AG080SP040MQPF-Q1

P-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-40V	7.5mΩ@-10V	-80A
	12mΩ@-4.5V	

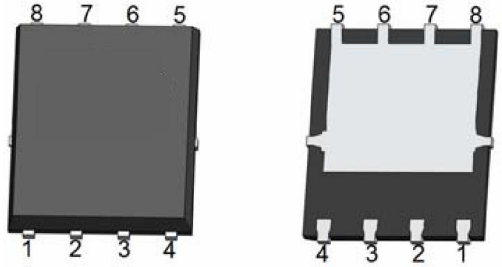
Feature

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

Application

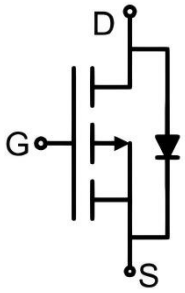
- DC/DC Converter
- Ideal for high-frequency switching and synchronous rectification

Package



PDFN5*6-8L

Circuit diagram



Marking

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	-80	A
Continuous Drain Current (T_C=100℃)	I_D(100℃)	-56	A
Pulsed Drain Current	I_{DM}	-320	A
Single Pulse Avalanche Energy[1)]	E_{AS}	500	mJ
Power Dissipation	P_D	75	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	1.67	℃/W
Operating Junction Temperature	T_J	-55 ~ +150	℃
Storage Temperature Range	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_C=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	-40			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-40V, 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	-1.6	-2.2	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =-10V, I_D =-20A		6.3	7.5	mΩ
		V_{GS} =-4.5V, I_D =-20A		9	12	
Dynamic characteristics[2)]						
Input Capacitance	C_{iss}	V_{DS} =-20V, V_{GS} =0V, f =1MHz		3700		pF
Output Capacitance	C_{oss}			880		
Reverse Transfer Capacitance	C_{rss}			20		
Total Gate Charge	Q_g	V_{DS} =-20V, V_{GS} =-10V I_D =-20A		57		nC
Gate-Source Charge	Q_{gs}			9.8		
Gate-Drain Charge	Q_{gd}			7.3		
Turn-on delay time	$t_{d(on)}$	V_{DS} =-20V, V_{GS}=-10V I_D =-20A, R_G =1.6Ω		10.5		nS
Turn-on rise time	t_r			4		
Turn-off delay time	$t_{d(off)}$			35		
Turn-off fall time	t_f			5		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				-80	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =-20A			-1.2	V
Reverse recover time	T_{rr}	I_F =-20A, di/dt =-100A/us T_J =25℃		24		nS
Reverse recovery charge	Q_{rr}			68		nC

Notes:

1) EAS condition: T_j=25℃,V_{DD} =-20V, V_G =-10V, L =0.5mH, Rg =25Ω.

2) Guaranteed by design,not subject to production.

