

● General Description

The ZM200N06I combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is ideal for load switch and battery protection applications.

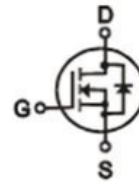
● Features

- Advance high cell density Trench technology
- Low $R_{DS(ON)}$ to minimize conductive loss
- Low Gate Charge for fast switching
- Low Thermal resistance

● Application

- MB/VGA Vcore
- SMPS 2nd Synchronous Rectifier
- POL application
- BLDC Motor driver

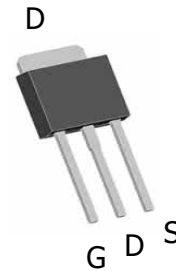
● Product Summary



$$V_{DS} = 60V$$

$$R_{DS(ON)} = 20m\Omega$$

$$I_D = 38A$$



TO-251

● Ordering Information:

| | |
|---------------------------|-----------|
| Part NO. | ZM200N06I |
| Marking | ZM200N06 |
| Packing Information | Bulk Tube |
| Basic ordering unit (pcs) | 900 |

● Absolute Maximum Ratings ($T_C = 25^\circ C$)

| Parameter | Symbol | Rating | Unit |
|-----------------------------------|------------------------|------------|------------|
| Drain-Source Voltage | V_{DS} | 60 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Continuous Drain Current | $I_{D@TC=25^\circ C}$ | 38 | A |
| | $I_{D@TC=75^\circ C}$ | 28.9 | A |
| | $I_{D@TC=100^\circ C}$ | 23.9 | A |
| Pulsed Drain Current ^① | I_{DM} | 76 | A |
| Total Power Dissipation | $P_D@TC=25^\circ C$ | 50 | W |
| Total Power Dissipation | $P_D@TA=25^\circ C$ | 2.0 | W |
| Operating Junction Temperature | T_J | -55 to 150 | $^\circ C$ |
| Storage Temperature | T_{STG} | -55 to 150 | $^\circ C$ |
| Single Pulse Avalanche Energy | E_{AS} | 130 | mJ |

•Thermal resistance

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|--|-------------------|------|------|------|-------|
| Thermal resistance, junction - case | R _{thJC} | - | - | 2.3 | ° C/W |
| Thermal resistance, junction - ambient | R _{thJA} | - | - | 62.7 | ° 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 =250uA | 60 | | | V |
| Gate Threshold Voltage | V _{GS(TH)} | V _{GS} =V _{DS} , I _D =250uA | 1.2 | 1.8 | 3.5 | V |
| Drain-Source Leakage Current | I _{DSS} | V _{DS} =60V, V _{GS} =0V | | | 1.0 | uA |
| Gate- Source Leakage Current | I _{GSS} | V _{GS} =±20V, V _{DS} =0V | | | ±100 | nA |
| Static Drain-source On Resistance | R _{DS(ON)} | V _{GS} =10V, I _D =16A | | 20 | 24 | mΩ |
| | | V _{GS} =4.5V, I _D =8A | | 25 | 30 | mΩ |
| Forward Transconductance | g _{FS} | V _{DS} =25V, I _D =10A | | 9 | | s |
| Source-drain voltage | V _{SD} | I _S =16A | | | 1.28 | V |

•Electronic Characteristics

| Parameter | Symbol | Condition | Min. | Typ | Max. | Unit |
|------------------------------|------------------|-----------|------|------|------|------|
| Input capacitance | C _{iss} | f = 1MHz | - | 1500 | - | pF |
| Output capacitance | C _{oss} | | - | 280 | - | |
| Reverse transfer capacitance | C _{rss} | | - | 140 | - | |

•Gate Charge characteristics(T_a = 25°C)

| Parameter | Symbol | Condition | Min. | Typ | Max. | Unit |
|----------------------|-----------------|-----------------------|------|-----|------|------|
| Total gate charge | Q _g | V _{DD} = 25V | - | 18 | - | nC |
| Gate - Source charge | Q _{gs} | I _D = 5A | - | 6 | - | |
| Gate - Drain charge | Q _{gd} | V _{GS} = 10V | - | 9 | - | |

