AJ019SN060MTD

N-Channel Super Junction Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
600V	19mΩ@10V	107A

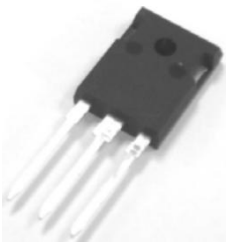
Feature

- New technology for high voltage device
- Ultra low on-resistance and ultra low conduction losses
- Ultra Low Gate Charge cause lower driving requirements
- Diode reverse recovery speed is super fast
- High reliability

Application

- Power factor correction (PFC)
- Switched mode power supplies (SMPS)
- Uninterruptible Power Supply (UPS)
- On-board charger (OBC)

Package



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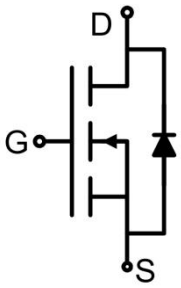
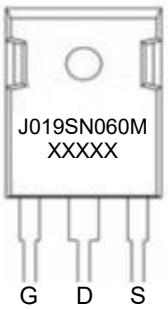
Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage (V_{GS}=0V)	V_{DS}	600	V
Gate-Source Voltage (V_{GS}=0V), AC (f>1 Hz)	V_{GS}	±30	V
Gate-Source Voltage (V_{GS}=0V), DC	V_{GS}	±20	V
Continuous Drain Current	I_D	107	A
Continuous Drain Current (T_C=100℃)	I_D (100℃)	74.9	A
Pulsed Drain Current[1)]	I_{DM}	321	A
Single Pulse Avalanche Energy[2)]	E_{AS}	1156	mJ
Power Dissipation	P_D	532	W
Thermal Resistance from Junction-to-Case	$R_{\theta JC}$	0.28	℃/W
Operating Junction Temperature	T_J	-55 ~ +175	℃
Storage Temperature	T_{STG}	-55 ~ +175	℃

Electrical characteristics (T_A=25 °C, 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 =1mA	600			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =600V, V_{GS} =0V, T_C =25℃			15	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±200	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =3mA	3.5	4.2	5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =54A		17	19	mΩ
Dynamic characteristics[3)]						
Input Capacitance	C_{iss}	V_{DS} =50V, V_{GS} =0V, f =1MHz		11400		pF
Output Capacitance	C_{oss}			481		
Reverse Transfer Capacitance	C_{rss}			63.9		
Total Gate Charge	Q_g	V_{DS} =400V, V_{GS} =10V I_D =54A		184		nC
Gate-Source Charge	Q_{gs}			70		
Gate-Drain Charge	Q_{gd}			61		
Turn-on delay time	$t_{d(on)}$	V_{DS} =380V, V_{GS} =10V I_D =54A, R_G =3Ω		60		nS
Turn-on rise time	t_r			25		
Turn-off delay time	$t_{d(off)}$			196		
Turn-off fall time	t_f			15		
Source-Drain Diode characteristics						
Diode Forward Current	I_S	T_C =25℃			107	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =107A, T_J =25℃			1.2	V
Reverse Recovery Time	T_{rr}	I_F =50A, di/dt =100A/μs T_J =25℃		190		nS
Reverse Recovery Charge	Q_{rr}			1.2		μC
Peak reverse recovery current	I_{rrm}			13		A

Notes:

1) Repetitive Rating: Pulse width limited by maximum junction temperature.

2) Tj=25℃,V_{DD}=50V, V_G=10V, R_G=25Ω.

3) Guaranteed by design, not subject to production testing.

