

**• General Description**

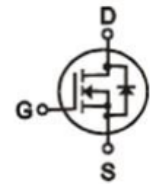
It combines advanced trench MOSFET technology with a low resistance package to provide extremely low  $R_{DS(ON)}$ .

**• Features**

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

**• Application**

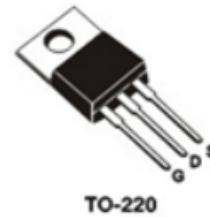
- Synchronous Rectification for AC-DC/DC-DC converter
- Oring switches
- Power Tools

**• Product Summary**


$V_{DS} = 60V$

$R_{DS(ON)} = 2.7m\Omega$

$I_D = 180A$


**• Ordering Information:**

|                           |              |
|---------------------------|--------------|
| Part NO.                  | ZMS030N06HPC |
| Marking                   | ZMS030N06H   |
| Packing Information       | BULK TUBE    |
| Basic ordering unit (pcs) | 500          |

**• Absolute Maximum Ratings (T<sub>C</sub> =25°C)**

| Parameter                        | Symbol               | Rating     | Unit |
|----------------------------------|----------------------|------------|------|
| Drain-Source Voltage             | $V_{DS}$             | 60         | V    |
| Gate-Source Voltage              | $V_{GS}$             | ±20        | V    |
| Continuous Drain Current         | $I_D@TC=25^\circ C$  | 180        | A    |
|                                  | $I_D@TC=75^\circ C$  | 136        | A    |
|                                  | $I_D@TC=100^\circ C$ | 113        | A    |
| Pulsed Drain Current ①           | $I_{DM}$             | 540        | A    |
| Total Power Dissipation(TC=25°C) | $P_D@TC=25^\circ C$  | 150        | W    |
| Operating Junction Temperature   | $T_J$                | -55 to 150 | °C   |
| Storage Temperature              | $T_{STG}$            | -55 to 150 | °C   |
| Single Pulse Avalanche Energy    | $E_{AS}$             | 1200       | mJ   |

**•Thermal resistance**

| Parameter                                    | Symbol            | Min. | Typ. | Max. | Unit  |
|--|-------------------|------|------|------|-------|
| Thermal resistance, junction - case          | R <sub>thJC</sub> | -    | -    | 0.75 | ° C/W |
| Thermal resistance, junction - ambient       | R <sub>thJA</sub> | -    | -    | 70   | ° 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               | 60   |     |      | V    |
| Gate Threshold Voltage            | V <sub>GS(TH)</sub> | V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA | 2    |     | 4    | V    |
| Drain-Source Leakage Current      | I <sub>DSS</sub>    | V <sub>DS</sub> =60V, 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> =30A                |      | 2.7 | 3.5  | mΩ   |
| Forward Transconductance          | g <sub>FS</sub>     | V <sub>DS</sub> =10V, I <sub>D</sub> =40A                |      | 28  |      | s    |
| Source-drain voltage              | V <sub>SD</sub>     | I <sub>S</sub> =30A                                      |      |     | 1.28 | V    |

**•Electronic Characteristics**

| Parameter                    | Symbol           | Condition | Min. | Typ  | Max. | Unit |
|------------------------------|------------------|-----------|------|------|------|------|
| Input capacitance            | C <sub>iss</sub> | f = 1MHz  | -    | 3500 | -    | pF   |
| Output capacitance           | C <sub>oss</sub> |           | -    | 880  | -    |      |
| Reverse transfer capacitance | C <sub>rss</sub> |           | -    | 110  | -    |      |

**•Gate Charge characteristics(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  | -    | 46  | -    | nC   |
| Gate - Source charge | Q <sub>gs</sub> | I <sub>D</sub> = 15A  | -    | 15  | -    |      |
| Gate - Drain charge  | Q <sub>gd</sub> | V <sub>GS</sub> = 10V | -    | 7   | -    |      |

Note: ① Pulse Test : Pulse width ≤ 10μs, Duty cycle ≤ 1% ;