Typical Characteristics

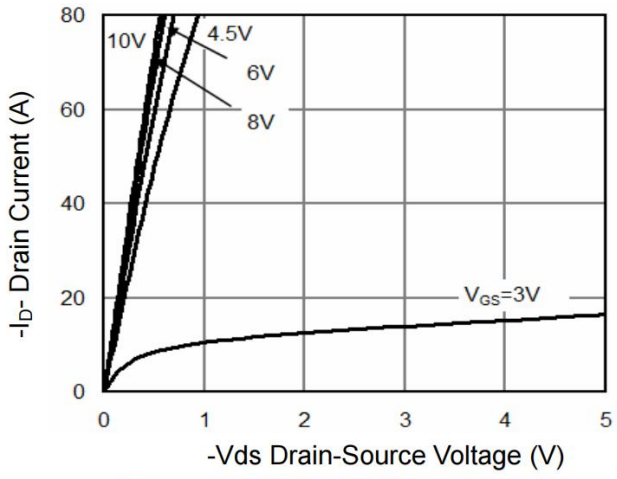


Figure 1 Output Characteristics

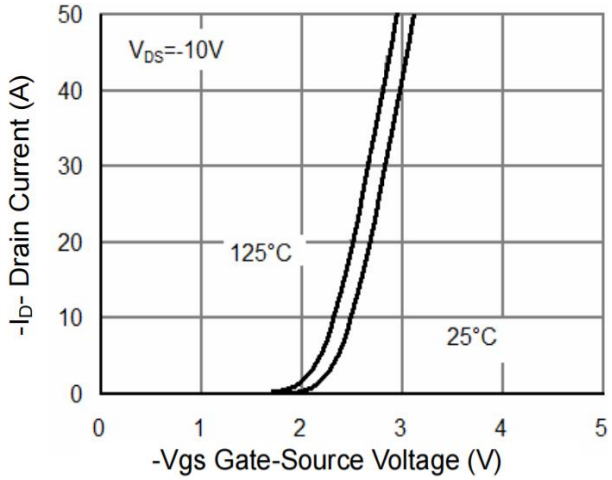


Figure 2 Transfer Characteristics

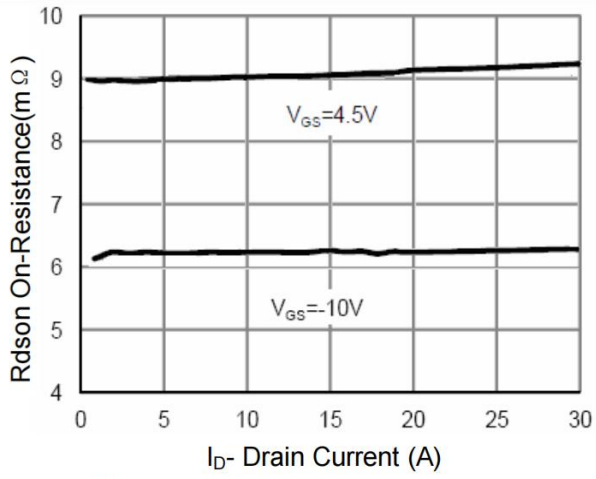


Figure 3 Rdson- Drain Current

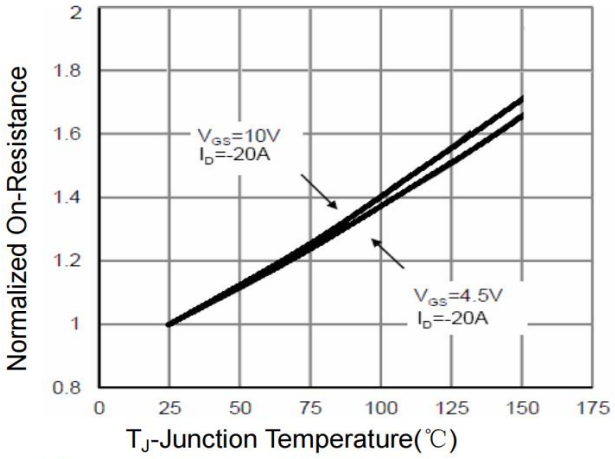


Figure 4 Rdson-JunctionTemperature

