



Description

The DMP3018SFVQ-7 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.



DFN3X3-8L

General Features

$V_{DS} = -30V$ $I_D = -55A$

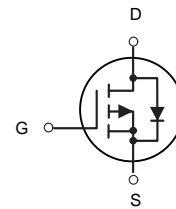
$R_{DS(ON)} < 11m\Omega$ @ $V_{GS} = -10V$

Application

Battery protection

Load switch

Uninterruptible power supply



P-Channel MOSFET

Ordering Information

| Product ID | Pack | Brand | Qty(PCS) |
|---------------|-----------|------------|----------|
| DMP3018SFVQ-7 | DFN3X3-8L | HXY MOSFET | 5000 |

Absolute Maximum Ratings ($T_C=25^\circ C$ unless otherwise noted)

| Symbol | Parameter | Rating | Units |
|-----------------------|---|------------|-------|
| V _{DS} | Drain-Source Voltage | -30 | V |
| V _{GS} | Gate-Source Voltage | ± 20 | V |
| $I_D@T_C=25^\circ C$ | Continuous Drain Current, $V_{GS} @ 10V^1$ | -55 | A |
| $I_D@T_C=100^\circ C$ | Continuous Drain Current, $V_{GS} @ 10V^1$ | -23 | A |
| IDM | Pulsed Drain Current ² | -140 | A |
| EAS | Single Pulse Avalanche Energy ³ | 78.8 | mJ |
| $P_D@T_C=25^\circ C$ | Total Power Dissipation ⁴ | 21.5 | W |
| TSTG | Storage Temperature Range | -55 to 150 | °C |
| T _J | Operating Junction Temperature Range | -55 to 150 | °C |
| R _{θJC} | Thermal Resistance Junction-Case ¹ | 5.8 | °C/W |



Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise specified)

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Units |
|---|---|--|------|------|-----------|------------|
| Off Characteristic | | | | | | |
| $V_{(BR)DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}=0V, I_D = -250\mu A$ | -30 | - | - | V |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{DS} = -30V, V_{GS} = 0V,$ | - | - | -1 | μA |
| I_{GSS} | Gate to Body Leakage Current | $V_{DS} = 0V, V_{GS} = \pm 20V$ | - | - | ± 100 | nA |
| On Characteristics | | | | | | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS} = V_{GS}, I_D = -250\mu A$ | -1.0 | -1.5 | -2.5 | V |
| $R_{DS(on)}$ | Static Drain-Source on-Resistance <small>note3</small> | $V_{GS} = -10V, I_D = -12A$ | - | 8.5 | 11 | m Ω |
| | | $V_{GS} = -4.5V, I_D = -8A$ | - | 13 | 18 | |
| Dynamic Characteristics | | | | | | |
| C_{iss} | Input Capacitance | $V_{DS} = -15V, V_{GS} = 0V,$ $f = 1.0MHz$ | - | 2800 | - | pF |
| C_{oss} | Output Capacitance | | - | 346 | - | pF |
| C_{rss} | Reverse Transfer Capacitance | | - | 319 | - | pF |
| Q_g | Total Gate Charge | $V_{DS} = -15V, I_D = -20A,$ $V_{GS} = -10V$ | - | 30 | - | nC |
| Q_{gs} | Gate-Source Charge | | - | 5.3 | - | nC |
| Q_{gd} | Gate-Drain("Miller") Charge | | - | 7.6 | - | nC |
| Switching Characteristics | | | | | | |
| $t_{d(on)}$ | Turn-on Delay Time | $V_{DD} = -15V, I_D = -20A,$ $V_{GS} = -10V, R_{GEN} = 2.5\Omega$ | - | 14 | - | ns |
| t_r | Turn-on Rise Time | | - | 20 | - | ns |
| $t_{d(off)}$ | Turn-off Delay Time | | - | 95 | - | ns |
| t_f | Turn-off Fall Time | | - | 65 | - | ns |
| Drain-Source Diode Characteristics and Maximum Ratings | | | | | | |
| I_S | Maximum Continuous Drain to Source Diode Forward Current | | - | - | -55 | A |
| I_{SM} | Maximum Pulsed Drain to Source Diode Forward Current | | - | - | -140 | A |
| V_{SD} | Drain to Source Diode Forward Voltage | $V_{GS} = 0V, I_S = -35A$ | - | -0.8 | -1.2 | V |