Fig.1 Gate-Charge Characteristics

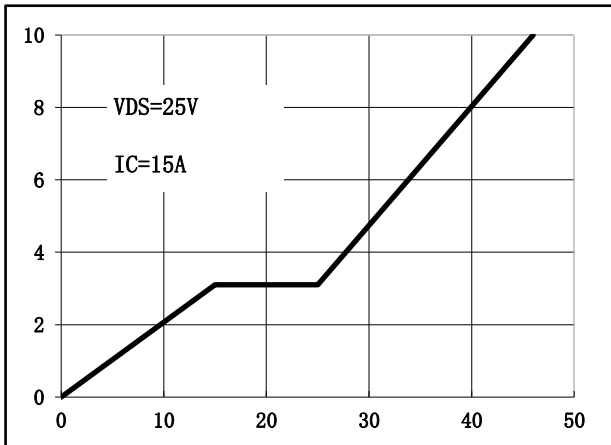


Fig.2 Capacitance Characteristics

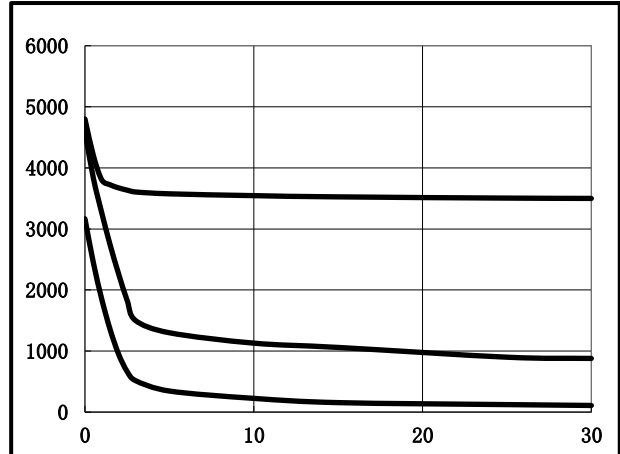


Fig.3 Power Dissipation

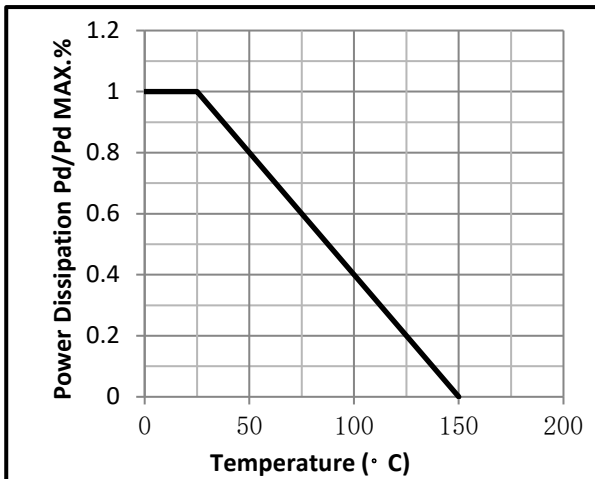


Fig.4 Typical output Characteristics

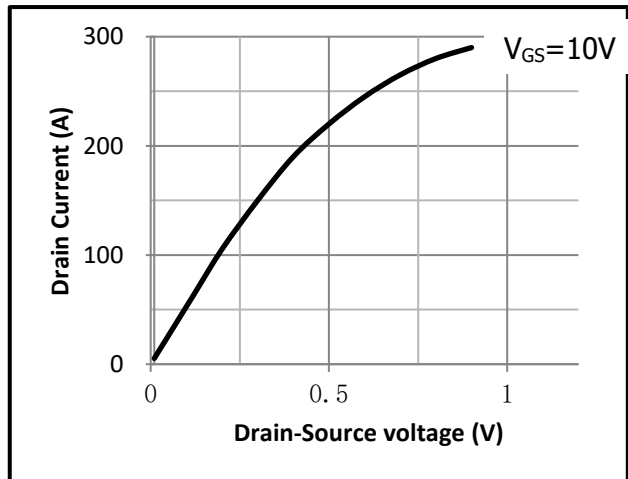


Fig.5 Threshold Voltage V.S Junction Temperature

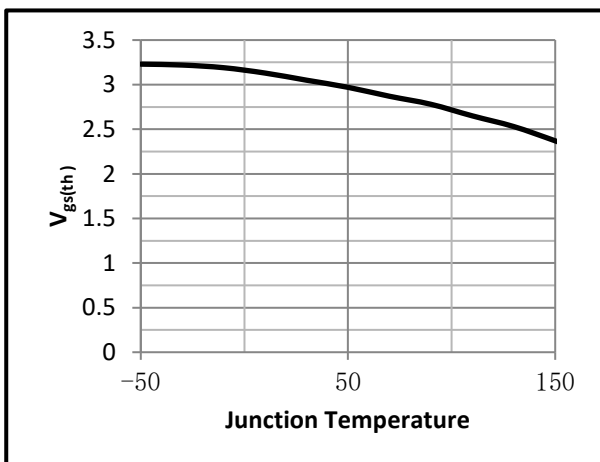


Fig.6 Resistance V.S Drain Current

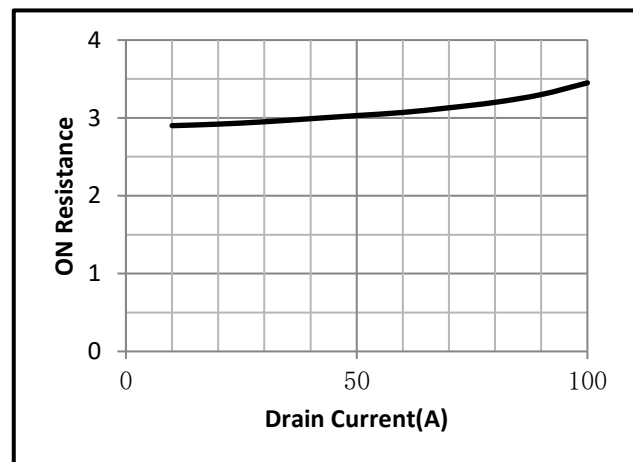


Fig.7 On-Resistance VS Gate Source Voltage

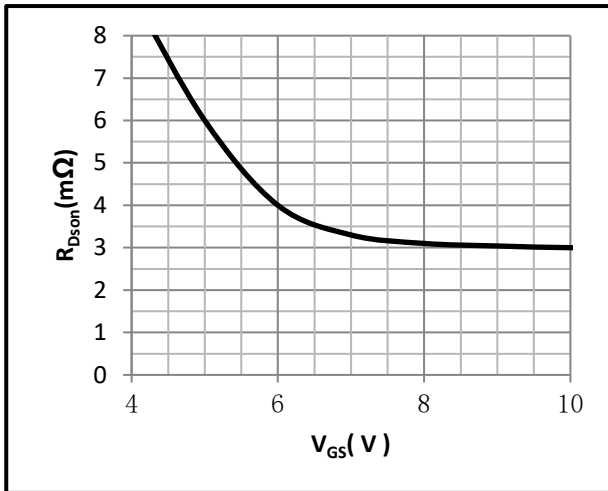


