

**• General Description**

The ZMS075N10S combines advanced trench MOSFET technology with a low resistance package to provide extremely low  $R_{DS(ON)}$ .

**• Features**

- Advance device constructure
- Low  $R_{DS(ON)}$  to minimize conduction loss
- Low Gate Charge for fast switching
- Low Thermal resistance

**• Application**

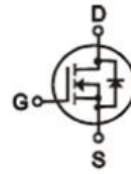
- Synchronous Rectification for AC-DC/DC-DC converter
- Oring switches
- Power Tools

**• Ordering Information:**

|                           |            |
|---------------------------|------------|
| Part NO.                  | ZMS075N10S |
| Marking                   | ZMS075N10  |
| Packing Information       | REEL TAPE  |
| Basic ordering unit (pcs) | 4000       |

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

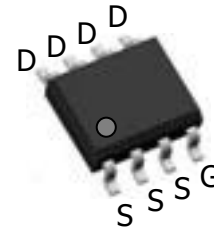
| Parameter                      | Symbol                       | Rating     | Unit             |
|--------------------------------|------------------------------|------------|------------------|
| Drain-Source Voltage           | $V_{DS}$                     | 100        | V                |
| Gate-Source 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                |
|                                | $I_{D@TC=100^\circ\text{C}}$ | 9.4        | A                |
| Pulsed Drain Current ①         | $I_{DM}$                     | 32         | A                |
| Total Power Dissipation        | $P_D@TC=25^\circ\text{C}$    | 3.6        | W                |
| Total Power Dissipation        | $P_D@TA=25^\circ\text{C}$    | 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  | $E_{AS}$                     | 50         | mJ               |

**• Product Summary**


$V_{DS} = 100\text{V}$

$R_{DS(ON)} = 7.5\text{m}\Omega$

$I_D = 15\text{A}$



**•Thermal resistance**

| Parameter                                    | Symbol            | Min. | Typ. | Max. | Unit  |
|--|-------------------|------|------|------|-------|
| Thermal resistance, junction - case          | R <sub>thJC</sub> | -    | -    | 34   | ° C/W |
| Thermal resistance, junction - ambient       | R <sub>thJA</sub> | -    | -    | 180  | ° C/W |
| Soldering temperature, wavesoldering for 10s | T <sub>sold</sub> | -    | -    | 265  | ° C   |

**•Electronic Characteristics**

| Parameter                         | Symbol              | Condition  | Min. | Typ | Max. | Unit |
|-----------------------------------|---------------------|--|------|-----|------|------|
| Drain-Source Breakdown Voltage    | BV <sub>DSS</sub>   | V <sub>GS</sub> = 0V, I <sub>D</sub> = 250uA               | 100  |     |      | V    |
| Gate Threshold Voltage            | V <sub>GS(TH)</sub> | V <sub>GS</sub> = V <sub>DS</sub> , I <sub>D</sub> = 250uA | 1.6  |     | 2.5  | V    |
| Drain-Source Leakage Current      | I <sub>DSS</sub>    | V <sub>DS</sub> = 100V, V <sub>GS</sub> = 0V               |      |     | 1.0  | uA   |
| Gate- Source Leakage Current      | I <sub>GSS</sub>    | V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V               |      |     | ±100 | nA   |
| Static Drain-source On Resistance | R <sub>DS(ON)</sub> | V <sub>GS</sub> = 10V, I <sub>D</sub> = 15A                |      | 7.5 | 9.5  | mΩ   |
|                                   |                     | V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 10A               |      | 9.5 | 11.5 | mΩ   |
| Forward Transconductance          | g <sub>FS</sub>     | V <sub>DS</sub> = 25V, I <sub>D</sub> = 10A                |      | 16  |      | s    |
| Diode Forward Voltage             | V <sub>FSD</sub>    | I <sub>S</sub> = 15A                                       |      |     | 1.2  | V    |

