

**• General Description**

The ZMD68308S combines advanced trench MOSFET technology with a low resistance package to provide extremely low  $R_{DS(ON)}$ .

**• Features**

- Advance high cell density Trench technology
- Low  $R_{DS(ON)}$  to minimize conductive loss
- Low Gate Charge for fast switching
- Dual DIE in one package

**• Application**

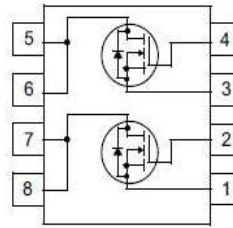
- Power Management in Notebook Computer,
- Portable Equipment and Battery Powered Systems
- Wireless Charging

**• Ordering Information:**

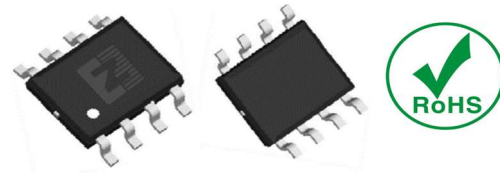
|                           |           |
|---------------------------|-----------|
| Part NO.                  | ZMD68308S |
| Marking                   | ZMD68308  |
| Packing Information       | REEL TAPE |
| Basic ordering unit (pcs) | 4000      |

**• Absolute Maximum Ratings ( $T_C = 25^\circ\text{C}$ )**

| Parameter  | Symbol                       | Rating     | Unit             |
|--|------------------------------|------------|------------------|
| Drain-Source Voltage                             | $V_{DS}$                     | 30         | V                |
| Gate-Source Voltage                              | $V_{GS}$                     | $\pm 20$   | V                |
| Continuous Drain Current                         | $I_{D@TC=25^\circ\text{C}}$  | 15         | A                |
|  | $I_{D@TC=75^\circ\text{C}}$  | 11.4       | A                |
|  | $I_{D@TC=100^\circ\text{C}}$ | 9.5        | A                |
| Pulsed Drain Current <sup>①</sup>                | $I_{DM}$                     | 45         | A                |
| Total Power Dissipation( $TC=25^\circ\text{C}$ ) | $P_{D@TC=25^\circ\text{C}}$  | 3.6        | W                |
| Total Power Dissipation( $TA=25^\circ\text{C}$ ) | $P_{D@TA=25^\circ\text{C}}$  | 0.69       | W                |
| Operating Junction Temperature                   | $T_J$                        | -55 to 150 | $^\circ\text{C}$ |
| Storage Temperature                              | $T_{STG}$                    | -55 to 150 | $^\circ\text{C}$ |
| Single Pulse Avalanche Energy                    | $E_{AS}$                     | 80         | mJ               |
| Avalanche Current                                | $I_{AS} I_{AR}$              | 40         | A                |

**• Product Summary**


$V_{DS1} = 30\text{V}$   
 $V_{DS2} = 30\text{V}$   
 $R_{DS(ON)1} = 8.5\text{m}\Omega$   
 $R_{DS(ON)2} = 8.5\text{m}\Omega$   
 $I_{D1} = 15\text{A}$   
 $I_{D2} = 15\text{A}$



SOP-8

**•Thermal resistance**

| Parameter                                    | Symbol     | Min. | Typ. | Max. | Unit  |
|--|------------|------|------|------|-------|
| Thermal resistance, junction - case          | $R_{thJC}$ | -    | -    | 35   | ° C/W |
| Thermal resistance, junction - ambient       | $R_{thJA}$ | -    | -    | 70   | ° C/W |
| Soldering temperature, wavesoldering for 10s | $T_{sold}$ | -    | -    | 265  | ° C   |

**•Electronic Characteristics**

| Parameter                         | Symbol       | Condition                         | Min. | Typ  | Max.      | Unit       |
|-----------------------------------|--------------|-----------------------------------|------|------|-----------|------------|
| Drain-Source Breakdown Voltage    | $BV_{DSS}$   | $V_{GS} = 0V, I_D = 250\mu A$     | 30   |      |           | V          |
| Gate Threshold Voltage            | $V_{GS(TH)}$ | $V_{GS} = V_{DS}, I_D = 250\mu A$ | 1.2  |      | 2.5       | V          |
| Drain-Source Leakage Current      | $I_{DSS}$    | $V_{DS} = 30V, V_{GS} = 0V$       |      |      | 1.0       | $\mu A$    |
| Gate- Source Leakage Current      | $I_{GSS}$    | $V_{GS} = \pm 20V, V_{DS} = 0V$   |      |      | $\pm 100$ | nA         |
| Static Drain-source On Resistance | $R_{DS(ON)}$ | $V_{GS} = 10V, I_D = 20A$         |      | 8.5  | 11        | m $\Omega$ |
|                                   |              | $V_{GS} = 4.5V, I_D = 10A$        |      | 12.5 | 16        | m $\Omega$ |
| Forward Transconductance          | $g_{FS}$     | $V_{DS} = 25V, I_D = 10A$         |      | 9    |           | s          |
| Source-drain voltage              | $V_{SD}$     | $I_S = 10A$                       |      |      | 1.28      | V          |