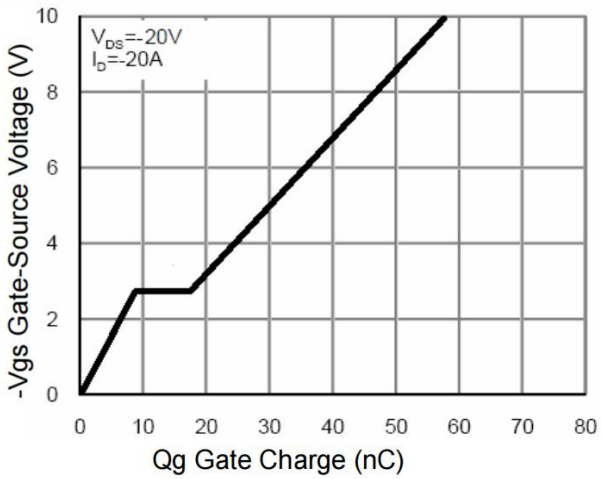


Figure 5 Gate Charge

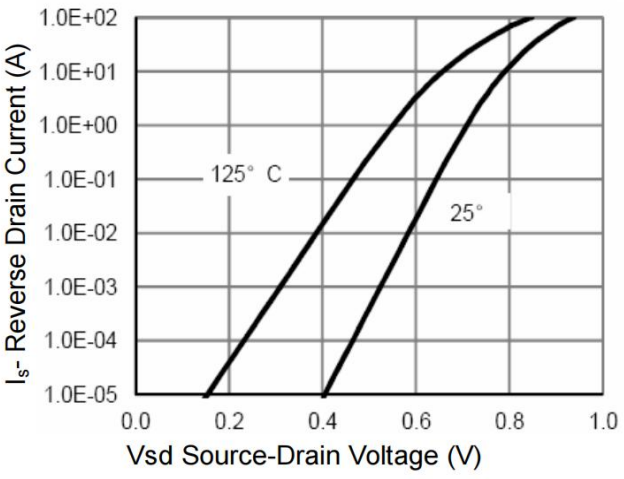


Figure 6 Source- Drain Diode Forward

Typical Characteristics

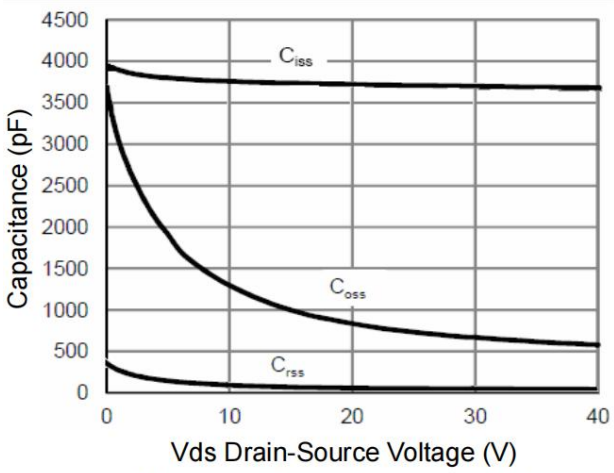


Figure 7 Capacitance vs Vds

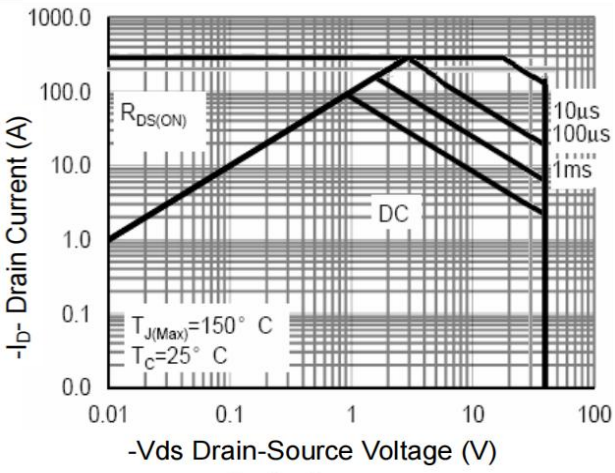


Figure 8 Safe Operation Area

