AG080SP060MQPF-Q1

P-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
-60V	8.5mΩ@-10V	-80A

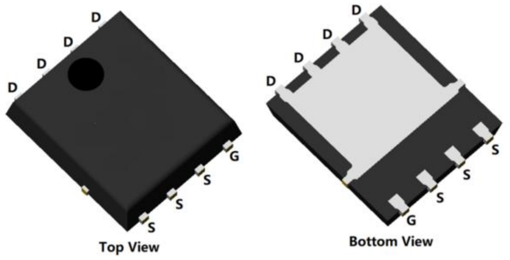
Feature

- Split gate trench MOSFET technology
- Low $R_{DS(on)}$ & FOM
- Excellent stability and uniformity
- Suffix "-Q1" for AEC-Q101

Application

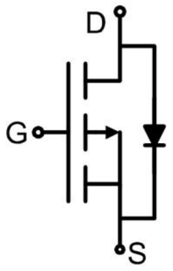
- Power management
- Portable equipment

Package

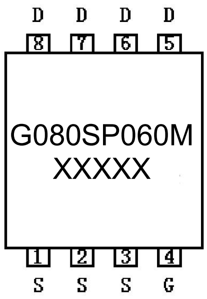


PDFN5*6-8L

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}	±18	V
Continuous Drain Current (T_C=25℃)	I_D	-80	A
Continuous Drain Current (T_C=100℃)	I_D(100℃)	-50	A
Pulsed Drain Current$^{1)}$	I_{DM}	-320	A
Single Pulse Avalanche Energy$^{2)}$	E_{AS}	400	mJ
Power Dissipation$^{3)}$ (T_C=25℃)	P_D	120	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	1.04	℃/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	-60			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =-60V, V_{GS} =0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±18V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =-250μA	-2	-2.7	-4	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =-10V, I_D =-20A		6.5	8.5	mΩ
Dynamic characteristics$^{4)}$						
Input Capacitance	C_{iss}	V_{DS} =-30V, V_{GS} =0V, f =1MHz		5450		pF
Output Capacitance	C_{oss}			900		
Reverse Transfer Capacitance	C_{rss}			65		
Total Gate Charge	Q_g	V_{DS} =-30V, V_{GS} =-10V I_D =-20A		82		nC
Gate-Source Charge	Q_{gs}			25		
Gate-Drain Charge	Q_{gd}			17		
Turn-on delay time	$t_{d(on)}$	V_{DS} =-30V, V_{GS} =-10V I_D =-20A, R_G =1.6Ω		15		nS
Turn-on rise time	t_r			50		
Turn-off delay time	$t_{d(off)}$			135		
Turn-off fall time	t_f			160		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				-80	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =-20A			-1.3	V
Reverse Recovery Time	T_{rr}	I_F =-20A, di/dt =-500A/μs		150		nS
Reverse Recovery Charge	Q_{rr}			45		nC

Notes:

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

2) T_J =25℃, V_{DD} =-60V, V_G =-10V, R_G =25Ω, L =2mH, I_{AS} =-20A.

