AER095N10S-Q1

N-Channel Super Trench Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	9.5mΩ@10V	60A
	12mΩ@4.5V	

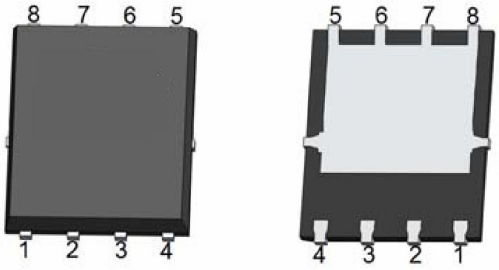
Feature

- Excellent gate charge x $R_{DS(on)}$ product (FOM)
- Very low on-resistance $R_{DS(on)}$
- Suffix "-Q1" for AEC-Q101

Application

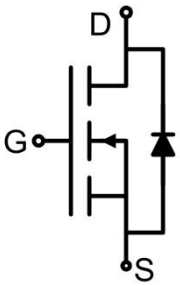
- DC-DC converter
- Ideal for high-frequency switching and synchronous rectification

Package

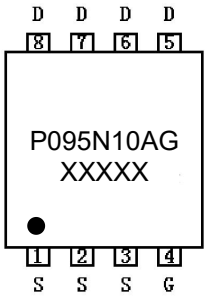


PDFN5*6-8L

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	60	A
Continuous Drain Current (T_C =100℃)	I_D(100℃)	43	A
Pulsed Drain Current	I_{DM}	240	A
Power Dissipation	P_D	80	W
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	1.56	℃/W
Single pulse avalanche energy[1)]	E_{AS}	260	mJ
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_C=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	100			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =100V,V_{GS} = 0V			1	μA
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	1.1	1.7	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =30A		8.5	9.5	mΩ
		V_{GS} =4.5V, I_D =30A		10.5	12.0	
Forward Transconductance	g_{FS}	V_{DS} =5V, I_D =30A		45		S
Dynamic characteristics[2)]						
Input Capacitance	C_{iss}	V_{DS} =50V, V_{GS} =0V, f =1MHz		2600		pF
Output Capacitance	C_{oss}			230		
Reverse Transfer Capacitance	C_{rss}			27		
Total Gate Charge	Q_g	V_{DS} =50V, V_{GS} =10V, I_D =30A		54		nC
Gate-Source Charge	Q_{gs}			10		
Gate-Drain Charge	Q_{gd}			14		
Turn-on delay time	$t_{d(on)}$	V_{DD}=50V, V_{GS}=10V, I_D=30A, R_G=1.6Ω		13		nS
Turn-on rise time	t_r			10		
Turn-off delay time	$t_{d(off)}$			30		
Turn-off fall time	t_f			8		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				60	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S=30A			1.2	V
Reverse Recovery Time	t_{rr}	T_J =25℃, I_F =30A, di/dt =100A/μs[3)]		55		nS
Reverse Recovery Charge	Q_{rr}			98		nC

Notes:

1) EAS condition : Tj=25℃,V_{DD}=50V,V_G=10V,L=0.5mH,R_g=25Ω.

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

3) These curves are based on the junction-to-case thermal impedance which is measured with the device mounted to a large heatsink, assuming a maximum junction temperature of $T_{J(MAX)}$=150°C. The SOA curve provides a single pulse rating.

