AER025N06S-Q1

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	2.5mΩ@10V	140A
	3.5mΩ@4.5V	

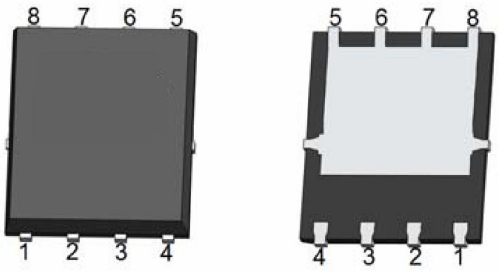
Feature

- Split gate trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Suffix "-Q1" for AEC-Q101

Application

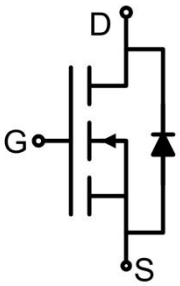
- DC-DC converter
- Power switching application
- Uninterruptible power supply

Package

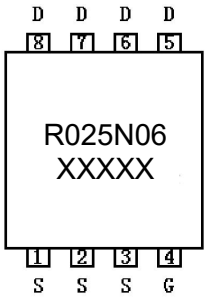


PDFN5*6-8L

Circuit diagram



Marking



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N-Channel Enhancement Mode MOSFET

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(T_C =25℃)	I_D	140	A
Continuous Drain Current (T_C =100℃)	I_D(100℃)	88	A
Pulsed Drain Current[1]	I_{DM}	560	A
Power Dissipation(T_C =25℃)[3]	P_D	113	W
Thermal Resistance,Junction-to-Ambient[4]	$R_{\theta JA}$	50	℃/W
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	1.1	℃/W
Single pulse avalanche energy[2]	E_{AS}	800	mJ
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_J=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 =250μA	60			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =60V,V_{GS} = 0V			1	μA
		V_{DS} =60V,V_{GS} = 0V,T_j=150℃			100	
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.2	1.75	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =70A		2	2.5	mΩ
		V_{GS} =4.5V, I_D =20A		2.8	3.5	
Dynamic characteristics[5]						
Input Capacitance	C_{iss}	V_{DS} =30V, V_{GS} =0V, f =1MHz		4320		pF
Output Capacitance	C_{oss}			1510		
Reverse Transfer Capacitance	C_{rss}			55		
Gate resistance	R_G	f =1.0MHz		2		Ω
Total Gate Charge	Q_g	V_{DS} =30V, V_{GS} =10V, I_D =47.5A		71		nC
Gate-Source Charge	Q_{gs}			17		
Gate-Drain Charge	Q_{gd}			11		
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V, V_{GS}=10V, I_D=47.5A, R_{GEN}=3Ω		15		nS
Turn-on rise time	t_r			47		
Turn-off delay time	$t_{d(off)}$			53		
Turn-off fall time	t_f			19		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				140	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S=70A			1.2	V
Reverse Recovery Time	t_{rr}	I_F =47.5A, di/dt =100A/μs		51		nS
Reverse Recovery Charge	Q_{rr}			51		nC

Notes:

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

2) T_J=25℃, V_G=10V, R_G=25Ω, L=4mH, IAS=20A.

3) P_d is based on max. junction temperature, using junction-case thermal resistance.

4) The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25℃. The maximum allowed junction temperature of 150℃. The value in any given application depends on the user's specific board design.

