

• General Description

The ZM085N03L 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
- Low Thermal resistance

• Application

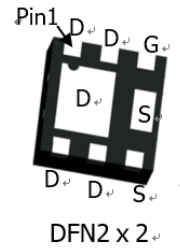
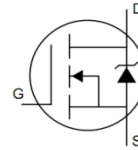
- MB/VGA Vcore
- SMPS 2nd Synchronous Rectifier
- POL application
- BLDC Motor driver

• Product Summary

$V_{DS}=30V$

$R_{DS(ON)}=6.8m\Omega$

$I_D=15A$


• Ordering Information:

| | |
|---------------------------|-----------|
| Part NO. | ZM085N03L |
| Marking | 085N03 |
| Packing Information | REEL TAPE |
| Basic ordering unit (pcs) | 3000 |

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

| Parameter | Symbol | Rating | Unit |
|--------------------------------------|------------------------|------------|------------|
| Drain-Source Voltage | V_{DS} | 30 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Continuous Drain Current | $I_{D@TC=25^\circ C}$ | 15 | A |
| | $I_{D@TC=75^\circ C}$ | 11 | A |
| | $I_{D@TC=100^\circ C}$ | 9.5 | A |
| Pulsed Drain Current ^① | I_{DM} | 30 | A |
| Total Power Dissipation ^② | $P_D@T_C=25^\circ C$ | 15 | W |
| Total Power Dissipation | $P_D@T_A=25^\circ C$ | 1.3 | W |
| Operating Junction Temperature | T_J | -55 to 150 | $^\circ C$ |
| Storage Temperature | T_{STG} | -55 to 150 | $^\circ C$ |

•Thermal resistance

| Parameter | Symbol | Min. | Typ. | Max. | Unit |
|--|-------------------|------|------|------|-------|
| Thermal resistance, junction - case ^② | R _{thJC} | - | - | 8 | ° C/W |
| Thermal resistance, junction - ambient | R _{thJA} | - | - | 95 | ° 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 | 30 | | | V |
| Gate Threshold Voltage | V _{GS(TH)} | V _{GS} =V _{DS} , I _D =250uA | 1.3 | 1.7 | 2.5 | V |
| Drain-Source Leakage Current | I _{DSS} | V _{DS} =30V, 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 =8A | | 6.8 | 8.5 | mΩ |
| | | V _{GS} =4.5V, I _D =6A | | 9 | 13 | mΩ |
| Forward Transconductance | g _{FS} | V _{DS} =10V, I _D =5A | | 8 | | s |
| Source-drain voltage | V _{SD} | I _s =15A | | | 1.28 | V |

•Electronic Characteristics

| Parameter | Symbol | Condition | Min. | Typ | Max. | Unit |
|------------------------------|------------------|-----------|------|------|------|------|
| Input capacitance | C _{iss} | f = 1MHz | - | 1200 | - | pF |
| Output capacitance | C _{oss} | | - | 235 | - | |
| Reverse transfer capacitance | C _{rss} | | - | 120 | - | |

•Gate Charge characteristics(T_a = 25°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 = 4A | - | 4 | - | |
| Gate - Drain charge | Q _{gd} | V _{GS} = 10V | - | 6 | - | |

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

② Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate;