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

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

Typical Characteristics

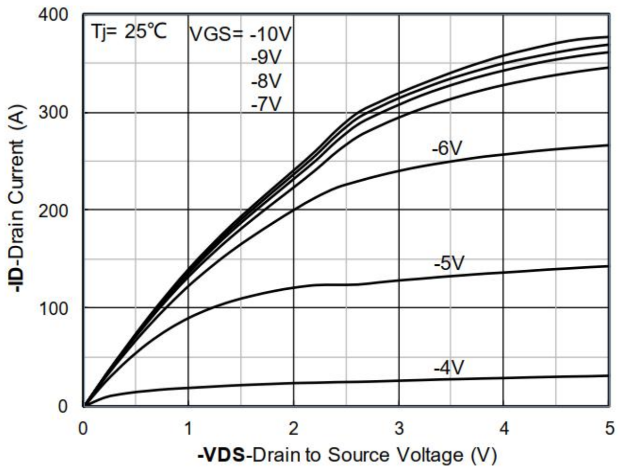


Figure 1. Output Characteristics

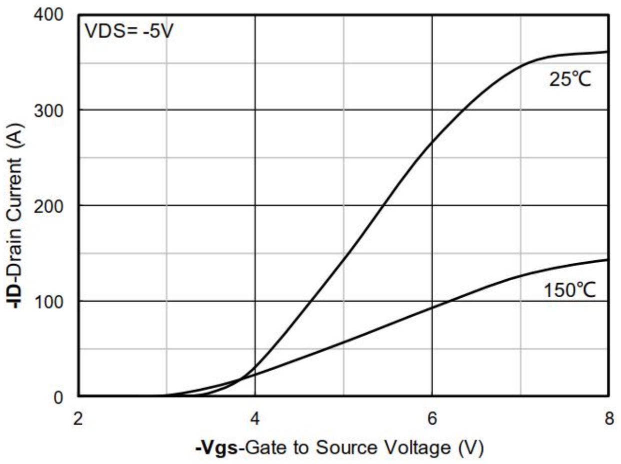


Figure 2. Transfer Characteristics

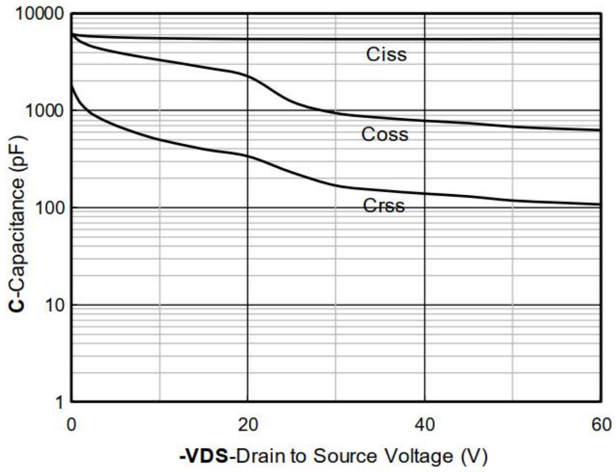


Figure 3. Capacitance Characteristics

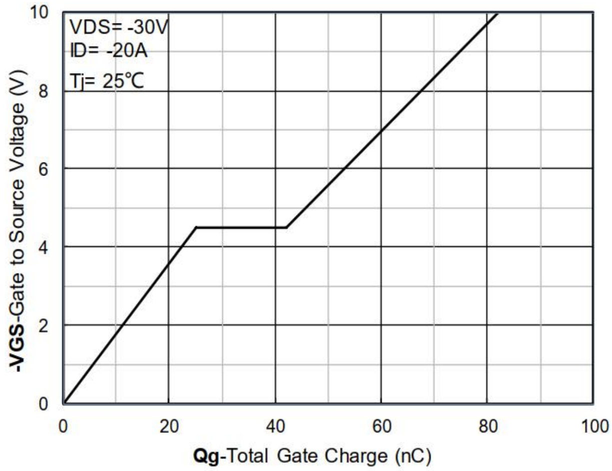


Figure 4. Gate Charge

