AG116SN040MQPT-Q1

N-Channel Enhancement Mode Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
40V	2.9mΩ@10V	116A
	4.3mΩ@4.5V	

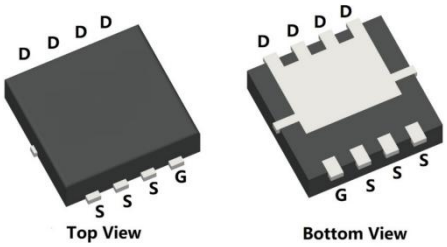
Feature

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

Application

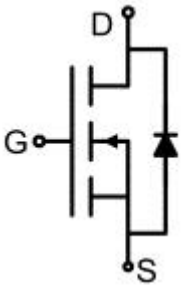
- DC-DC convertor
- Ideal for high-frequency switching and synchronous rectification

Package

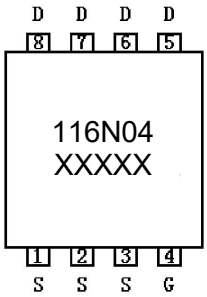


PDFN3.3*3.3-8L

Circuit diagram



Marking



AG116SN040MQPT-Q1

N-Channel Enhancement Mode Power MOSFET

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	116	A
Continuous Drain Current (T_C =100℃)	I_D (100℃)	72	A
Pulsed Drain Current	I_{DM}	464	A
Power Dissipation	P_D	62	W
Single Pulse Avalanche Energy[1)]	E_{AS}	256	mJ
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	2.02	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	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_{GS} =±20V, V_{DS} =0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1	1.5	2.2	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =20A		2.25	2.9	mΩ
		V_{GS} =4.5V, I_D =20A		3.5	4.3	
Dynamic characteristics[4)]						
Input Capacitance	C_{iss}	V_{DS} =20V,V_{GS} =0V,f =1MHz		1930		pF
Output Capacitance	C_{oss}			460		
Reverse Transfer Capacitance	C_{rss}			40		
Total Gate Charge	Q_g	V_{DS} =20V,V_{GS} =10V,I_D =20A		35		nC
Gate-Source Charge	Q_{gs}			7		
Gate-Drain Charge	Q_{gd}			8		
Turn-on delay time	$t_{d(on)}$	V_{DD}=20V,V_{GS}=10V,I_D=20A, R_G=1.6Ω		10		nS
Turn-on rise time	t_r			40		
Turn-off delay time	$t_{d(off)}$			30		
Turn-off fall time	t_f			10		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				116	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S=20A			1.2	V
Reverse Recovery Time	t_{rr}	I_F =20A, di/dt =100A/μs, T_J=25℃		40		nS
Reverse Recovery Charge	Q_{rr}			38		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