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

Fig.1 Power Dissipation

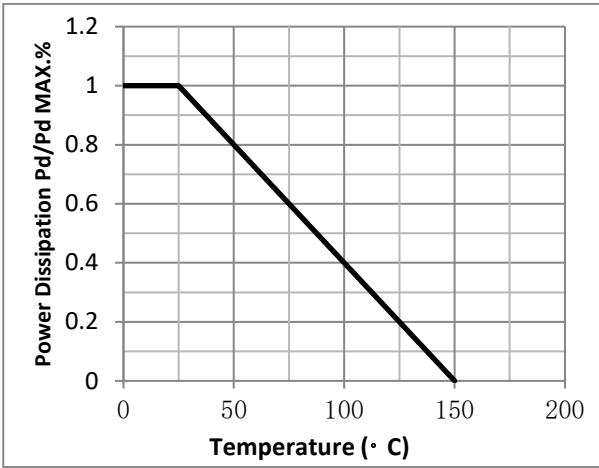


Fig.2 Typical output Characteristics

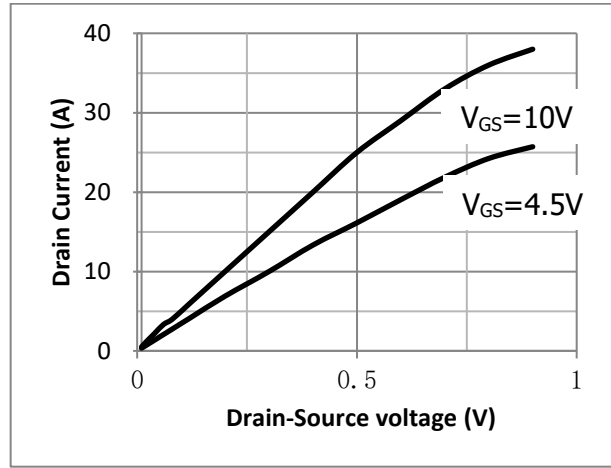


Fig.3 Threshold Voltage V.S Junction Temperature

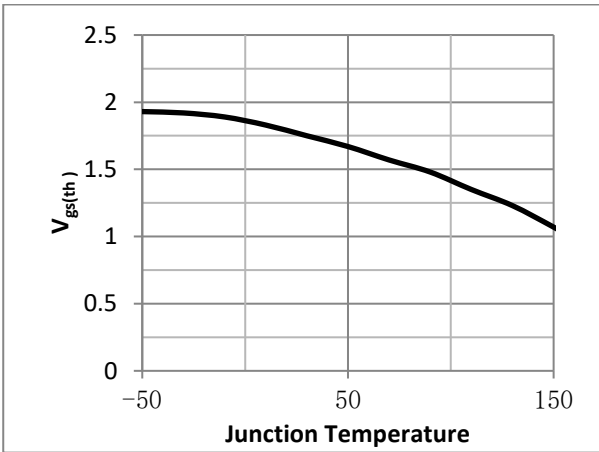


Fig.4 Resistance V.S Drain Current

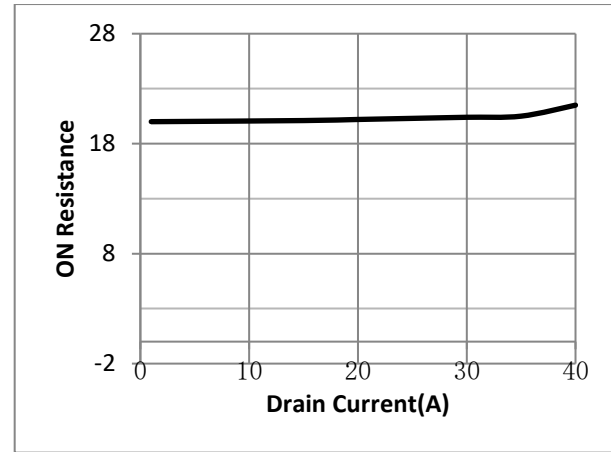


Fig.5 On-Resistance VS Gate Source Voltage

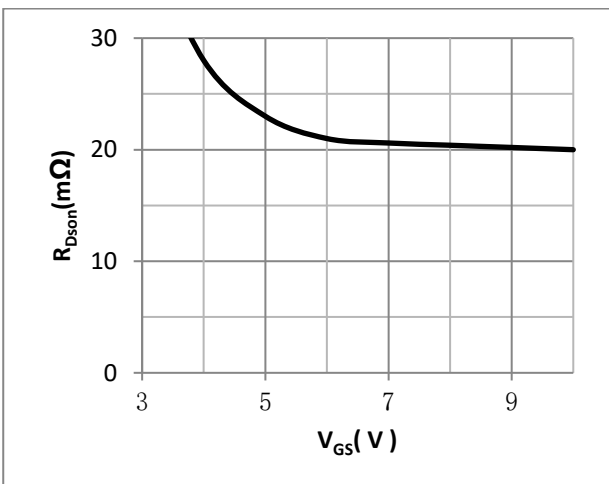