Typical Characteristics

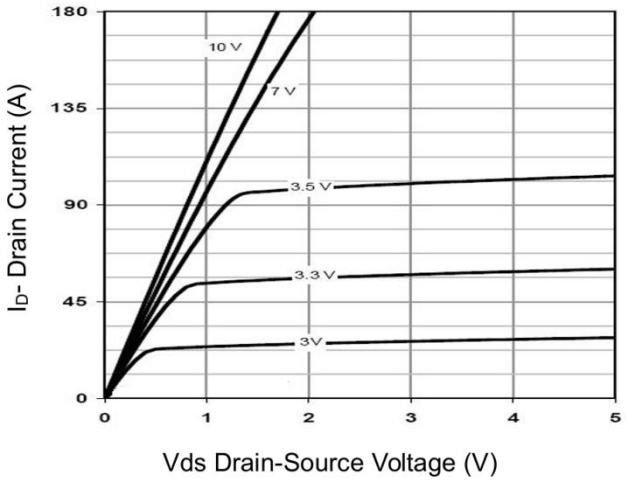


Figure 1 Output Characteristics

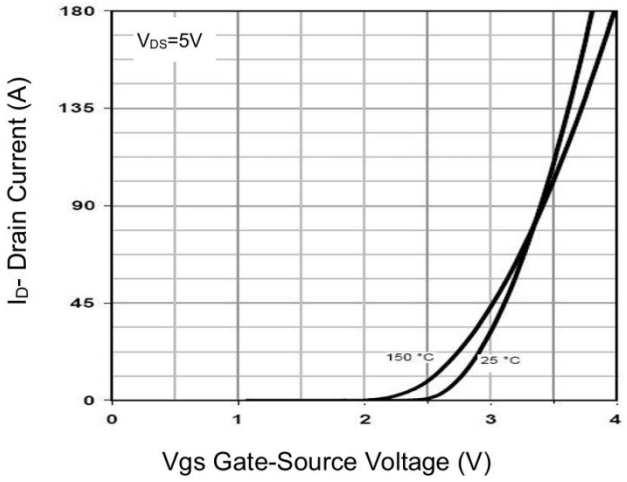


Figure 2 Transfer Characteristics

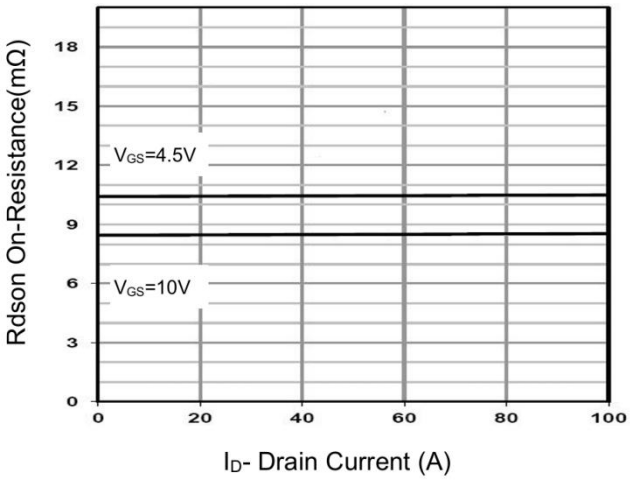


Figure 3 Rdson- Drain Current

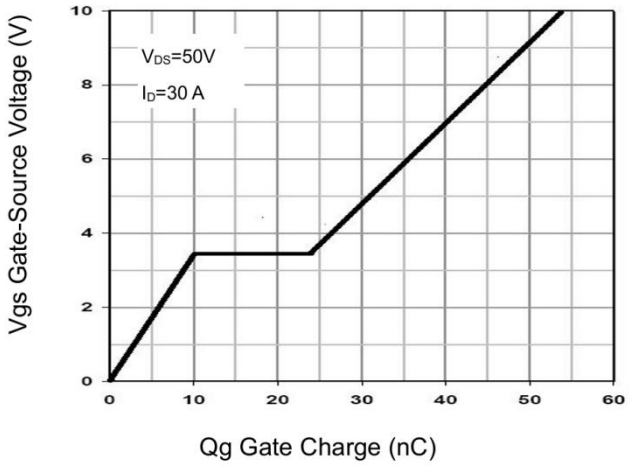


Figure 4 Gate Charge

