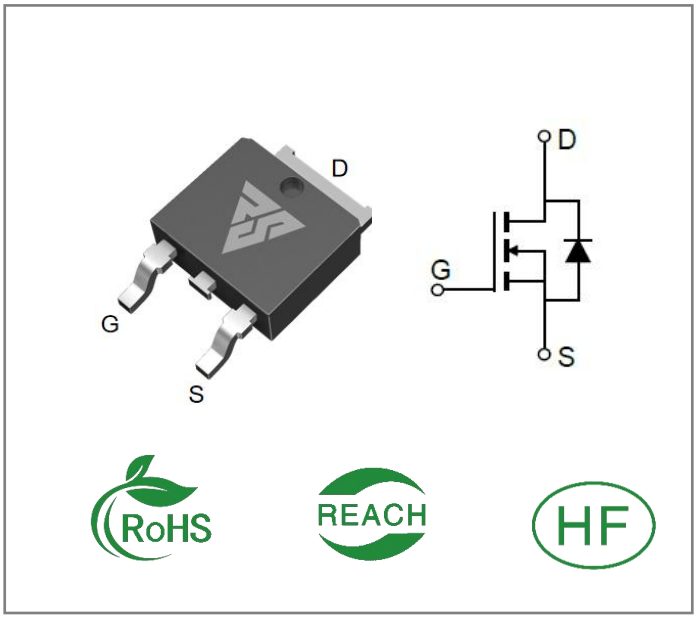
V_{DS}	$R_{DS(on)typ}$	I_D@25℃
800V	540mΩ	7A



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 (Q_{rr})
- 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.
RSM080540D	TO-252-3	RSM080540D	Tape&reel	2500 PCS

Maximum Ratings （TJ= 25℃ unless otherwise specified）

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{DS}	Drain - Source Voltage	800	V	V_{GS}=0V,I_D =250μA	
V_{GS}	Gate - Source Voltage	-10/+22	V	Absolute maximum values	
V_{GSop}	Gate - Source Voltage	0/+18	V	Recommended operational values	
I_D	Continuous Drain Current	7 5	A	V_{GS}=15V,T_C =25℃ V_{GS}=15V,T_C =175℃	
I_{DM}	Pulsed Drain Current	14	A	V_{GS}=15V,T_C =25℃	
P_D	Power Dissipation	52	W	T_C =25℃,T_J =175℃	
E_{AS}	Single Pulse Avalanche Energy	11.25	mJ	L=10mH,I_{AS}=1.5A V_{DD}=50V,V_{GS}=15 V	

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T_J, T_{stg}	Operating Junction and StorageTemperature	-55 to + 175	℃		

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	V_{GS}=0V,I_D =250μA	
$V_{GS(th)}$	Gate Threshold Voltage	2.7	3.6	4.5	V	V_{GS}= V_{DS}, I_D=1.8mA	
I_{DSS}	Zero Gate Voltage Drain Current		1	50	μA	V_{DS}= 800V, V_{GS}=0V T_J =25℃	
I_{GSS}	Gate-Source Leakage Current			250	nA	V_{GS}=18V, V_{DS}= 0V	
$R_{DS(on)}$	Drain-Source on-state Resistance		540	700	mΩ	V_{GS}=15V, I_D =3.6A	
			380	500		V_{GS}=18V, I_D =3.6A	
C_{iss}	Input Capacitance		200		pF	V_{GS}=0V, V_{DS}=50V f=1MHz，T_J=25℃	
C_{oss}	Output Capacitance		45				
C_{rss}	Reverse Transfer Capacitance		6				
$t_{d(on)}$	Turn-On Delay Time		15		ns	V_{DD} =500V V_{GS} =0/18 V I_D = 3.6A $R_{G(ext)}$ = 10Ω	
t_r	Rise Time		39				
$t_{d(off)}$	Turn-Off Delay Time		16				
t_f	Fall Time		69				
$R_{G(int)}$	Internal Gate Resistance		5.5		Ω	f=1 MHz	
Q_{gs}	Gate to Source Charge		95		nC	V_{DS}=500V V_{GS}=0/15V I_D=3.6A T_J=25℃	
Q_{gd}	Gate to Drain Charge		30				
Q_g	Total Gate Charge		27				

