ASZM011075L

N-Channel Silicon Carbide Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D@25℃
750V	15mΩ@18V	189A

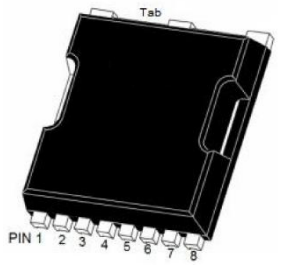
Feature

- Wide bandgap SiC MOSFET technology
- Low On-Resistance with High Blocking Voltage
- Low Capacitances with High-Speed switching
- Low reverse recovery(Qrr)

Application

- Switch mode power supplies
- Renewable energy
- On Board Charger
- High voltage DC/DC converters

Package



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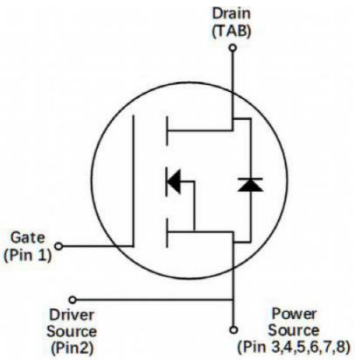
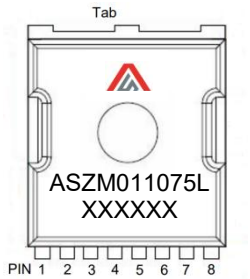
Circuit diagram



Marking



Absolute maximum ratings (Tc=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Value	Unit
Drain-Source Voltage	V_{DS}	V_{GS} = 0V, I_D = 100μA	750	V
Gate-Source Voltage	V_{GSmax}	AC (f > 1 Hz)	-10/+25	V
Gate-Source Voltage	V_{GSOP}	Static	-4/+18	V
Continuous Drain Current	I_D	V_{GS} = 18V, T_C=25℃	189	A
	I_D	V_{GS} = 18V, T_C=100℃	133	
Pulsed Drain Current	$I_{D,pulse}$	Pulse with t_p limited by T_{jmax} at 1ms Pulse with t_p limited by T_{jmax} at 100μs	356 698	A
Power Dissipation	P_D	T_C=25℃	577	W
Thermal Resistance（Typ）	$R_{\theta JC}$	Junction-to-Case	0.26	℃/W
Junction Temperature	T_J		-55~ +175	℃
Storage Temperature	T_{STG}		-55~ +175	℃

Electrical characteristics (Tj=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =100μA	750			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =750V,V_{GS} = 0V			50	μA
Gate-Source leakage current	I_{GSS}	V_{GS} =18V, V_{DS} = 0V			250	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =36mA		2.8		V
		V_{DS} =V_{GS}, I_D =36mA,T_j = 175℃		2.0		
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =18V, I_D =80A		11	15	mΩ
		V_{GS} =18V, I_D =80A,T_j = 175℃		14		
Transconductance	g_{fs}	V_{DS} =18V, I_D =80A		60		S
		V_{DS} =18V, I_D =80A,T_j = 175℃		54		
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =600V,V_{GS} =0V,f =1 MHz V_{AC} = 25mV		5670		pF
Output Capacitance	C_{oss}			383		
Reverse Transfer Capacitance	C_{rss}			37		
Internal Gate Resistance	$R_{G(int)}$	f=1 MHz, V_{AC} = 25mV		1.2		Ω
Total Gate Charge	Q_g	V_{DS} =400V,I_D =80A V_{GS} =-4/18V		235		nC
Gate-Source Charge	Q_{gs}			84		
Gate-Drain Charge	Q_{gd}			62		
Source-Drain Diode characteristics						
Diode Forward Current	I_S	V_{GS} =-4V,T_C=25℃		130		A
Diode Forward voltage	V_{SD}	V_{GS} =-4V, I_{SD}= 40A		3.9		V
		V_{GS} =-4V, I_{SD}= 40A,T_J=175℃		3.4		V
Diode pulse Current	I_S, pulse	V_{GS} = -4V, pulse width t_p limited by T_{jmax}		356		A

