AJ072SN060MTL

N-Channel Super Junction Power MOSFET

Product Summary

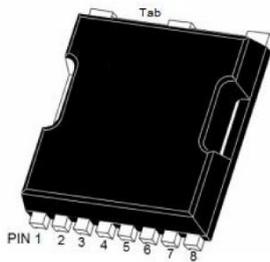| $V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
600V	72mΩ@10V	33A

Feature

- Excellent package for heat dissipation
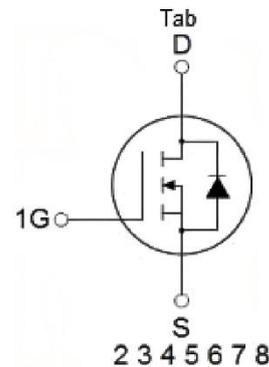- High density cell design for low $R_{DS(ON)}$

Application

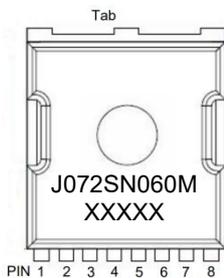- EV charger
- AC-DC power management
- Sever/Telecom/PC power

Package

TOLL

Circuit diagram

Marking

Document ID	Issued Date	Revised Date	Revision	Page.
AS-3151341	2023/08/04	2026/03/06	B	6

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Absolute maximum ratings (T$_J$=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V$_{DS}$	600	V
Gate-Source Voltage	V$_{GS}$	±30	V
Continuous Drain Current[1,3] (V$_{GS}$ =10V, T$_C$ =25℃)	I$_D$	33	A
Continuous Drain Current[1,3] (V$_{GS}$ =10V, T$_C$ =100℃)	I$_D$(100℃)	20	A
Pulsed Drain Current (t$_p$ =100us, T$_C$ =25℃)	I$_{DM}$	110	A
Single Pulse Avalanche Energy[2]	E$_{AS}$	889.35	mJ
Power Dissipation[1,3] (T$_C$ =25℃)	P$_D$	250	W
Thermal Resistance Junction to Case	R$_{θJC}$	0.5	℃/W
Operating Junction Temperature	T$_J$	-55 ~ +150	℃
Storage Temperature Range	T$_{STG}$	-55 ~ +150	℃

Electrical characteristics (T$_J$=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$_D$ =250µA	600			V
Zero gate voltage drain current	I$_{DSS}$	V$_{DS}$ =600V, V$_{GS}$ =0V			10	µA
Gate-body leakage current	I$_{GSS}$	V$_{DS}$ =0V, V$_{GS}$ =±30V			±100	nA
Gate threshold voltage	V$_{GS(th)}$	V$_{DS}$ =V$_{GS}$, I$_D$ =250µA	3	4	5	V
Drain-source on-resistance	R$_{DS(on)}$	V$_{GS}$ =10V, I$_D$ =24A		60	72	mΩ
Dynamic characteristics[4]						
Input Capacitance	C$_{iss}$	V$_{DS}$ =300V, V$_{GS}$ =0V f =1MHz		3480		pF
Output Capacitance	C$_{oss}$			108		
Reverse Transfer Capacitance	C$_{rss}$			22.4		
Total Gate Charge	Q$_g$	V$_{DS}$ =300V, V$_{GS}$ =10V I$_D$ =24A		70		nC
Gate-Source Charge	Q$_{gs}$			21.8		
Gate-Drain Charge	Q$_{gd}$			29.6		
Turn-on delay time	t$_{d(on)}$	V$_{DS}$ =300V, V$_{GS}$ =10V I$_D$ =24A, R$_G$ =3Ω		64		nS
Turn-on rise time	t$_r$			18.5		
Turn-off delay time	t$_{d(off)}$			41.5		
Turn-off fall time	t$_f$			6		
Source-Drain Diode characteristics						
Diode Forward Current	I$_S$				33	A
Diode Forward voltage	V$_{SD}$	V$_{GS}$ =0V, I$_S$ =24A			1.2	V
Reverse Recovery Time	T$_{rr}$	I$_F$ =24A, di/dt =-100A/µs		157		nS
Reverse Recovery Charge	Q$_{rr}$			1430		nC

Notes:

1) The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted.

2) The test condition is T$_J$ =25℃, V$_G$=10V, L=30mH, R$_G$ =25Ω, I$_{AS}$=7.7A.

3) Thermal resistance from junction to soldering point (on the exposed drain pad).

4) Guaranteed by design, not subject to production.