Fig.1 Gate-Charge Characteristics

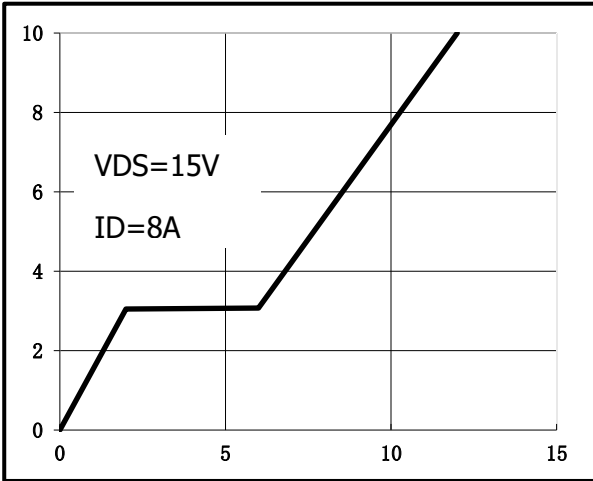


Fig.2 Capacitance Characteristics

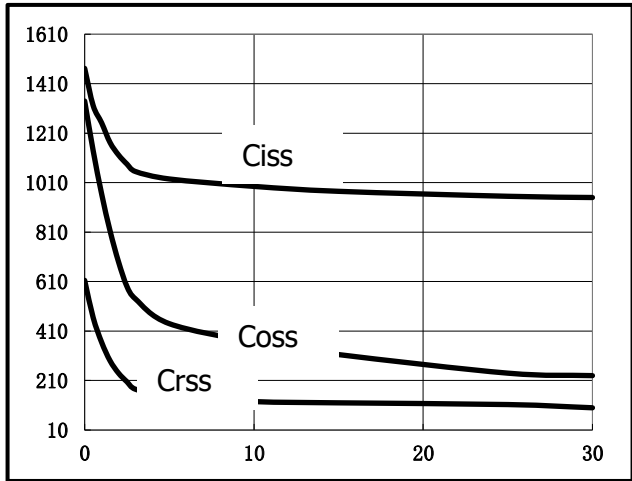


Fig.3 Power Dissipation Derating Curve

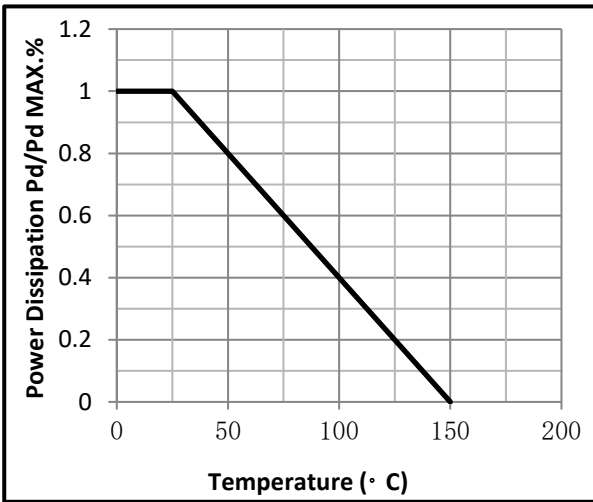


Fig.4 Typical output Characteristics

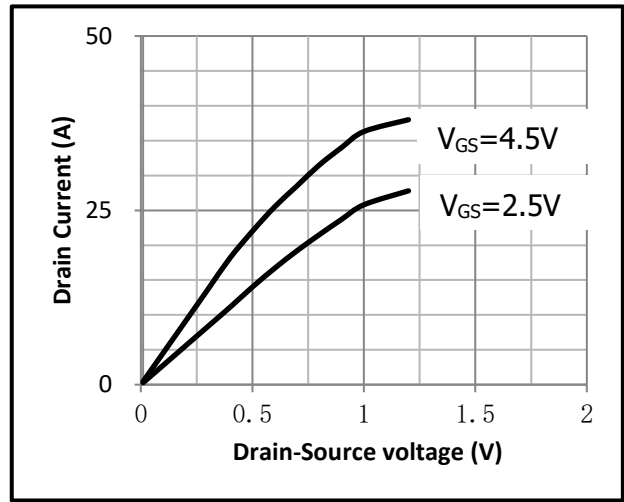


Fig.5 Threshold Voltage V.S Junction Temperature

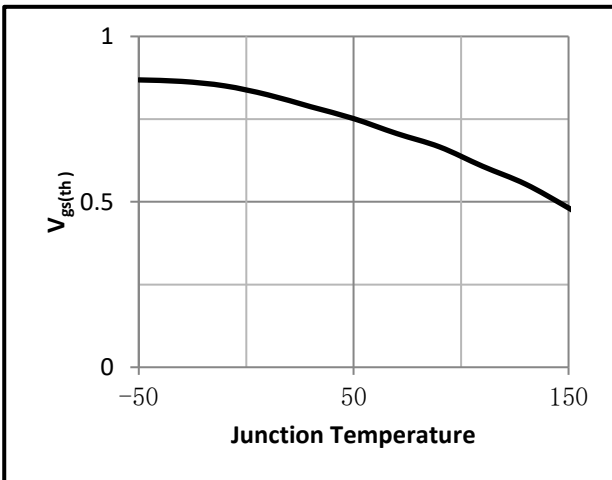


Fig.6 Resistance V.S Drain Current

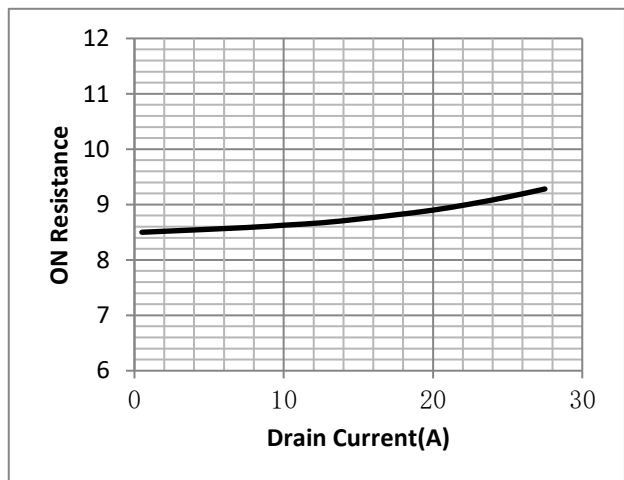