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. EAS condition: $T_J = 25^\circ\text{C}$, $V_{DD} = -20V$, $V_G = -10V$, $L = 0.5mH$, $R_G = 25\Omega$, $I_{AS} = -17A$

3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$



Typical Performance Characteristics

Figure 1: Output Characteristics

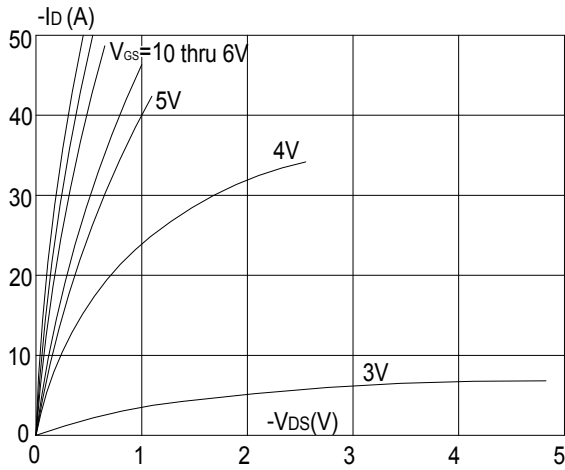


Figure 2: Typical Transfer Characteristics

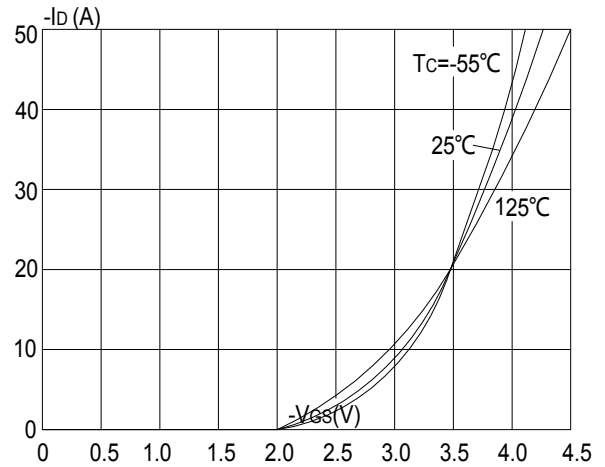


Figure 3: On-resistance vs. Drain Current

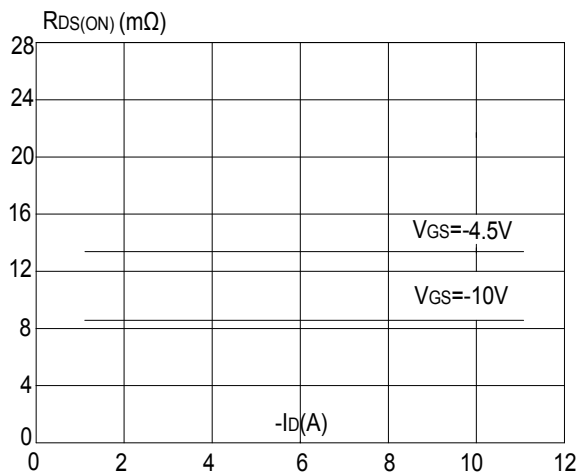


Figure 4: Body Diode Characteristics

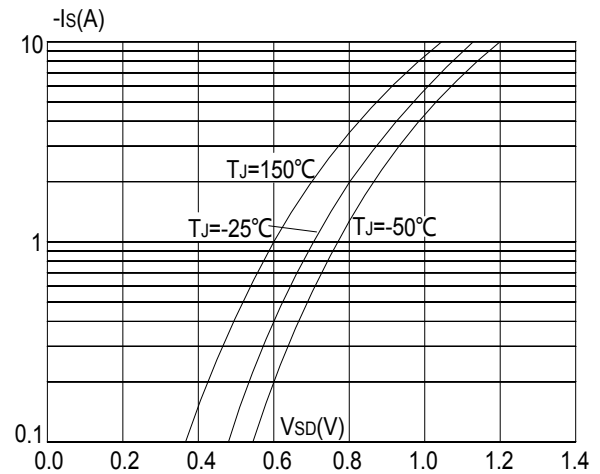


Figure 5: Gate Charge Characteristics

