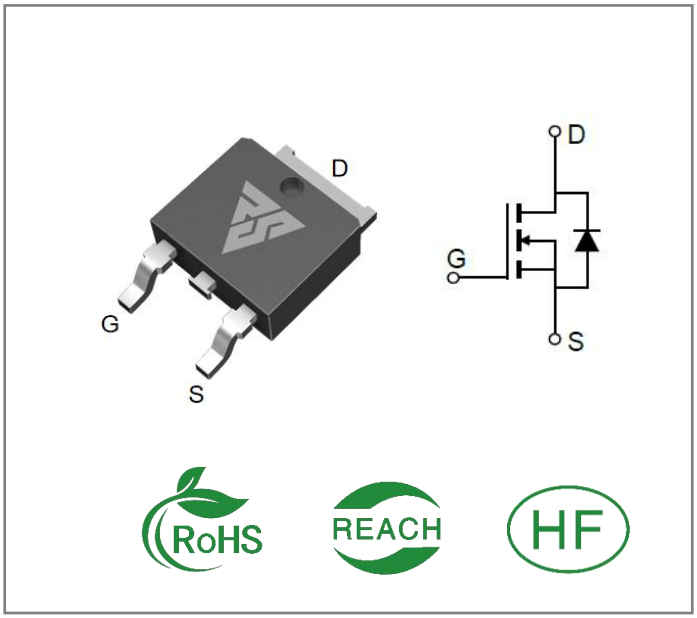
| VDS | RDS(on)Typ | ID@25℃ |
|---|---|---|
| 800V | 180mΩ | 18A |




## Applications:

- Switch Mode Power Supplies
- High Voltage DC/DC Converters
- Battery Chargers
- Motor Drives
- Pulsed Power Applications

## Features:

- Wide Bandgap SiC MOSFET Technology
- Low On-Resistance with High Blocking Voltage
- Low Capacitances with High-Speed Switching
- Low Reverse Recovery (Qrr)
- Easy to Parallel and Simple to Drive
- Robust against Parasitic Turn on Even 0V Turn off Gate Voltage

## Benefits:

- Reduced Switching Losses
- Increased System Switching Frequency
- Increased Power Density
- Reduction of Heat Sink Requirements
- Reduced EMI

## Ordering Information

| Part Number | Package | Marking | Packing | Qty. |
|---|---|---|---|---|
| RSM080180D | TO-252 | RSM080180D | Tape&reel | 2500 PCS |

## Maximum Ratings (TJ= 25℃ unless otherwise specified)

| Symbol | Parameter | Value | Unit | Test Conditions |
|---|---|---|---|---|
| VDS | Drain - Source Voltage | 800 | V | VGS=0V,ID=250μA |
| VGS | Gate - Source Voltage | -10/+22 | V | Absolute maximum values |
| VGSOP | Recommended Operation Voltage of Gate to Source | 0/+18 | V | Recommended operational values |
| ID | Continuous Drain Current | 18 | A | VGS=15V, TC =25℃ |
| IDM | Pulsed Drain Current | 40 | A | VGS=15V, TC =25℃ |
| EAS | Single Pulsed Avalanche Energy | 61 | mJ | TJ=25℃,VDD=50V L=10mH,IAS=3.5A |
| PD | Power Dissipation | 52 | W | TC =25℃, TJ =175℃ |
| TJ, Tstg | Operating Junction and StorageTemperature | -55 to + 175 | ℃ | |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## Electrical Characteristics (TJ= 25℃ unless otherwise specified)