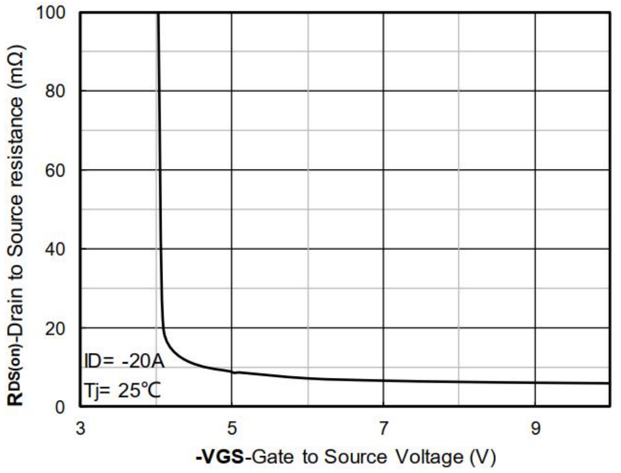


Figure 5. On-Resistance vs Gate to Source Voltage

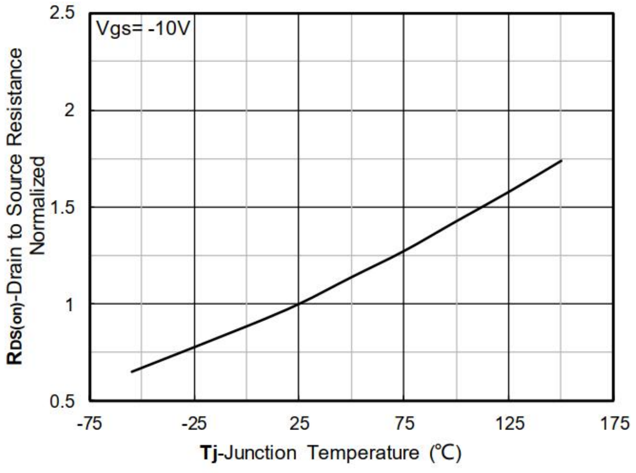


Figure 6. Normalized On-Resistance

Typical Characteristics

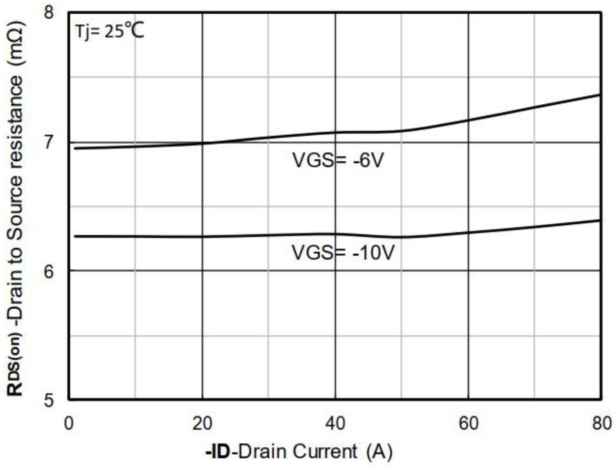


Figure 7. RDS(on) VS Drain Current

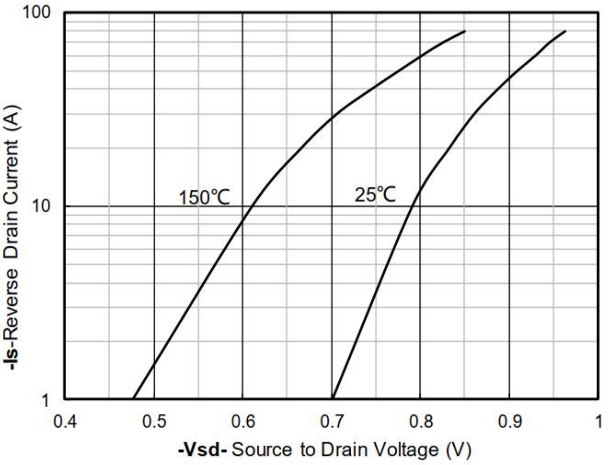


Figure 8. Forward characteristics of reverse diode

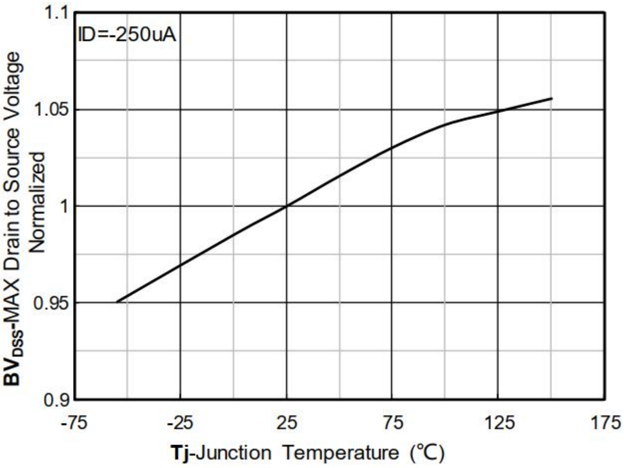


Figure 9. Normalized breakdown voltage

