

## JMSL1018PP

### Features

- Excellent  $R_{DS(ON)}$  and Low Gate Charge
- 100% UIS Tested
- 100% Vds Tested
- Halogen-free; RoHS-compliant
- Pb-free plating

### Applications

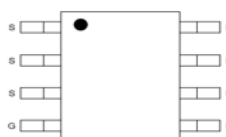
- Load Switch
- PWM Application
- Power Management

### Product Summary

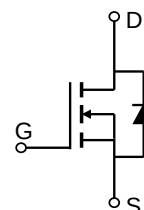
| Parameters                       | Value | Unit |
|----------------------------------|-------|------|
| $V_{DSS}$                        | 100   | V    |
| $V_{GS(th)_{Typ}}$               | 1.7   | V    |
| $I_D(@V_{GS}=10V)$               | 8.4   | A    |
| $R_{DS(ON)_{Typ}}(@V_{GS}=10V)$  | 14.7  | mΩ   |
| $R_{DS(ON)_{Typ}}(@V_{GS}=4.5V)$ | 22.2  | mΩ   |



SOP-8



Pin Assignment



Schematic Diagram

### Ordering Information

| Device        | Marking | MSL | Form      | Package | Reel(pcs) | Per Carton (pcs) |
|---------------|---------|-----|-----------|---------|-----------|------------------|
| JMSL1018PP-13 | SL1018P | 3   | Tape&Reel | SOP-8   | 4000      | 48000            |

### Absolute Maximum Ratings (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

| Symbol              | Parameter                                     | Value                     | Unit             |
|---------------------|-----------------------------------------------|---------------------------|------------------|
| $V_{DS}$            | Drain-to-Source Voltage                       | 100                       | V                |
| $V_{GS}$            | Gate-to-Source Voltage                        | $\pm 20$                  | V                |
| $I_D$               | Continuous Drain Current                      | $T_A = 25^\circ\text{C}$  | A                |
|                     |                                               | $T_A = 100^\circ\text{C}$ |                  |
| $I_{DM}$            | Pulsed Drain Current <sup>(1)</sup>           | Refer to Fig.4            | A                |
| $E_{AS}$            | Single Pulsed Avalanche Energy <sup>(2)</sup> | 74                        | mJ               |
| $P_D$               | Power Dissipation                             | $T_A = 25^\circ\text{C}$  | W                |
|                     |                                               | $T_A = 100^\circ\text{C}$ |                  |
| $T_{J \text{ STG}}$ | Junction & Storage Temperature Range          | -55 to 150                | $^\circ\text{C}$ |

### Thermal Characteristics

| Symbol | Parameter                                              | Max | Unit               |
|--------|--------------------------------------------------------|-----|--------------------|
| R      | Thermal Resistance, Junction to Ambient <sup>(3)</sup> | 50  | $^\circ\text{C/W}$ |



Electrical Characteristics (T<sub>J</sub> = 25°C unless otherwise specified)

| Symbol               | Conditions | Min. | Typ. | Max. | Unit |
|----------------------|------------|------|------|------|------|
| Off Characteristics  |            |      |      |      |      |
| V <sub>(BR)DSS</sub> |            | 100  | -    | -    | V    |
| I <sub>DSS</sub>     |            | -    | -    | 1.0  | μ    |
| I <sub>GSS</sub>     |            | -    | -    | ±100 |      |
|                      |            |      |      |      |      |
| V <sub>GS(th)</sub>  |            | 1.2  | 1.7  | 2.2  | V    |
|                      |            | -    | 14.7 | 19.1 | mΩ   |
|                      |            | -    | 22.2 | 28.9 | mΩ   |
|                      |            |      |      |      |      |
| R <sub>g</sub>       |            | -    | 2    | -    | Ω    |
| C <sub>iss</sub>     |            | -    | 707  | 1061 | pF   |
| C <sub>oss</sub>     |            | -    | 357  | 535  | pF   |
| C <sub>rss</sub>     |            | -    | 9    | -    | pF   |
| Q <sub>g</sub>       |            | -    | 13   | -    | nC   |
| Q <sub>gs</sub>      |            | -    | 2.8  | -    | nC   |
| Q <sub>gd</sub>      |            | -    | 2.9  | -    | nC   |
|                      |            |      |      |      |      |
| t <sub>d(on)</sub>   |            | -    | 6.4  | -    | ns   |
| t <sub>r</sub>       |            | -    | 27   | -    | ns   |
| t <sub>d(off)</sub>  |            | -    | 18   | -    | ns   |
| t <sub>f</sub>       |            | -    | 8.0  | -    | ns   |
|                      |            |      |      |      |      |
| I <sub>S</sub>       |            | -    | -    | 8.4  | A    |
| I <sub>SM</sub>      |            | -    | -    | 34   | A    |
| V <sub>SD</sub>      |            | -    |      | 1.2  | V    |
| trr                  |            | 23   | 38   | 58   | ns   |
| Qrr                  |            | -    | 21   | -    | nC   |