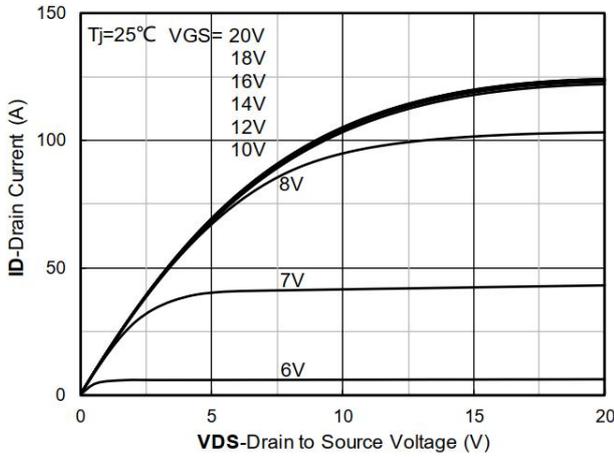## Typical Characteristics

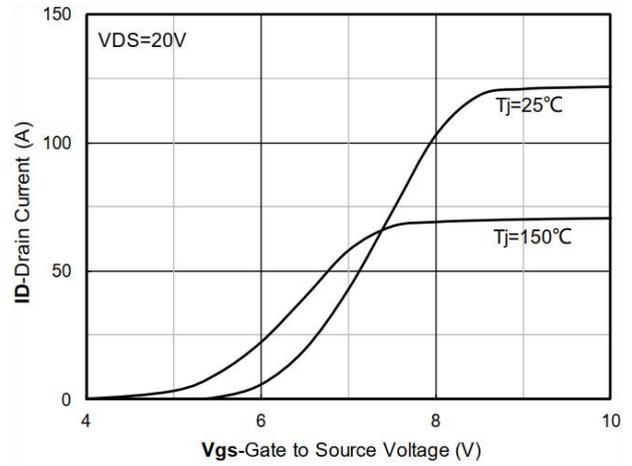Figure 1. Output Characteristics

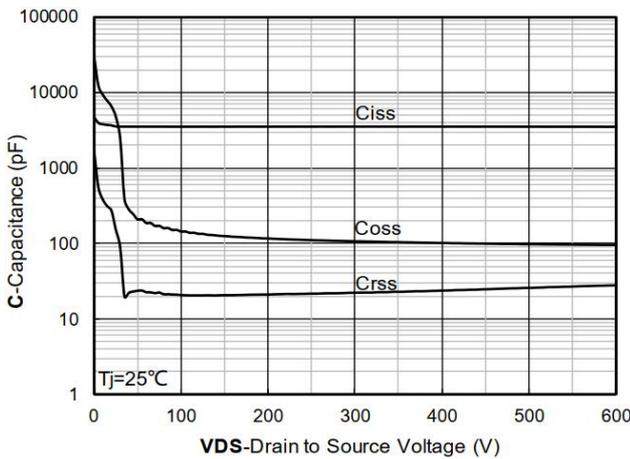
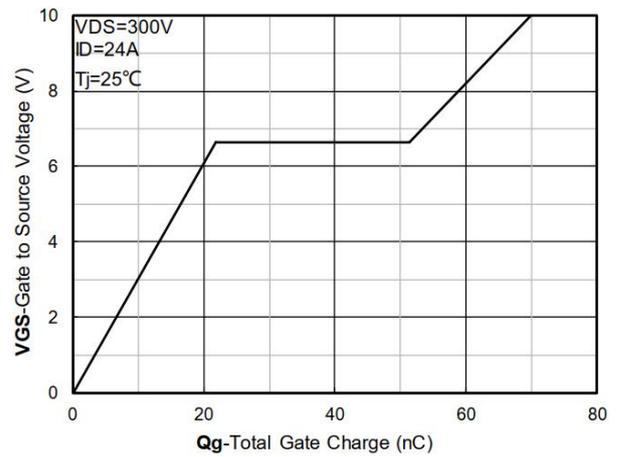Figure 2. Transfer Characteristics