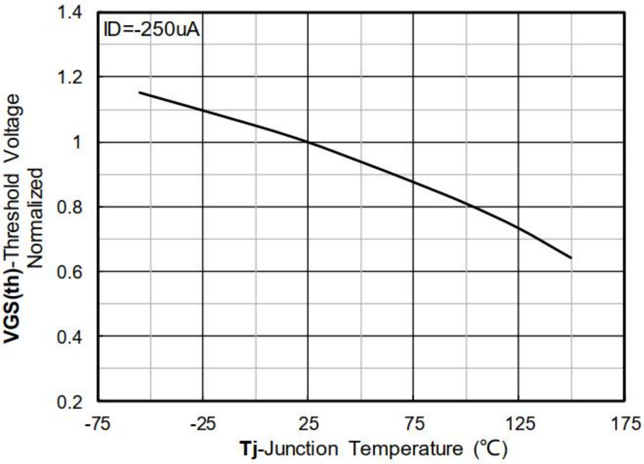


Figure 10. Normalized Threshold voltage

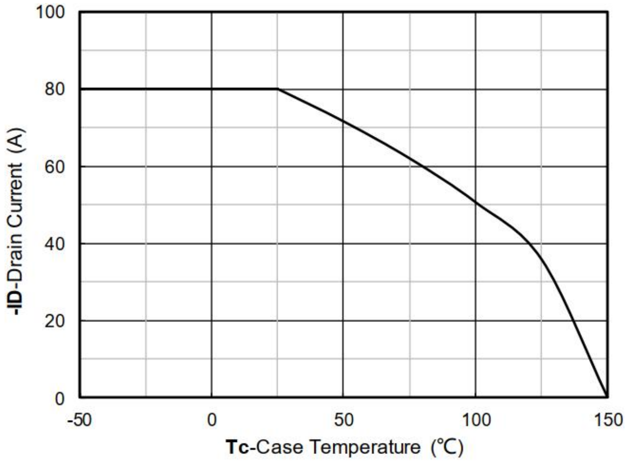


Figure 11. Current dissipation

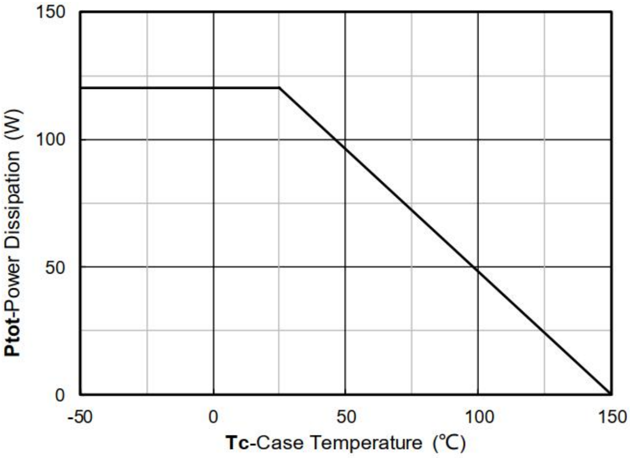


Figure 12. Power dissipation

Typical Characteristics

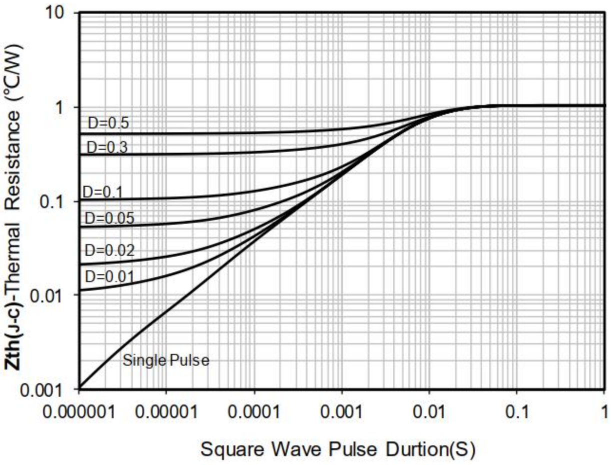


Figure 13. Maximum Transient Thermal Impedance

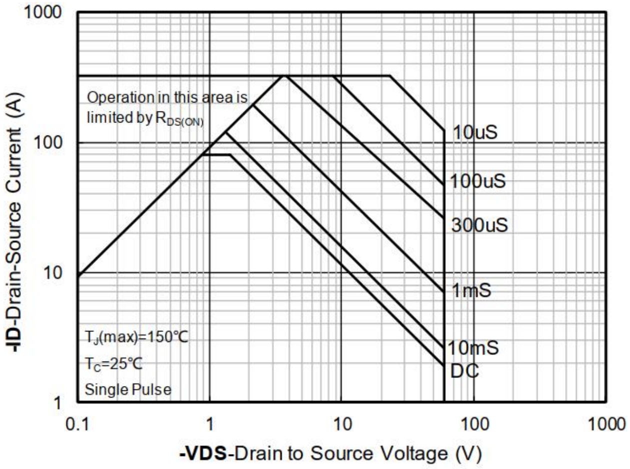
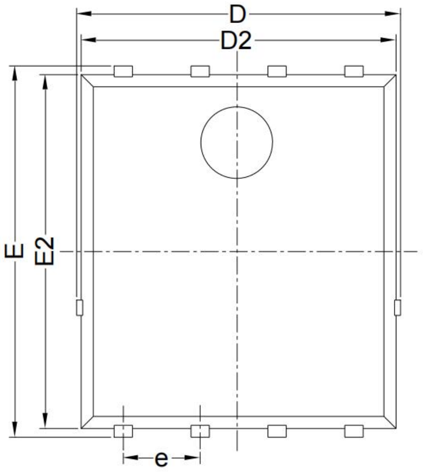
