



## Description

The DMP3068L uses advanced trench technology to provide excellent  $R_{DS(ON)}$ . This device is suitable for use as a load switch or in PWM applications.

## General Features

$V_{DS} = -30V, I_D = -4.2A$

$R_{DS(ON)} < 55m\Omega @ V_{GS} = -10V$

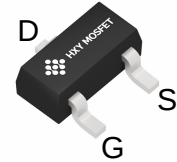
$R_{DS(ON)} < 75m\Omega @ V_{GS} = -4.5V$

## Application

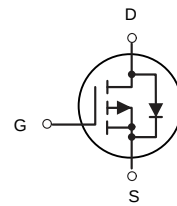
Battery protection

Load switch

Uninterruptible power supply



**SOT-23**



P-Channel MOSFET

## Package Marking and Ordering Information

| Product ID | Pack   | Brand      | Qty(PCS) |
|------------|--------|------------|----------|
| DMP3068L   | SOT-23 | HXY MOSFET | 3000     |

## Absolute Maximum Ratings (TA=25°C unless otherwise noted)

| Symbol          | Parameter                                        | Limit      | Unit |
|-----------------|--------------------------------------------------|------------|------|
| $V_{DS}$        | Drain-Source Voltage                             | -30        | V    |
| $V_{GS}$        | Gate-Source Voltage                              | $\pm 12$   | V    |
| $I_D$           | Drain Current-Continuous                         | -4.2       | A    |
| $I_{DM}$        | Drain Current-Pulsed (Note 1)                    | -30        | A    |
| $P_D$           | Maximum Power Dissipation                        | 1.2        | W    |
| $T_J, T_{STG}$  | Operating Junction and Storage Temperature Range | -55 To 150 | °C   |
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient (Note 2) | 104        | °C/W |



**Electrical Characteristics (TA=25°C unless otherwise noted)**

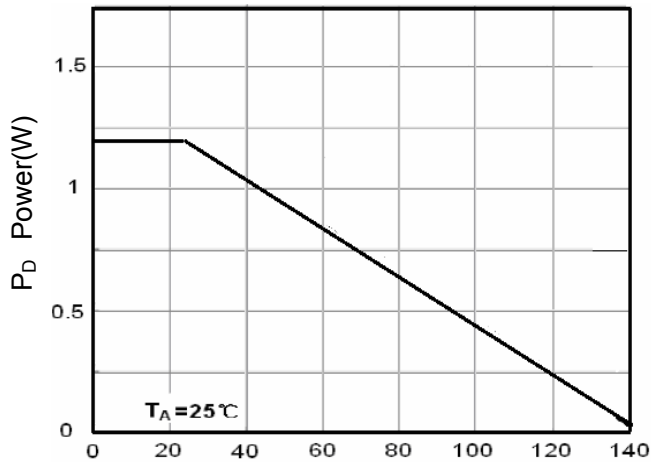
| Parameter                                 | Symbol       | Condition                                              | Min  | Typ | Max       | Unit       |
|-------------------------------------------|--------------|--------------------------------------------------------|------|-----|-----------|------------|
| Drain-Source Breakdown Voltage            | $BV_{DSS}$   | $V_{GS}=0V, I_D=-250\mu A$                             | -30  |     | -         | V          |
| Zero Gate Voltage Drain Current           | $I_{DSS}$    | $V_{DS}=-24V, V_{GS}=0V$                               | -    | -   | -1        | $\mu A$    |
| Gate-Body Leakage Current                 | $I_{GSS}$    | $V_{GS}=\pm 10V, V_{DS}=0V$                            | -    | -   | $\pm 100$ | nA         |
| Gate Threshold Voltage                    | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=-250\mu A$                         | -0.7 | -1  | -1.3      | V          |
| Drain-Source On-State Resistance          | $R_{DS(on)}$ | $V_{GS}=-10V, I_D=-4.2A$                               | -    | 45  | 55        | m $\Omega$ |
|                                           |              | $V_{GS}=-4.5V, I_D=-4A$                                | -    | 56  | 75        | m $\Omega$ |
|                                           |              | $V_{GS}=-2.5V, I_D=-1A$                                |      | 72  | 90        | m $\Omega$ |
| Forward Transconductance                  | $g_{FS}$     | $V_{DS}=-5V, I_D=-4.2A$                                | -    | 10  | -         | S          |
| Input Capacitance                         | $C_{iss}$    | $V_{DS}=-15V, V_{GS}=0V,$<br>$F=1.0MHz$                | -    | 880 | -         | PF         |
| Output Capacitance                        | $C_{oss}$    |                                                        | -    | 105 | -         | PF         |
| Reverse Transfer Capacitance              | $C_{rss}$    |                                                        | -    | 65  | -         | PF         |
| Turn-on Delay Time                        | $t_{d(on)}$  | $V_{DD}=-15V, I_D=-4.2A, V_{GS}=-10V, R_{GEN}=6\Omega$ | -    | 7   | -         | nS         |
| Turn-on Rise Time                         | $t_r$        |                                                        | -    | 3   | -         | nS         |
| Turn-Off Delay Time                       | $t_{d(off)}$ |                                                        | -    | 30  | -         | nS         |
| Turn-Off Fall Time                        | $t_f$        |                                                        | -    | 12  | -         | nS         |
| Total Gate Charge                         | $Q_g$        | $V_{DS}=-15V, I_D=-4.2A, V_{GS}=-4.5V$                 | -    | 8.5 | -         | nC         |
| Gate-Source Charge                        | $Q_{gs}$     |                                                        | -    | 1.8 | -         | nC         |
| Gate-Drain Charge                         | $Q_{gd}$     |                                                        | -    | 2.7 | -         | nC         |
| Drain-Source Diode Characteristics        |              |                                                        |      |     |           |            |
| Diode Forward Voltage <sup>(Note 3)</sup> | $V_{SD}$     | $V_{GS}=0V, I_S=-4.2A$                                 | -    | -   | -1.2      | V          |

