AT009SN060MQNH-Q1

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	40mΩ@10V	9A
	45mΩ@4.5V	

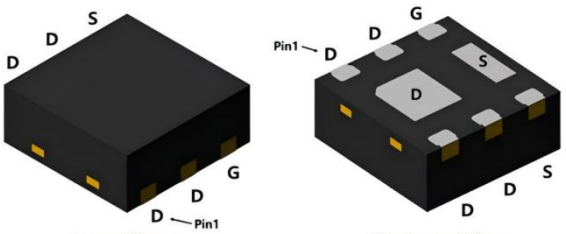
Feature

- Low On-resistance
- Low input capacitance
- Suffix “-Q1” for AEC-Q101

Application

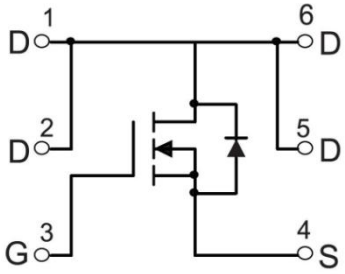
- Power management functions
- DC-DC converters

Package

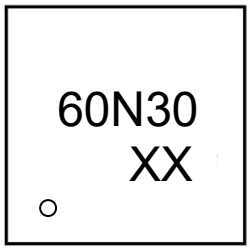


DFN2*2-6L

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	9	A
Pulsed Drain Current	I_{DM}	36	A
Power Dissipation	P_D	2.1	W
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	59.5	℃/W
Operating Junction Temperature	T_J	-55 ~ +150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

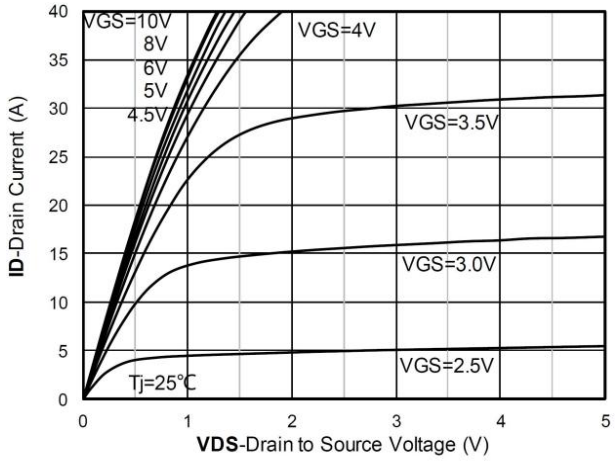
Electrical characteristics (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} =0V, I_D =250μA	60			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =48V, V_{GS} =0V, T_J=25℃			1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1	1.6	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =8A		30	40	mΩ
		V_{GS} =4.5V, I_D =4A		35	45	
Dynamic characteristics[1)]						
Input Capacitance	C_{iss}	V_{DS} =30V, V_{GS} =0V, f =1MHz		1180		pF
Output Capacitance	C_{oss}			60		
Reverse Transfer Capacitance	C_{rss}			45		
Total Gate Charge	Q_g	V_{DS} =30V, V_{GS} =10V, I_D =8A		21		nC
Gate-Source Charge	Q_{gs}			3.5		
Gate-Drain Charge	Q_{gd}			4.2		
Turn-on delay time	$t_{d(on)}$	V_{DS} =30V, V_{GS} =10V, I_D =2A R_G =3Ω		5		nS
Turn-on rise time	t_r			15		
Turn-off delay time	$t_{d(off)}$			24		
Turn-off fall time	t_f			2.3		
Source-Drain Diode characteristics						
Diode Continuous Current	I_S				9	A
Diode forward voltage	V_{SD}	V_{GS} =0V, I_S =1A, T_J =25℃			1.2	V

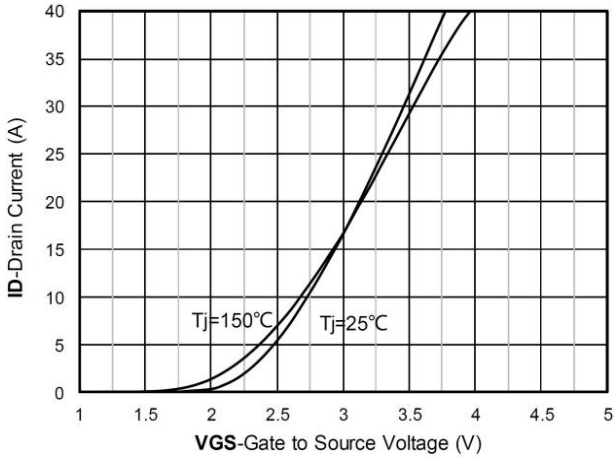
Notes:

1) Guaranteed by design, not subject to production.