**•Electronic Characteristics**

| Parameter                    | Symbol           | Condition | Min. | Typ  | Max. | Unit |
|------------------------------|------------------|-----------|------|------|------|------|
| Input capacitance            | C <sub>iss</sub> | f = 1MHz  | -    | 2120 | -    | pF   |
| Output capacitance           | C <sub>oss</sub> |           | -    | 940  | -    |      |
| Reverse transfer capacitance | C <sub>rss</sub> |           | -    | 48   | -    |      |

**•Switching Parameters(T<sub>a</sub> = 25°C)**

| Parameter                          | Symbol          | Condition                                | Min. | Typ | Max. | Unit |
|------------------------------------|-----------------|--|------|-----|------|------|
| Total gate charge                  | Q <sub>g</sub>  | V <sub>DD</sub> = 25V                    | -    | 28  | -    | nC   |
| Gate - Source charge               | Q <sub>gs</sub> | I <sub>D</sub> = 8A                      | -    | 5.5 | -    |      |
| Gate - Drain charge                | Q <sub>gd</sub> | V <sub>GS</sub> = 10V                    | -    | 5.3 | -    |      |
| Body Diode Reverse Recovery Time   | t <sub>rr</sub> | I <sub>F</sub> = 20A,<br>di/dt = 100A/μs |      | 47  |      | nS   |
| Body Diode Reverse Recovery Charge | Q <sub>rr</sub> | I <sub>F</sub> = 20A,<br>di/dt = 100A/μs |      | 38  |      | nC   |

Note: ① Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2% ;