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

Symbol	Parameter	Typ.	Max	Unit	Test Conditions	Note
V_{SD}	Diode Forward Voltage	3.5		V	V_{GS}=0V, I_S =3A T_J = 25℃	
I_S	Continuous Diode Forward Current	7		A	V_{GS}=0V,T_J= 25℃	
t_{rr}	Reverse Recovery time	11		ns	V_{GS}=0V I_{SD}=3.6A V_R=500V di/dt=850 A/μs T_J= 25℃	
Q_{rr}	Reverse Recovery Charge	35		nC		
I_{rrm}	Peak Reverse Recovery Current	5.5		A		

Thermal Characteristics (TJ= 25℃ unless otherwise specified)

Symbol	Parameter	Typ.	Unit	Test Conditions	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	2.9	℃/W		

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Typical Feature Curve

Figure 1. Output Characteristics Tj=25℃

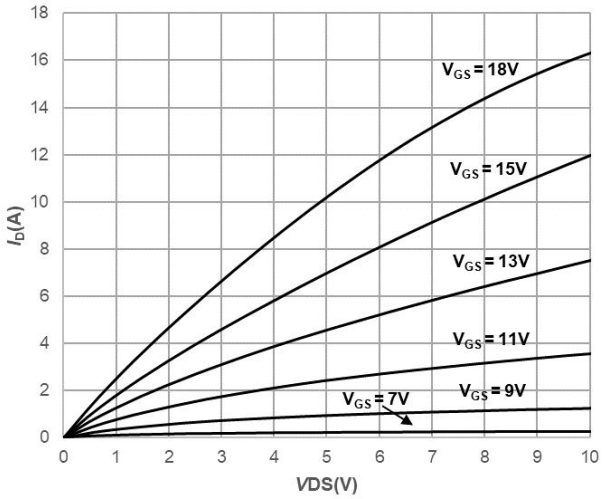

