



Description

The DMP3036SSD uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

General Features

$V_{DS} = -30V, I_D = -11A$

$R_{DS(ON)} < 18m @ V_{GS} = -10V$

$R_{DS(ON)} < 27m @ V_{GS} = -4.5V$

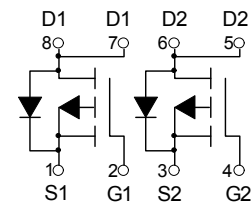
Application

PWM application

Load switch



SOP-8



Dual P-Channel MOSFET

Package Marking and Ordering Information

| Product ID | Pack | Brand | Qty(PCS) |
|------------|-------|------------|----------|
| DMP3036SSD | SOP-8 | HXY MOSFET | 3000 |

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

| Symbol | Parameter | Limit | Unit |
|-----------------|--|------------|--------------|
| V_{DS} | Drain-Source Voltage | -30 | V |
| V_{GS} | Gate-Source Voltage | ± 20 | V |
| I_D | Drain Current-Continuous | -11 | A |
| I_{DM} | Drain Current-Pulsed (Note 1) | -40 | A |
| P_D | Maximum Power Dissipation | 3.7 | W |
| T_J, T_{STG} | Operating Junction and Storage Temperature Range | -55 To 150 | $^\circ C$ |
| $R_{\theta JA}$ | Thermal Resistance, Junction-to-Ambient (Note 2) | 33.8 | $^\circ C/W$ |



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

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Units |
|---------------|---|--|------|------|-----------|------------|
| $V_{(BR)DSS}$ | 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 |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}=V_{GS}, I_D=-250\mu A$ | -1.0 | -1.6 | -2.5 | V |
| $R_{DS(on)}$ | Static Drain-Source on-Resistance <small>Note3</small> | $V_{GS}=-10V, I_D=-10A$ | - | 14 | 18 | m Ω |
| | | $V_{GS}=-4.5V, I_D=-5A$ | - | 20 | 27 | |
| C_{iss} | Input Capacitance | $V_{DS}=-15V, V_{GS}=0V,$ $f=1.0MHz$ | - | 1330 | - | pF |
| C_{oss} | Output Capacitance | | - | 183 | - | pF |
| C_{rss} | Reverse Transfer Capacitance | | - | 156 | - | pF |
| Q_g | Total Gate Charge | $V_{DS}=-15V, I_D=-5A,$ $V_{GS}=-10V$ | - | 22 | - | nC |
| Q_{gs} | Gate-Source Charge | | - | 1.0 | - | nC |
| Q_{gd} | Gate-Drain("Miller") Charge | | - | 1.8 | - | nC |
| $t_{d(on)}$ | Turn-on Delay Time | $V_{DD}=-15V, I_D=-10A,$ $V_{GS}=-10V, R_{GEN}=2.5\Omega$ | - | 9 | - | ns |
| t_r | Turn-on Rise Time | | - | 13 | - | ns |
| $t_{d(off)}$ | Turn-off Delay Time | | - | 48 | - | ns |
| t_f | Turn-off Fall Time | | - | 20 | - | ns |
| I_S | Maximum Continuous Drain to Source Diode Forward Current | | - | - | -11 | A |
| I_{SM} | Maximum Pulsed Drain to Source Diode Forward Current | | - | - | -40 | A |
| V_{SD} | Drain to Source Diode Forward Voltage | $V_{GS}=0V, I_S=-15A$ | - | -0.8 | -1.2 | V |
| t_{rr} | Reverse Recovery Time | $T_J=25^{\circ}\text{C},$ | - | 64 | - | ns |
| Q_{rr} | Reverse Recovery Charge | $V_{DD}=-24V, I_F=-2.8A,$ $di/dt=-100A/\mu s$ | - | 25 | - | nC |