Figure 3. Capacitance Characteristics

Figure 4. Gate Charge
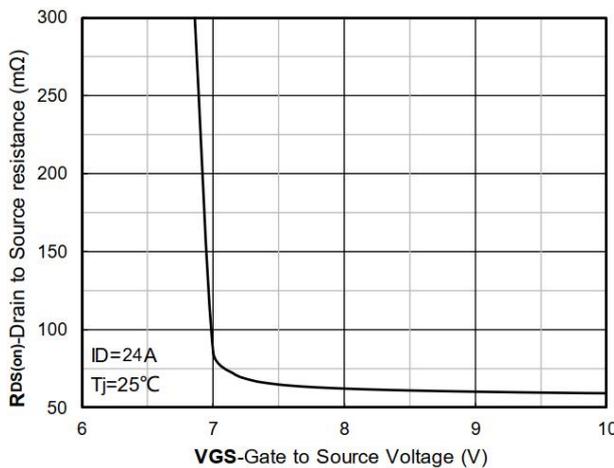
Figure 5. On-Resistance vs Gate to Source Voltage
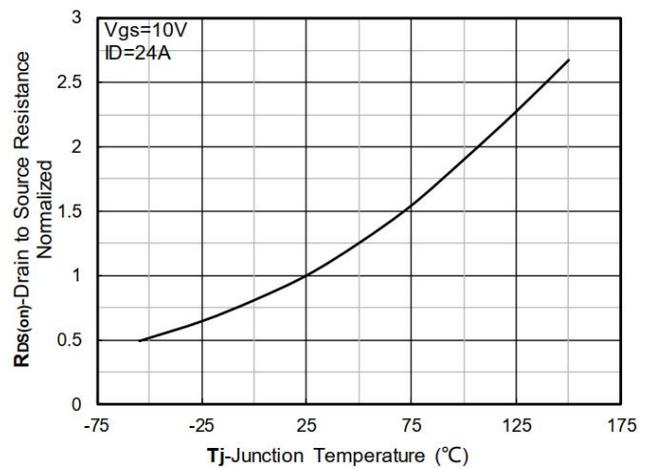
Figure 6. Normalized On-Resistance

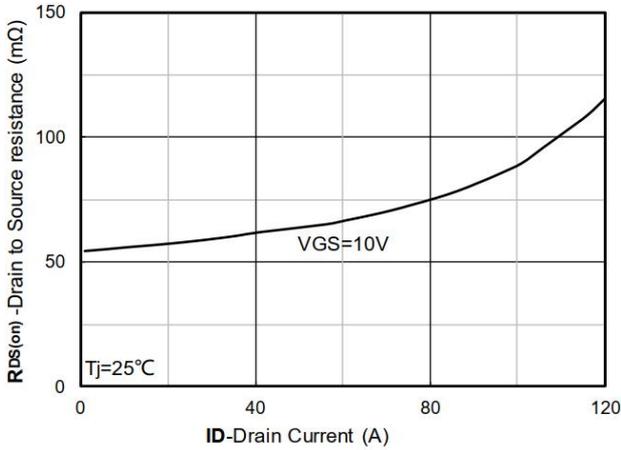| Document ID	Issued Date	Revised Date	Revision	Page.
AS-3151341	2023/08/04	2026/03/06	B	6