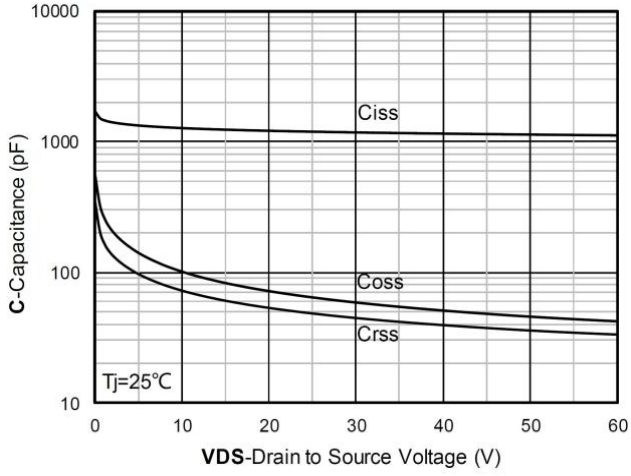
Typical Characteristics



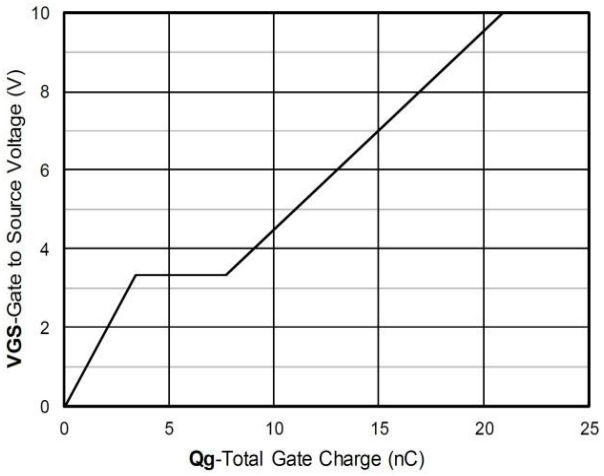
Output Characteristics



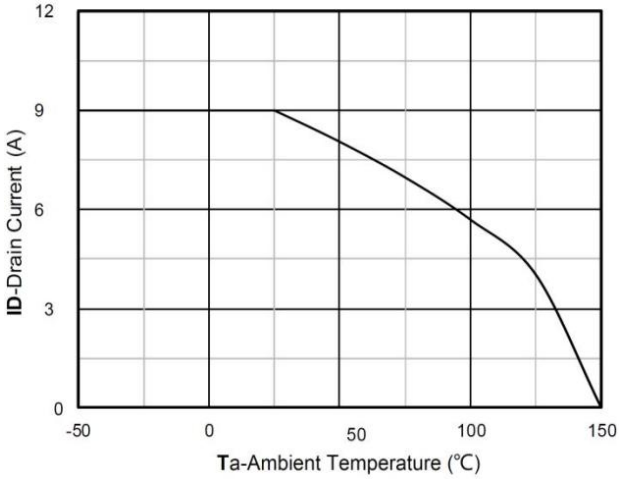
Transfer Characteristics



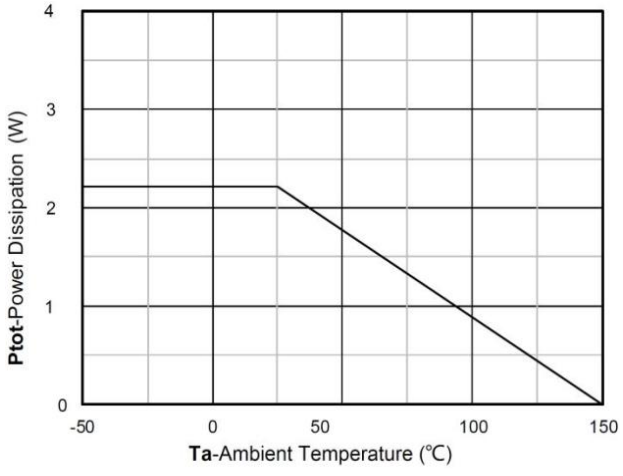
Capacitance Characteristics



Gate Charge



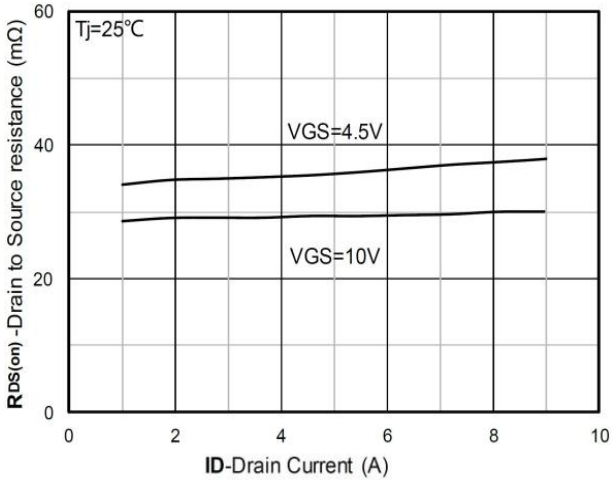
Current dissipation



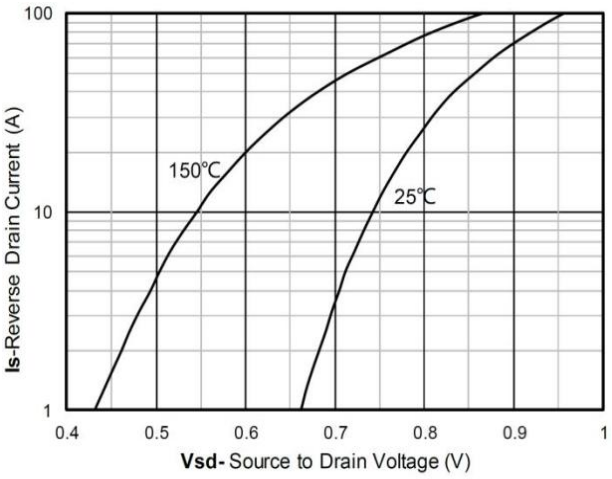
Power dissipation

Document ID	Issued Date	Revised Date	Revision	Page.
AS-1151356	2023/10/20	2026/03/20	B	5