Typical Characteristics

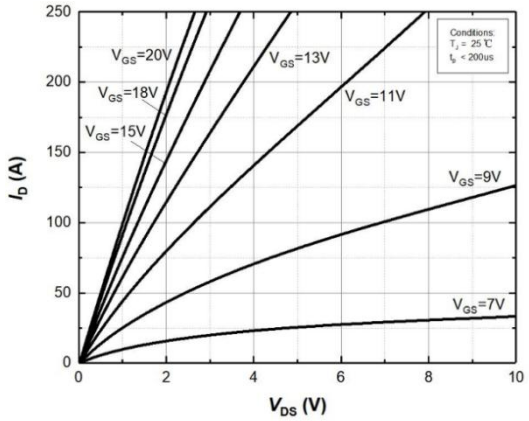


Figure 1. Output characteristics at Tj=25°C

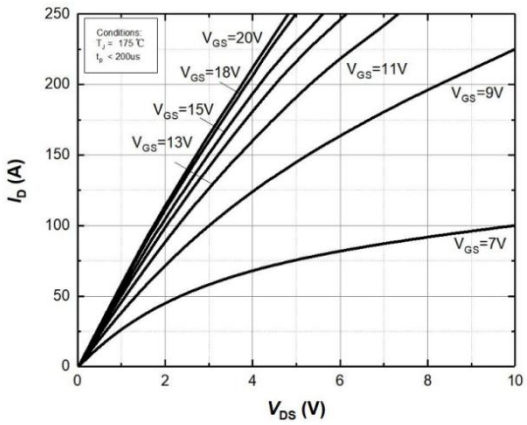


Figure 2. Output characteristics at Tj=175°C

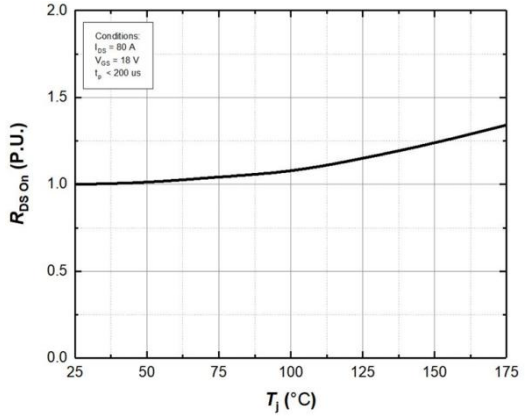


Figure 3. Normalized On-Resistance vs. Temperature

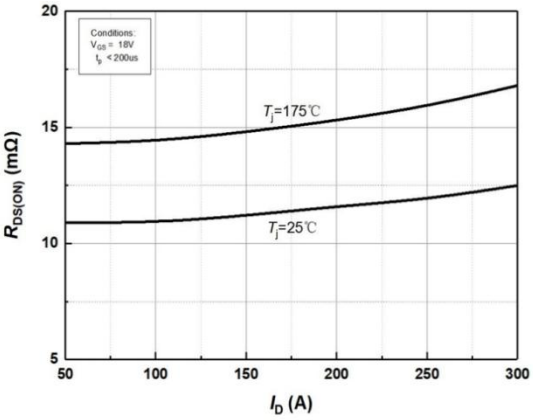


Figure 4. On-Resistance vs. Drain current for Various Temperature

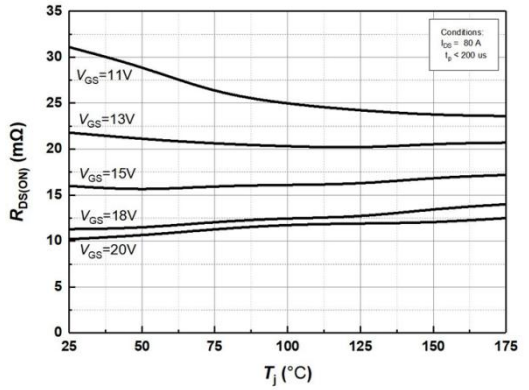


Figure 5. On-Resistance vs. Temperature for Various Gate Voltage

