

VDS	RDS(on)Typ	ID@25°C
650V	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:

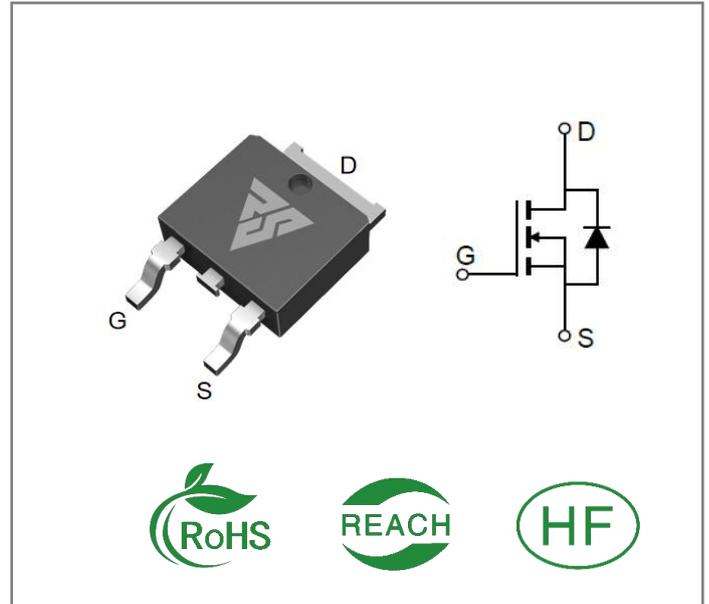
- Reduced Switching Losses
- Increased System Switching Frequency
- Increased Power Density
- Reduction of Heat Sink Requirements
- Reduced EMI

Ordering Information

Part Number	Package	Marking	Packing	Qty.
RSM065180D	TO-252	RSM065180D	Tape&reel	2500 PCS

Maximum Ratings (TJ= 25°C unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions
VDS	Drain - Source Voltage	650	V	VGS=0V, ID=500μA
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°C
IDM	Pulsed Drain Current	40	A	VGS=15V, TC =25°C
EAS	Single Pulsed Avalanche Energy	60	mJ	TJ=25C, VDD=50V, L=10mH
PD	Power Dissipation	52	W	TC =25°C, TJ =175°C
TJ, Tstg	Operating Junction and Storage Temperature	-55 to +175	°C	



Electrical Characteristics (T_J= 25°C unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions	Note
V(BR)DSS	Drain-Source Breakdown Voltage	650			V	VGS=0V, ID=500μA	
VGS(th)	Gate Threshold Voltage	2.5	3.3	4.5	V	VGS= VDS, ID=3.5mA	
IDSS	Zero Gate Voltage Drain Current			10	μA	VDS=650V, 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 =18A	
			130	200		VGS=18V, ID =18A	
Ciss	Input Capacitance		491		pF	VGS=0V, VDS=500V f=1MHz, Tj=25°C	
Coss	Output Capacitance		39				
Crss	Reverse Transfer Capacitance		4.2				
RG	Gate Resistance		6.5		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 (T_J= 25°C 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°C	
trr	Reverse Recovery time	17.6		ns	VGS=0V, ISD=8.5A VR=500V, Tj=25°C di/dt=530A/us	
Qrr	Reverse Recovery Charge	43		nC		
Irrm	Peak Reverse Recovery Current	4.2		A		

Thermal Characteristics (T_J= 25°C unless otherwise specified)

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions
RθJC	Thermal Resistance from Junction to Case	2.88		°C/W	

