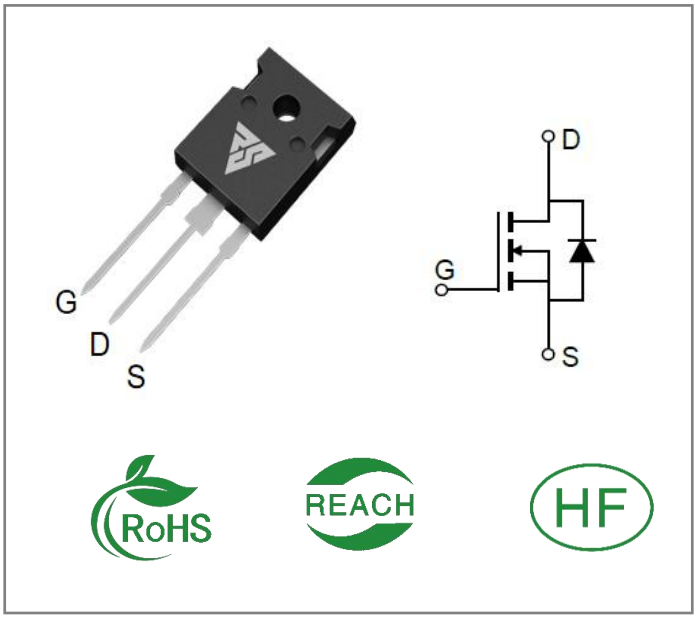
V_{DS}	$R_{DS(on)typ}$	I_D@25℃
800V	20mΩ	120A



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.
RSM080020W	TO-247-3	RSM080020W	Tube	30 PCS

Maximum Ratings （TJ= 25℃ unless otherwise specified）

Symbol	Parameter	Value	Unit	Test Conditions
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[1]	120 100	A	T_C =25℃ T_C =100℃
I_{DM}	Pulsed Drain Current	240	A	
E_{AS}	Single Pulse Avalanche Energy	720	mJ	L=10mH,I_{AS}=12A
P_D	Power Dissipation	333	W	T_C =25℃， T_J =175℃
T_J, T_{stg}	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	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=12.3mA	
I_{DSS}	Zero Gate Voltage Drain Current		1	50	μA	V_{DS}= 800V, V_{GS}=0V TJ =25℃	
I_{GSS}	Gate-Source Leakage Current			250	nA	V_{GS}=18V, V_{DS}= 0V	
$R_{DS(on)}$	Drain-Source on-state Resistance		20	35	mΩ	V_{GS}=18V, I_D =60A	
C_{iss}	Input Capacitance		3400		pF	V_{GS}=0V, V_{DS}=500V f=100KHz，T_J=25℃	
C_{oss}	Output Capacitance		689				
C_{rss}	Reverse Transfer Capacitance		45				
$t_{d(on)}$	Turn-On Delay Time		21		ns	V_{DD} =500V V_{GS} =0/18 V I_D = 20A $R_{G(ext)}$ = 10Ω	
t_r	Rise Time		76				
$t_{d(off)}$	Turn-Off Delay Time		70				
t_f	Fall Time		37				
$R_{G(int)}$	Internal Gate Resistance		0.37		Ω	f=1 MHz, V_{AC}=25mV	
Q_{gs}	Gate to Source Charge		35		nC	V_{DS}=500V V_{GS}=0/18V I_D=60A T_J=25℃	
Q_{gd}	Gate to Drain Charge		17				
Q_g	Total Gate Charge		125				

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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	3.4		V	V_{GS}=0V, I_S =30A T_J = 25℃	
I_S	Continuous Diode Forward Current	120		A	V_{GS}=0V,T_J= 25℃	
t_{rr}	Reverse Recovery time	35		ns	V_{GS}=0V I_{SD}=60A V_R=500V di/dt=400 A/μs T_J= 25℃	
Q_{rr}	Reverse Recovery Charge	130		nC		
I_{rrm}	Peak Reverse Recovery Current	6		A		

Thermal Characteristics （TJ= 25℃ unless otherwise specified）

Symbol	Parameter	Typ.	Unit	Test Conditions	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.45	℃/W		