**Notes:**

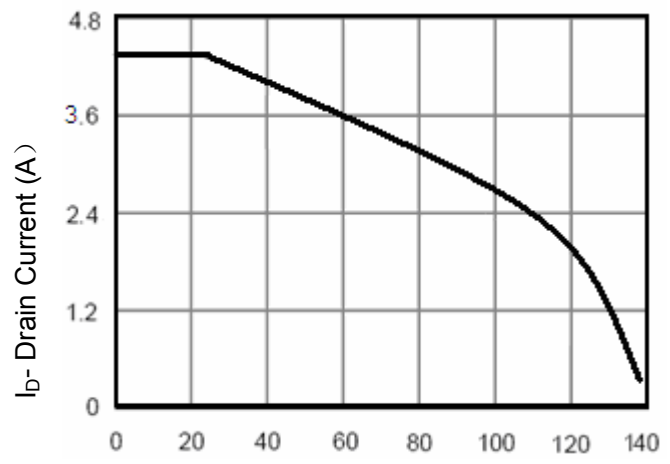
- 1、Repetitive Rating: Pulse width limited by maximum junction temperature.
- 2、Surface Mounted on FR4 Board,  $t \leq 10$  sec.
- 3、Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
- 4、Guaranteed by design, not subject to production



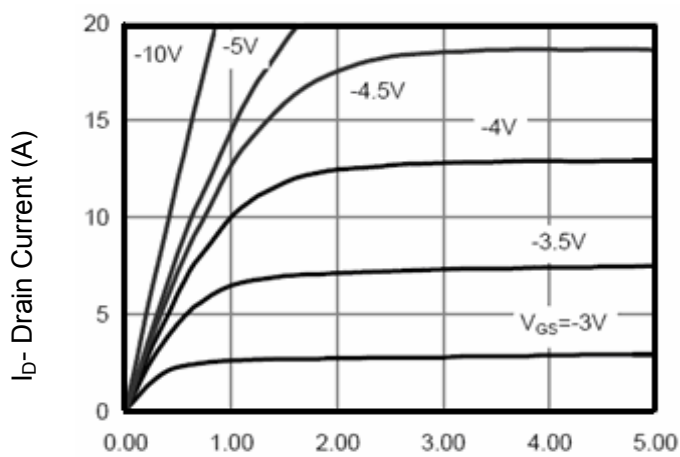
## Typical Electrical and Thermal Characteristics