| Symbol | Parameter | Min. | Typ. | Max. | Unit | Test Conditions | Note |
|---|---|---|---|---|---|---|---|
| V(BR)DSS | Drain-Source Breakdown Voltage | 800 | | | V | VGS=0V,ID=250μA | |
| VGS(th) | Gate Threshold Voltage | 2.7 | 3.6 | 4.5 | V | VGS= VDS, ID=3.5mA | |
| IDSS | Zero Gate Voltage Drain Current | | | 10 | μA | VDS=800V, VGS=0V | |
| IGSS | Gate-Source Leakage Current | | | 250 | nA | VGS=18V, VDS=0V | |
| RDS(on) | Drain-Source on-state Resistance | | 180 | 280 | mΩ | VGS=15V, ID =10A | |
| | | | 130 | 200 | | VGS=18V, ID =10A | |
| Ciss | Input Capacitance | | 527 | | pF | VGS=0V, VDS=50V f=1MHz,Tj=25℃ | |
| Coss | Output Capacitance | | 111 | | | | |
| Crss | Reverse Transfer Capacitance | | 10.5 | | | | |
| RG | Gate Resistance | | 2.5 | | Ω | f=1 MHz, VAC=25mV | |
| Qg | Total Gate Charge | | 28.6 | | nC | VDS=500V VGS=0/+15V ID=8.5A | |
| Qgs | Gate to Source Charge | | 8.3 | | | | |
| Qgd | Gate to Drain Charge | | 13.8 | | | | |
| td(on) | Turn-On Delay Time | | 16 | | ns | VDD=500V VGS =0/15V ID=8.5A RG(ext)=10Ω | |
| tr | Rise Time | | 55 | | | | |
| td(off) | Turn-Off Delay Time | | 34 | | | | |
| tf | Fall Time | | 71 | | | | |

## Reverse Diode Characteristics (TJ= 25℃ unless otherwise specified)

| Symbol | Parameter | Typ. | Max | Unit | Test Conditions | Note |
|---|---|---|---|---|---|---|
| VSD | Diode Forward Voltage | 3.4 | | V | VGS=0V, ISD =5A | |
| IS | Continuous Diode Forward Current | | 18 | A | VGS=0V,Tj= 25℃ | |
| trr | Reverse Recovery time | 17.6 | | ns | VGS=0V,ISD=8.5A VR=500V,Tj=25℃ di/dt=530A/us | |
| Qrr | Reverse Recovery Charge | 43 | | nC | | |
| Irrm | Peak Reverse Recovery Current | 4.2 | | A | | |

## Thermal Characteristics (TJ= 25℃ unless otherwise specified)

| Symbol | Parameter | Typ. | Max. | Unit | Test Conditions |
|---|---|---|---|---|---|
| RθJC | Thermal Resistance from Junction to Case | 2.88 | | ℃/W | |