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Typical Feature Curve

Figure 1. Output Characteristics Tj=25℃

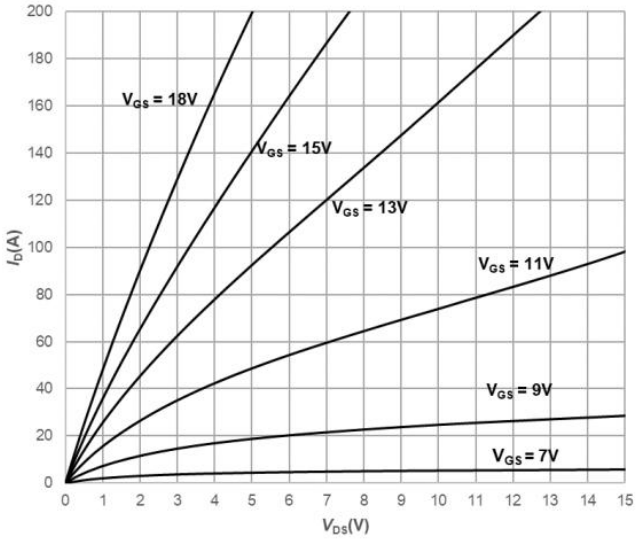

Figure 2. Output Characteristics Tj=175℃

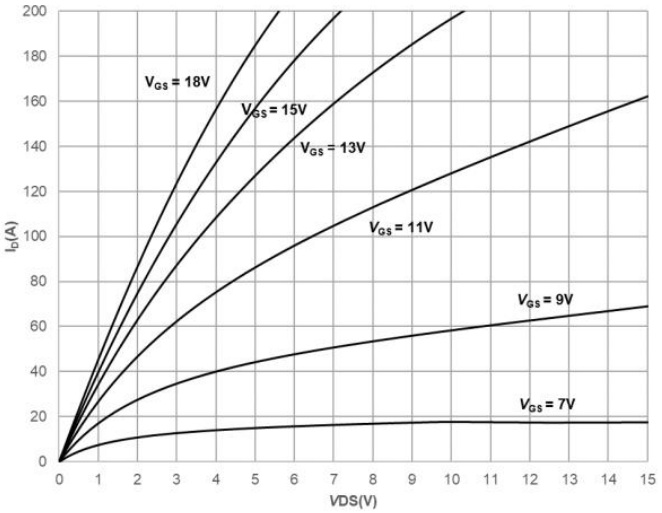

Figure 3. Output Characteristics Tj=40℃

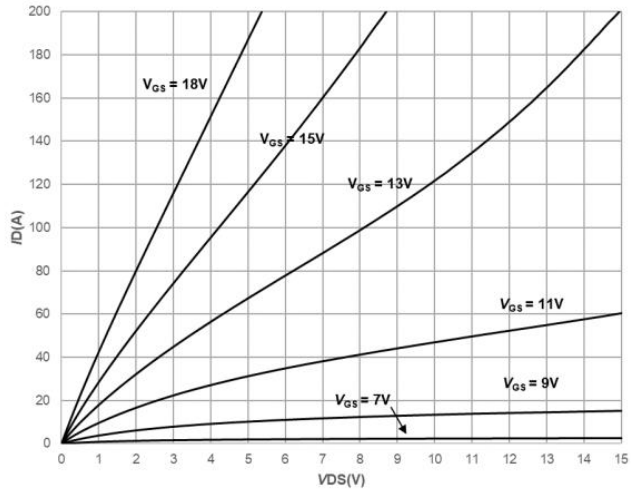

Figure 4. Typical Transfer Characteristics

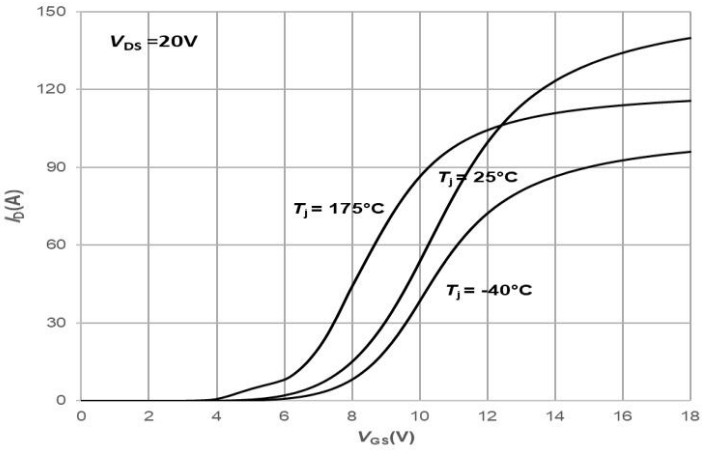