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.  
2. E<sub>AS</sub> condition: Starting T<sub>J</sub>≠265℃BT/F2 7.08 Tf1 0 0 1 170.7 nJ

## Typical Performance Characteristics

Figure 1: Power De-rating

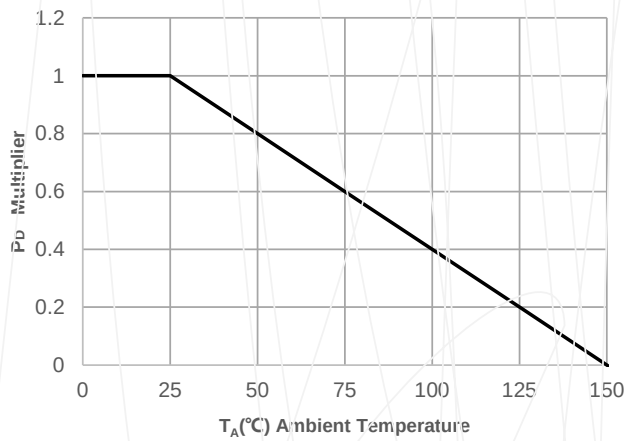
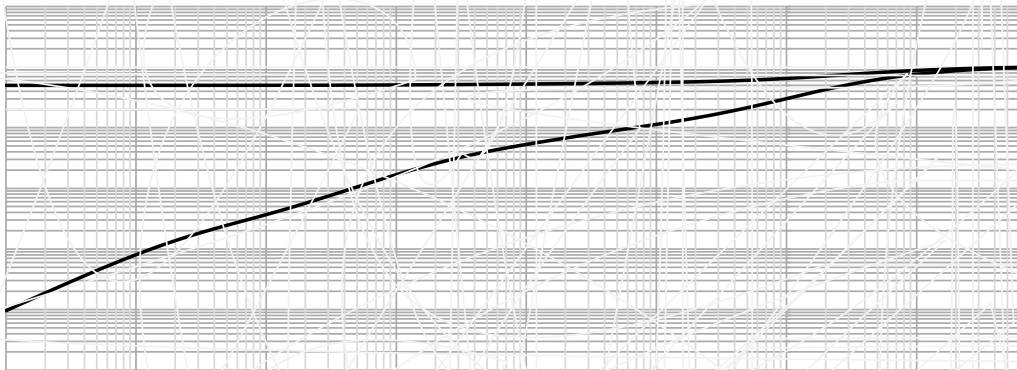
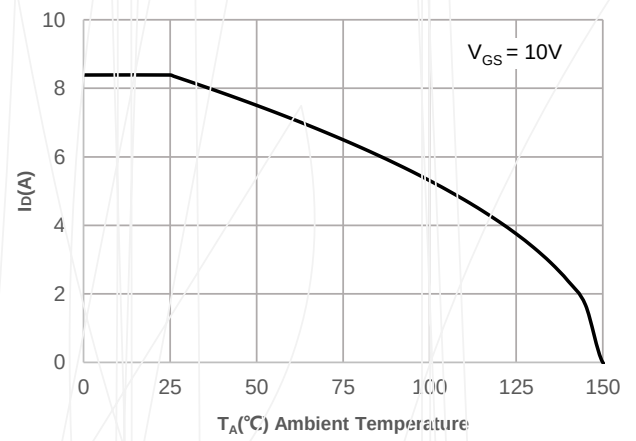
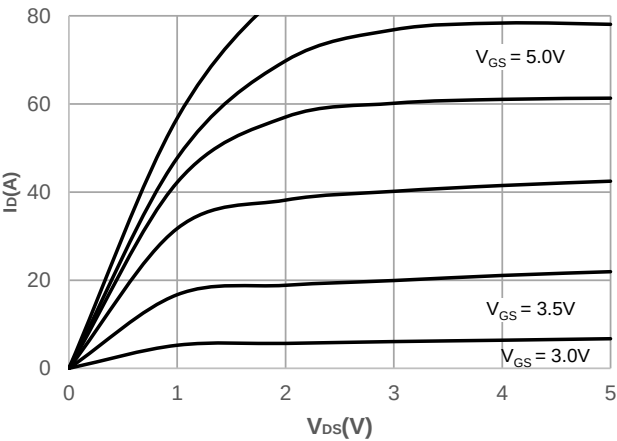