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## Typical Feature Curve

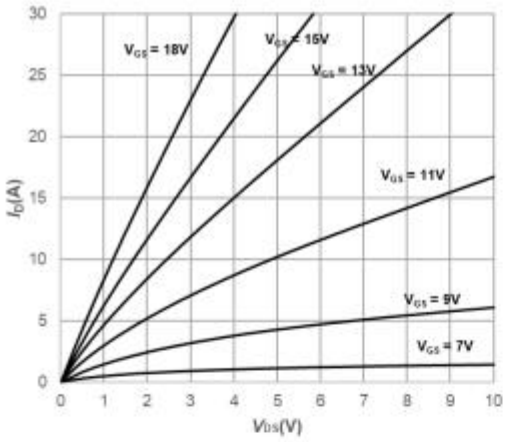


Fig1. Output Characteristics $T_j$=25℃

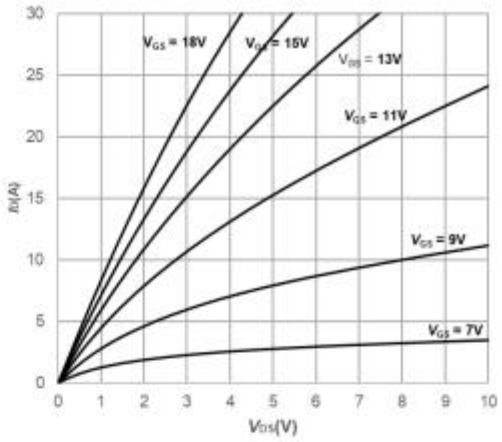


Fig2. Output Characteristics $T_j$= 175℃

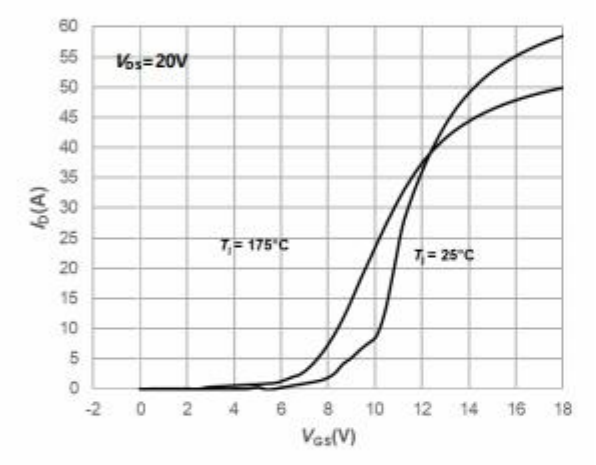


Fig3. Typical Transfer Characteristics

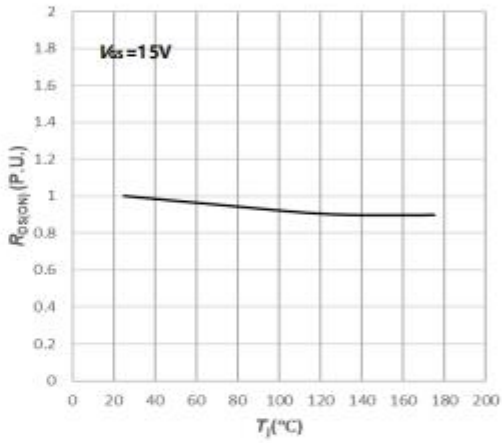


Fig4. Normalized On-Resistance vs. Temperature

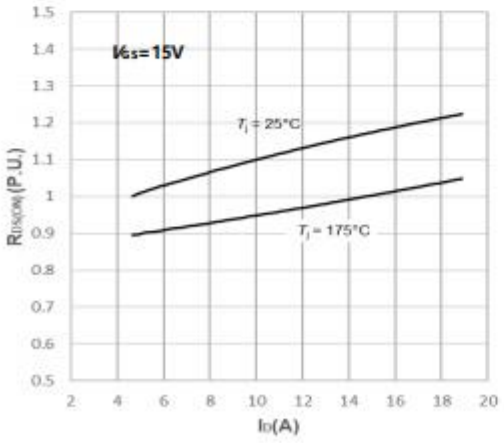


Fig5. Normalized On-Resistance vs. Drain Current For Various Temperatures

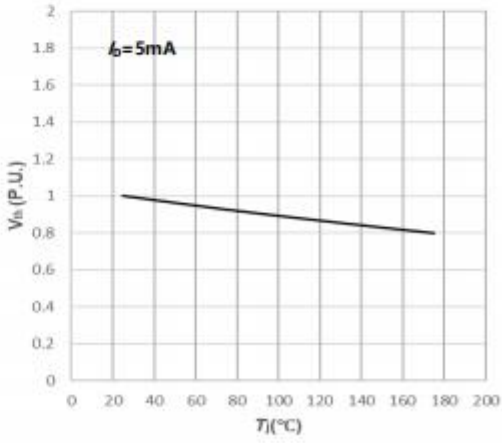


Fig6. Normalized Threshold Voltage vs. Temperature


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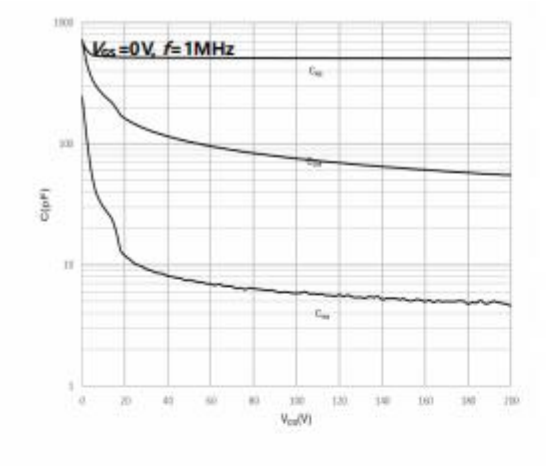


Fig7. Capacitances vs. Drain-Source Voltage (0-200V)

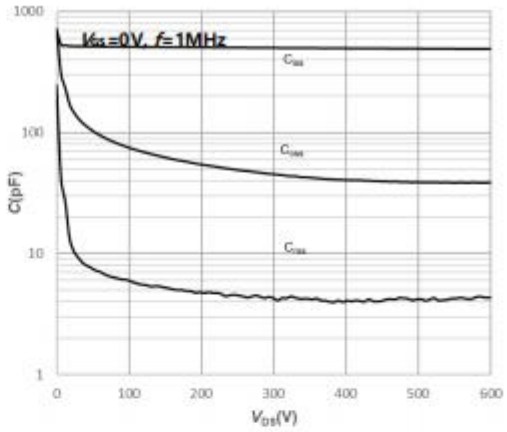


Fig8. Capacitances vs. Drain-Source Voltage (0-600V)