Figure 5. Normalized On-Resistance vs. Temperature

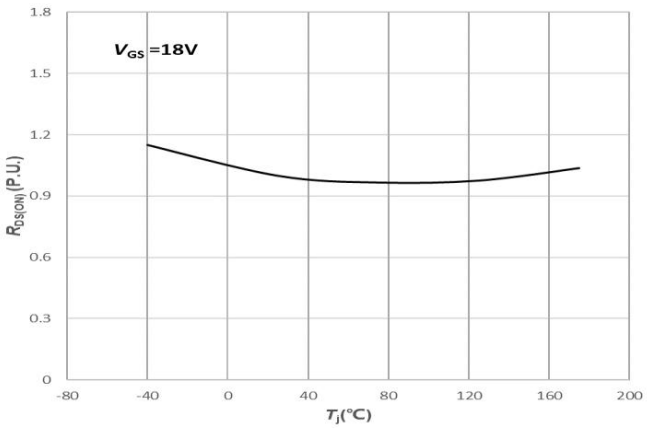

Figure 6. Normalized On-Resistance vs. Drain Current For Various Temperatures

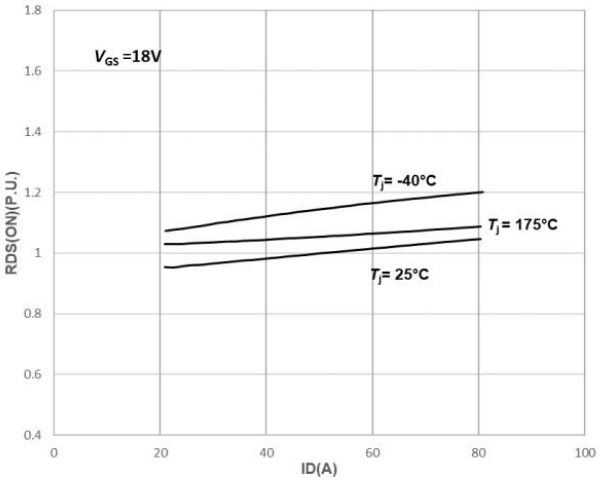

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Figure 7. Capacitances vs. Drain-Source Voltage (0-200V)

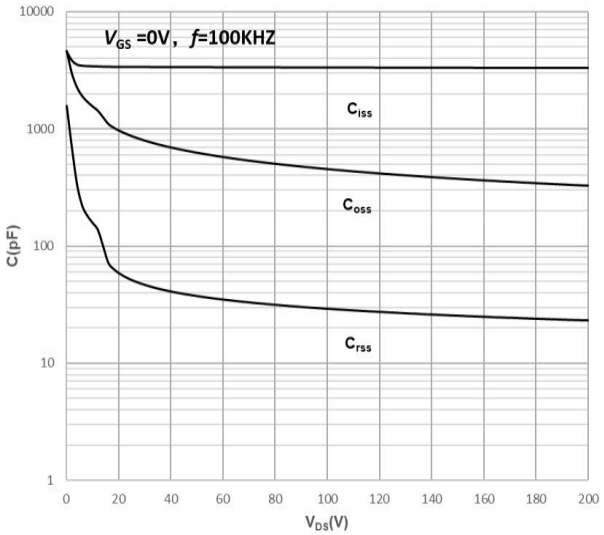


Figure 8. Capacitances vs. Drain-Source Voltage (0-650V)