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

2. EAS condition: $T_J=25^{\circ}\text{C}, V_{GS}=10V, R_G=25\Omega, L=0.5mH, I_{AS}=-12.7A$

3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$



Typical Performance Characteristics

Figure 1: Output Characteristics

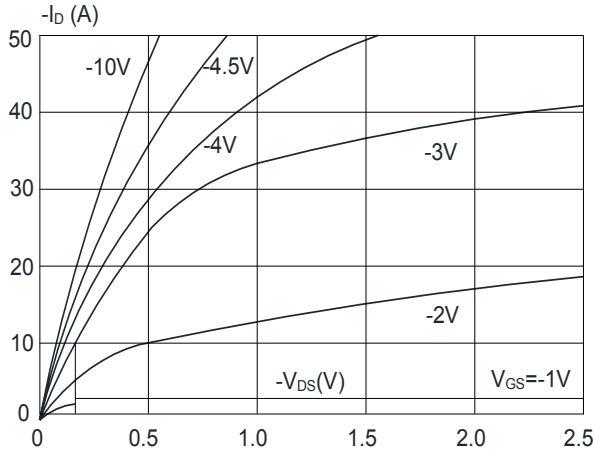


Figure 2: Typical Transfer Characteristics

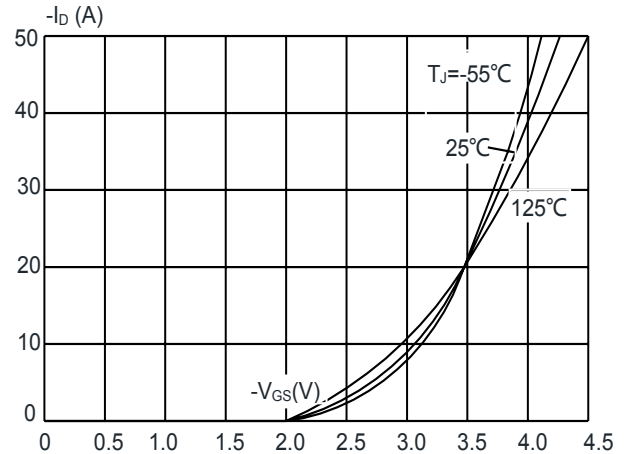