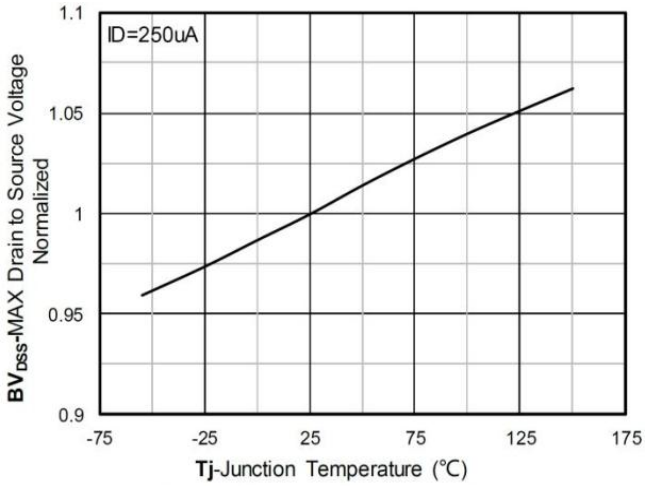
Typical Characteristics



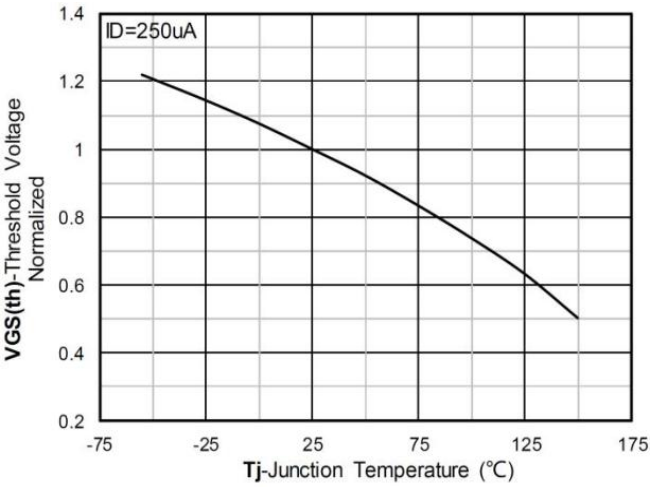
RDS(on) VS Drain Current



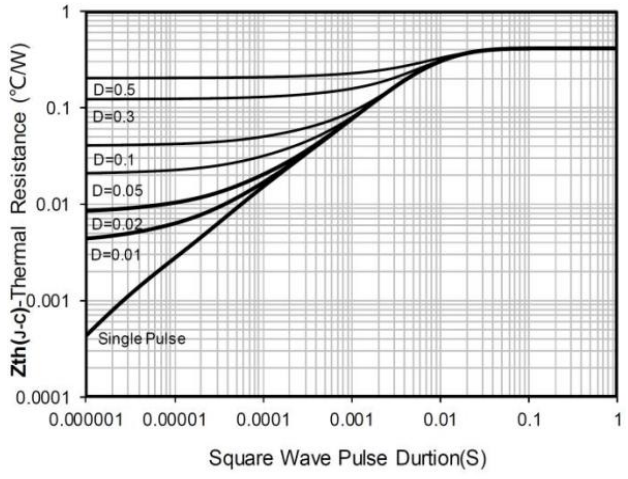
Forward characteristics of reverse diode



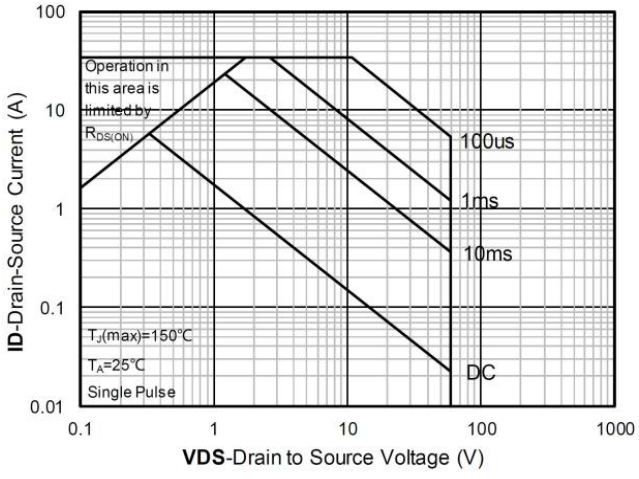
Normalized breakdown voltage



Normalized Threshold voltage

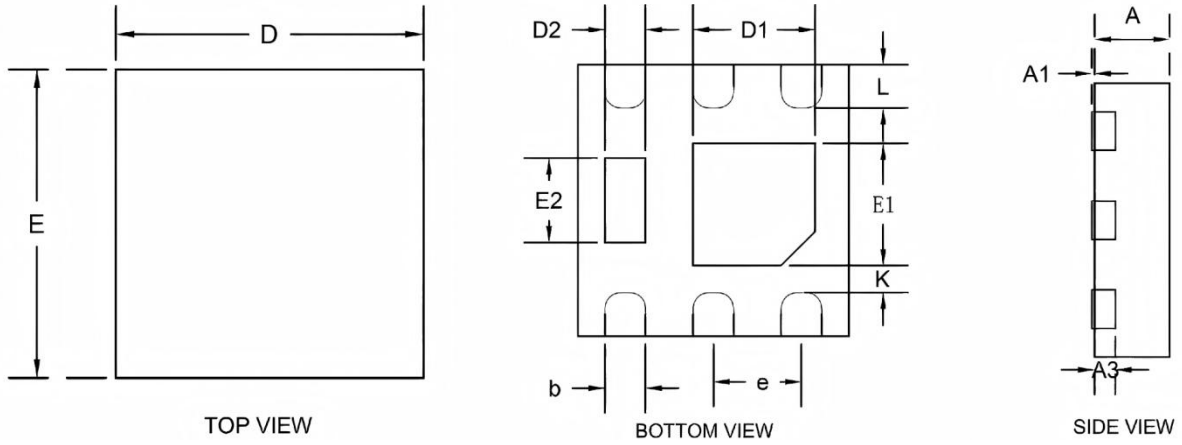


Maximum Transient Thermal Impedance



Safe Operation Area

DFN2*2-6L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.450	0.650	0.018	0.026
A1	0.000	0.050	0.000	0.002
A3	0.152 BSC.		0.006 BSC.	
b	0.250	0.350	0.010	0.014
D	1.900	2.100	0.075	0.083
D1	0.800	1.050	0.031	0.041
D2	0.150	0.450	0.006	0.018
E	1.950	2.050	0.077	0.081
E1	0.700	1.250	0.028	0.049
E2	0.550	0.750	0.022	0.030
e	0.650 BSC.		0.026 BSC.	
L	0.200	0.400	0.008	0.016
K	0.200 BSC.		0.008 BSC.	