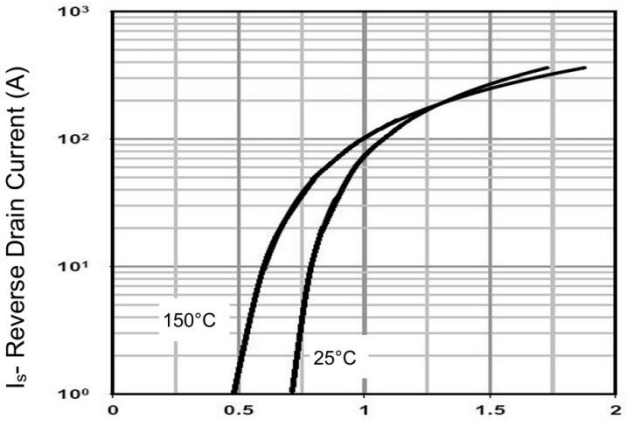


Figure 5 Source- Drain Diode Forward

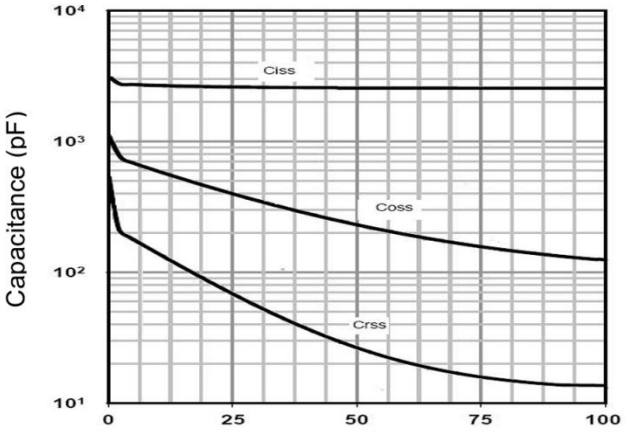


Figure 6 Capacitance vs Vds

Typical Characteristics

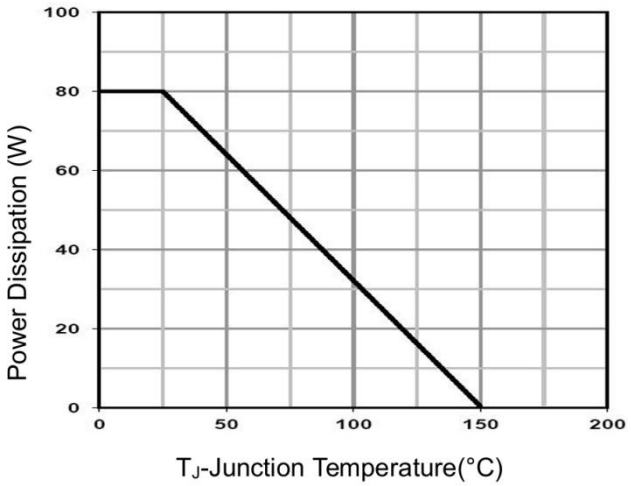


Figure 7 Power De-rating

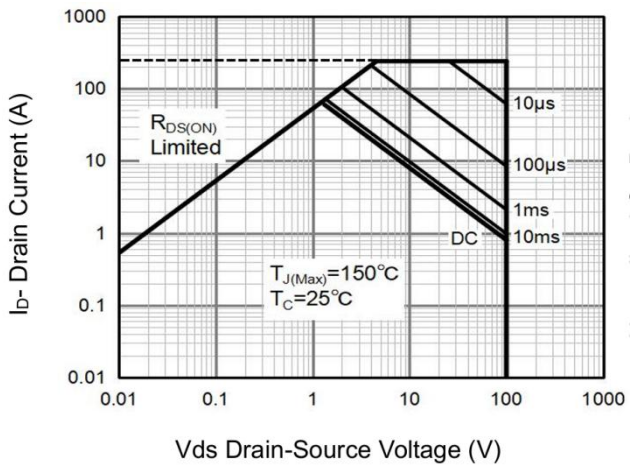


Figure 8 Safe Operation Area

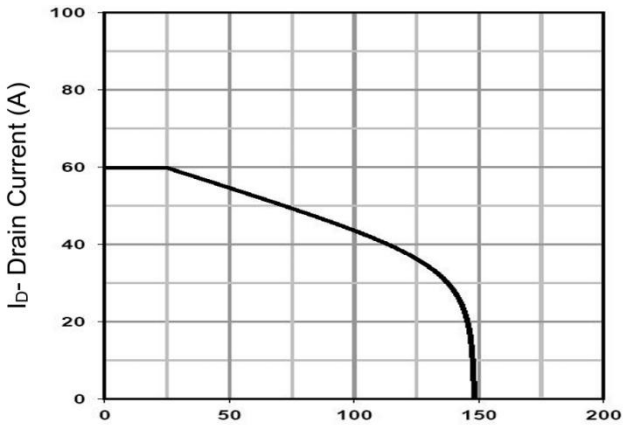