Figure 3: On-resistance vs. Drain Current

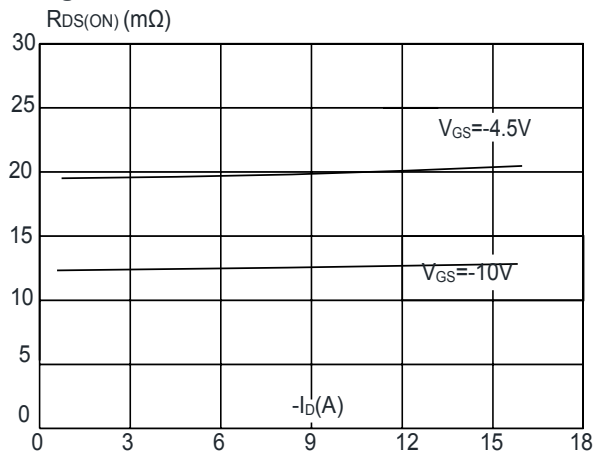


Figure 4: Body Diode Characteristics

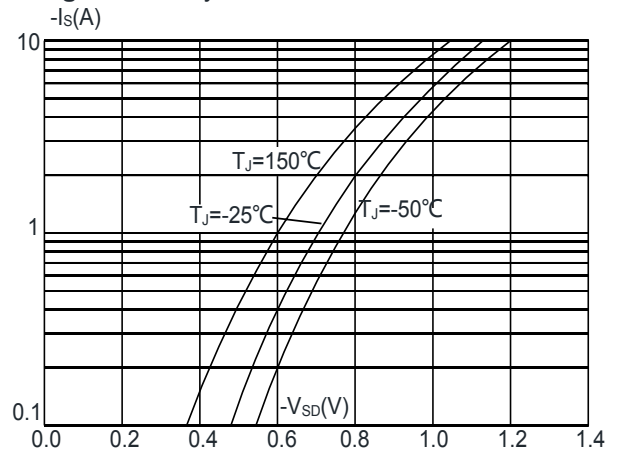


Figure 5: Gate Charge Characteristics

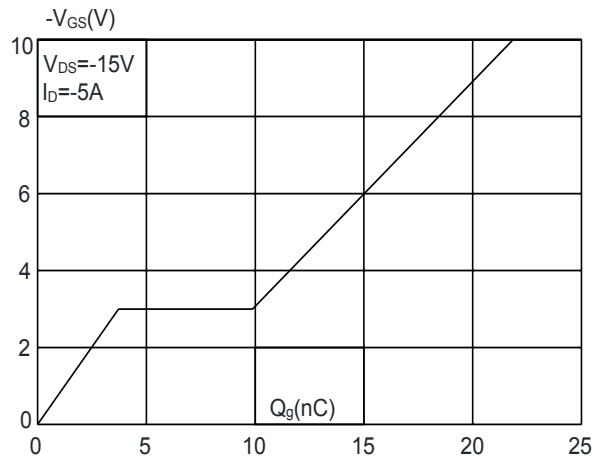


Figure 6: Capacitance Characteristics

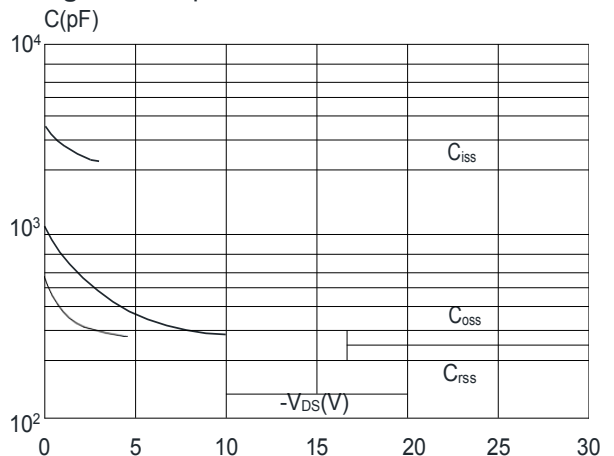




Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

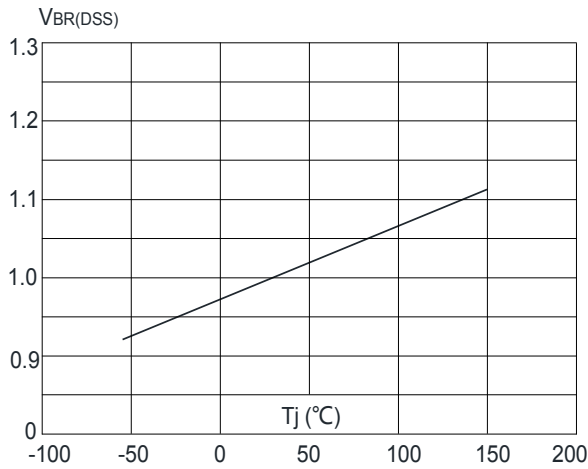