**•Electronic Characteristics**

| Parameter                    | Symbol    | Condition                    | Min. | Typ  | Max. | Unit |
|------------------------------|-----------|------------------------------|------|------|------|------|
| Input capacitance            | $C_{iss}$ | $V_{DS} = 25V$<br>$f = 1MHz$ | -    | 1150 | -    | pF   |
| Output capacitance           | $C_{oss}$ |                              | -    | 230  | -    |      |
| Reverse transfer capacitance | $C_{rss}$ |                              | -    | 113  | -    |      |

**•Gate Charge characteristics( $T_a = 25^\circ C$ )**

| Parameter            | Symbol   | Condition      | Min. | Typ | Max. | Unit |
|----------------------|----------|----------------|------|-----|------|------|
| Total gate charge    | $Q_g$    | $V_{DD} = 15V$ | -    | 12  | -    | nC   |
| Gate - Source charge | $Q_{gs}$ | $I_D = 15A$    | -    | 4   | -    |      |
| Gate - Drain charge  | $Q_{gd}$ | $V_{GS} = 10V$ | -    | 6   | -    |      |

Note: ① Pulse Test : Pulse width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$  ;

Fig.1 Power Dissipation

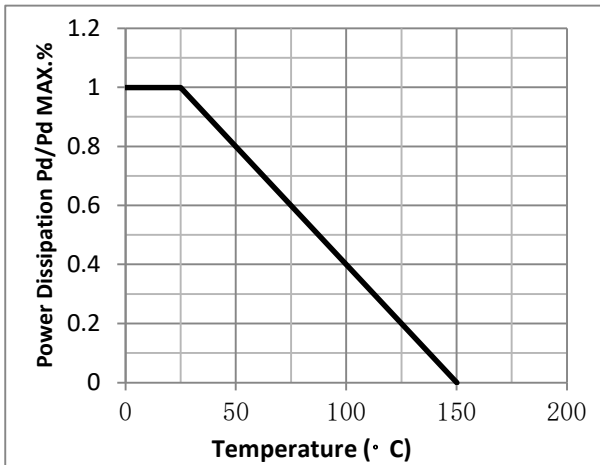


Fig.2 Typical output Characteristics

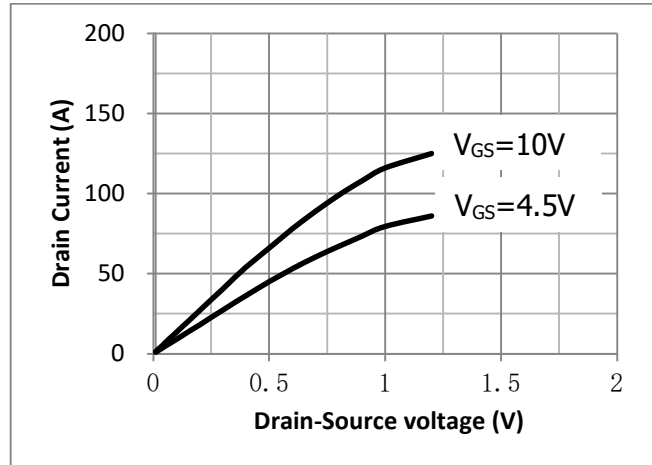


Fig.3 Threshold Voltage V.S Junction Temperature

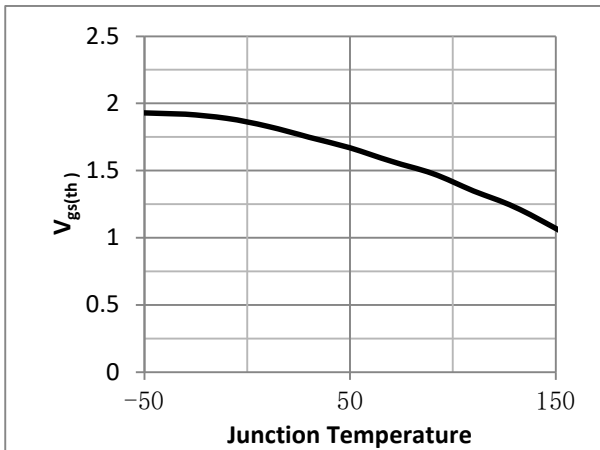


Fig.4 Resistance V.S Drain Current

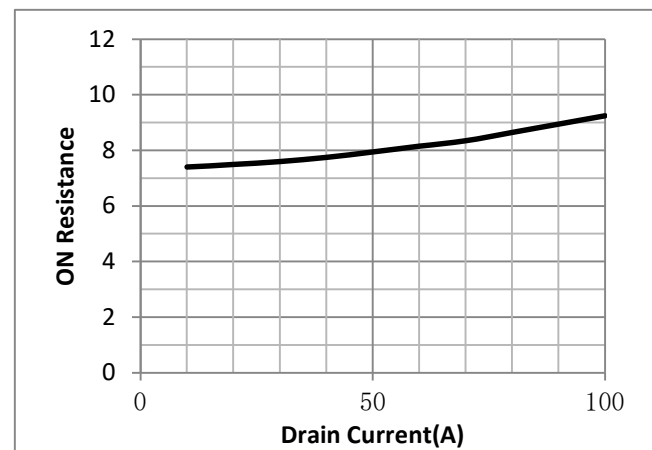


Fig.5 On-Resistance VS Gate Source Voltage

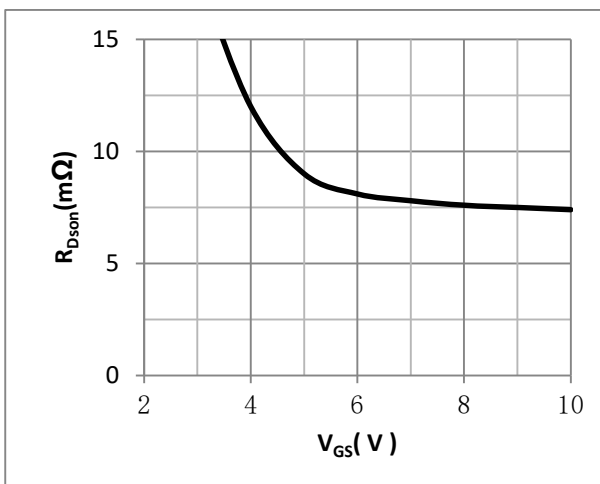


Fig.6 On-Resistance V.S Junction Temperature

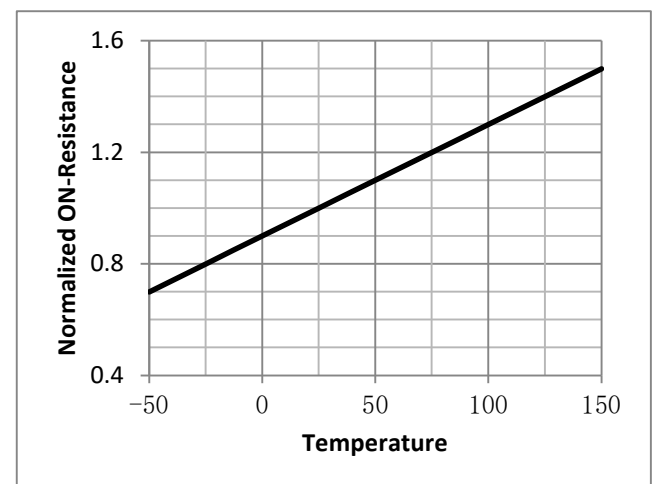


Fig.7 Gate Charge Measurement Circuit

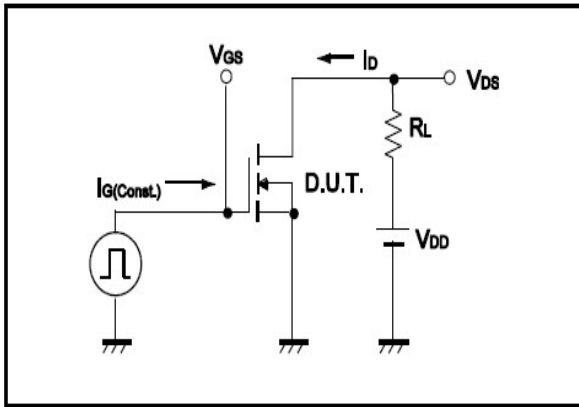


Fig.8 Gate Charge Waveform

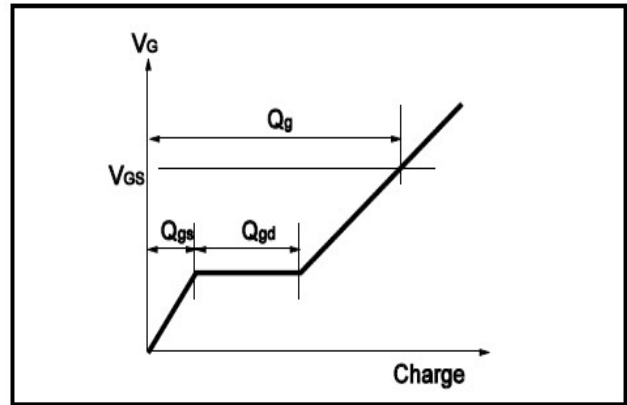