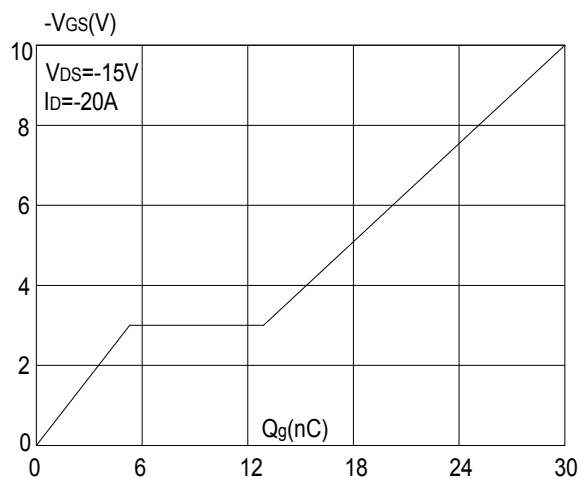


Figure 6: Capacitance Characteristics

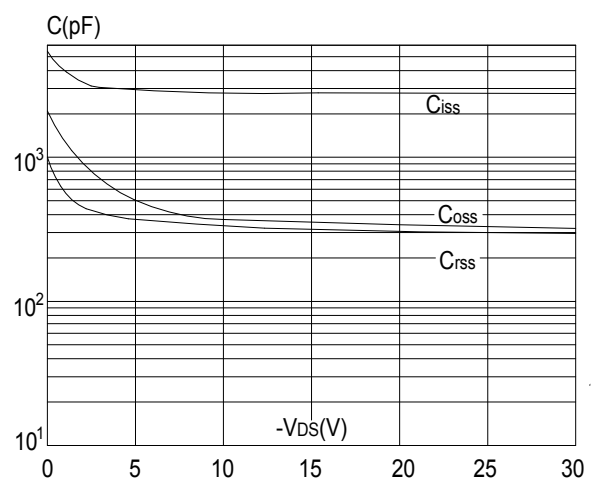




Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

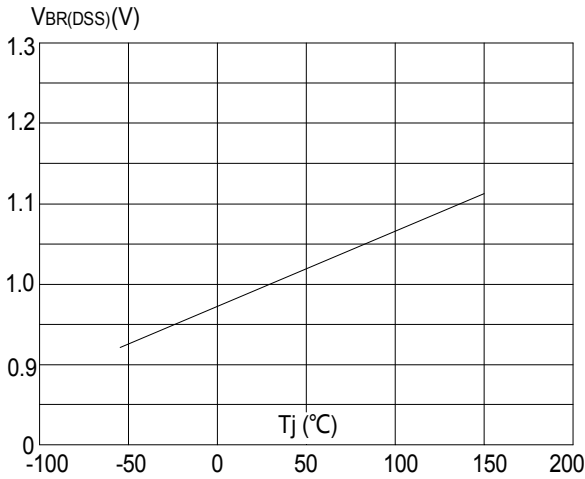


Figure 8: Normalized on Resistance vs. Junction Temperature

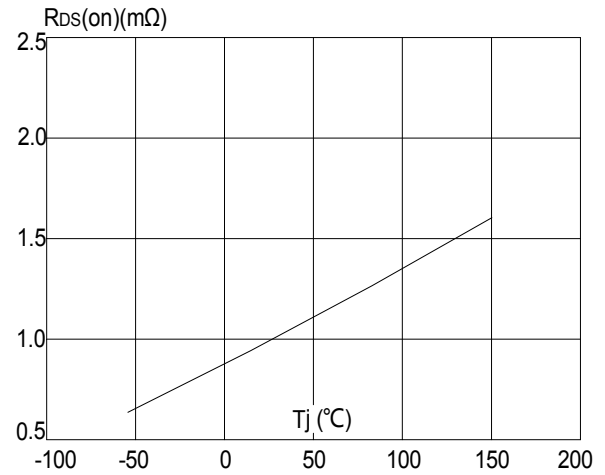


Figure 9: Maximum Safe Operating Area

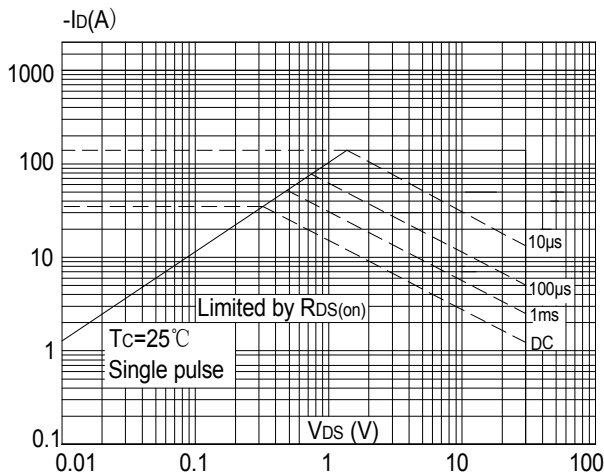


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

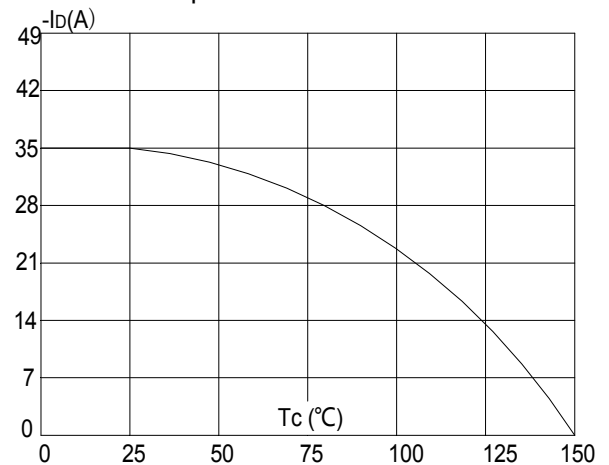
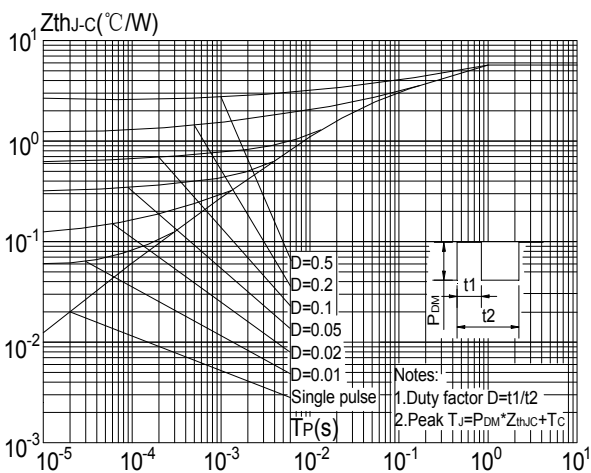


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case





DFN3X3-8L Package Information



| Symbol | Dimensions In Millimeters | | |
|----------|---------------------------|------|------|
| | Min. | Nom. | Max. |
| A | 0.70 | 0.75 | 0.80 |
| b | 0.25 | 0.30 | 0.35 |
| c | 0.10 | 0.15 | 0.25 |
| D | 3.25 | 3.35 | 3.45 |
| D1 | 3.00 | 3.10 | 3.20 |
| D2 | 1.48 | 1.58 | 1.68 |
| D3 | - | 0.13 | - |
| E | 3.20 | 3.30 | 3.40 |
| E1 | 3.00 | 3.15 | 3.20 |
| E2 | 2.39 | 2.49 | 2.59 |
| e | 0.65BSC | | |
| H | 0.30 | 0.39 | 0.50 |
| L | 0.30 | 0.40 | 0.50 |
| L1 | - | 0.13 | - |
| M | * | * | 0.15 |
| θ | | 10° | 12° |



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