Figure 2. Output Characteristics Tj=175℃

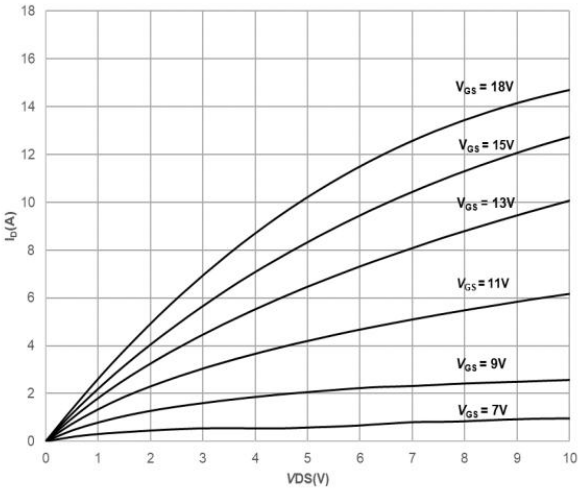

Figure 3. Output Characteristics Tj=-40℃

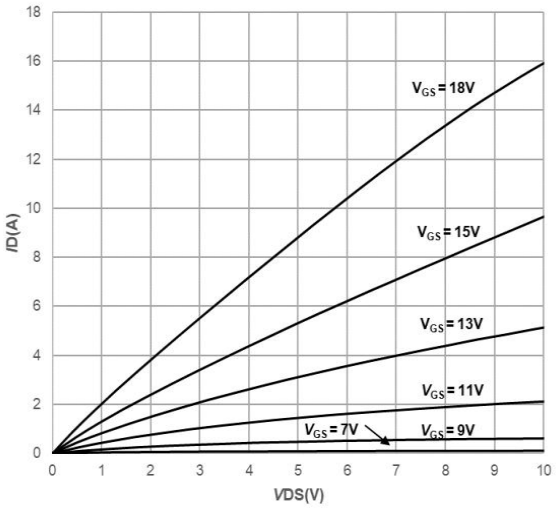

Figure 4. Typical Transfer Characteristics

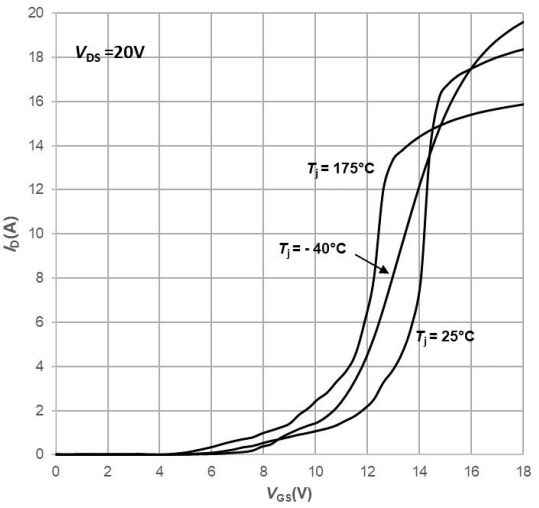

Figure 5. Normalized On-Resistance vs. Temperature

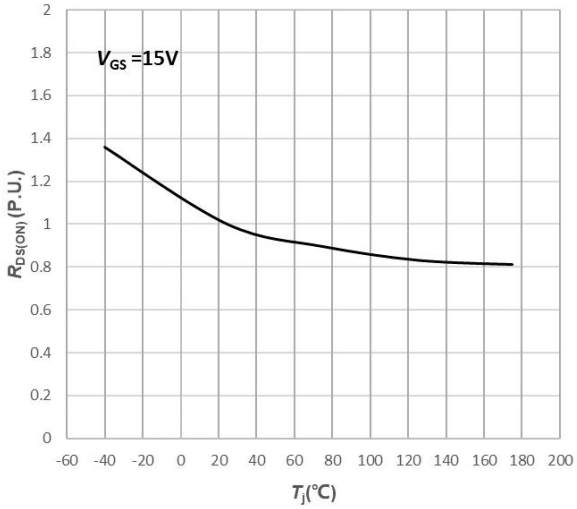

Figure 6. Normalized On-Resistance vs. Drain Current For Various Temperatures

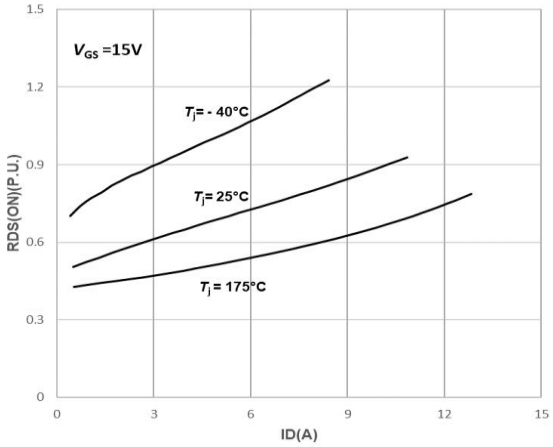

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Fig7. Normalized Threshold Voltage vs. Temperature

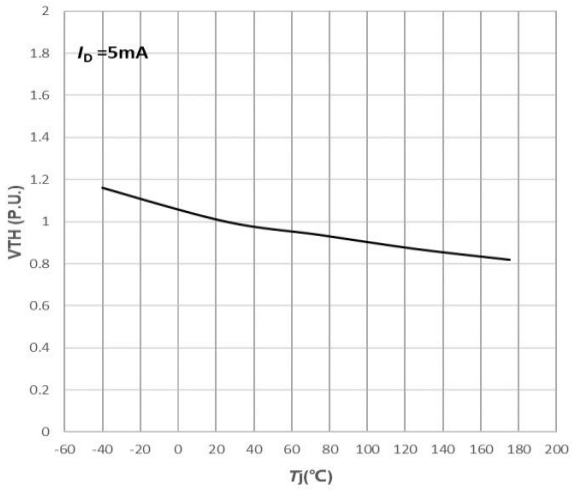


Figure 8. Capacitances vs. Drain-Source Voltage (0-200V)

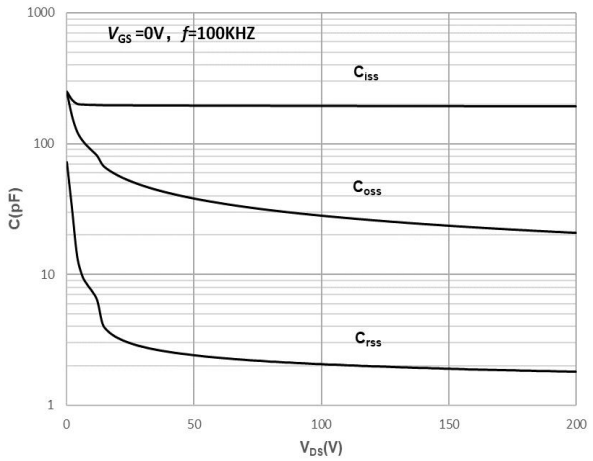


Figure 9. Capacitances vs. Drain-Source Voltage (0-650V)