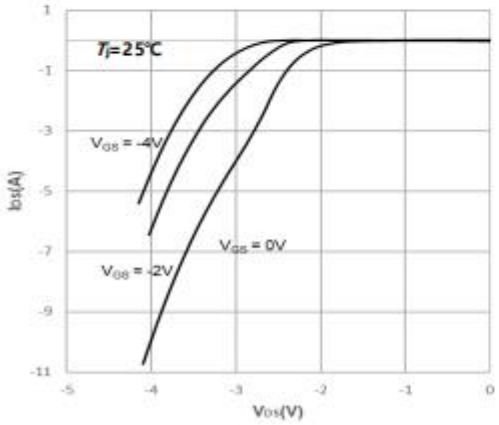


Fig9. Body Diode Characteristics


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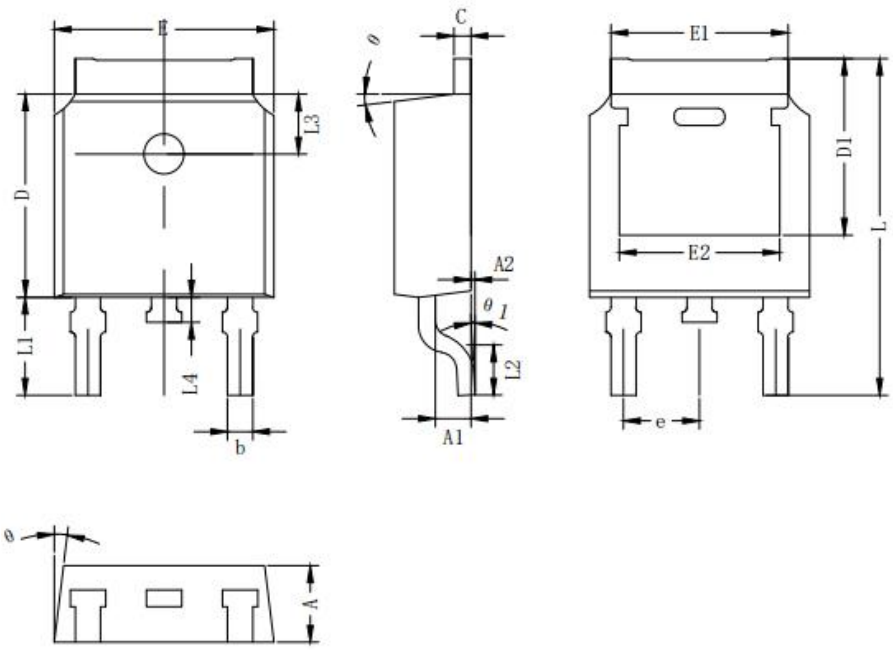
## Package outline drawing(TO-252 Unit: mm )




| SYMBOL | MIN | NOM | MAX |
|---|---|---|---|
| A | 2.10 | 2.30 | 2.50 |
| A1 | 0.97 | 1.07 | 1.17 |
| A2 | 0.00 | – | 0.12 |
| b | 0.66 | 0.76 | 0.86 |
| c | 0.45 | 0.51 | 0.60 |
| D | 5.90 | 6.10 | 6.30 |
| D1 | 5.10 | 5.30 | 5.45 |
| E | 6.40 | 6.60 | 6.80 |
| E1 | 5.10 | 5.33 | 5.45 |
| E2 | 4.63 | 4.83 | 5.03 |
| L | 9.90 | 10.10 | 10.30 |
| L1 | 2.74 | 2.94 | 3.14 |
| L2 | 1.40 | 1.50 | 1.70 |
| L3 | 1.65 | 1.80 | 1.95 |
| L4 | 0.60 | 0.80 | 1.00 |
| e | 2.286BSC | | |
| θ | 5° | 7° | 10° |
| θ1 | 0° | – | 3° |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