AT3407MQNH-Q1

P-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-30V	40mΩ@-10V	-10A
	60mΩ@-4.5V	

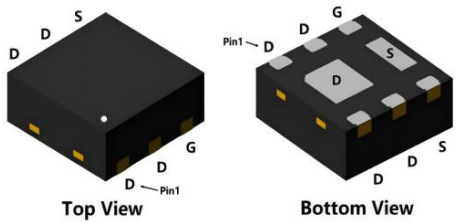
Feature

- Trench Power LV MOSFET technology
- High density cell design for Low $R_{DS(ON)}$
- High Speed switching
- Suffix “-Q1” for AEC-Q101

Application

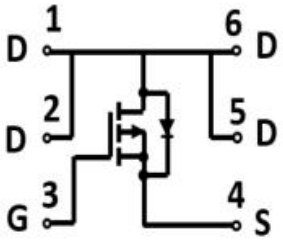
- Battery protection
- Load switch
- Power management

Package



DFN2*2-6L

Circuit diagram



Marking

Document ID	Issued Date	Revised Date	Revision	Page.
AS-1151239	2023/12/18	2025/12/08	B	6

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (T_C= 25℃)	I_D	-10	A
Continuous Drain Current (T_C= 100℃)	I_D(100℃)	-6	A
Pulsed Drain Current[1)]	I_{DM}	-40	A
Power Dissipation[2)] (T_C= 25℃)	P_D	15	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	8.3	℃/ W
Operating Junction Temperature	T_J	-55 ~ +150	℃
Storage Temperature	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	-30			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-30V, V_{GS} =0V			-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	-1.5	-2.4	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =-10V, I_D =-10A		30	40	mΩ
		V_{GS} =-4.5V, I_D =-5A		45	60	
Dynamic characteristics[3)]						
Input Capacitance	C_{iss}	V_{DS} =-15V, V_{GS} =0V, f =1MHz		490		pF
Output Capacitance	C_{oss}			75		
Reverse Transfer Capacitance	C_{rss}			60		
Total Gate Charge	Q_g	V_{DS} =-15V, V_{GS} =-10V I_D =-5A		9		nC
Gate-Source Charge	Q_{gs}			1.5		
Gate-Drain Charge	Q_{gd}			2.3		
Turn-on delay time	$t_{d(on)}$	V_{DS} =-15V, V_{GS} =-10V I_D =-5A, R_G =2.5Ω		9		nS
Turn-on rise time	t_r			3		
Turn-off delay time	$t_{d(off)}$			29		
Turn-off fall time	t_f			15		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				-10	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =-10A			-1.2	V
Reverse Recovery Time	T_{rr}	I_F =-5A, di/dt =-100A/us		32		nS
Reverse Recovery Charge	Q_{rr}			12		nC

Notes:

1) Repetitive rating; pulse width limited by max. junction temperature.

2) Pd is based on max. junction temperature, using junction-case and junction-ambient thermal resistance.

3) Guaranteed by design, not subject to production.