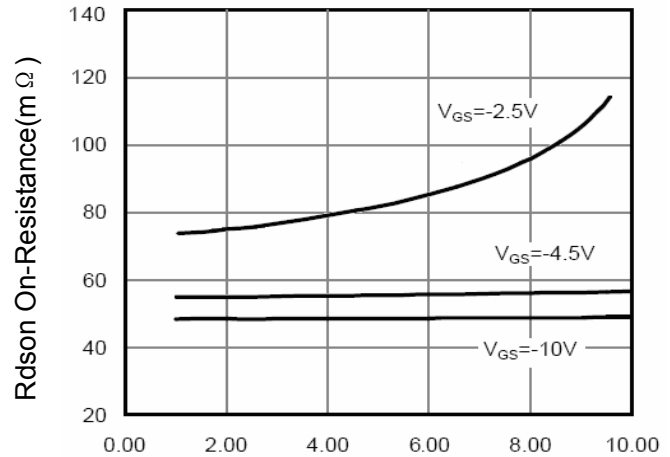
$T_J$ -Junction Temperature( $^\circ\text{C}$ )  
Figure 1 Power Dissipation



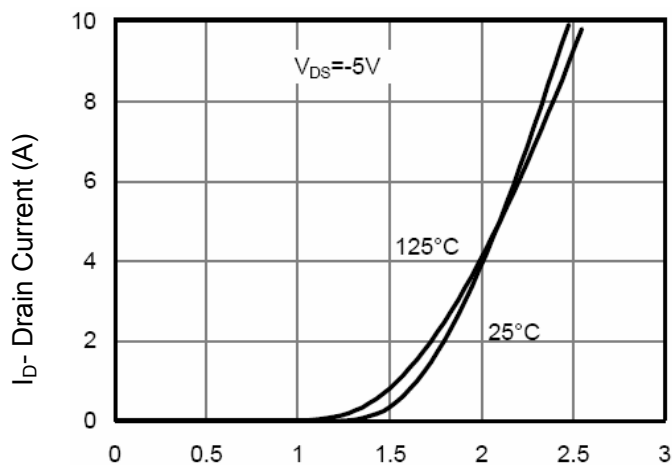
$T_J$ -Junction Temperature( $^\circ\text{C}$ )  
Figure 2 Drain Current



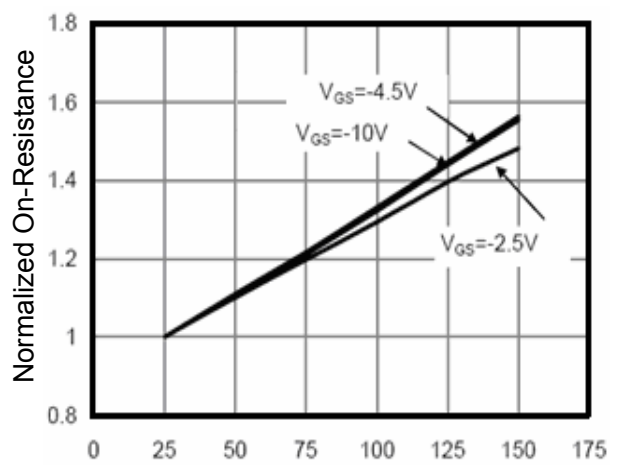
$V_{DS}$  Drain-Source Voltage (V)  
Figure 3 Output Characteristics



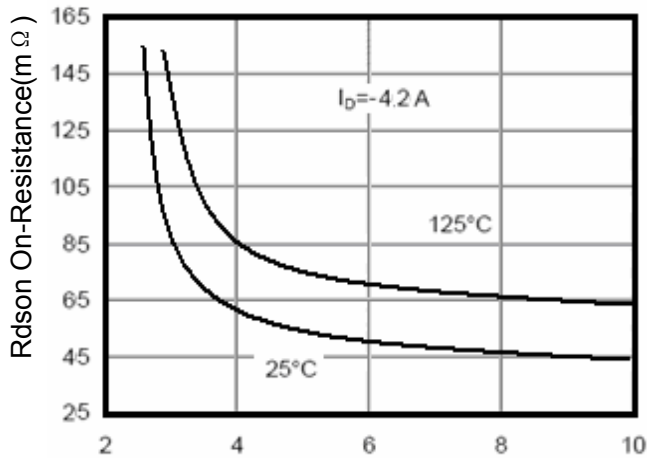
$I_D$ - Drain Current (A)  
Figure 4 Drain-Source On-Resistance