Typical Characteristics

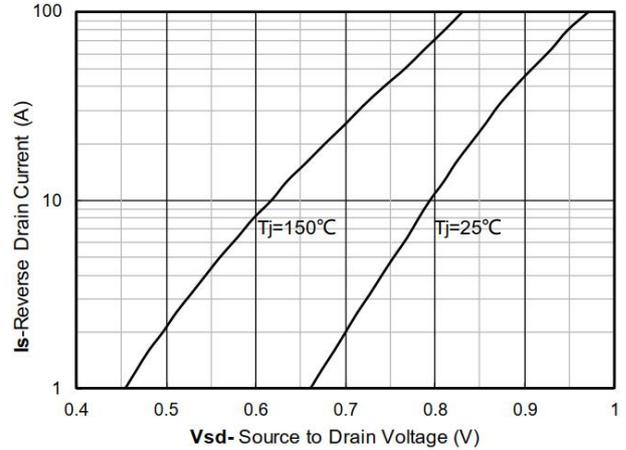Figure 7. $R_{DS(on)}$ VS Drain Current

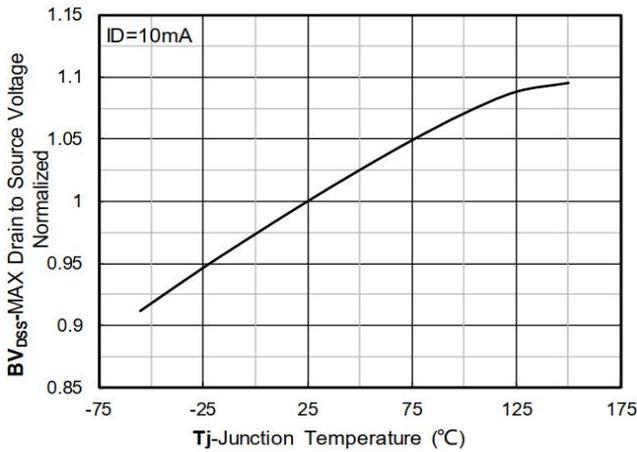Figure 8. Forward characteristics of reverse diode
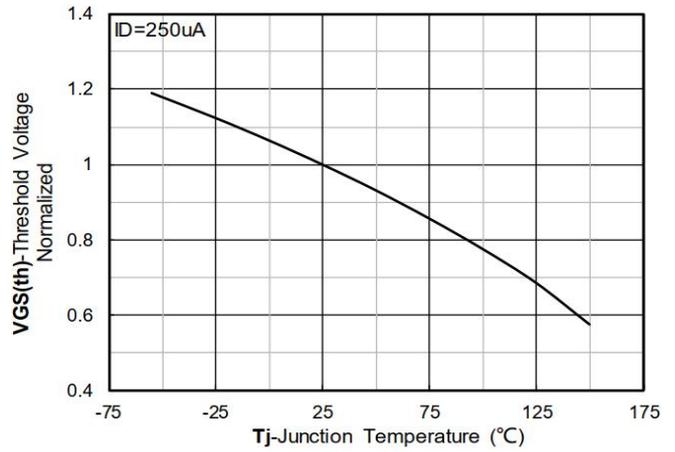

Figure 9. Normalized breakdown voltage
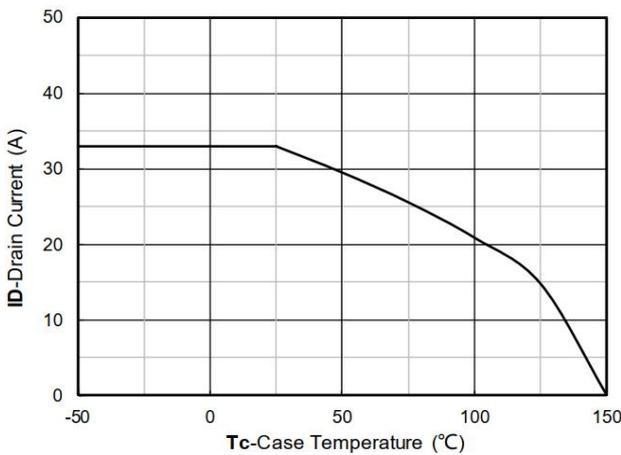

Figure 10. Normalized Threshold voltage

Figure 11. Current dissipation
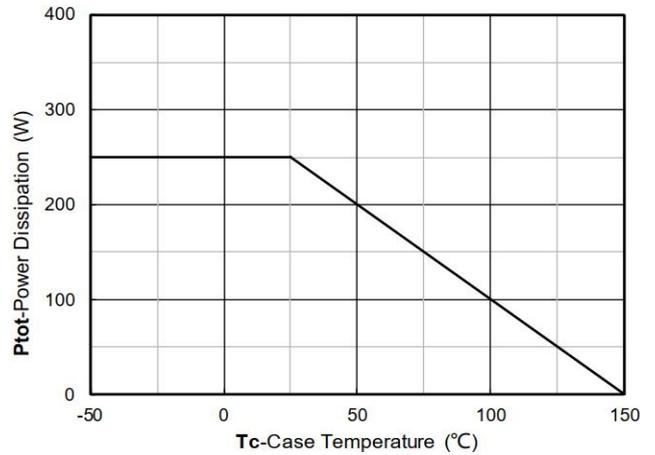
Figure 12. Power dissipation

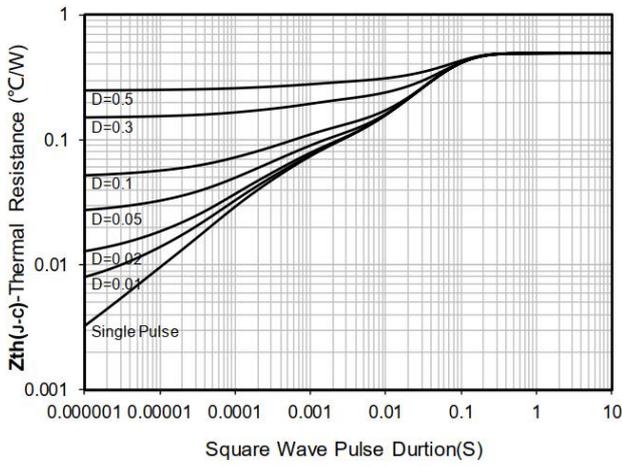| Document ID	Issued Date	Revised Date	Revision	Page.
AS-3151341	2023/08/04	2026/03/06	B	6