Typical Characteristics

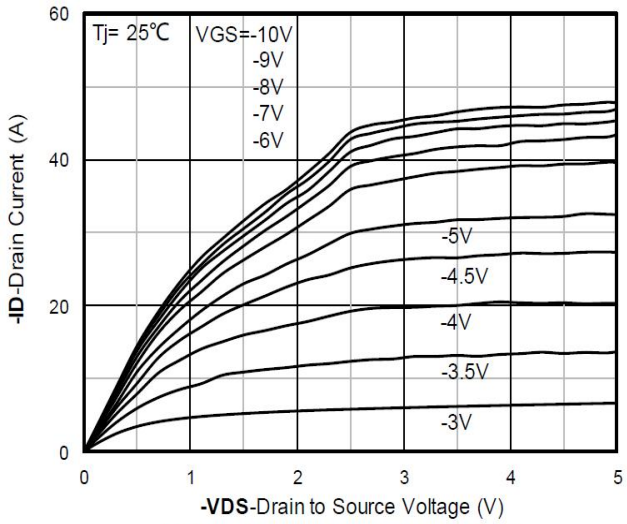


Figure 1. Output Characteristics

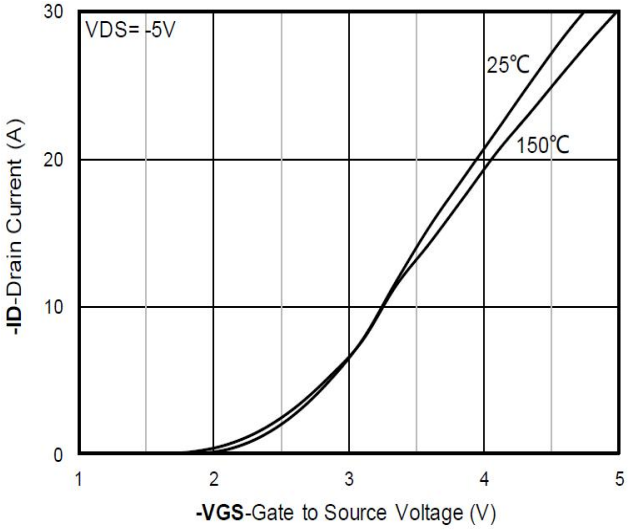


Figure 2. Transfer Characteristics

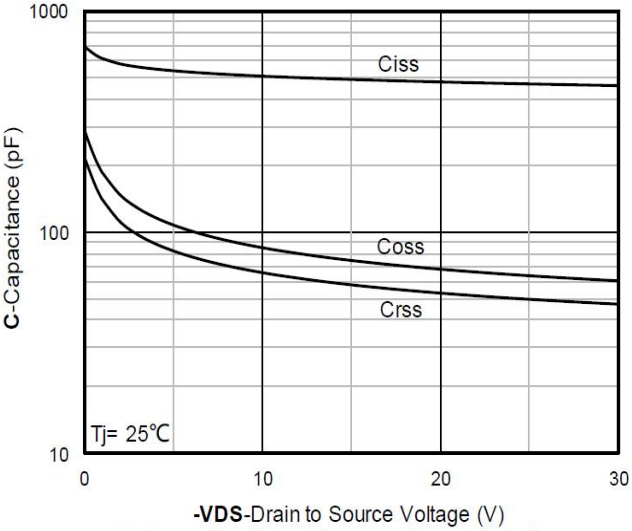


Figure 3. Capacitance Characteristics

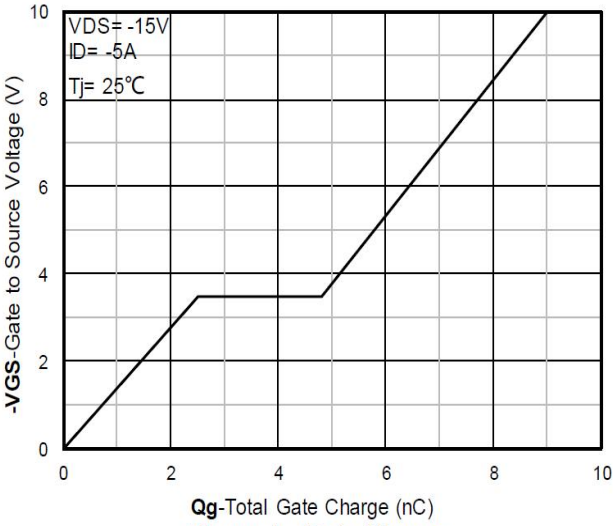


Figure 4. Gate Charge

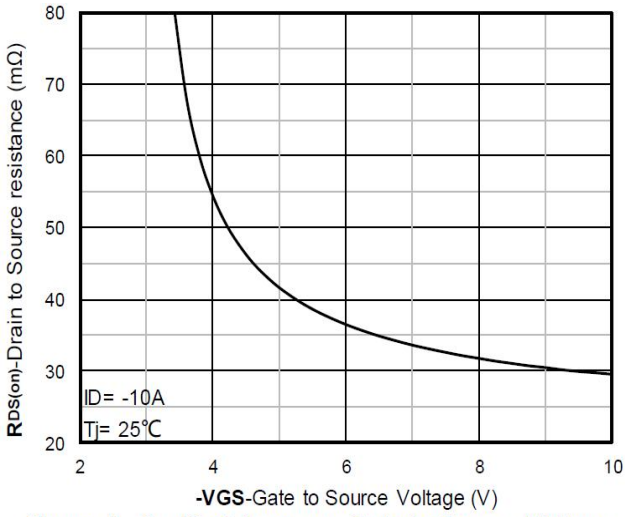


Figure 5. On-Resistance vs Gate to Source Voltage