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

Typical Characteristics

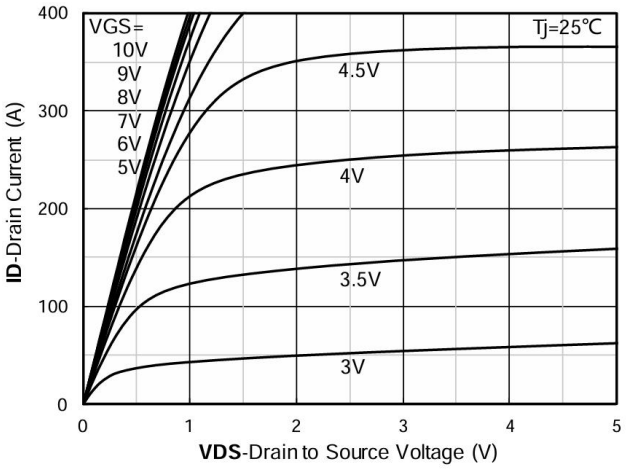


Figure 1. Output Characteristics

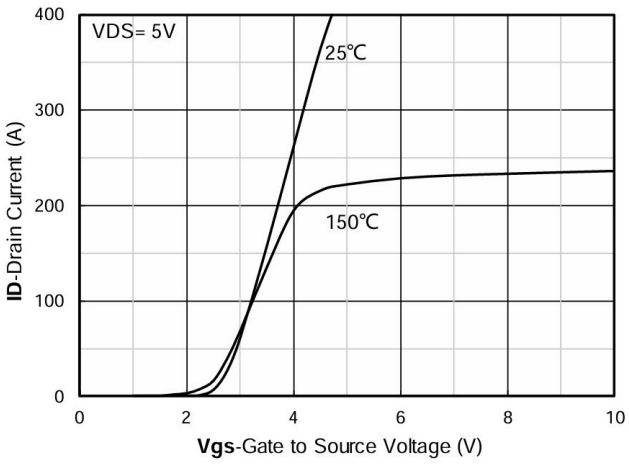


Figure 2. Transfer Characteristics

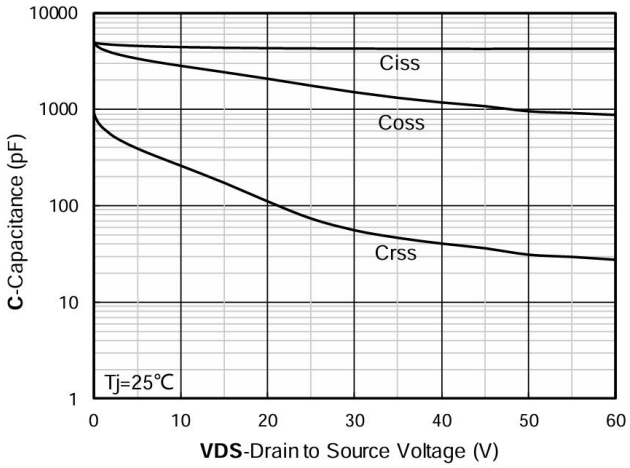


Figure 3. Capacitance Characteristics

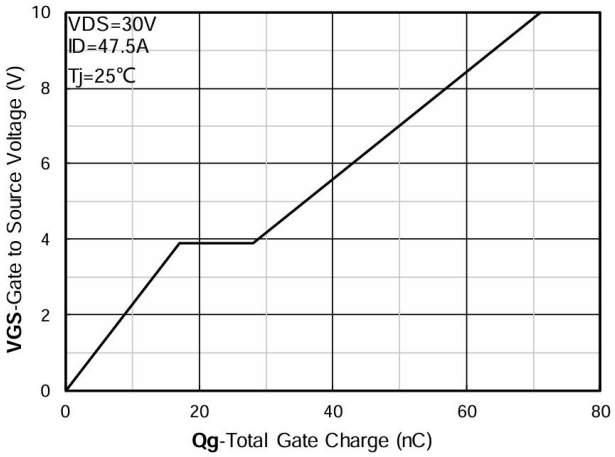


Figure 4. Gate Charge

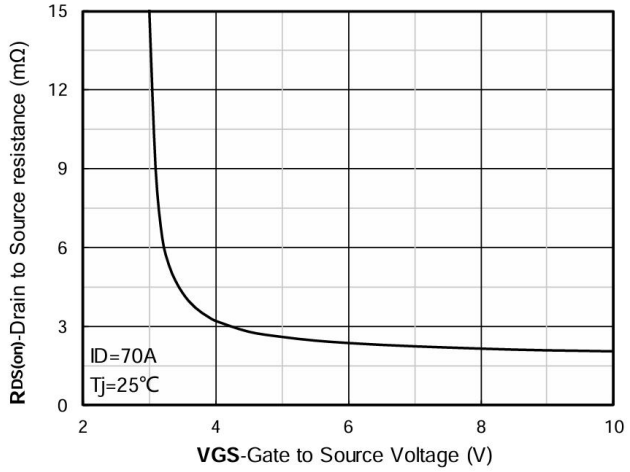