Fig.6 On-Resistance V.S Junction Temperature

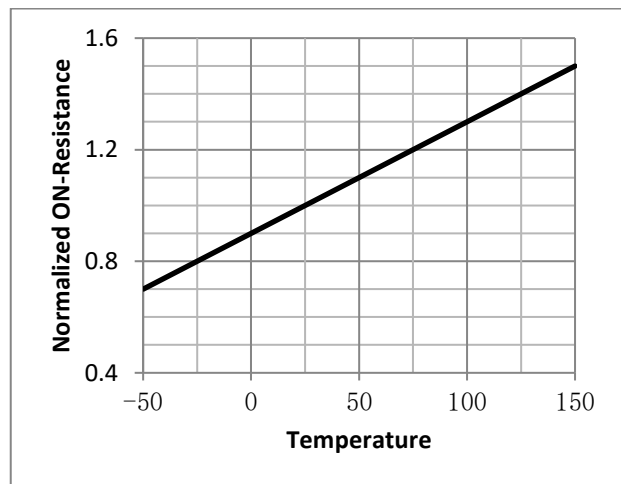


Fig.7 Switching Time Measurement Circuit

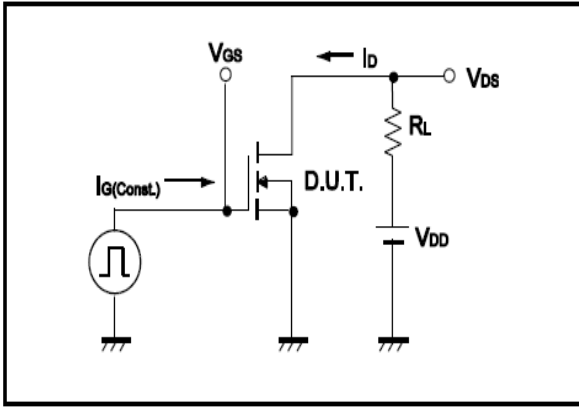


Fig.8 Gate Charge Waveform

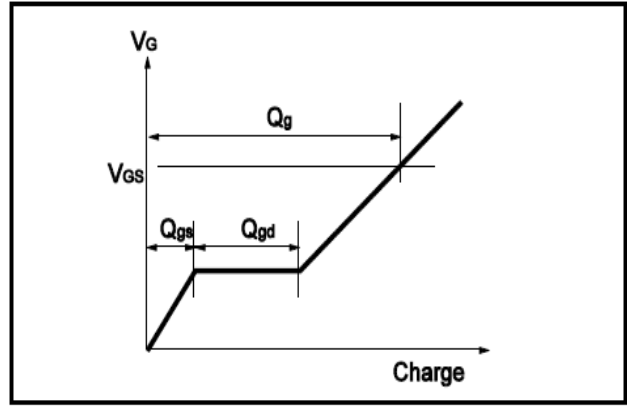


Fig.9 Switching Time Measurement Circuit

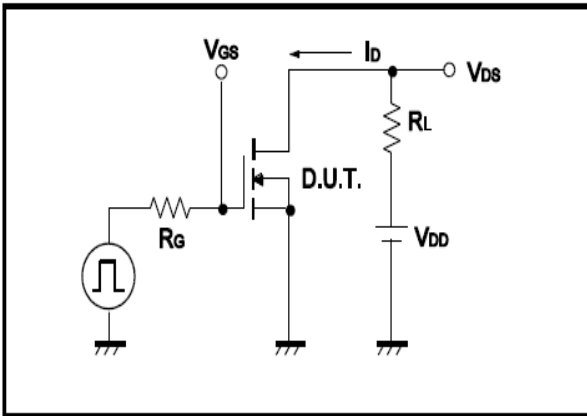


Fig.10 Gate Charge Waveform

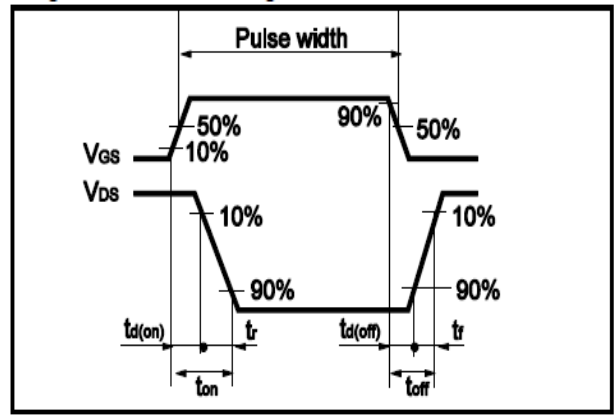


Fig.11 Avalanche Measurement Circuit

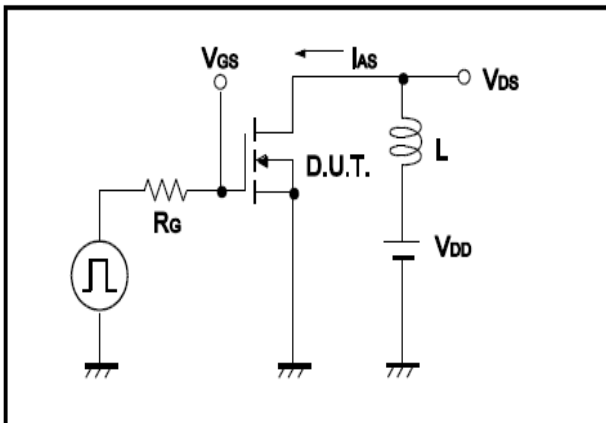
