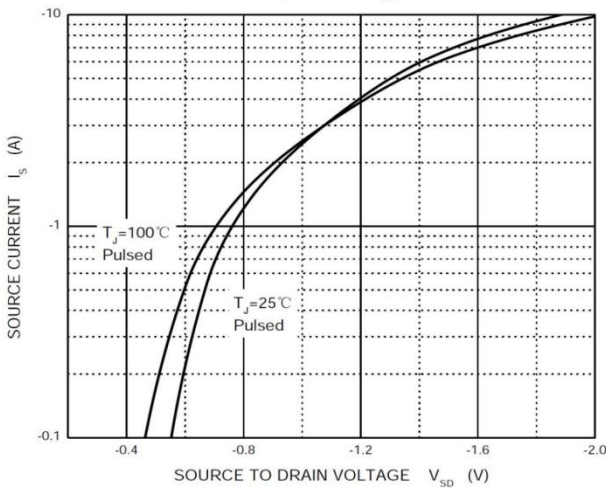
$R_{DS(ON)}$ — I_D



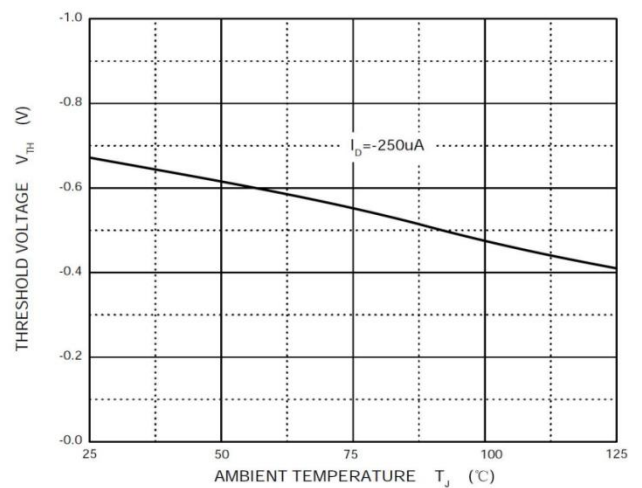
$R_{DS(ON)}$ — V_{GS}



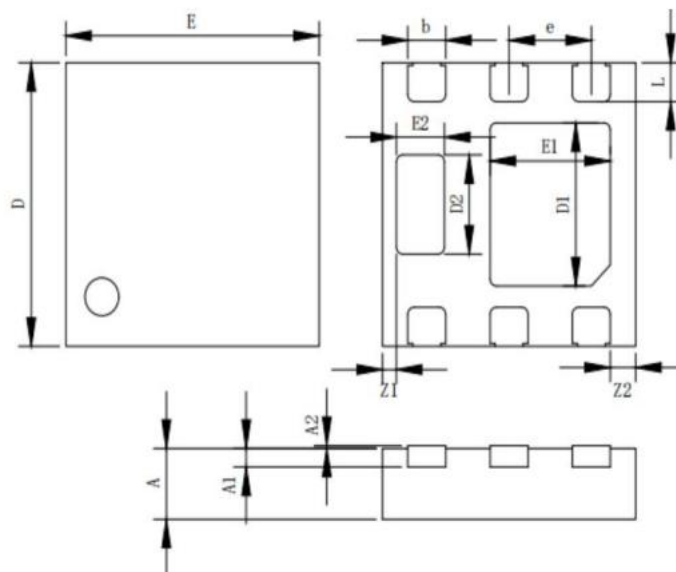
I_S — V_{SD}



Threshold Voltage



DFN2*2-6L Package Information



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.45 | 0.55 | 0.018 | 0.022 |
| A1 | 0.150 REF | | 0.006 REF | |
| A2 | 0.00 | 0.05 | 0.000 | 0.002 |
| D | 1.95 | 2.05 | 0.077 | 0.081 |
| E | 1.95 | 2.05 | 0.077 | 0.081 |
| D1 | 1.10 | 1.20 | 0.044 | 0.047 |
| E1 | 0.90 | 1.00 | 0.035 | 0.039 |
| D2 | 0.65 | 0.75 | 0.026 | 0.030 |
| E2 | 0.33 | 0.43 | 0.013 | 0.017 |
| Z1 | 0.06 | 0.16 | 0.002 | 0.006 |
| Z2 | 0.15 | 0.25 | 0.005 | 0.010 |
| b | 0.25 | 0.35 | 0.010 | 0.014 |
| e | 0.65 BSC | | 0.026 BSC | |
| L | 0.23 | 0.33 | 0.009 | 0.013 |