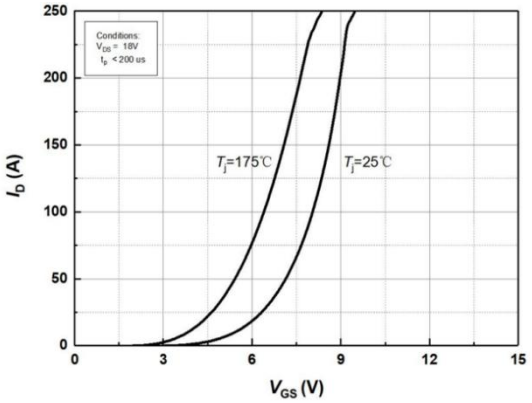


Figure 6. Transfer Characteristics for Various Junction Temperatures

Typical Characteristics

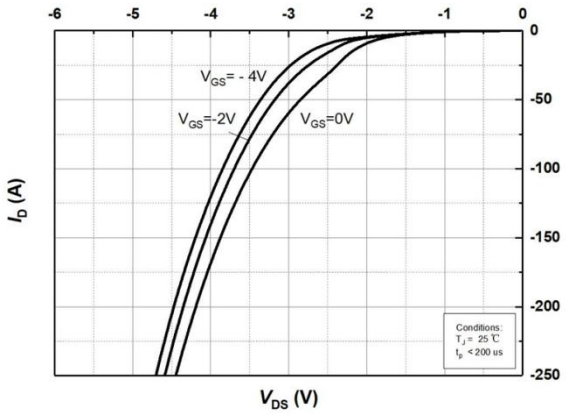


Figure 7. Body Diode Characteristics at Tj=25°C

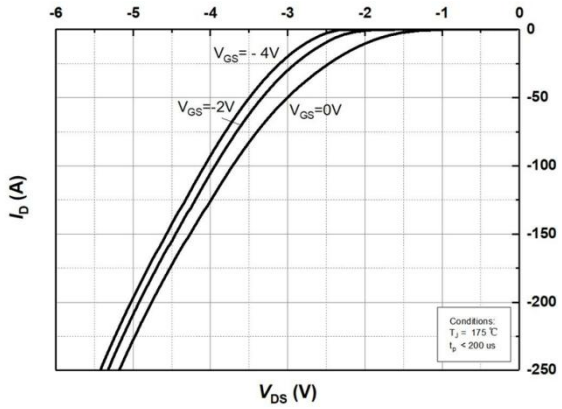


Figure 8. Body Diode Characteristics at Tj=175°C

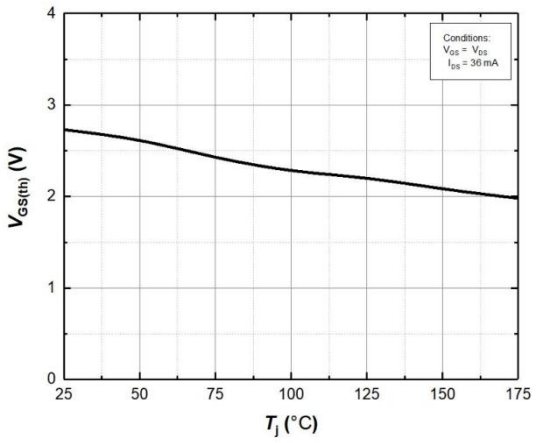


Figure 9. Threshold Voltage vs. Temperature

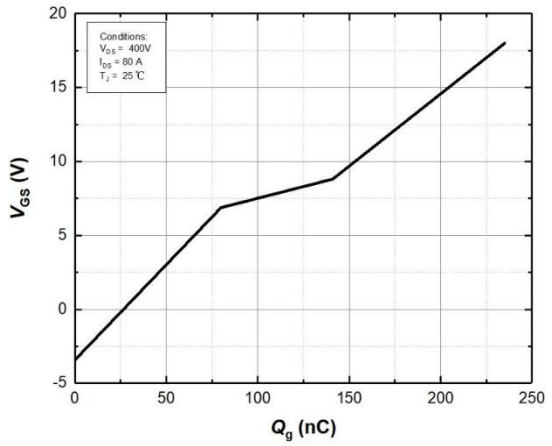


Figure 10 Gate Charge Characteristics