Fig.1 Gate-Charge Characteristics

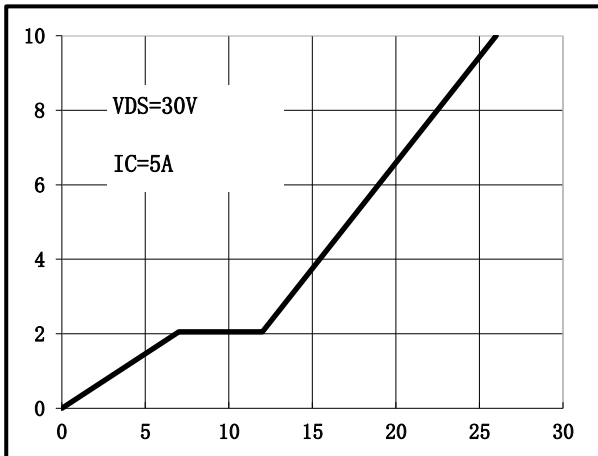


Fig.2 Capacitance Characteristics

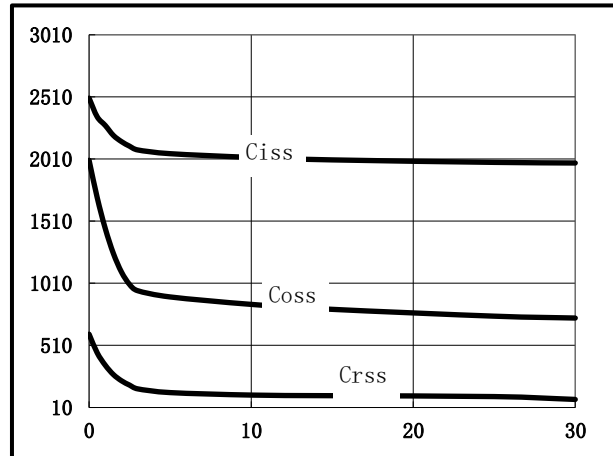


Fig.3 Power Dissipation

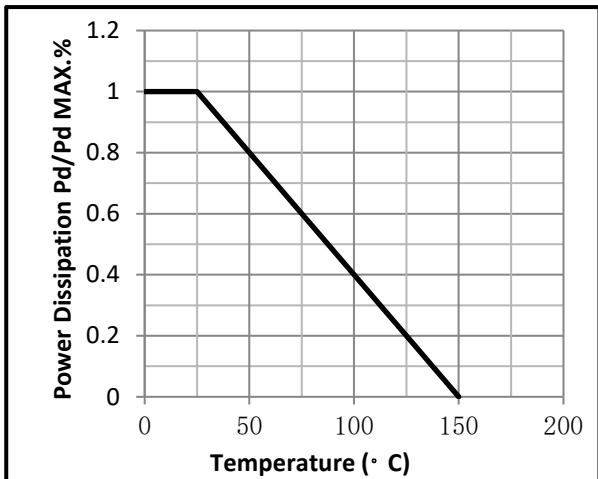


Fig.4 Typical output Characteristics

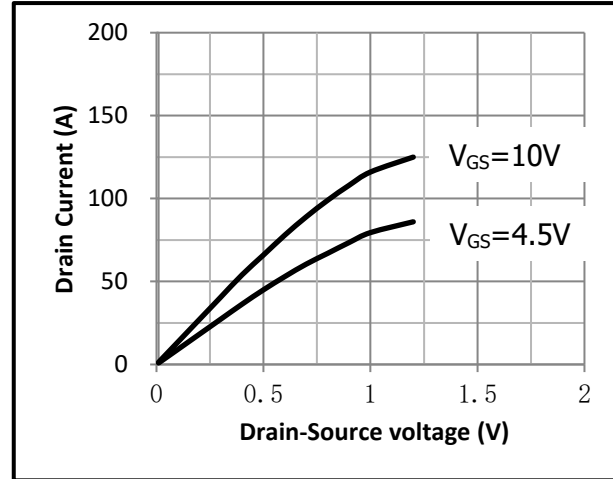


Fig.5 Threshold Voltage V.S Junction Temperature

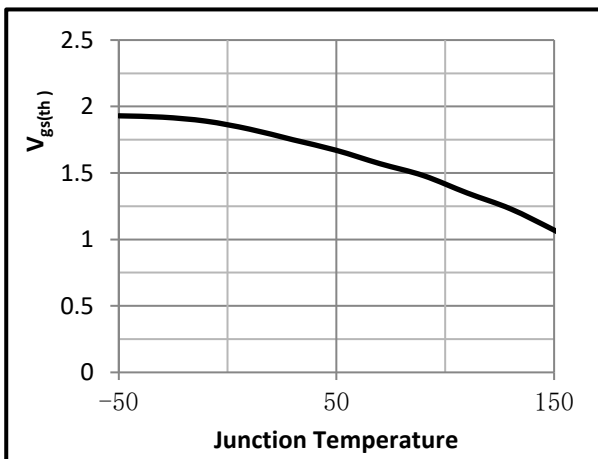


Fig.6 Resistance V.S Drain Current

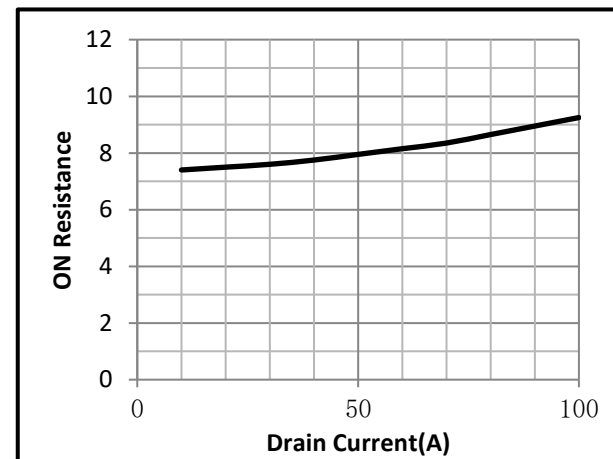


Fig.7 On-Resistance VS Gate Source Voltage