Typical Characteristics

Figure 13. Maximum Transient Thermal Impedance
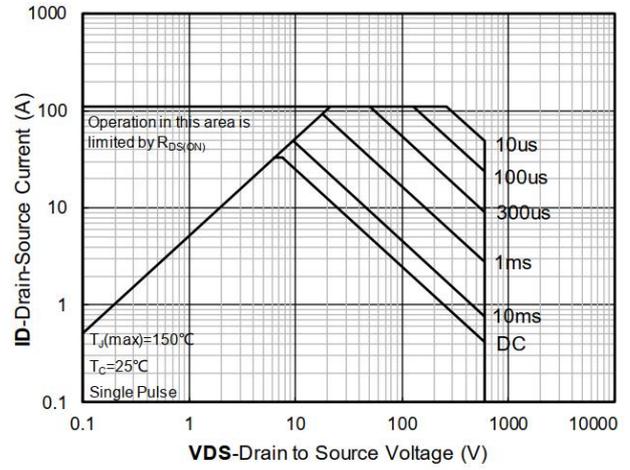
Figure 14. Safe Operation Area

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Page 5

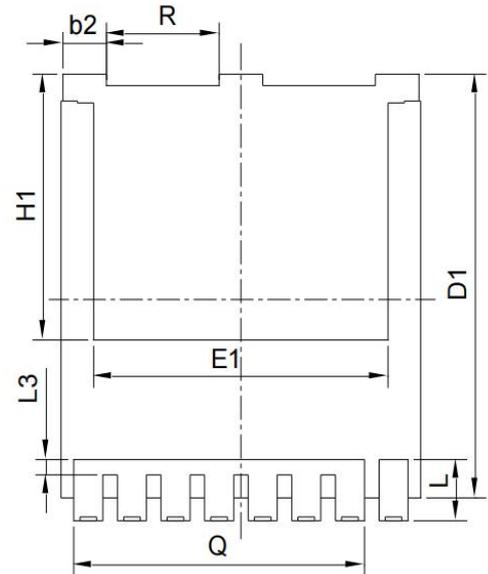| Document ID	Issued Date	Revised Date	Revision	Page.
AS-3151341	2023/08/04	2026/03/06	B	6

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TOLL Package Information
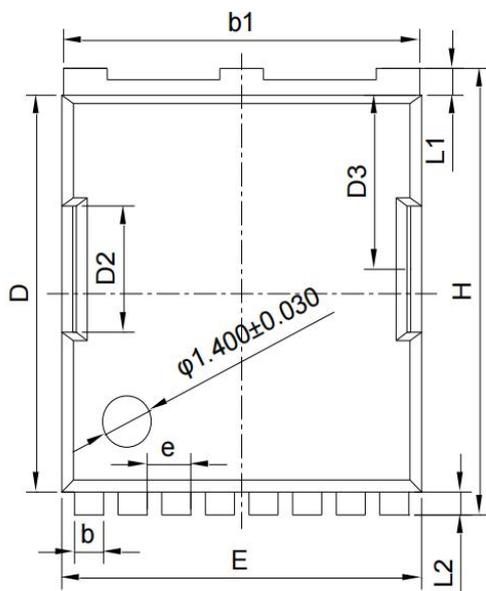
TOP VIEW
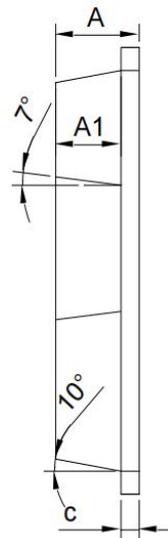
SIDE VIEW

BOTTOM VIEW

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	1.700	1.900	0.067	0.075
b	0.700	0.900	0.028	0.035
b1	9.700	9.900	0.382	0.390
b2	1.100	1.300	0.043	0.051
c	0.400	0.600	0.016	0.024
D	10.280	10.480	0.405	0.413
D1	10.980	11.180	0.432	0.440
D2	3.200	3.400	0.126	0.134
D3	4.450	4.650	0.175	0.183
E	9.800	10.000	0.386	0.394
E1	8.000	8.200	0.315	0.323
e	1.200 BSC.		0.047 BSC.	
H	11.580	11.780	0.456	0.464
H1	6.950 BSC.		0.274 BSC.	
L	1.500	1.700	0.059	0.067
L1	0.600	0.800	0.024	0.031
L2	0.500	0.700	0.020	0.028
L3	0.300	0.500	0.012	0.020
Q	8.000 REF.		0.315 REF.	
R	3.000	3.200	0.118	0.126

Document ID	Issued Date	Revised Date	Revision	Page.
AS-3151341	2023/08/04	2026/03/06	B	6