Typical Feature Curve

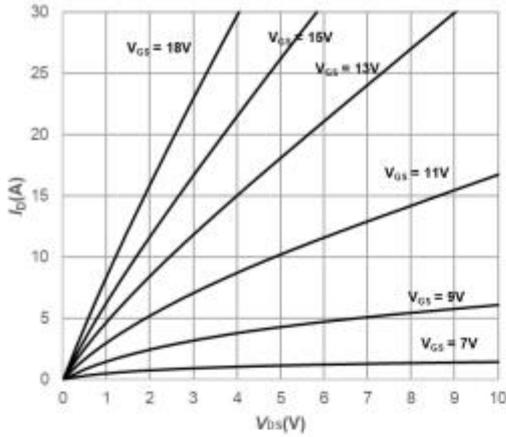


Fig1. Output Characteristics $T_j=25^{\circ}\text{C}$

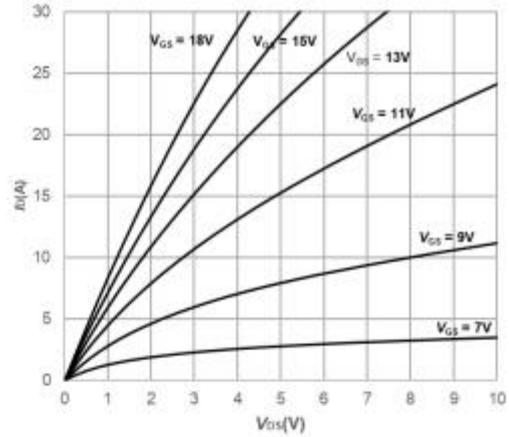


Fig2. Output Characteristics $T_j=175^{\circ}\text{C}$

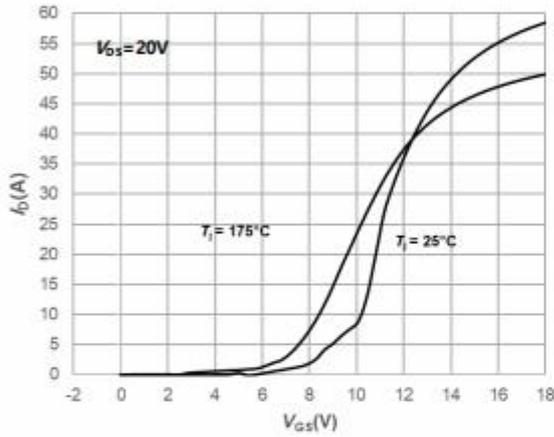


Fig3. Typical Transfer Characteristics

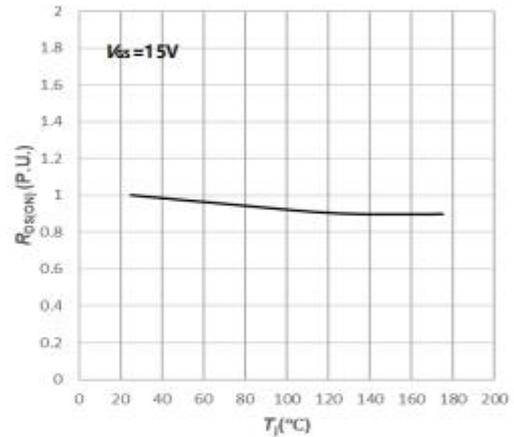


Fig4. Normalized On-Resistance vs. Temperature

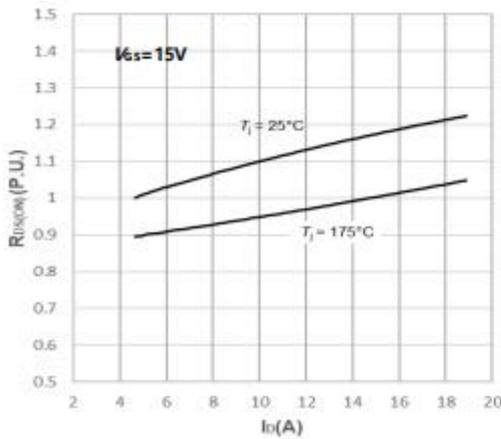


Fig5. Normalized On-Resistance vs. Drain Current For Various Temperatures