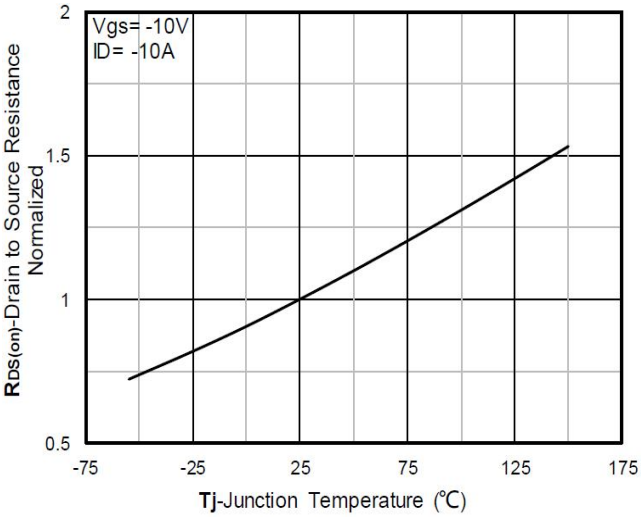


Figure 6. Normalized On-Resistance

Typical Characteristics

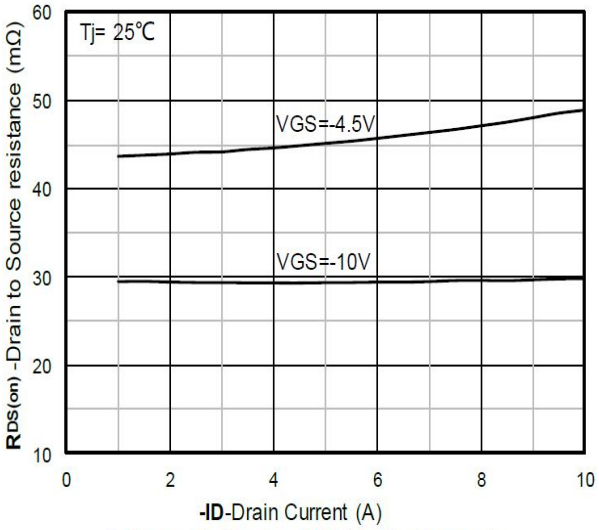


Figure 7. $R_{DS(on)}$ VS Drain Current

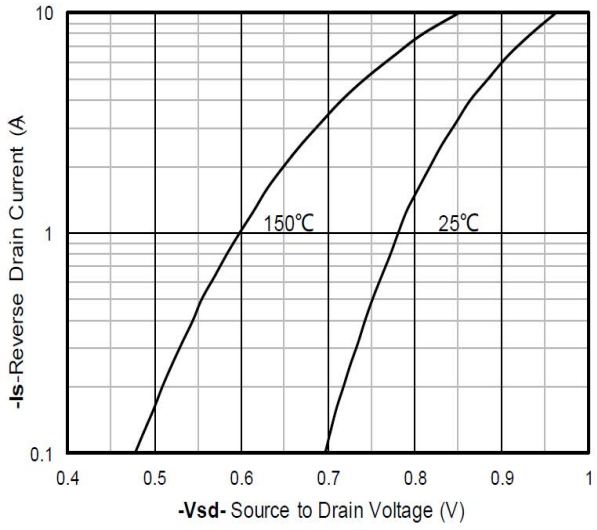


Figure 8. Forward characteristics of reverse diode

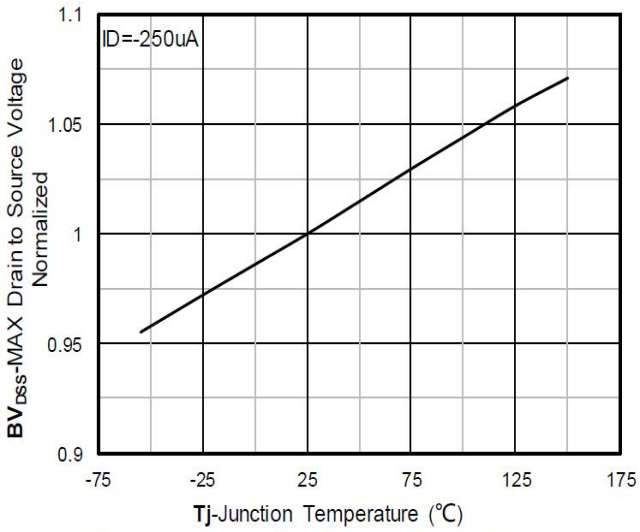


Figure 9. Normalized breakdown voltage

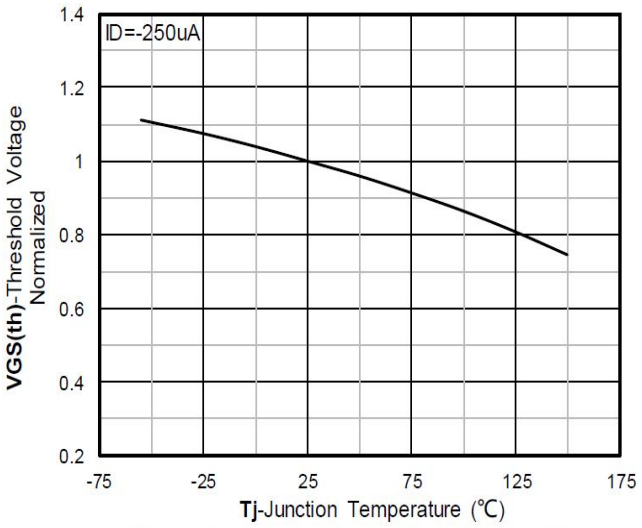