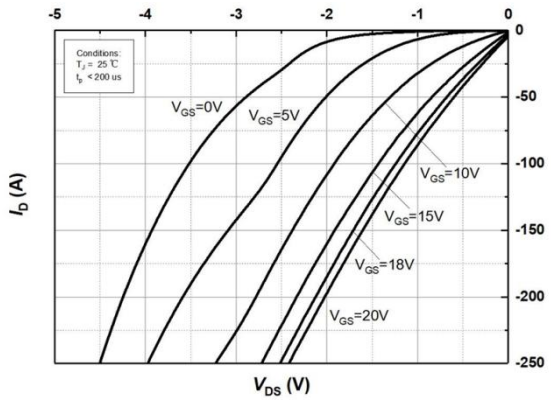


Figure 11. 3rd Quadrant Characteristic at Tj=25°C

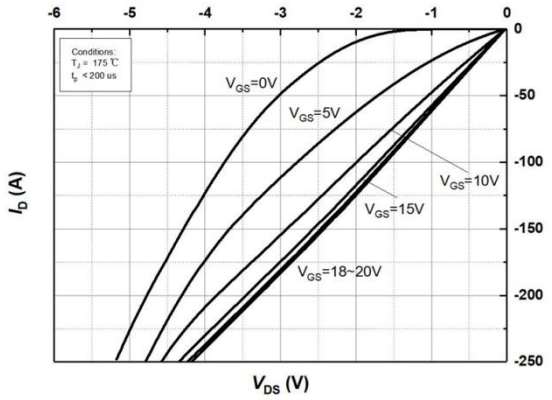


Figure 12. 3rd Quadrant Characteristic at Tj=175°C

Typical Characteristics

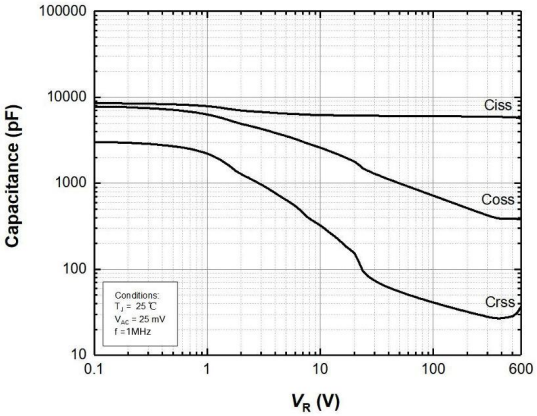


Figure 13. Capacitances vs. Drain-Source Voltage (0 – 600V)

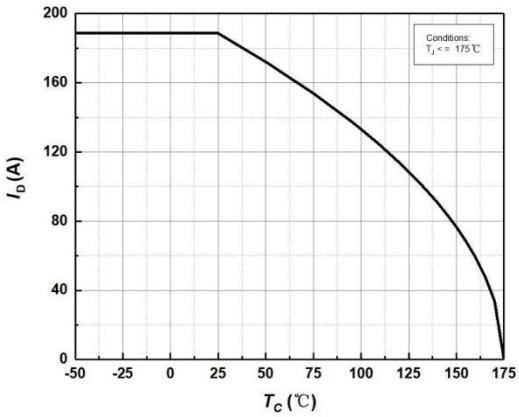


Figure 14. Continuous Drain Current Derating vs Case Temperature

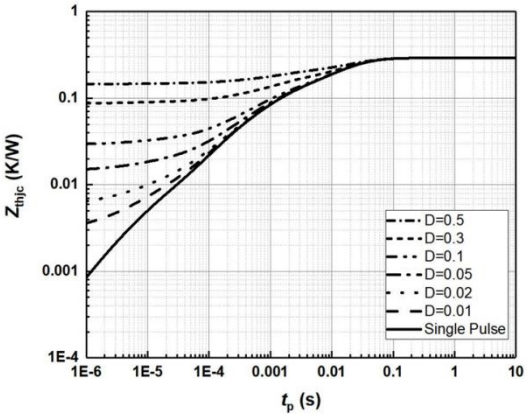


Figure 15.Transient Thermal Impedance (Junction – Case)