Figure 5. On-Resistance vs Gate to Source Voltage

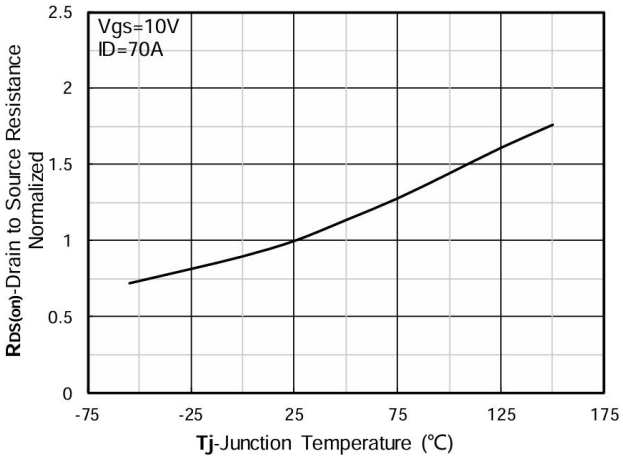


Figure 6. Normalized On-Resistance

Typical Characteristics

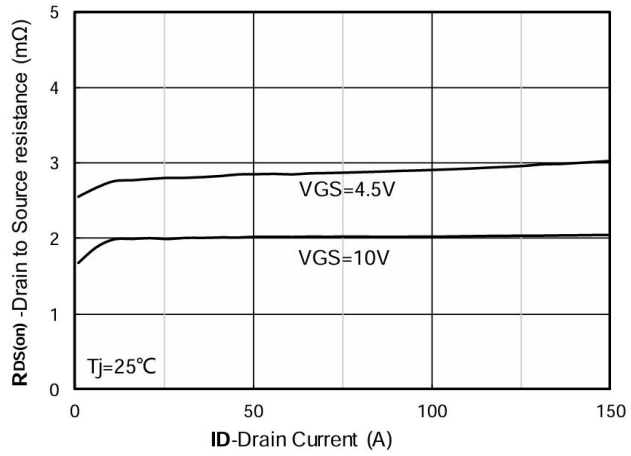


Figure 7. $R_{DS(on)}$ VS Drain Current

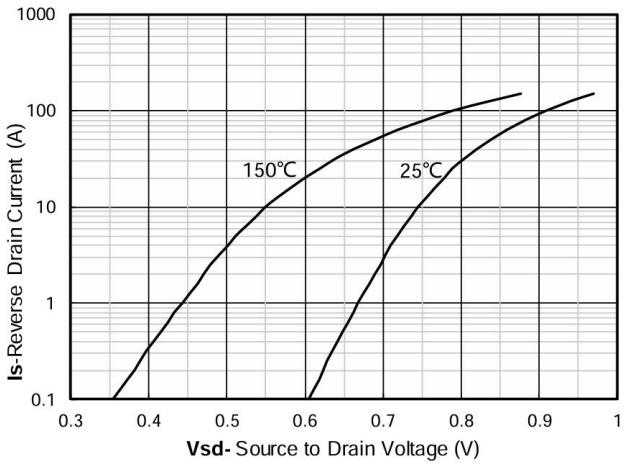


Figure 8. Forward characteristics of reverse diode

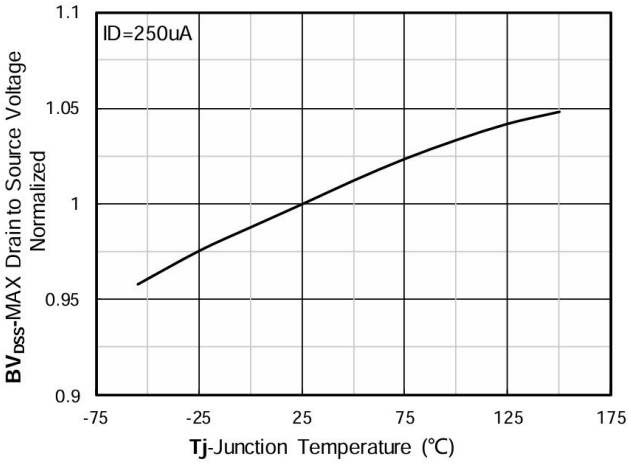


Figure 9. Normalized breakdown voltage