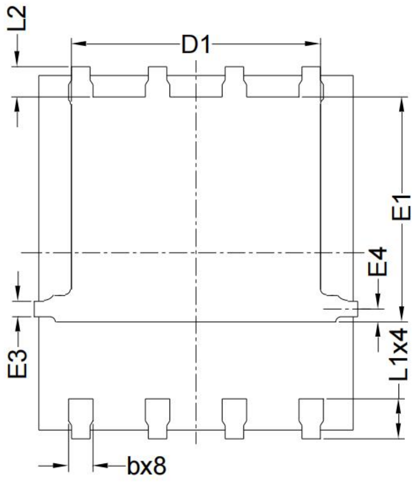


Figure 14. Safe Operation Area

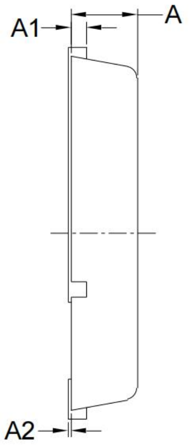
PDFN5*6-8L Package Information



Top View



Bottom View



Side View

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.		0.010 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
E3	0.254 REF.		0.010 REF.	
E4	0.210 REF.		0.008 REF.	
L1	0.560	0.760	0.022	0.030
L2	0.500 BSC.		0.020 BSC.	
b	0.310	0.510	0.012	0.020
e	1.270 BSC.		0.050 BSC.	