Figure 10. Normalized Threshold voltage

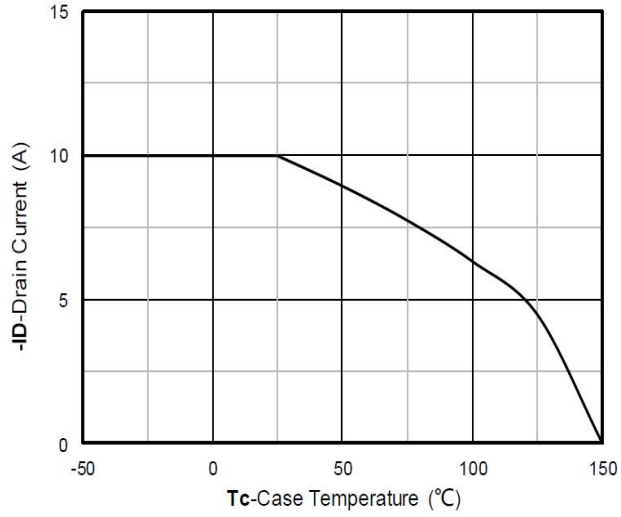


Figure 11. Current dissipation

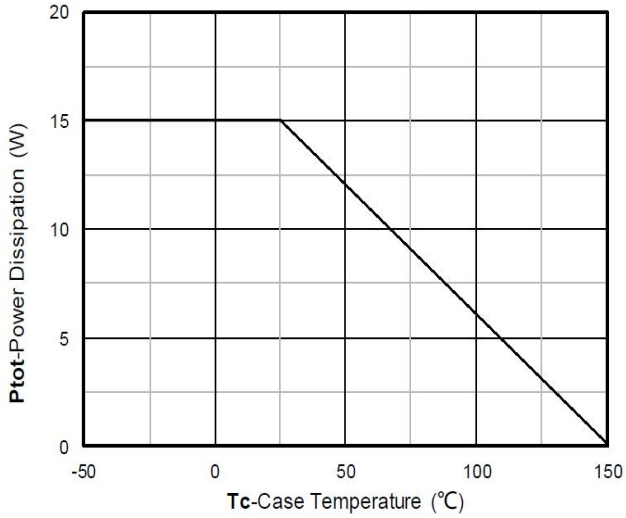


Figure 12. Power dissipation

Typical Characteristics

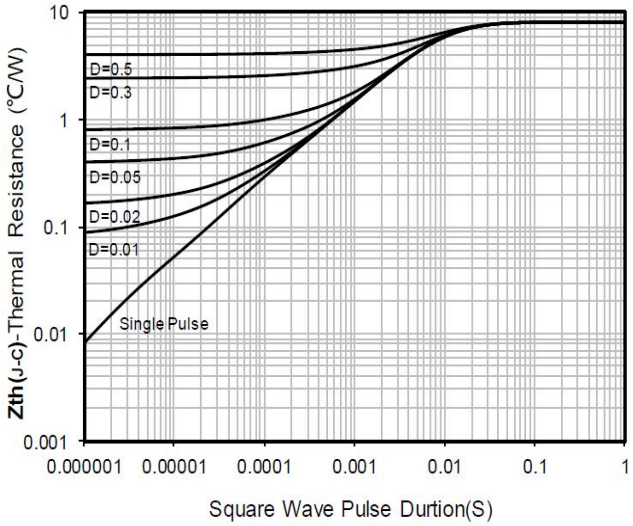


Figure 13. Maximum Transient Thermal Impedance

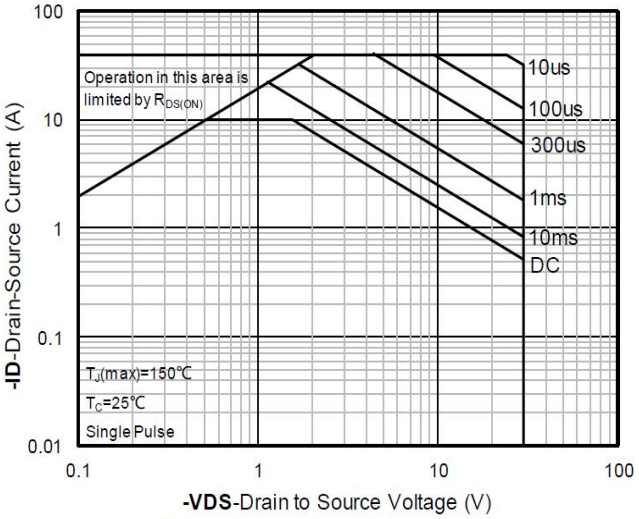
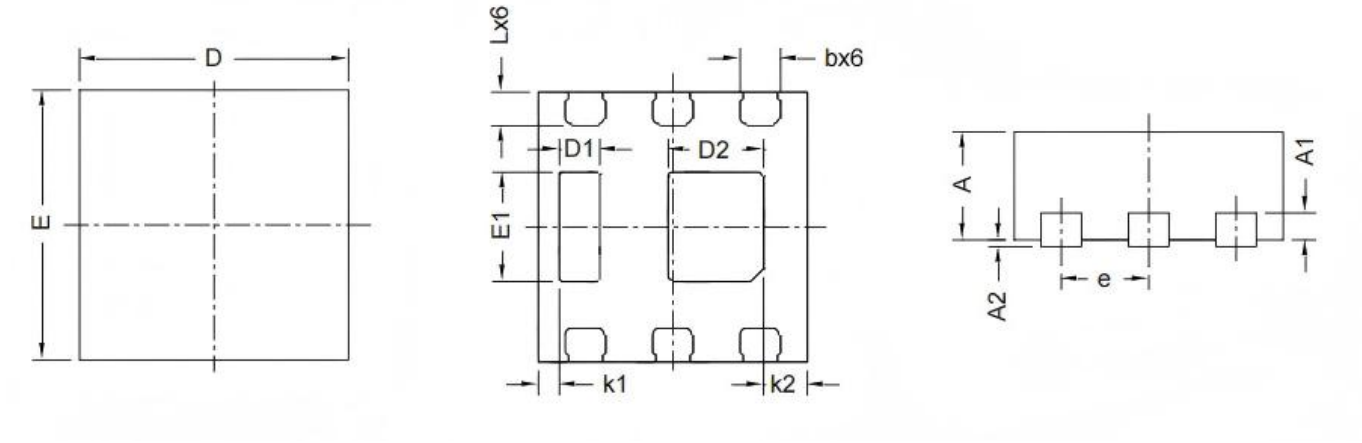


Figure 14. Safe Operation Area

DFN2*2-6L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
D	1.900	2.100	0.075	0.083
E	1.900	2.100	0.075	0.083
A	0.700	0.900	0.028	0.035
A1	0.200 BSC.		0.008 BSC.	
A2	-	0.100	-	0.004
D1	0.200	0.400	0.008	0.016
D2	0.610	0.810	0.024	0.032
E1	0.710	0.910	0.028	0.036
L	0.150	0.350	0.006	0.014
b	0.200	0.400	0.008	0.016
e	0.650 BSC.		0.026 BSC.	
k1	0.156 BSC.		0.006 BSC.	
k2	0.326 BSC.		0.013 BSC.	