Fig.9 Switching Time Measurement Circuit

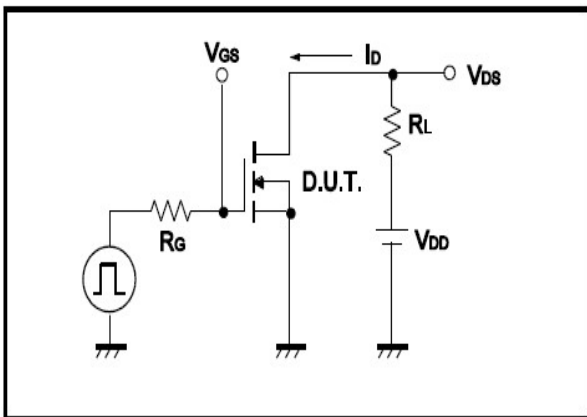


Fig.10 Switching Time Waveform

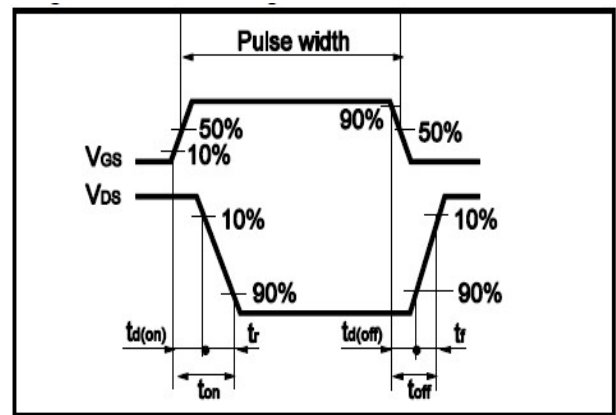


Fig.11 Avalanche Measurement Circuit

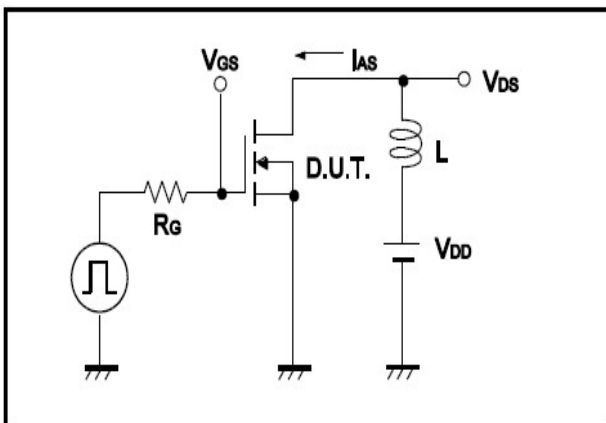
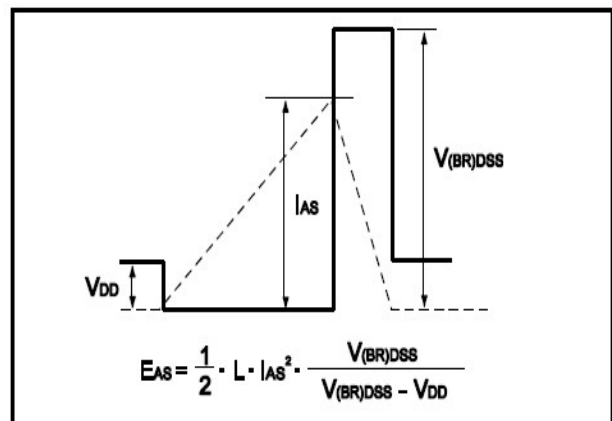


Fig.12 Avalanche Waveform



•Dimensions(SOP-8)

Unit: mm

| SYMBOL | min  | TYP  | max  | SYMBOL | min  |      | max  |
|--------|------|------|------|--------|------|------|------|
| A      | 4.80 |      | 5.00 | C      | 1.30 |      | 1.50 |
| A1     | 0.37 |      | 0.47 | C1     | 0.55 |      | 0.75 |
| A2     |      | 1.27 |      | C2     | 0.55 |      | 0.65 |
| A3     |      | 0.41 |      | C3     | 0.05 |      | 0.20 |
| B      | 5.80 |      | 6.20 | C4     | 0.19 | 0.20 | 0.23 |
| B1     | 3.80 |      | 4.00 | D      |      | 1.05 |      |
| B2     |      | 5.00 |      | D1     | 0.40 |      | 0.62 |