Figure 9 Current De-rating

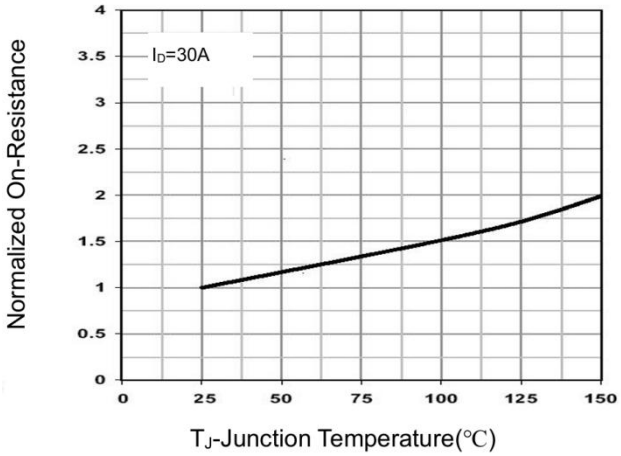


Figure 10 Rdson-Junction Temperature

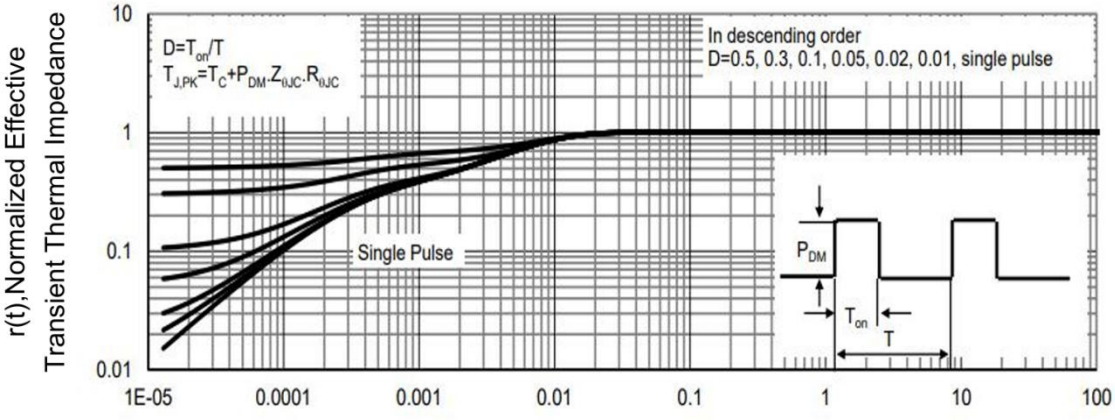
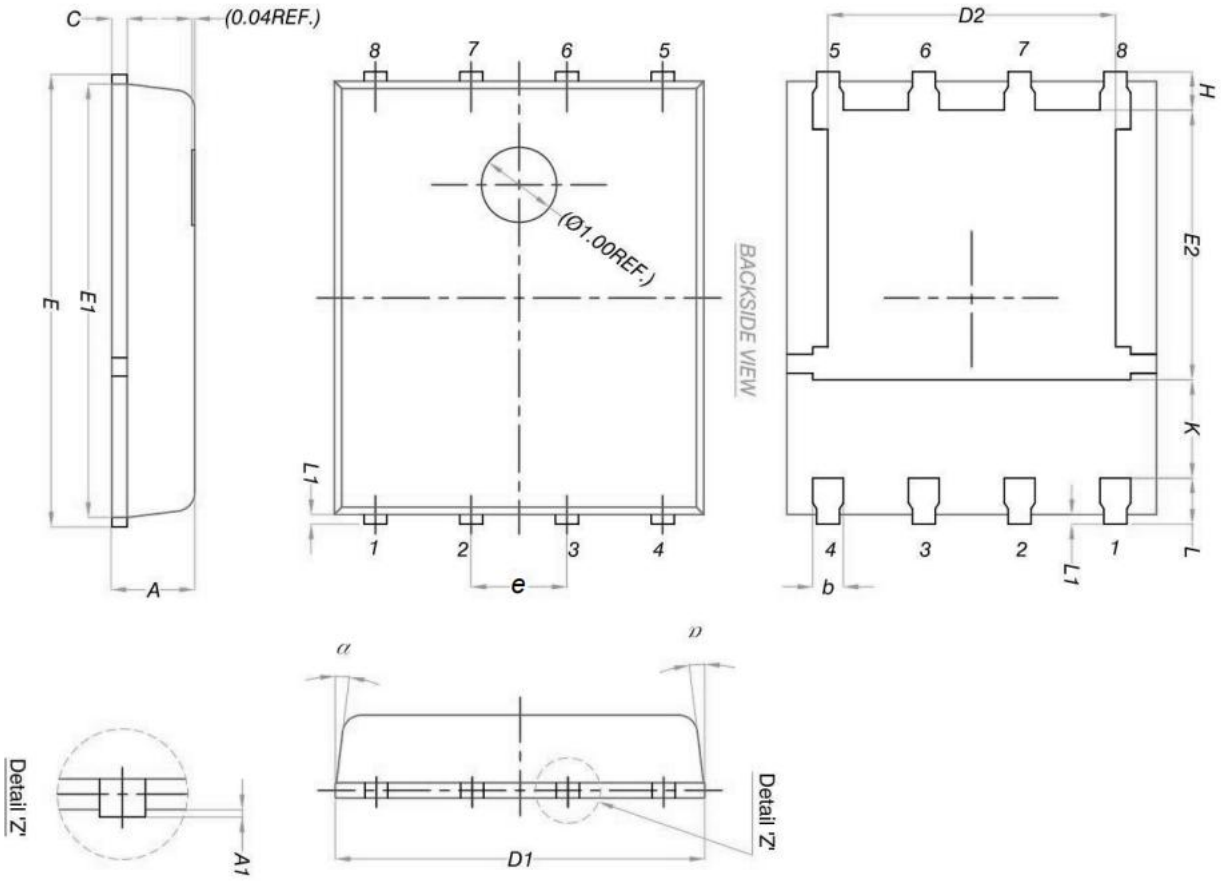


Figure 11 Normalized Maximum Transient Thermal Impedance

PDFN5*6-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.000	0.050	0.000	0.002
b	0.330	0.510	0.013	0.020
C	0.200	0.300	0.008	0.012
D1	4.800	5.000	0.189	0.197
D2	3.610	3.960	0.142	0.156
E	5.900	6.100	0.232	0.240
E1	5.700	5.800	0.224	0.228
E2	3.380	3.780	0.133	0.149
e	1.270 BSC		0.050 BSC	
H	0.410	0.610	0.016	0.024
K	1.100	-	0.043	-
L	0.510	0.710	0.020	0.028
L1	0.060	0.200	0.002	0.008
α	0°	12°	0°	12°