Figure 8: Normalized on Resistance vs. Junction Temperature

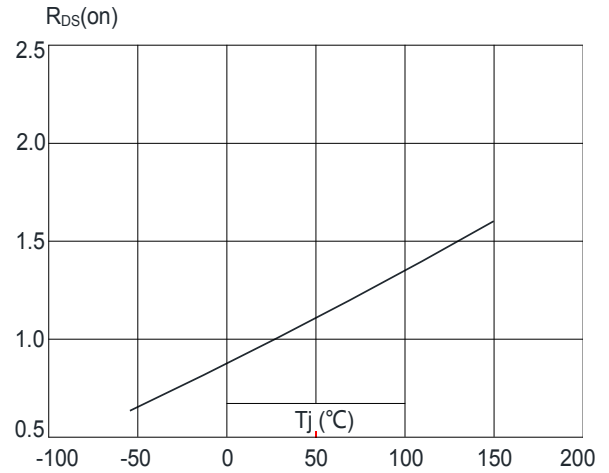


Figure 9: Maximum Safe Operating Area

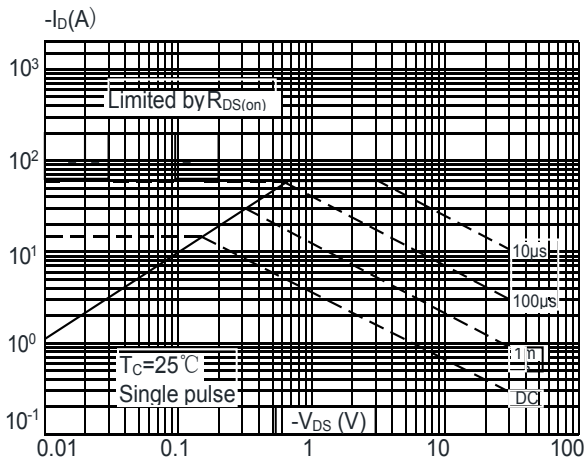


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

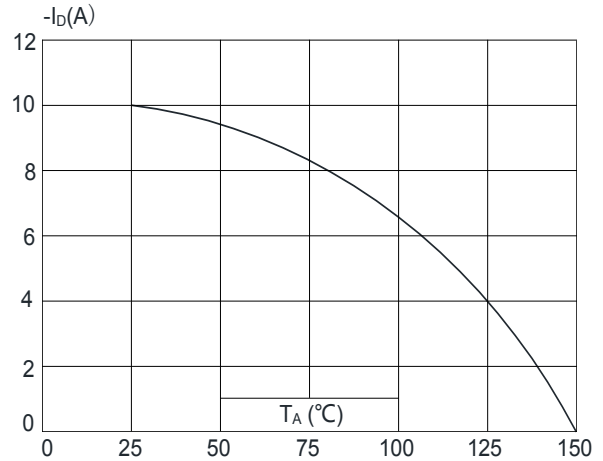
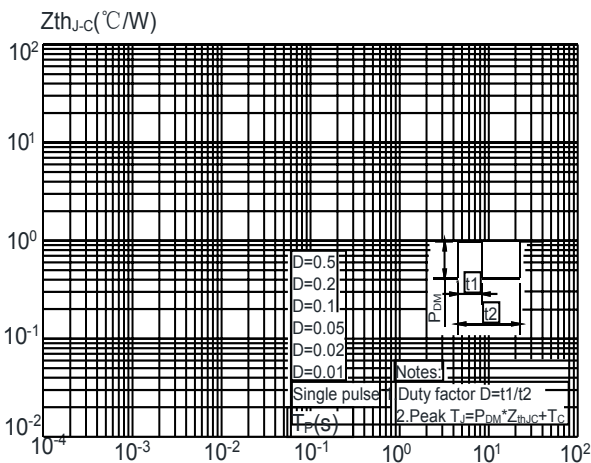


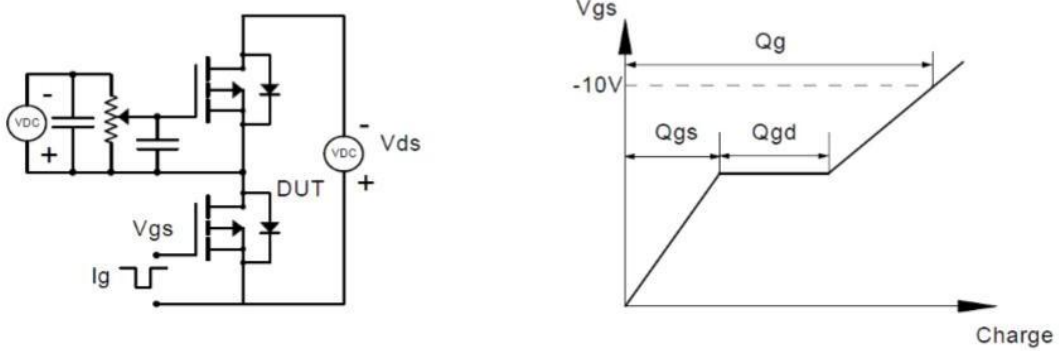
Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



