

### • General Description

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

### • 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

- Mobile device battery charging and discharging
- Battery protection switch

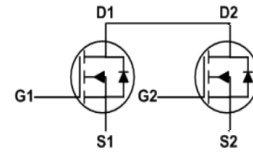
### • Ordering Information:

|                           |           |
|---------------------------|-----------|
| Part NO.                  | ZMD68602D |
| Marking                   | ZMD68602  |
| Packing Information       | REEL TAPE |
| Basic ordering unit (pcs) | 2500      |

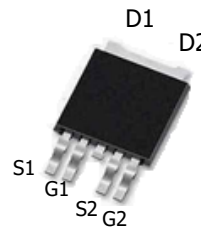
### • Absolute Maximum Ratings ( $T_C = 25^\circ\text{C}$ )

| Parameter  | Symbol                       | Rating     | Unit             |
|--|------------------------------|------------|------------------|
| Drain-Source Voltage                             | $V_{DS}$                     | 60         | V                |
| Gate-Source Voltage                              | $V_{GS}$                     | $\pm 20$   | V                |
| Continuous Drain Current                         | $I_{D@TC=25^\circ\text{C}}$  | 25         | A                |
|  | $I_{D@TC=75^\circ\text{C}}$  | 19         | A                |
|  | $I_{D@TC=100^\circ\text{C}}$ | 15.8       | A                |
| Pulsed Drain Current <sup>①</sup>                | $I_{DM}$                     | 75         | A                |
| Total Power Dissipation( $TC=25^\circ\text{C}$ ) | $P_D@TC=25^\circ\text{C}$    | 50         | W                |
| Total Power Dissipation( $TA=25^\circ\text{C}$ ) | $P_D@TA=25^\circ\text{C}$    | 1.25       | 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                    | $E_{AS}$                     | 75         | mJ               |

### • Product Summary



$V_{DS1} = 60\text{V}$   
 $V_{DS2} = 60\text{V}$   
 $R_{DS(ON)1} = 28\text{m}\Omega$   
 $R_{DS(ON)2} = 28\text{m}\Omega$   
 $I_{D1} = 25\text{A}$   
 $I_{D2} = 25\text{A}$



**•Thermal resistance**

| Parameter                                    | Symbol     | Min. | Typ. | Max. | Unit          |
|--|------------|------|------|------|---------------|
| Thermal resistance, junction - case          | $R_{thJC}$ | -    | -    | 2.3  | $^{\circ}C/W$ |
| Thermal resistance, junction - ambient       | $R_{thJA}$ | -    | -    | 62   | $^{\circ}C/W$ |
| Soldering temperature, wavesoldering for 10s | $T_{sold}$ | -    | -    | 265  | $^{\circ}C$   |

**•Electronic Characteristics**

| Parameter                         | Symbol       | Condition                         | Min. | Typ | Max.      | Unit       |
|-----------------------------------|--------------|-----------------------------------|------|-----|-----------|------------|
| Drain-Source Breakdown Voltage    | $BV_{DSS}$   | $V_{GS} = 0V, I_D = 250\mu A$     | 60   |     |           | V          |
| Gate Threshold Voltage            | $V_{GS(TH)}$ | $V_{GS} = V_{DS}, I_D = 250\mu A$ | 1.2  | 1.8 | 2.5       | V          |
| Drain-Source Leakage Current      | $I_{DSS}$    | $V_{DS} = 60V, V_{GS} = 0V$       |      |     | 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 | $R_{DS(ON)}$ | $V_{GS} = 10V, I_D = 12A$         |      | 28  | 34        | m $\Omega$ |
|                                   |              | $V_{GS} = 4.5V, I_D = 6A$         |      | 31  | 40        | m $\Omega$ |
| Forward Transconductance          | $g_{FS}$     | $V_{DS} = 25V, I_D = 10A$         |      | 5   |           | S          |
| Source-drain voltage              | $V_{SD}$     | $I_S = 12A$                       |      |     | 1.28      | V          |

**•Electronic Characteristics**

| Parameter                    | Symbol    | Condition | Min. | Typ  | Max. | Unit |
|------------------------------|-----------|-----------|------|------|------|------|
| Input capacitance            | $C_{iss}$ | f = 1MHz  | -    | 1430 | -    | pF   |
| Output capacitance           | $C_{oss}$ |           | -    | 160  | -    |      |
| Reverse transfer capacitance | $C_{rss}$ |           | -    | 115  | -    |      |

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

| Parameter            | Symbol   | Condition      | Min. | Typ | Max. | Unit |
|----------------------|----------|----------------|------|-----|------|------|
| Total gate charge    | $Q_g$    | $V_{DD} = 25V$ | -    | 25  | -    | nC   |
| Gate - Source charge | $Q_{gs}$ | $I_D = 5A$     | -    | 4   | -    |      |
| Gate - Drain charge  | $Q_{gd}$ | $V_{GS} = 10V$ | -    | 9   | -    |      |