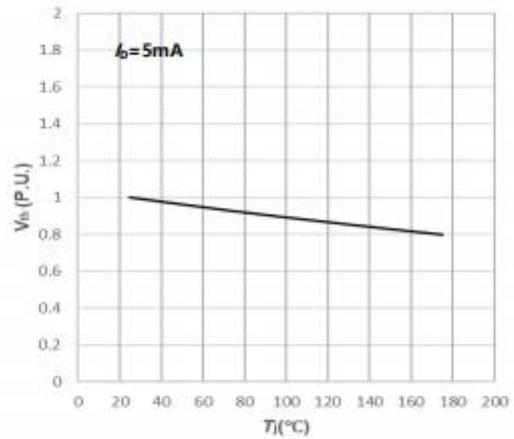


Fig6. Normalized Threshold Voltage vs. Temperature

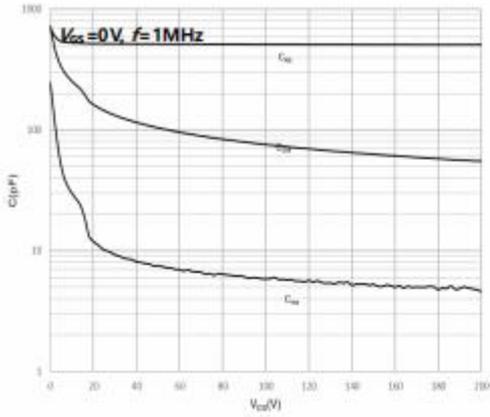


Fig7. Capacitances vs. Drain-Source Voltage (0-200V)

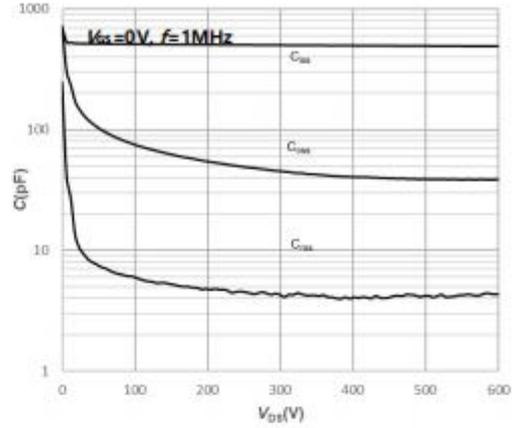


Fig8. Capacitances vs. Drain-Source Voltage (0-600V)

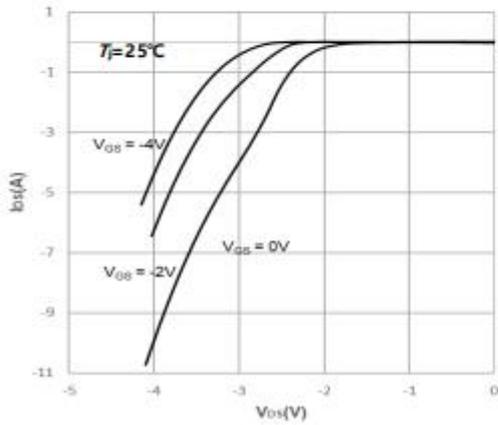
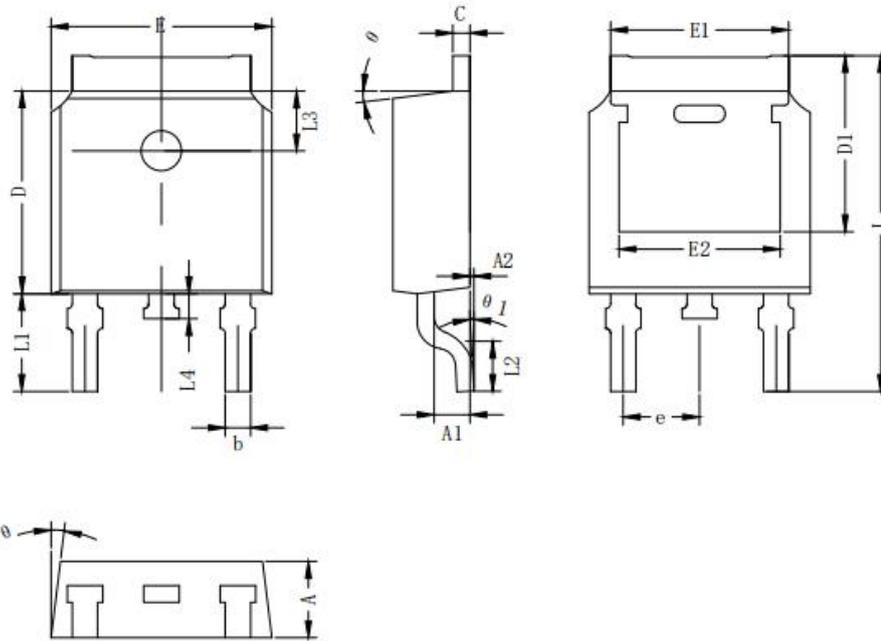


Fig9. Body Diode Characteristics

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		
theta	5°	7°	10°
theta1	0°	-	3°

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