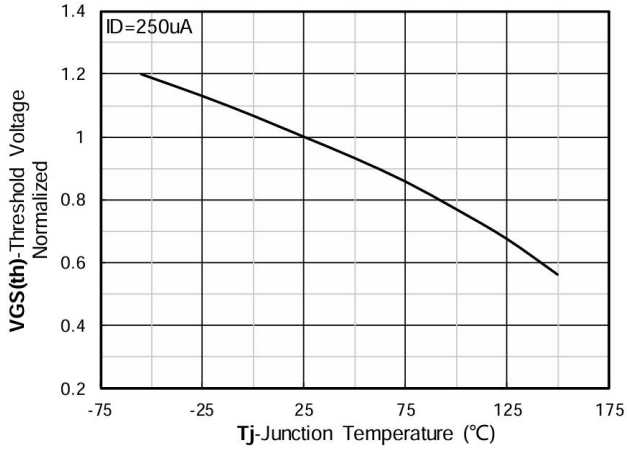


Figure 10. Normalized Threshold voltage

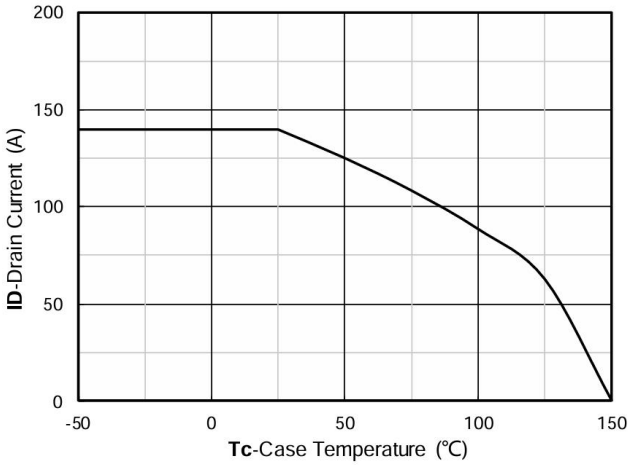


Figure 11. Current dissipation

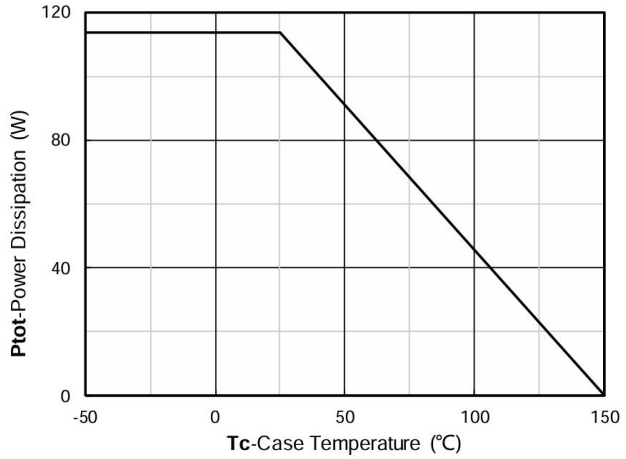


Figure 12. Power dissipation

Typical Characteristics

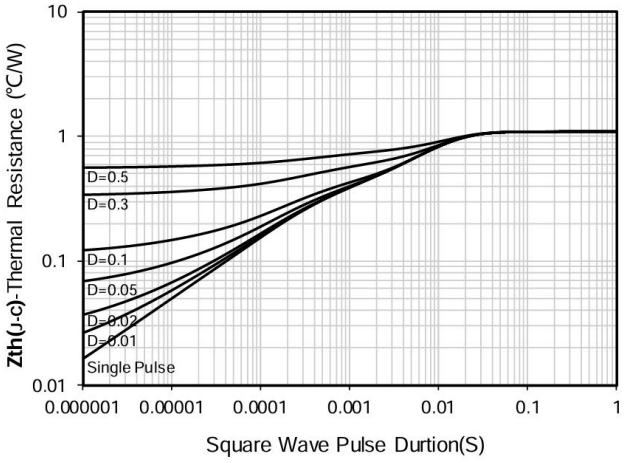


Figure 13. Maximum Transient Thermal Impedance

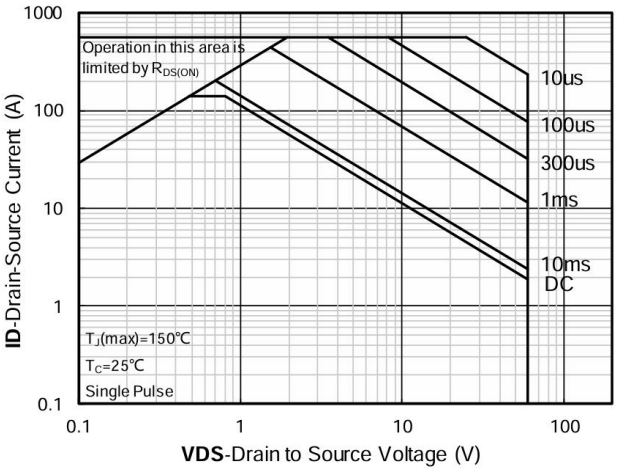
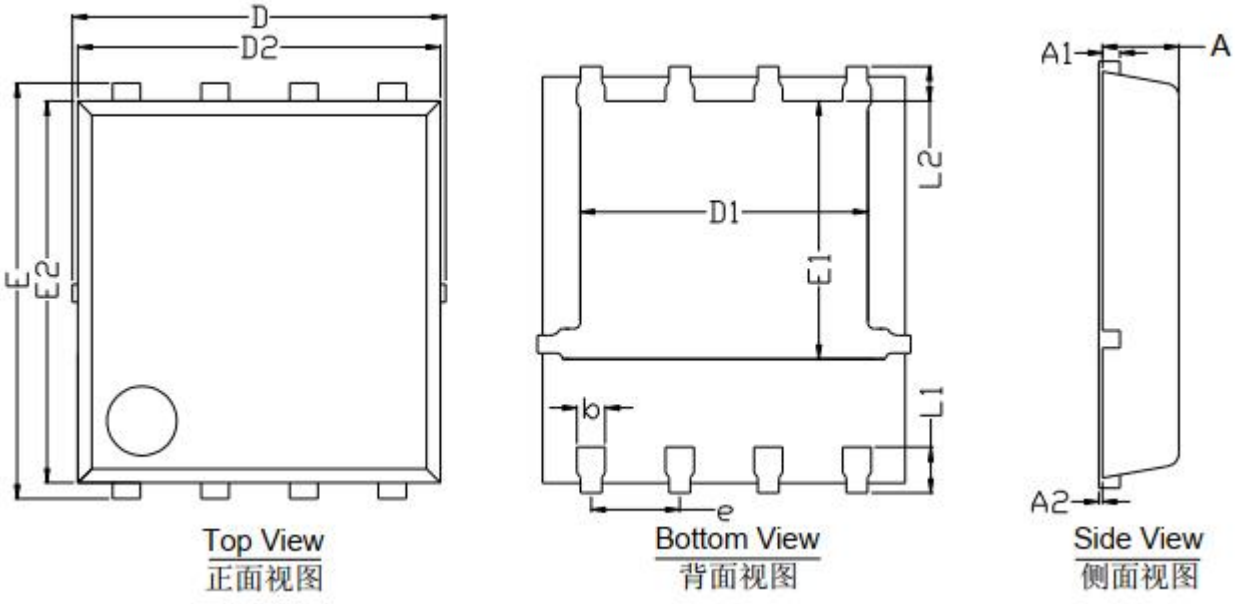


Figure 14. Safe Operation Area

PDFN5*6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
D	5.150	5.550	0.203	0.219
E	5.950	6.350	0.234	0.250
A	1.000	1.200	0.039	0.047
A1	0.254 BSC		0.100 BSC	
A2	0.000	0.100	0.000	0.004
D1	3.920	4.320	0.154	0.170
E1	3.520	3.920	0.139	0.154
D2	5.000	5.400	0.197	0.213
E2	5.660	6.060	0.223	0.239
L1	0.560	0.760	0.022	0.030
L2	0.500 BSC		0.015 BSC	
b	0.310	0.510	0.012	0.020
e	1.270 BSC		0.050 BSC	