Fig.7 On-Resistance VS Gate Source Voltage

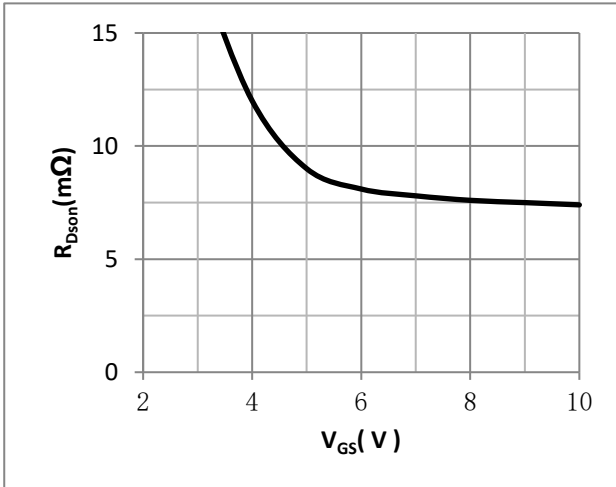


Fig.8 On-Resistance V.S Junction Temperature

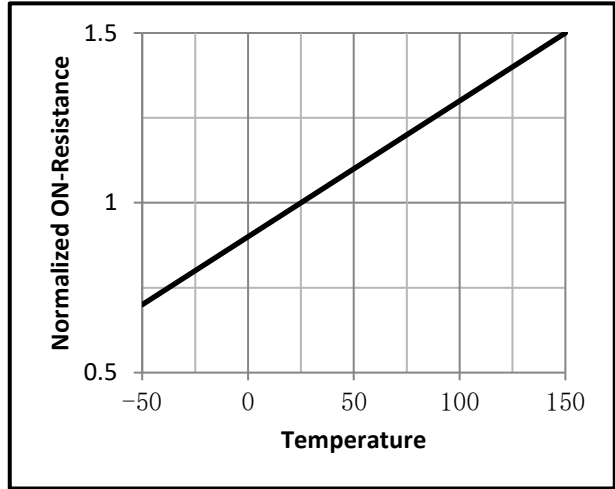


Fig.9 Switching Time Measurement Circuit

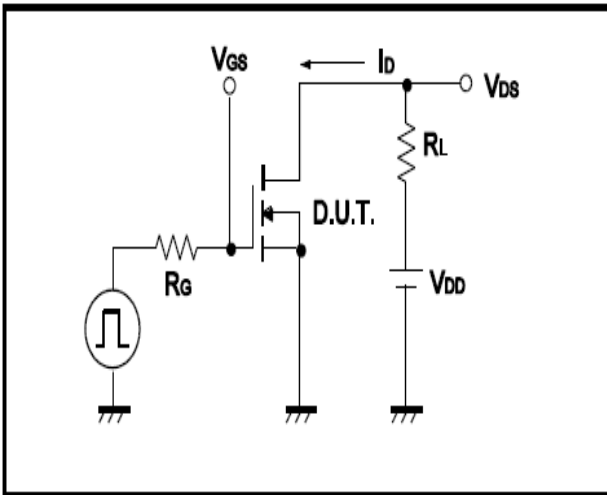


Fig.10 Gate Charge Waveform

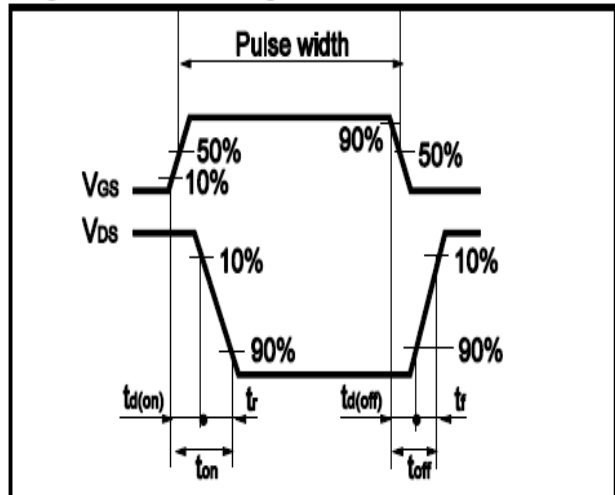


Fig.11 Avalanche Measurement Circuit

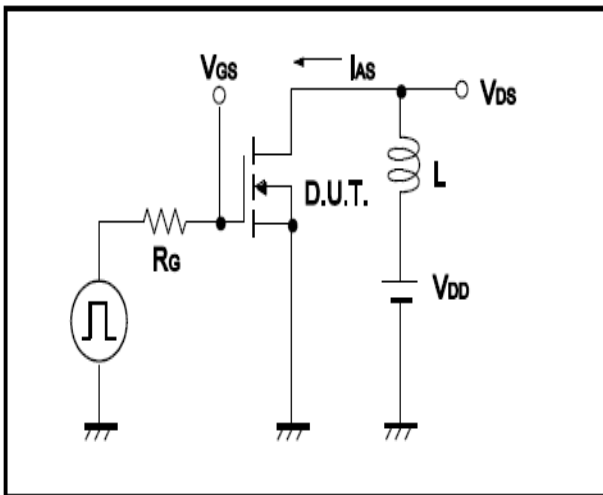
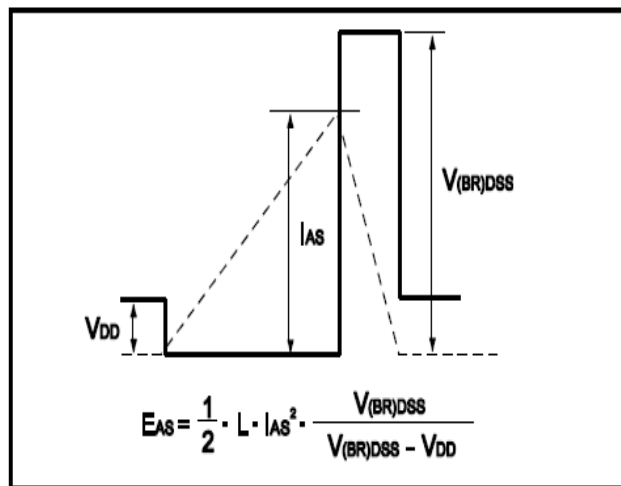
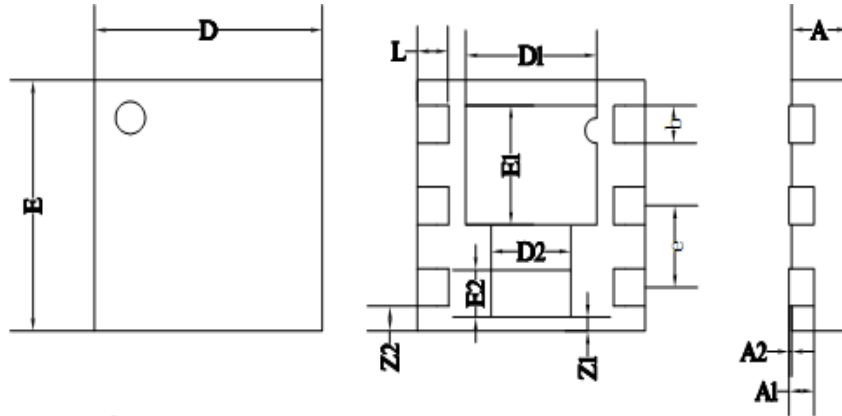


Fig.12 Avalanche Waveform



•Dimensions(DFN2*2)

Unit: mm



NOTE:
 All dimensions are in mm

| | MIN | NOM | MAX |
|-----------|---------|-------|-------|
| D | 1.95 | 2.00 | 2.05 |
| E | 1.95 | 2.00 | 2.05 |
| D1 | 1.10 | 1.15 | 1.20 |
| E1 | 0.90 | 0.95 | 1.00 |
| D2 | 0.65 | 0.70 | 0.75 |
| E2 | 0.33 | 0.38 | 0.43 |
| L | 0.225 | 0.275 | 0.325 |
| b | 0.25 | 0.30 | 0.35 |
| e | 0.65BSC | | |
| A | 0.45 | 0.50 | 0.55 |
| A1 | 0.20REF | | |
| A2 | 0.00 | - | 0.05 |
| Z1 | 0.06 | 0.11 | 0.16 |
| Z2 | 0.15 | 0.20 | 0.25 |