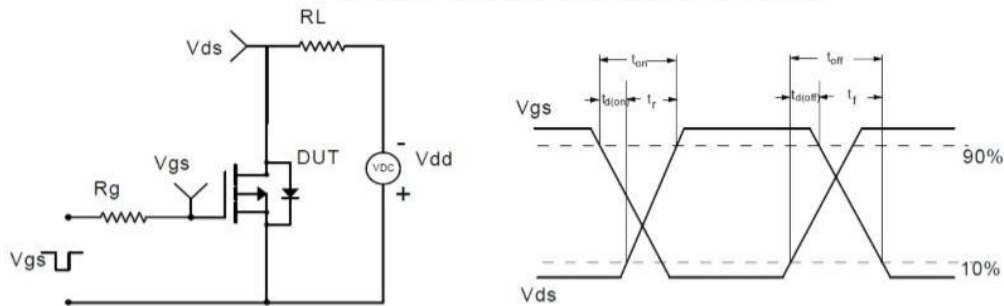


Test Circuit

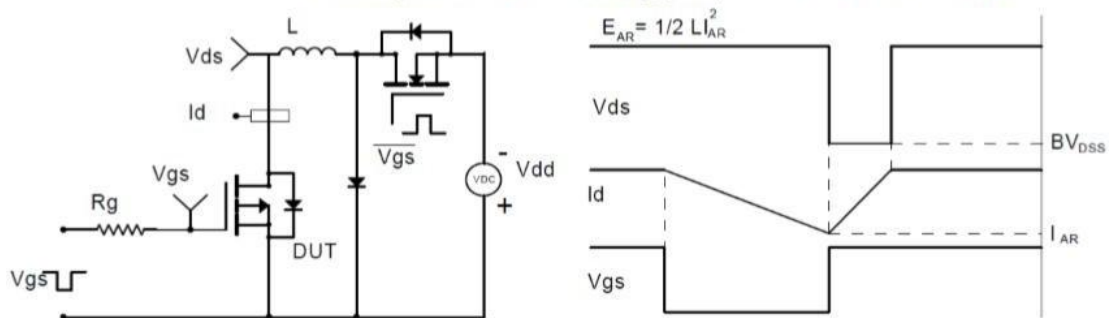
Gate Charge Test Circuit & Waveform



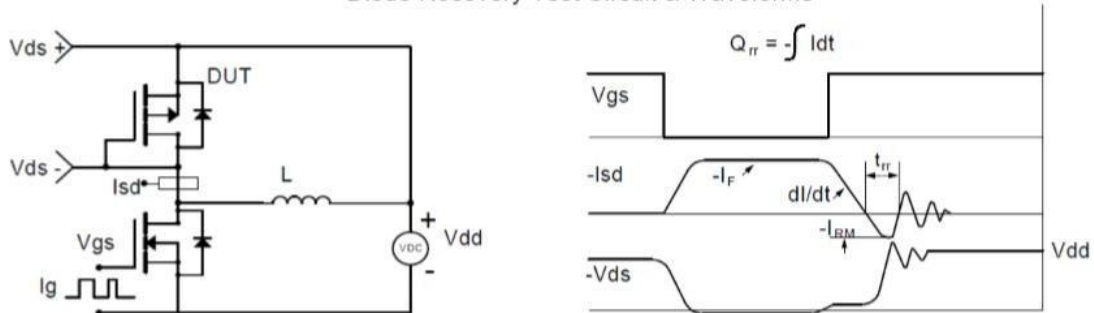
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

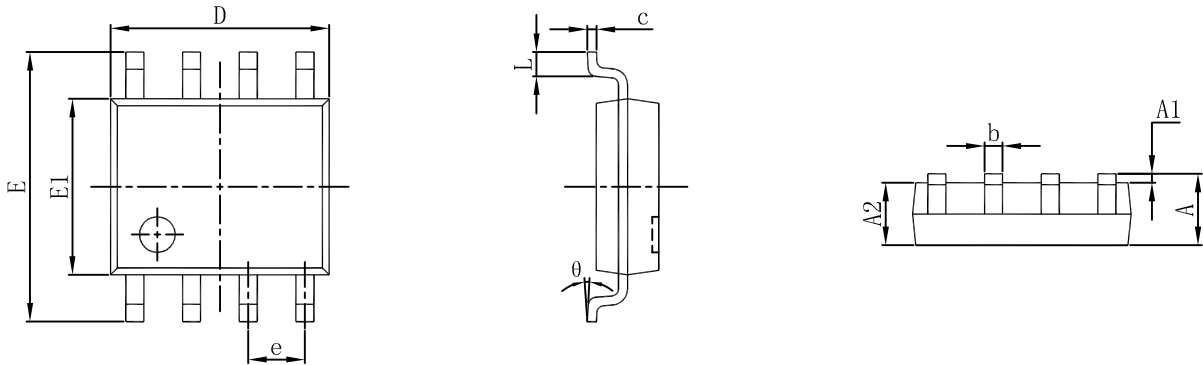


Diode Recovery Test Circuit & Waveforms

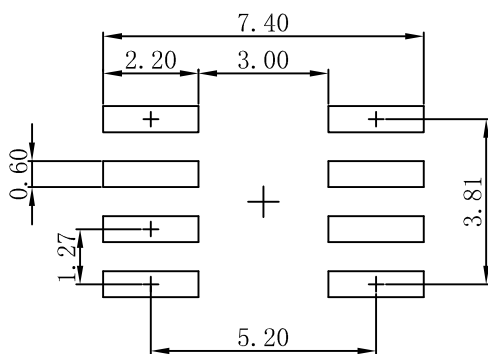




SOP-8 Package Outline Dimensions



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 1.350 | 1.750 | 0.053 | 0.069 |
| A1 | 0.100 | 0.250 | 0.004 | 0.010 |
| A2 | 1.350 | 1.550 | 0.053 | 0.061 |
| b | 0.330 | 0.510 | 0.013 | 0.020 |
| c | 0.170 | 0.250 | 0.007 | 0.010 |
| D | 4.800 | 5.000 | 0.189 | 0.197 |
| e | 1.270 (BSC) | | 0.050 (BSC) | |
| E | 5.800 | 6.200 | 0.228 | 0.244 |
| E1 | 3.800 | 4.000 | 0.150 | 0.157 |
| L | 0.400 | 1.270 | 0.016 | 0.050 |
| θ | 0° | 8° | 0° | 8° |



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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