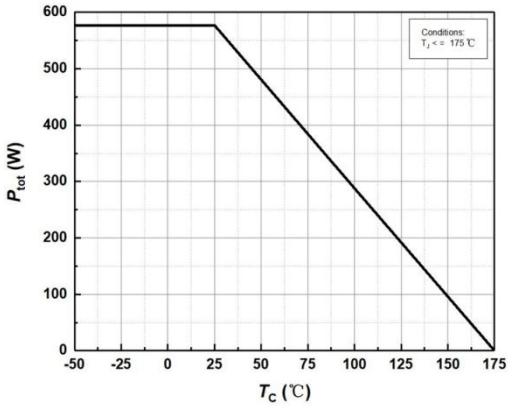


Figure 16. Maximum Power Dissipation Derating vs. Case Temperature

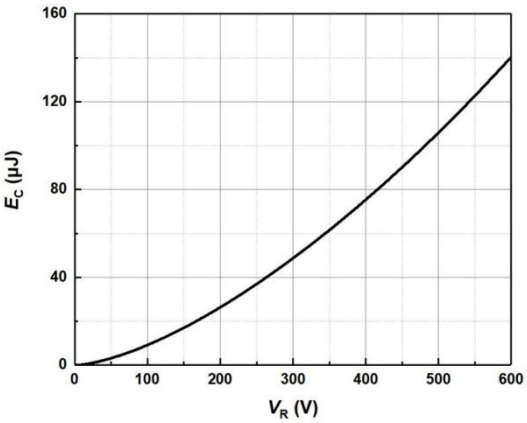


Figure 17. Output Capacitor Stored Energy

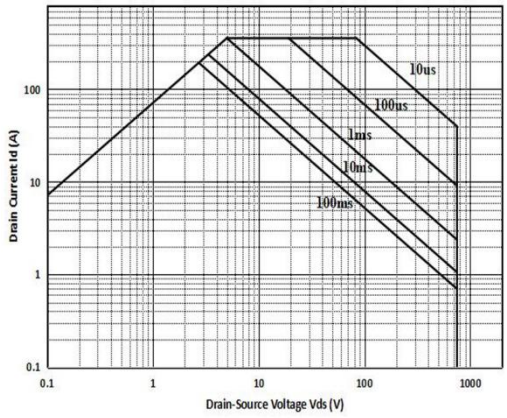
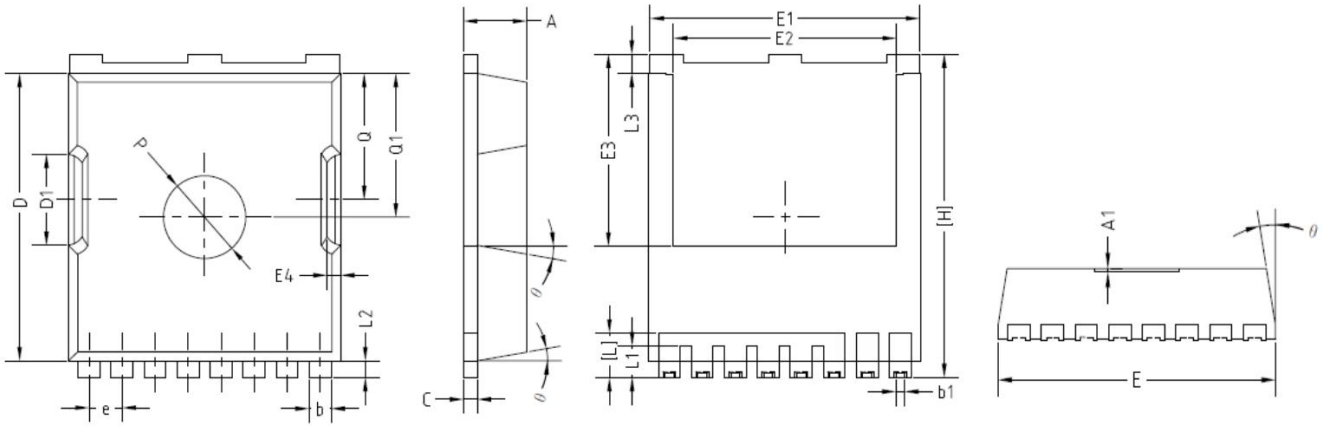


Figure 18. Safe Operating Area

TOLL Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.050	0.150	0.002	0.006
b	0.700	0.900	0.028	0.035
b1	0.350	0.450	0.014	0.018
C	0.400	0.650	0.016	0.026
D	10.280	10.700	0.405	0.421
D1	3.200	3.400	0.126	0.134
E	9.800	10.000	0.386	0.394
E1	9.700	9.900	0.382	0.390
E2	7.950	8.250	0.313	0.325
E3	6.800	7.200	0.268	0.283
E4	0.300	0.750	0.012	0.030
e	1.150	1.250	0.045	0.049
L	1.400	2.100	0.055	0.083
L1	1.050	1.350	0.041	0.053
L2	0.500	0.700	0.020	0.028
L3	0.600	0.800	0.024	0.031
θ	8°	12°	8°	12°
P	2.900	3.100	0.114	0.122
Q	4.450	4.700	0.175	0.185
Q1	5.100	5.300	0.201	0.209
H	11.550	11.900	0.455	0.469