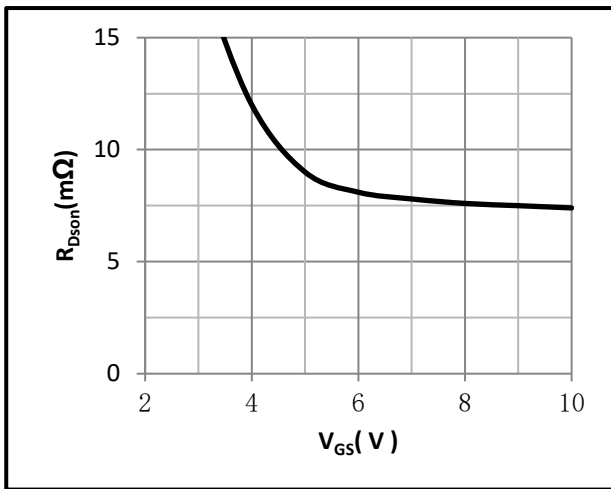


Fig.8 On-Resistance V.S Junction Temperature

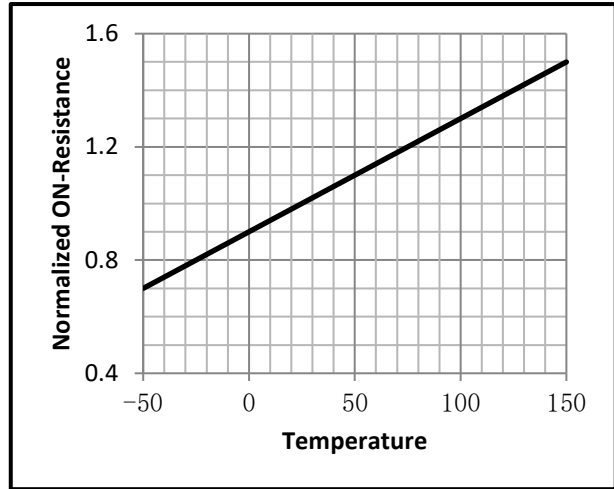


Fig.9 Switching Time Measurement Circuit

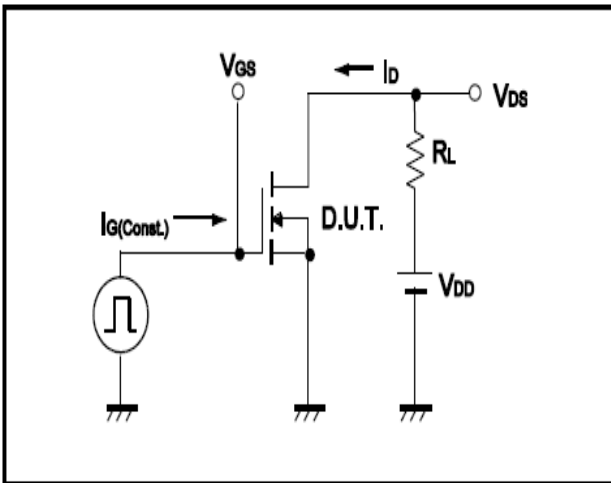


Fig.10 Gate Charge Waveform

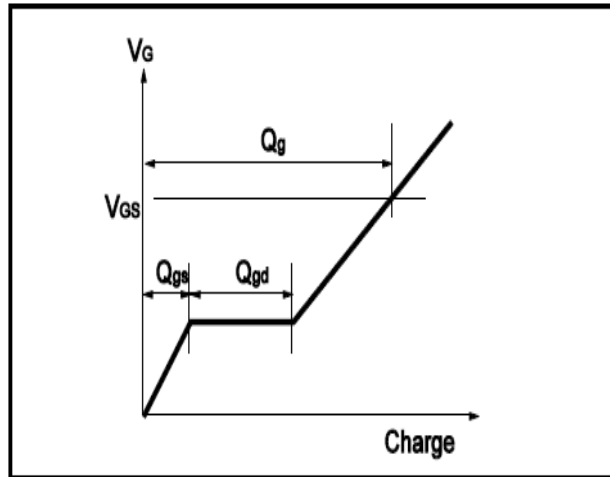


Fig.11 Switching Time Measurement Circuit

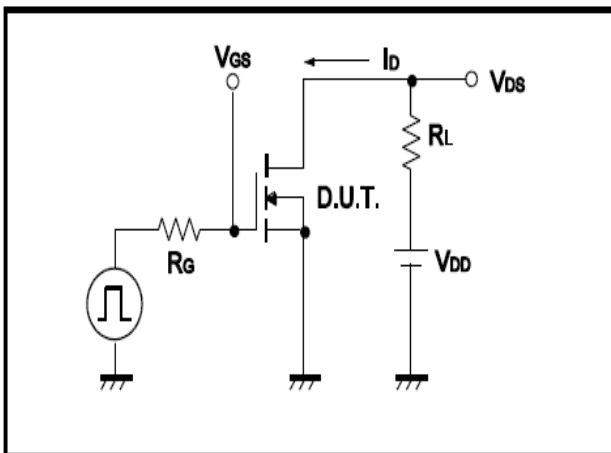
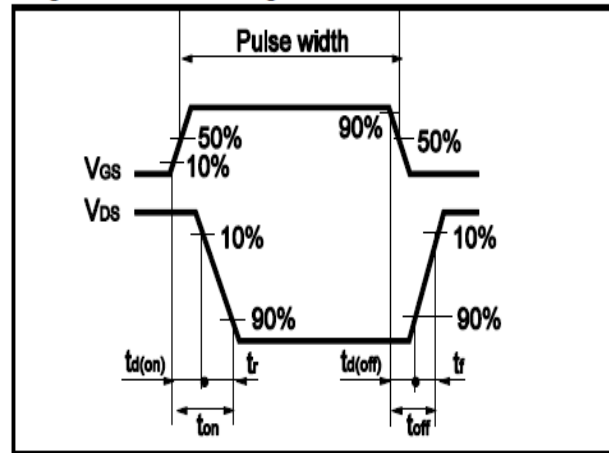


Fig.12 Gate Charge Waveform

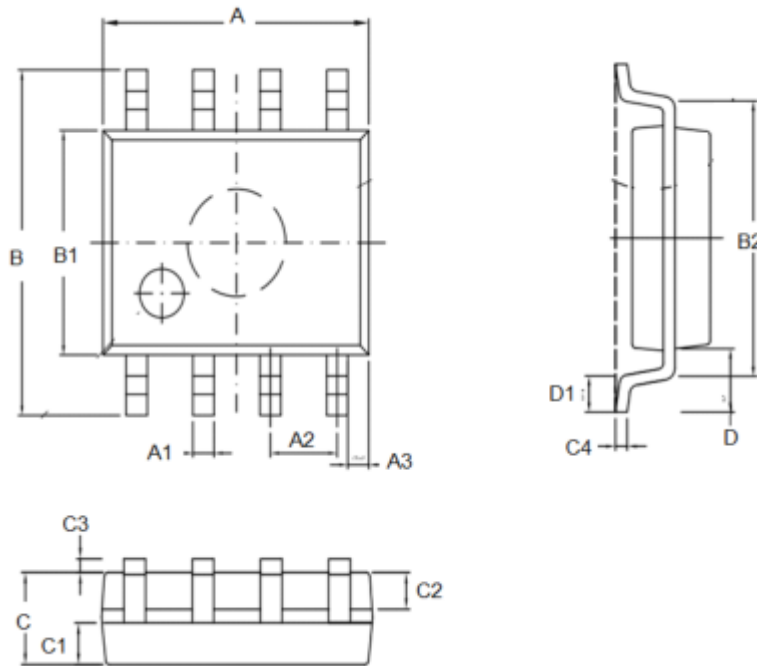




•Dimensions(SOP8)

Unit: mm

| SYMBOL | min  | TYP  | max  | SYMBOL | min  |      | max  |
|--------|------|------|------|--------|------|------|------|
| A      | 4.80 |      | 5.25 | C      | 1.30 |      | 1.75 |
| A1     | 0.37 |      | 0.49 | 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     | 0.10 | 0.20 | 0.23 |
| B1     | 3.80 |      | 4.10 | D      |      | 1.05 |      |
| B2     |      | 5.00 |      | D1     | 0.40 |      | 0.62 |



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