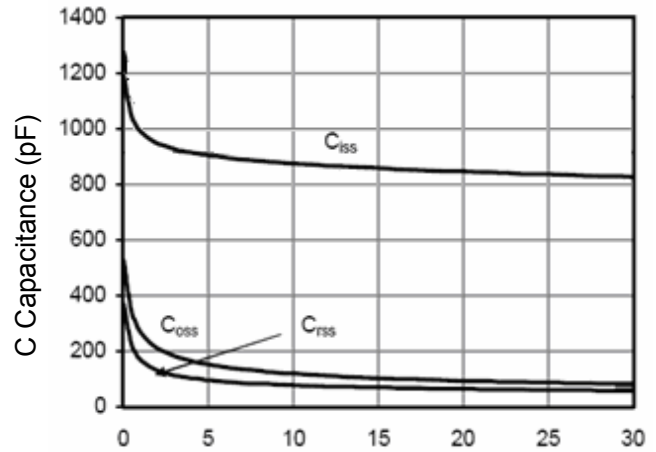
$V_{GS}$  Gate-Source Voltage (V)  
Figure 5 Transfer Characteristics



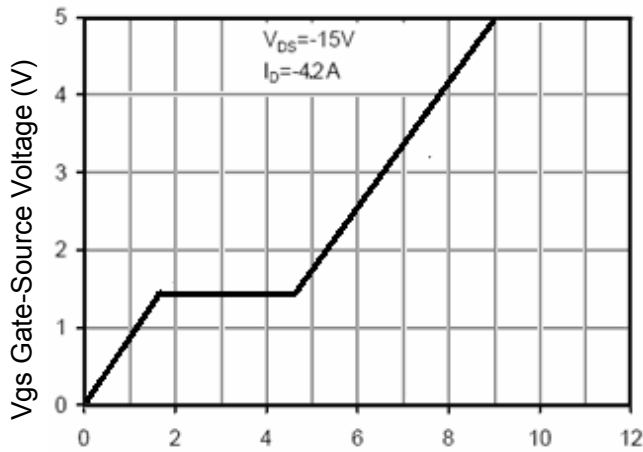
$T_J$ -Junction Temperature( $^\circ\text{C}$ )  
Figure 6 Drain-Source On-Resistance



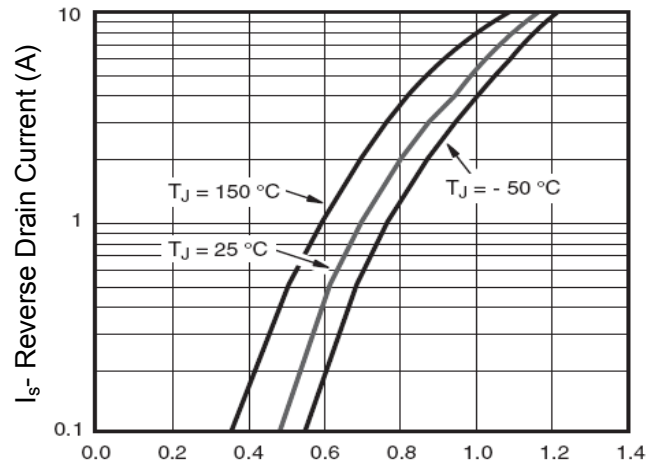
Vgs Gate-Source Voltage (V)  
Figure 7 Rdson vs Vgs