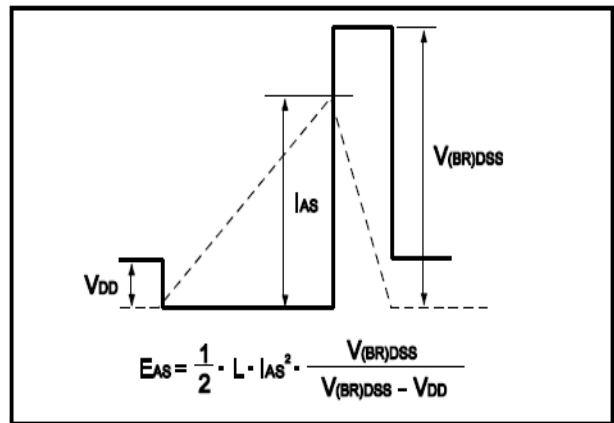


Fig.12 Avalanche Waveform



•Dimensions(TO-251)

Unit: mm

| SYMBOL | min | max | SYMBOL | min | max |
|--------|------|------|--------|------|------|
| A | 2.10 | 2.50 | D | 6.35 | 6.80 |
| A1 | 0.95 | 1.30 | D1 | 5.10 | 5.50 |
| B | 0.80 | 1.25 | E | 5.30 | 6.30 |
| b | 0.50 | 0.80 | e | 2.24 | 2.35 |
| b1 | 0.70 | 0.90 | E1 | 4.43 | 4.73 |
| c | 0.45 | 0.60 | L | 7.00 | 9.40 |
| c1 | 0.45 | 0.60 | | | |