Typical Characteristics

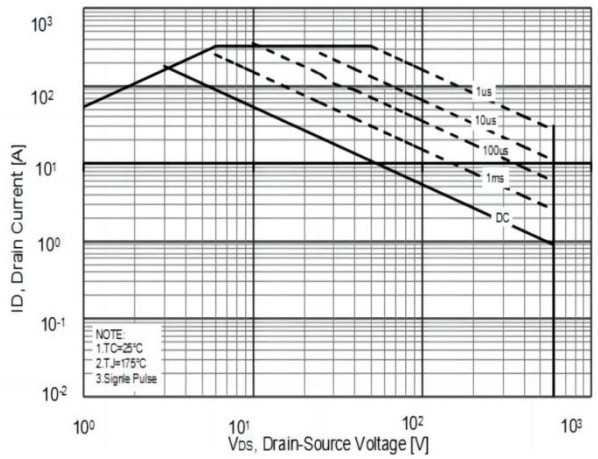


Figure1. Safe operating area

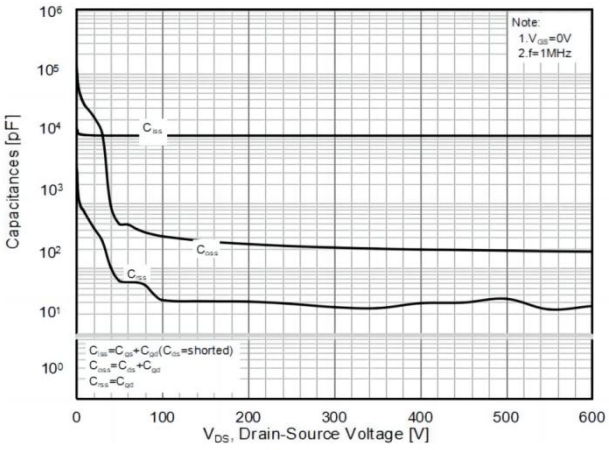


Figure2. Capacitance

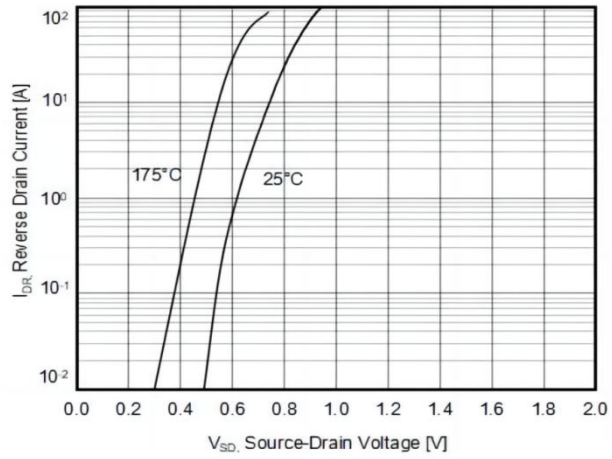


Figure3. Source-Drain Diode Forward Voltage

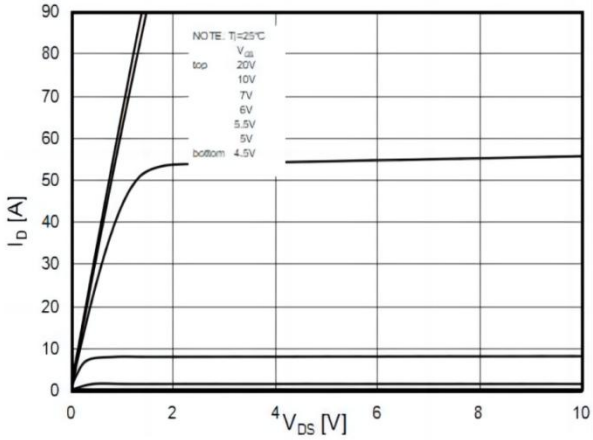


Figure4. Output characteristics

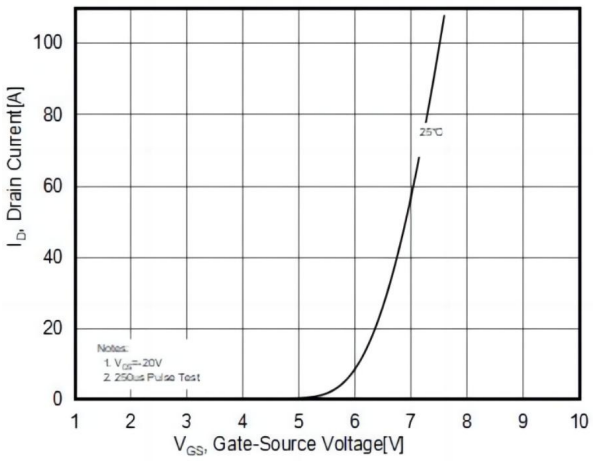


Figure5. Transfer characteristics

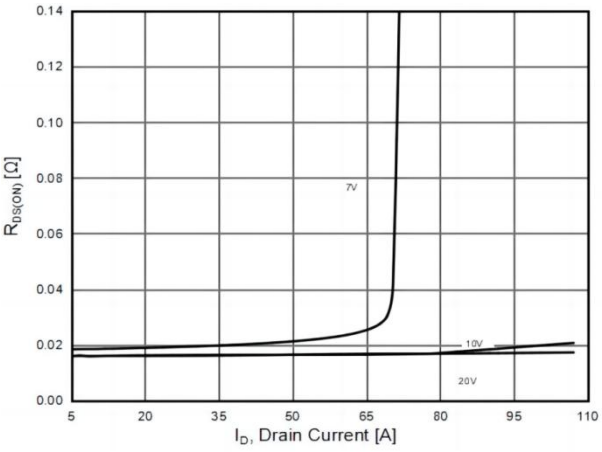


Figure6. Static drain-source on resistance