Fig.8 On-Resistance V.S Junction Temperature

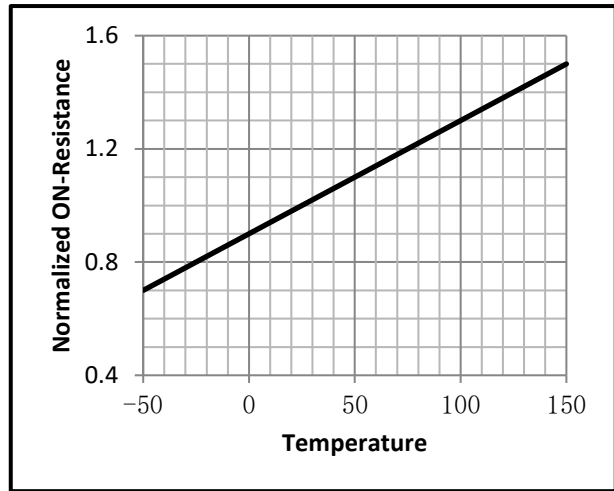


Fig.9 Switching Time Measurement Circuit

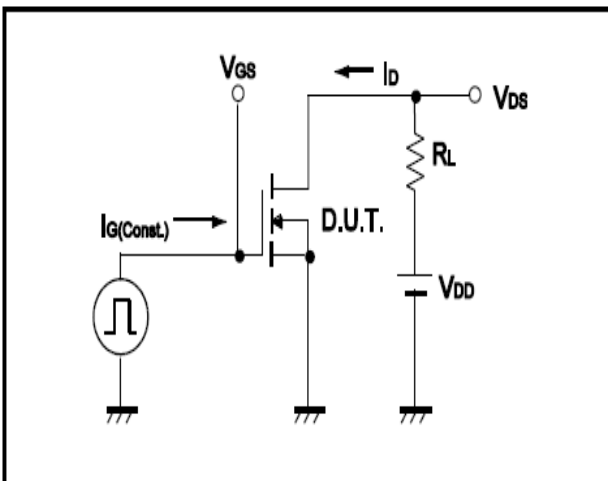


Fig.10 Gate Charge Waveform

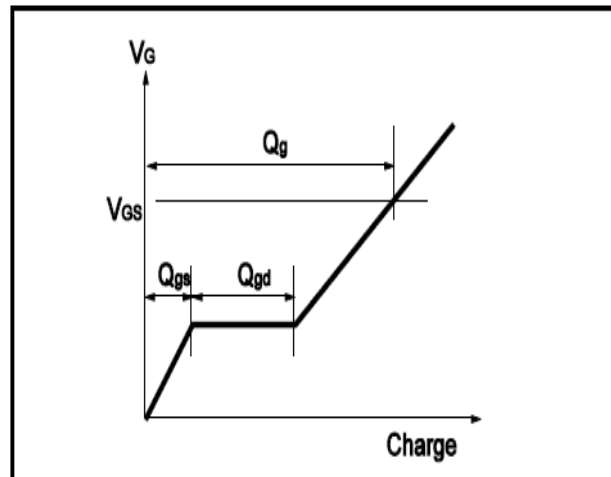


Fig.11 Switching Time Measurement Circuit

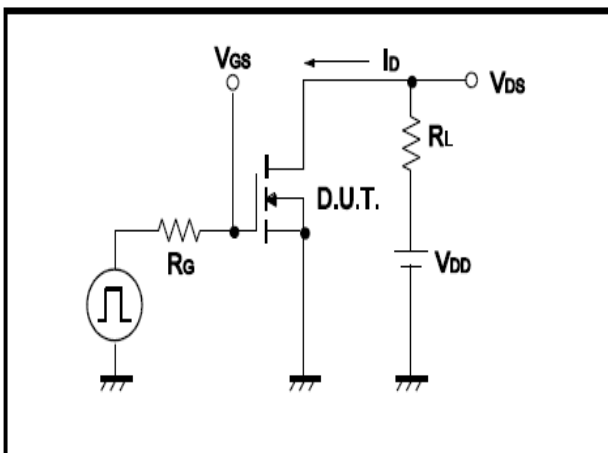
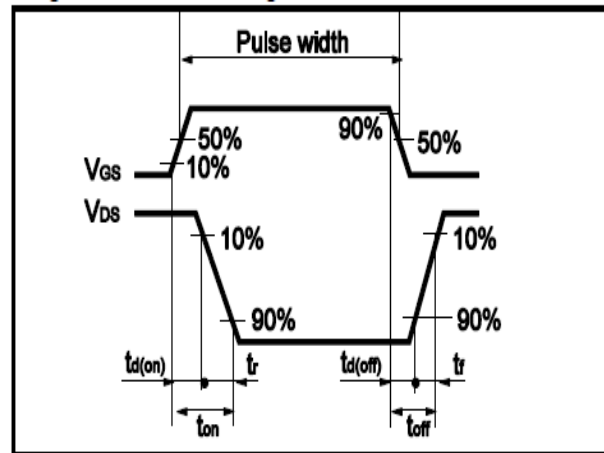


Fig.12 Gate Charge Waveform



• Dimensions (TO-220)

Unit: mm

| SYMBOL | min   | nom | max   | SYMBOL | min   | nom  | max   |
|--------|-------|-----|-------|--------|-------|------|-------|
| A      | 4.00  |     | 4.80  | E      | 9.90  |      | 10.70 |
| B      | 1.20  |     | 1.50  | e      |       | 2.54 |       |
| B1     | 1.00  |     | 1.40  | F      | 1.10  |      | 1.45  |
| b1     | 0.65  |     | 1.00  | L      | 12.50 |      | 14.50 |
| c      | 0.35  |     | 0.75  | L1     | 3.00  | 3.50 | 4.00  |
| D      | 15.00 |     | 16.50 | Q      | 2.50  |      | 3.00  |
| D1     | 5.90  |     | 6.90  | Q1     | 2.00  |      | 3.00  |
|        |       |     |       | ΦP     | 3.60  |      | 3.90  |