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

Fig.1 Maximum Continuous Drain Current

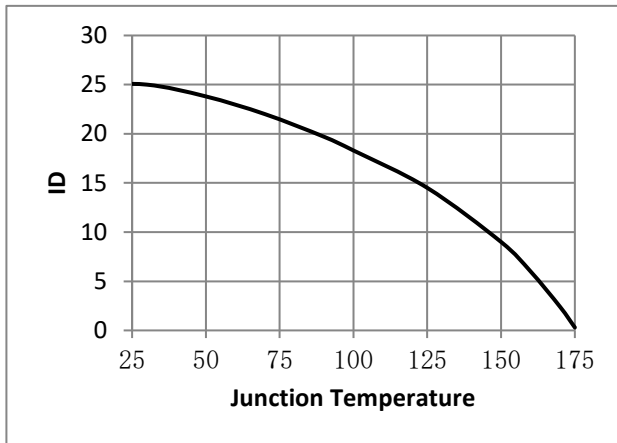


Fig.2 Typical output Characteristics

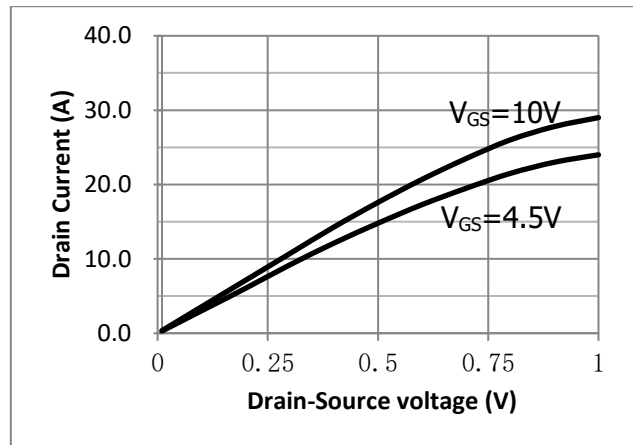


Fig.3 Threshold Voltage V.S Junction Temperature

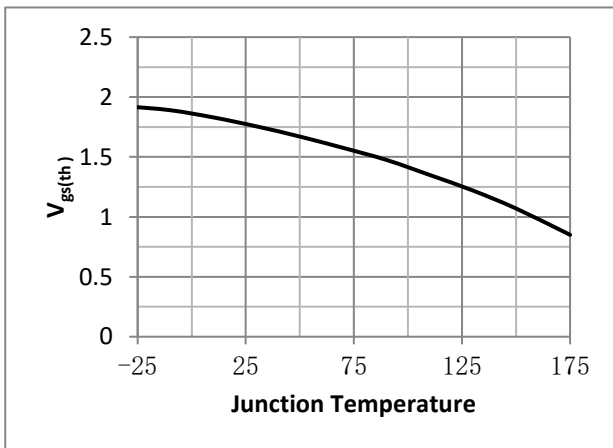


Fig.4 Resistance V.S Drain Current

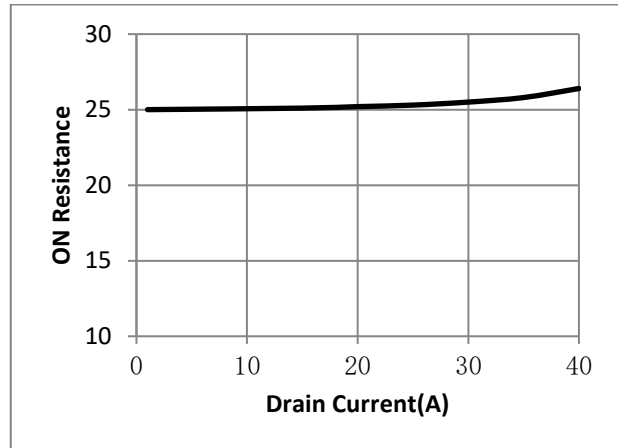


Fig.5 On-Resistance VS Gate Source Voltage

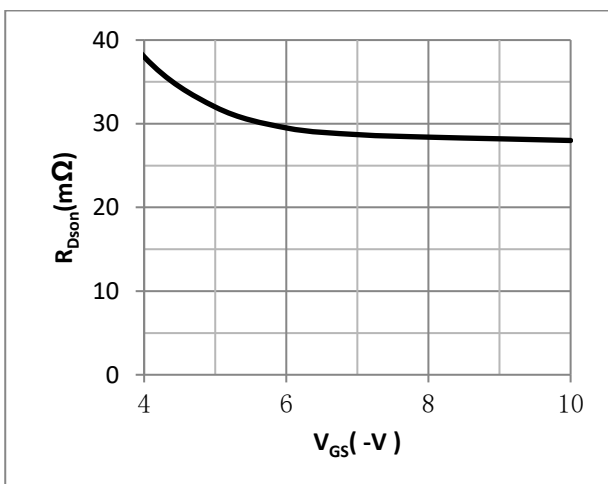
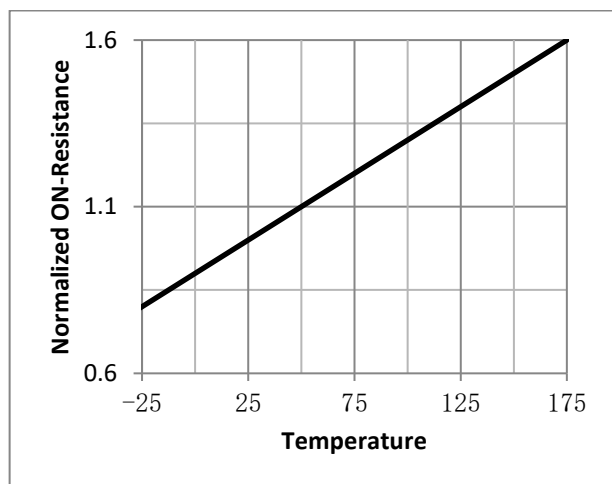


Fig.6 On-Resistance V.S Junction Temperature





●Dimensions(TO-252-4)

Unit: mm