Figure 2: Current De-rating



Typical Performance Characteristics

Figure 5: Output Characteristics



## Typical Performance Characteristics

**Figure 11: Normalized Breakdown voltage vs. Junction Temperature**

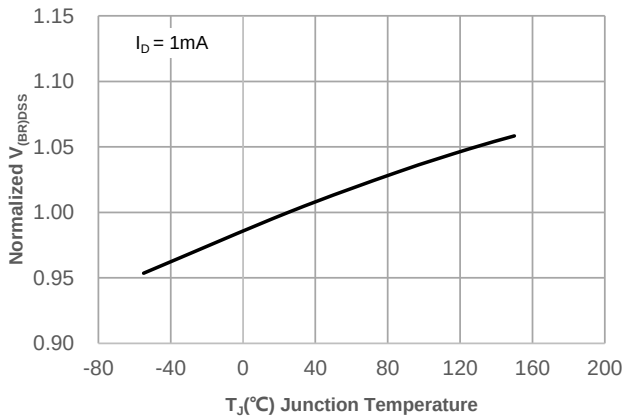


**Figure 12: Normalized on Resistance vs. Junction Temperature**

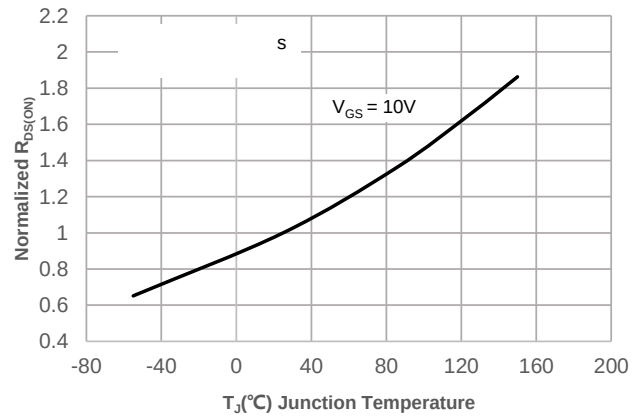


**Figure 13: Normalized Threshold Voltage vs. Junction Temperature**

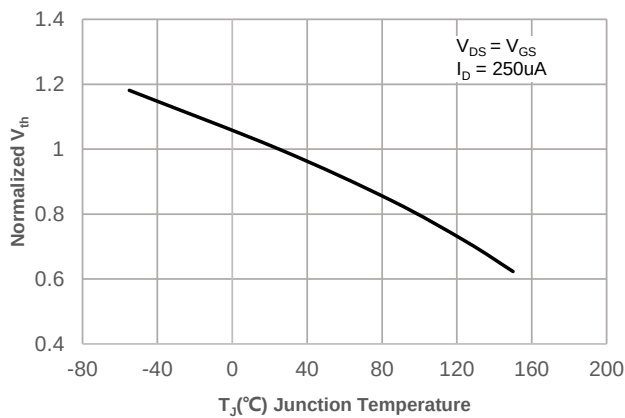


**Figure 14:  $R_{DS(on)}$  vs.  $V_{GS}$**

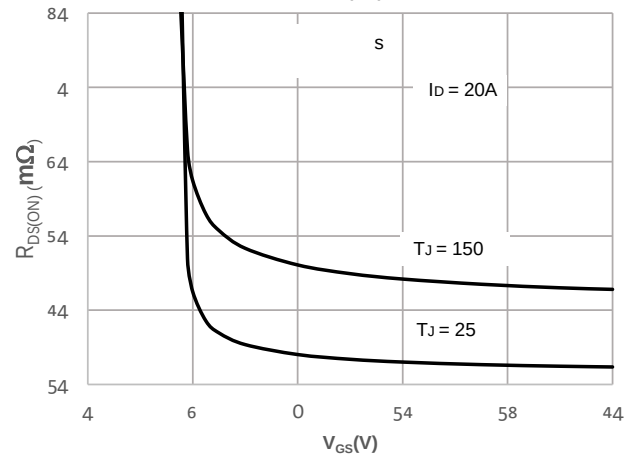
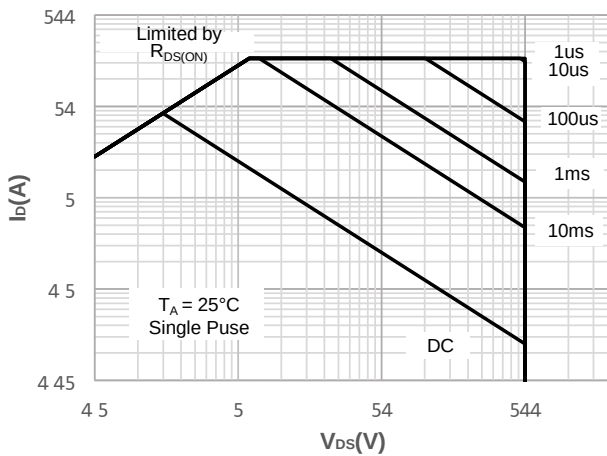