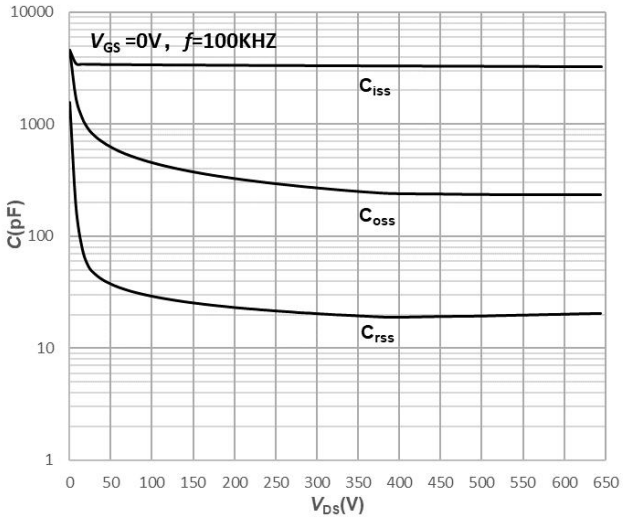


Fig9. Body Diode Characteristics

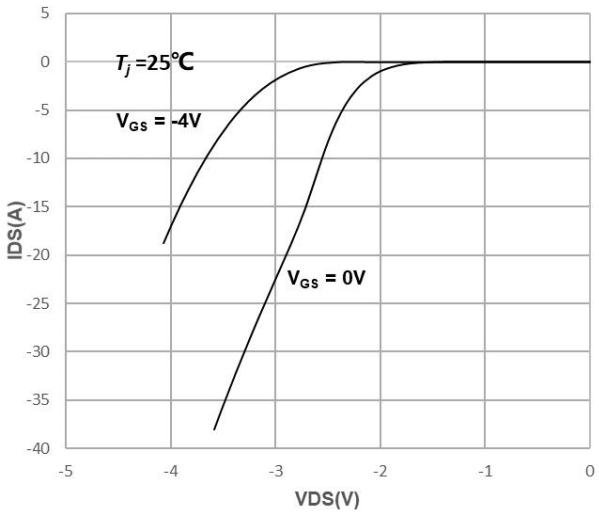
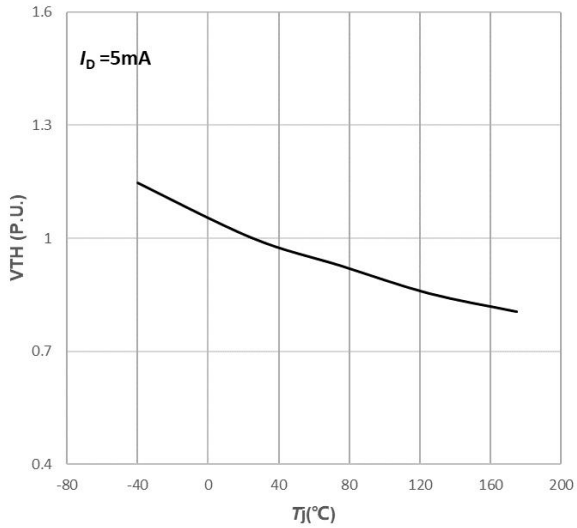