Vds Drain-Source Voltage (V)  
Figure 8 Capacitance vs Vds



Qg Gate Charge (nC)  
Figure 9 Gate Charge



Vsd Source-Drain Voltage (V)  
Figure 10 Source- Drain Diode Forward

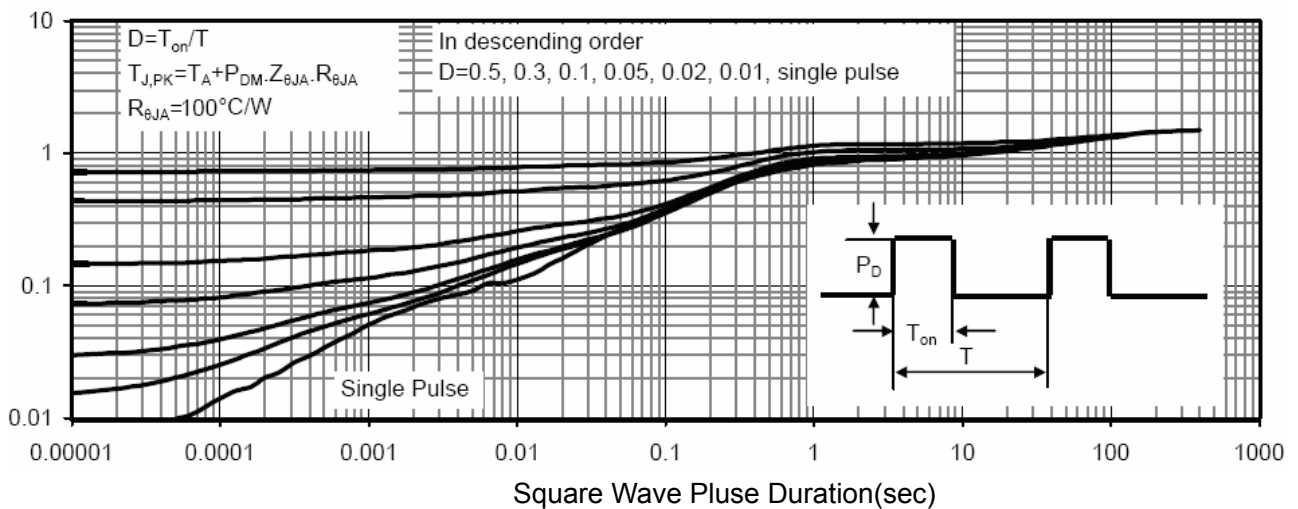
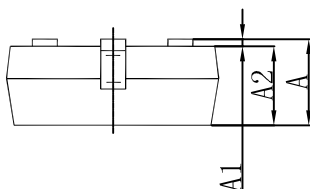
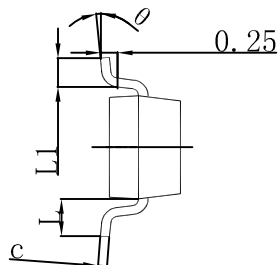
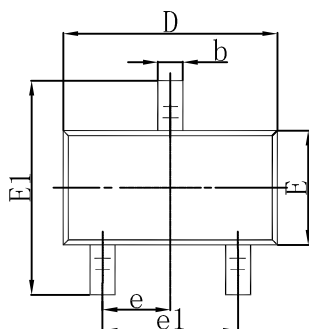


Figure 14 Normalized Maximum Transient Thermal Impedance

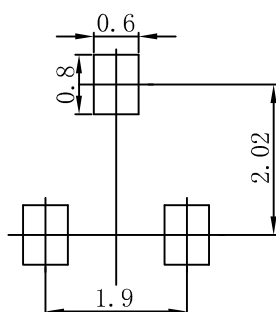


## SOT-23 Package Outline Dimensions



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 0.900                     | 1.150 | 0.035                | 0.045 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.900                     | 1.050 | 0.035                | 0.041 |
| b      | 0.300                     | 0.500 | 0.012                | 0.020 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 2.800                     | 3.000 | 0.110                | 0.118 |
| E      | 1.200                     | 1.400 | 0.047                | 0.055 |
| E1     | 2.250                     | 2.550 | 0.089                | 0.100 |
| e      | 0.950 TYP                 |       | 0.037 TYP            |       |
| e1     | 1.800                     | 2.000 | 0.071                | 0.079 |
| L      | 0.550 REF                 |       | 0.022 REF            |       |
| L1     | 0.300                     | 0.500 | 0.012                | 0.020 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

## SOT-23 Suggested Pad Layout



### Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.



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