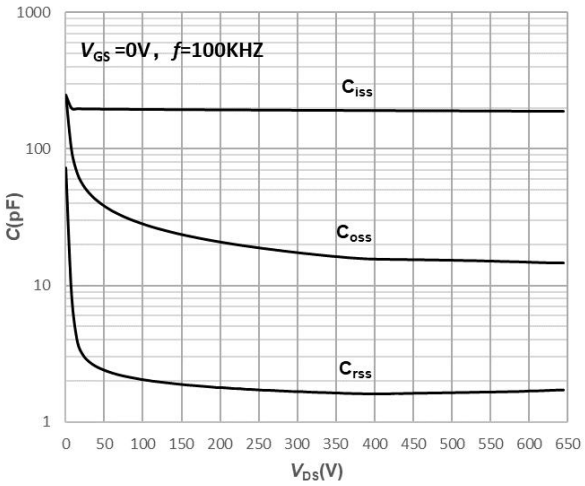
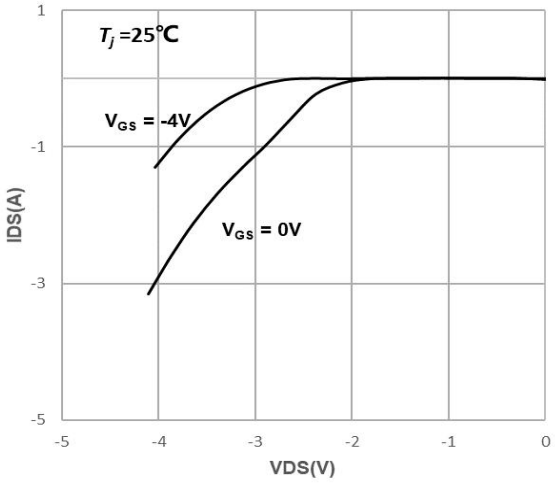


Fig10. Body Diode Characteristics



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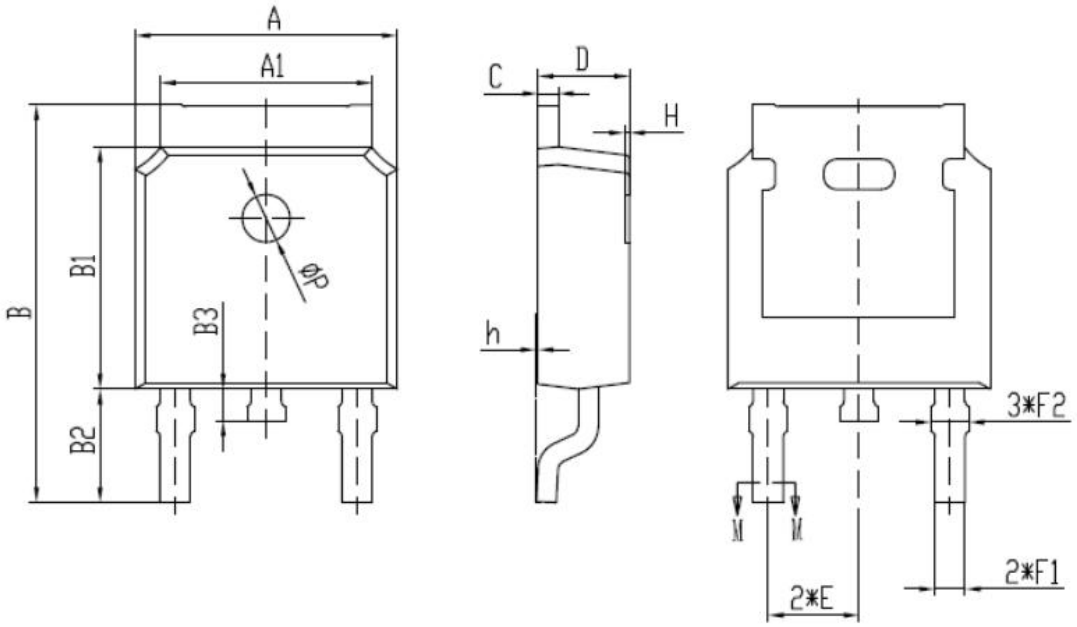
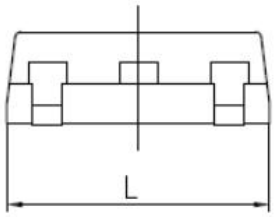
Package outline drawing(TO-252 Unit: mm)





Symbol	Dimensions in Millimeter	
	MIN	MAX
A	6.50	6.70
A1	5.16	5.46
B	9.77	10.17
B1	6.00	6.20
B2	2.60	3.00
B3	0.70	0.90
C	0.45	0.61
D	2.20	2.40
E	2.186	2.386
F1	0.67	0.87
F2	0.76	0.96
H	0.00	0.30
h	0.00	0.127
L	6.50	6.70
Φ P	1.10	1.30

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