Fig10. Normalized Threshold Voltage vs. Temperature



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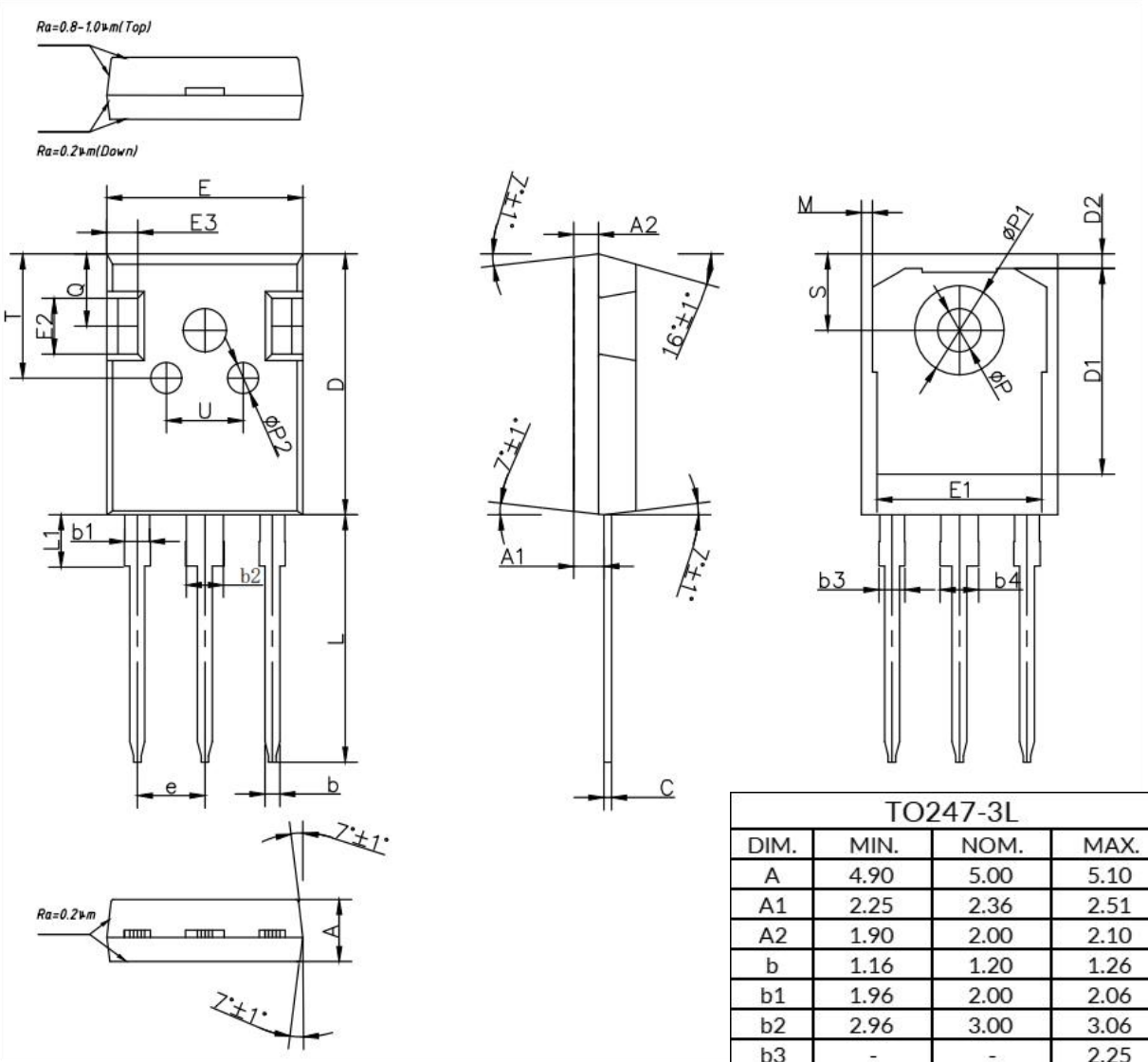
Package outline drawing(TO-247-3 Unit: mm)



TO247-3L			
DIM.	MIN.	NOM.	MAX.
A	4.90	5.00	5.10
A1	2.25	2.36	2.51
A2	1.90	2.00	2.10
b	1.16	1.20	1.26
b1	1.96	2.00	2.06
b2	2.96	3.00	3.06
b3	-	-	2.25
b4	-	-	3.25
c	0.59	0.60	0.66
D	20.90	21.00	21.10
D1	16.25	16.55	16.85
D2	1.05	1.17	1.35
E	15.50	-	16.30
E1	13.10	13.26	13.50
E2	4.40	4.50	4.60
E3	2.40	2.50	2.60
e	5.436BSC		
L	19.80	19.90	20.10
L1	-	-	4.30
M	0.35	0.89	0.95
P	3.40	3.50	3.60
P1	7.00	7.20	7.40
P2	2.40	2.50	2.60
Q	5.60	5.80	6.00
S	6.05	6.15	6.25
T	9.80	10.00	10.20
U	6.00	6.20	6.40
All dimensions in millimeters			

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