Typical Characteristics

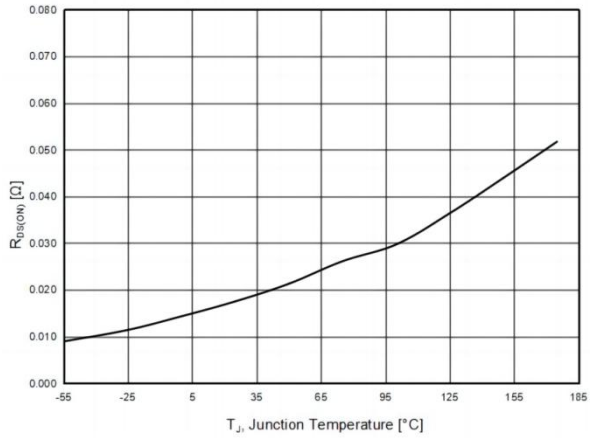


Figure7. $R_{DS(ON)}$ vs Junction Temperature

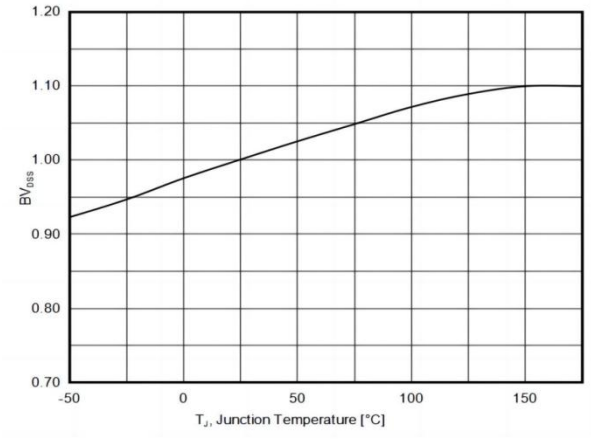


Figure8. BV_{DSS} vs Junction Temperature

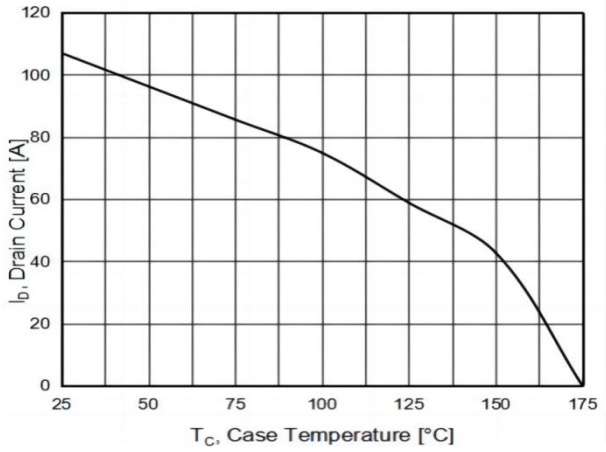


Figure9. Maximum I_D vs Junction Temperature

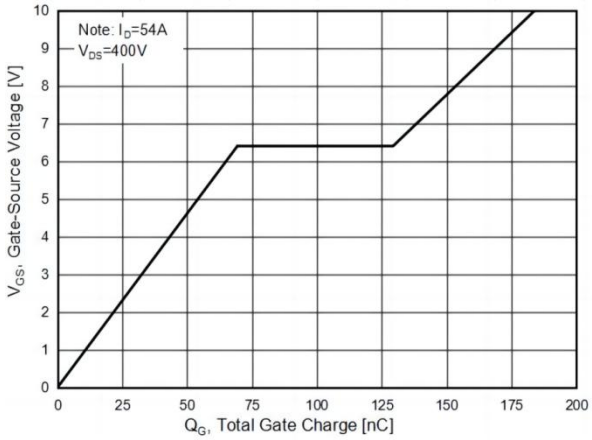
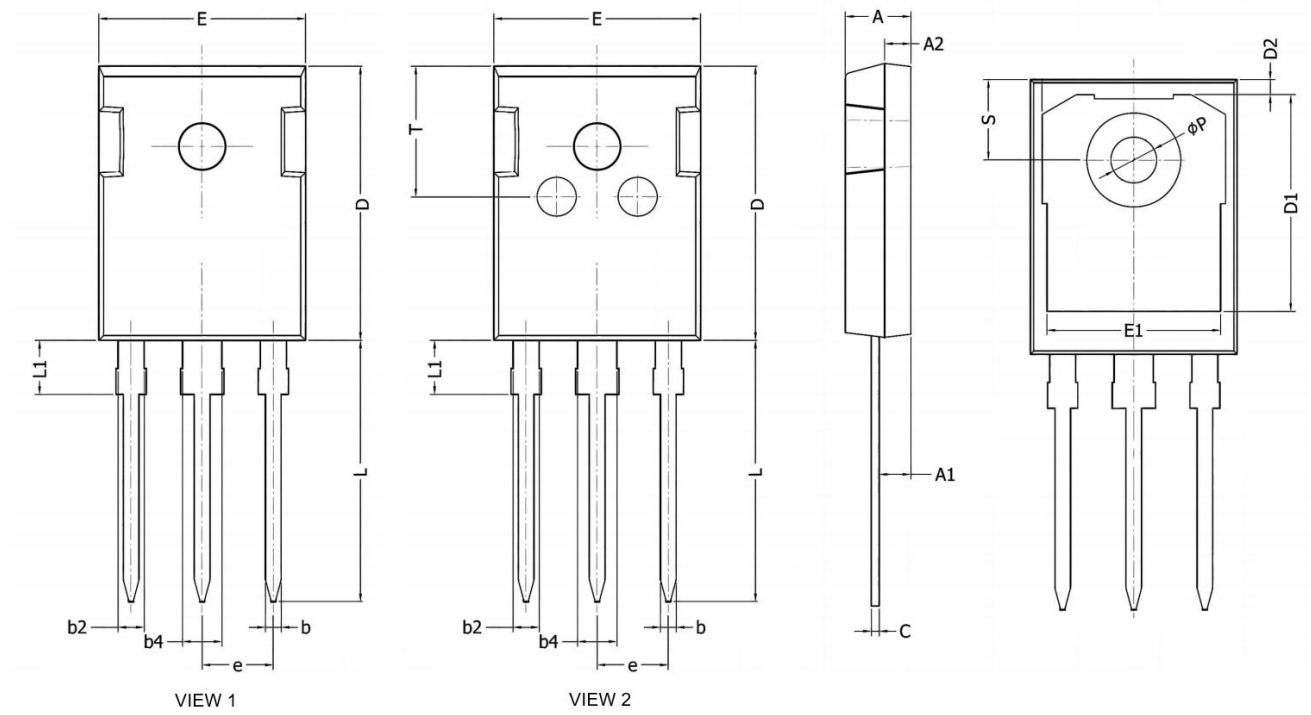


Figure10. Gate charge waveforms

TO-247AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.830	5.210	0.190	0.205
A1	2.290	2.540	0.090	0.100
A2	1.900	2.160	0.075	0.085
b	1.070	1.330	0.042	0.052
b2	1.910	2.410	0.075	0.095
b4	2.870	3.380	0.113	0.133
C	0.550	0.680	0.022	0.027
D	20.800	21.10	0.819	0.831
D1	16.250	17.650	0.640	0.695
D2	0.950	1.350	0.037	0.053
E	15.700	16.130	0.618	0.635
E1	13.100	14.150	0.516	0.557
e	5.436 BSC.		0.214 BSC.	
L	19.800	20.320	0.780	0.800
L1	4.100	4.400	0.161	0.173
P	3.400	3.650	0.134	0.144
S	6.040	6.300	0.238	0.248
T	9.800	10.200	0.386	0.402