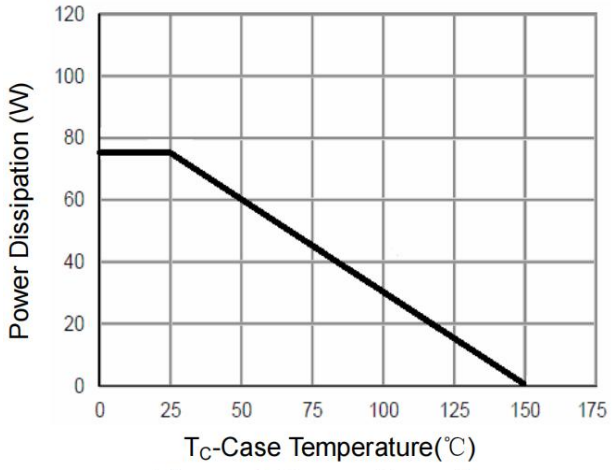


Figure 9 Power De-rating

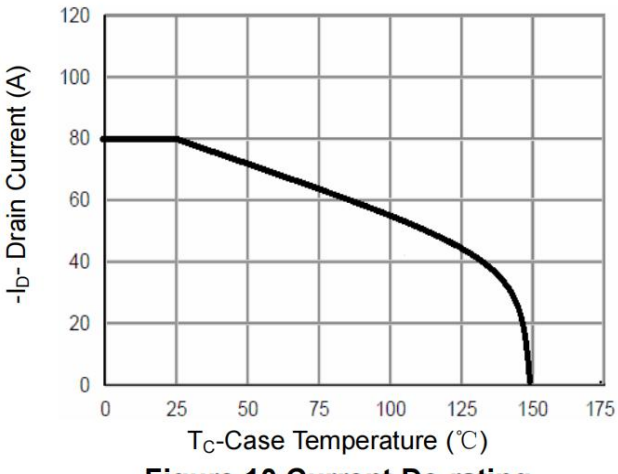


Figure 10 Current De-rating

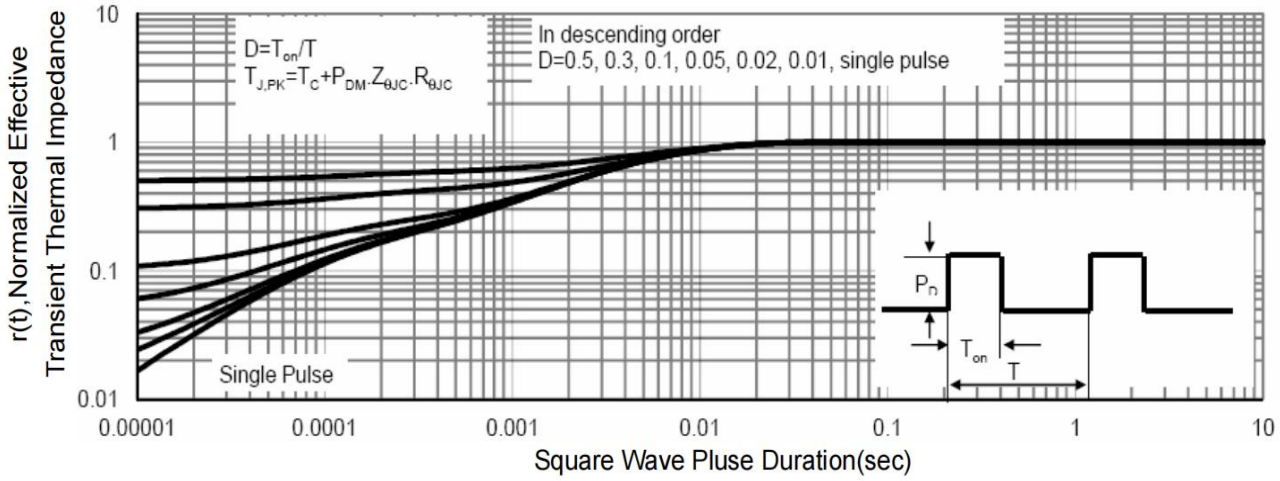
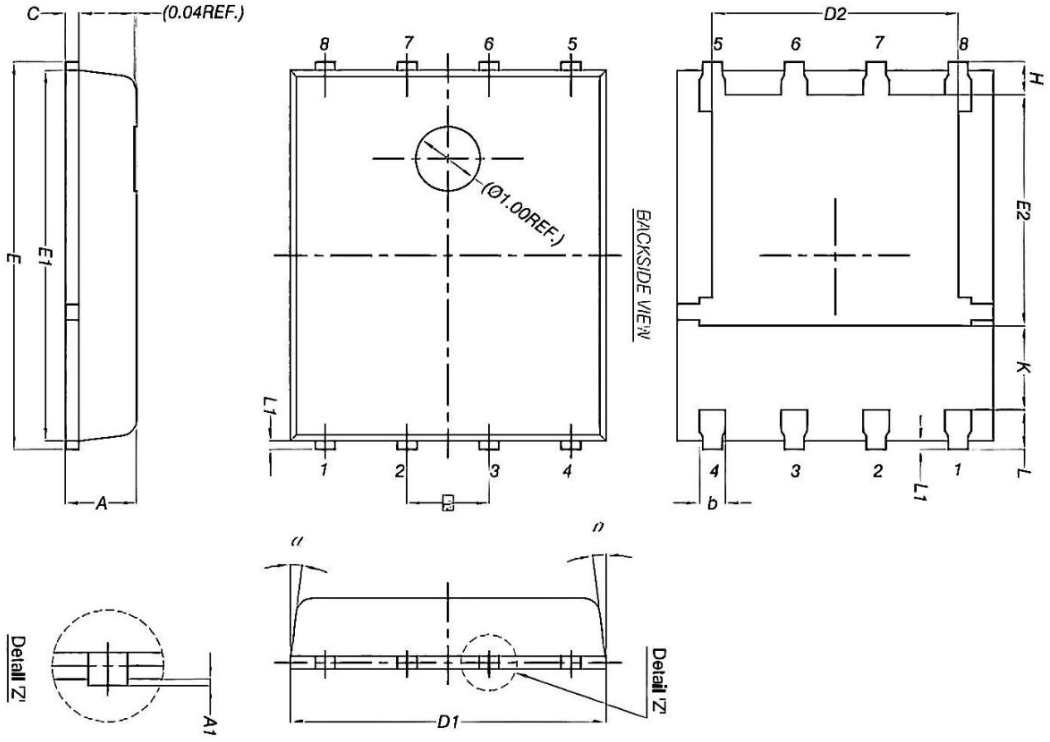


Figure 11 Normalized Maximum Transient Thermal Impedance

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°