**Figure 15: Maximum Safe Operating Area**



## Test Circuit



Figure 1: Gate Charge Test Circuit & Waveform

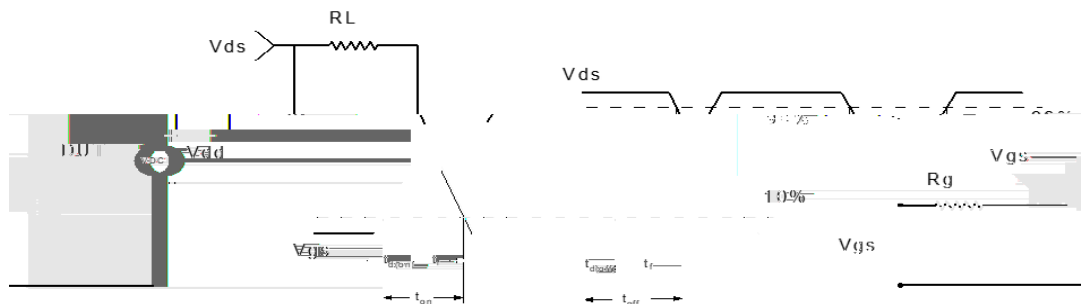


Figure 2: Resistive Switching Test Circuit & Waveform

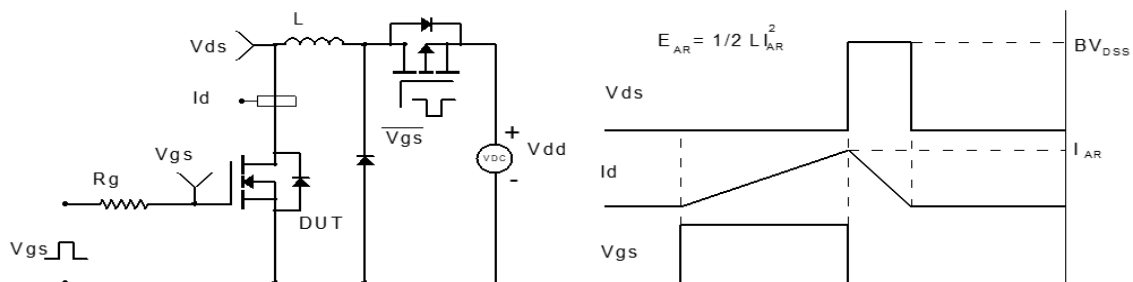


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

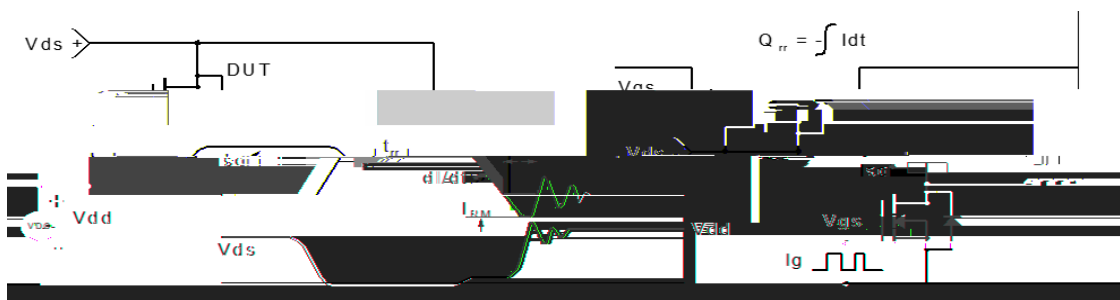
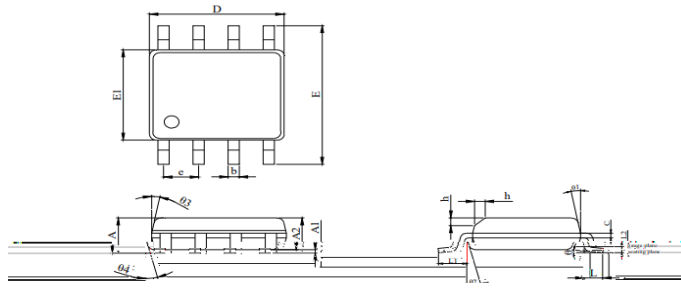


Figure 4: Diode Recovery Test Circuit & Waveform

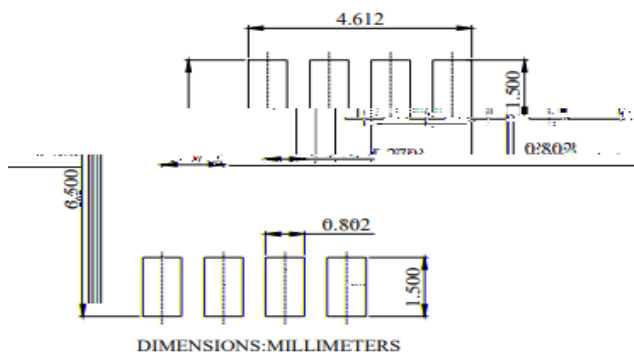
## Package Mechanical Data(SOP-8)

Package Outline



| DIM | MILLIMETER |      |      |
|-----|------------|------|------|
|     | MIN.       | NOM. | MAX. |
| A   | 1.35       | 1.50 | 1.65 |
| A1  | 0.05       | 0.10 | 0.15 |
| A2  | 1.35       | 1.40 | 1.50 |
| b   | 0.38       | --   | 0.50 |
| c   | 0.17       | --   | 0.25 |
| D   | 4.80       | 4.90 | 5.00 |
| E   | 5.80       | 6.00 | 6.20 |
| E1  | 3.80       | 3.90 | 4.00 |
| e   | 1.27(BSC)  |      |      |
| L   | 0.45       | 0.60 | 0.80 |
| L1  | 1.04 REF   |      |      |
| L2  | 0.25 BSC   |      |      |
| h   | 0.30       | 0.40 | 0.50 |
| θ   | 0°         | --   | 8°   |
| θ1  | 10°        | 12°  | 14°  |
| θ2  | 8°         | 10°  | 12°  |
| θ3  | 10°        | 12°  | 14°  |
| θ4  | 8°         | 10°  | 12°  |

Recommended Footprint



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