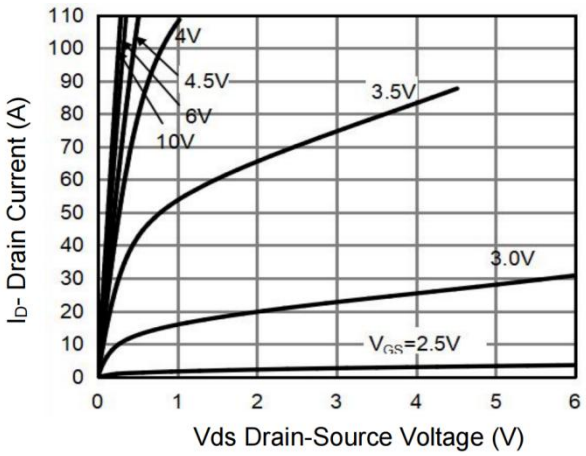


Figure 1 Output Characteristics

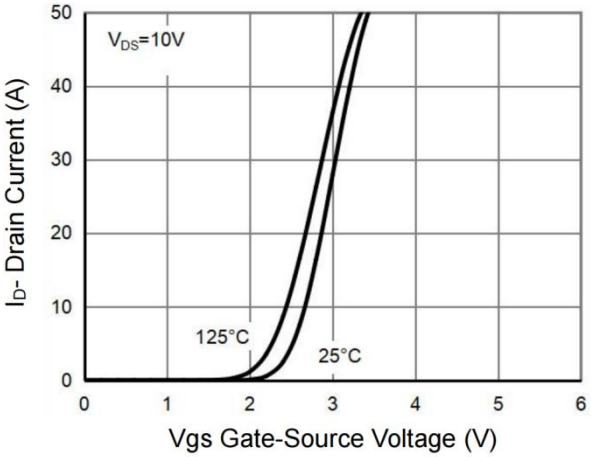


Figure 2 Transfer Characteristics

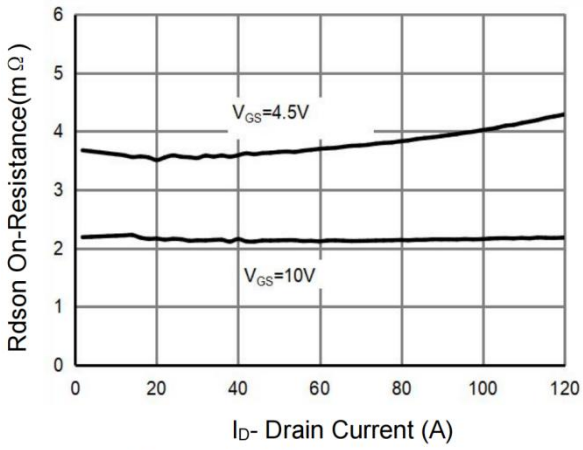


Figure 3 Rdson- Drain Current

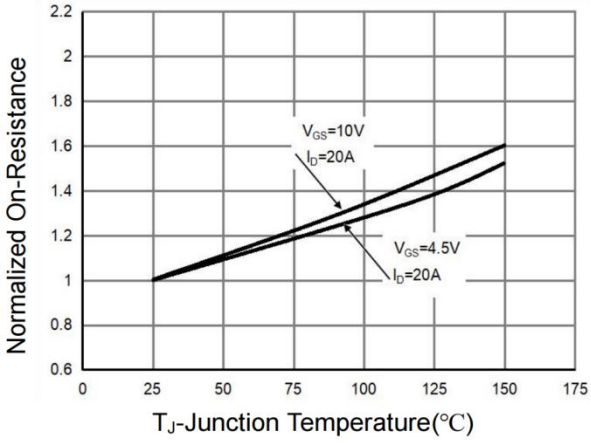


Figure 4 Rdson-Junction Temperature

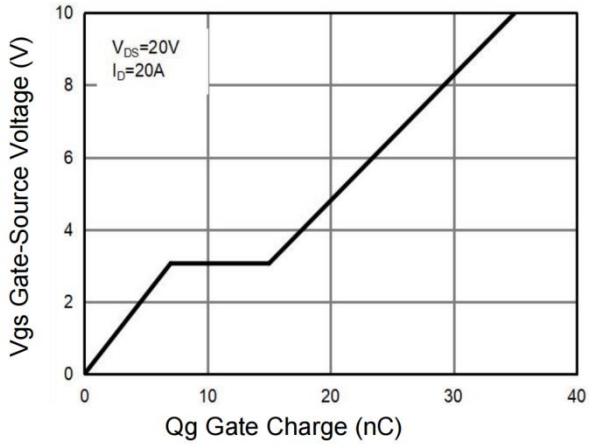


Figure 5 Gate Charge

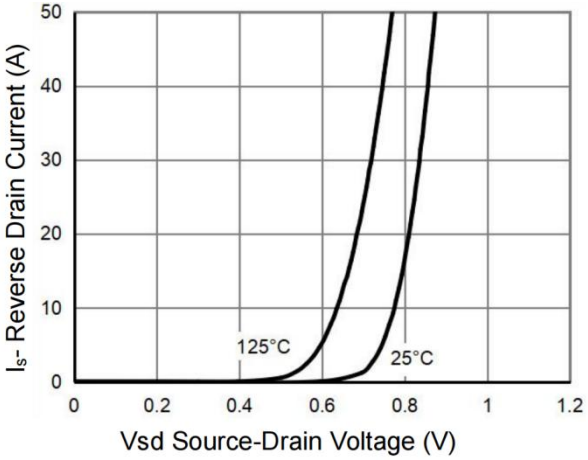


Figure 6 Source- Drain Diode Forward

Typical Characteristics

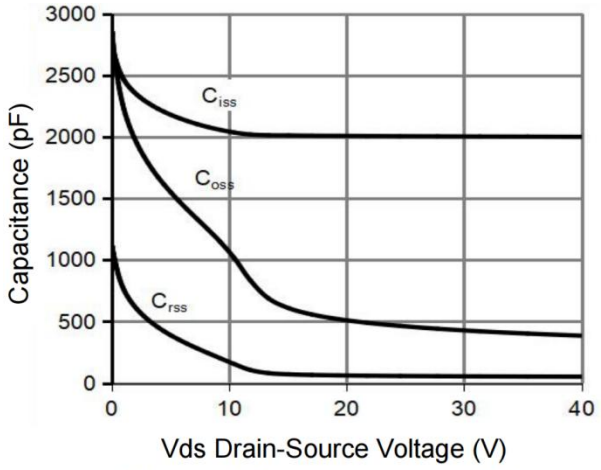


Figure 7 Capacitance vs Vds

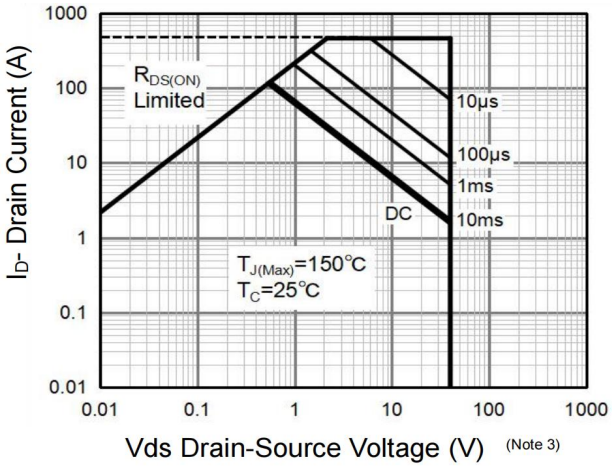


Figure 8 Safe Operation Area

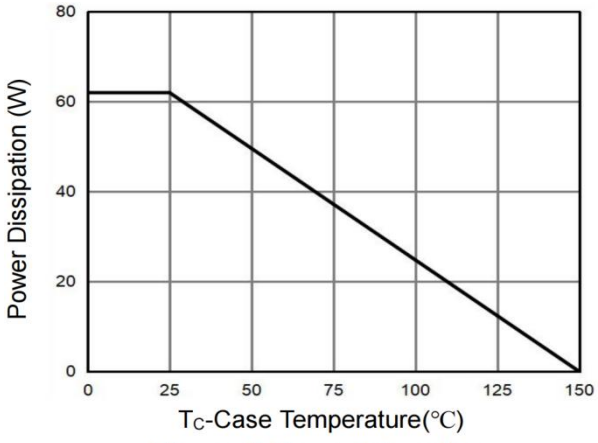


Figure 9 Power De-rating

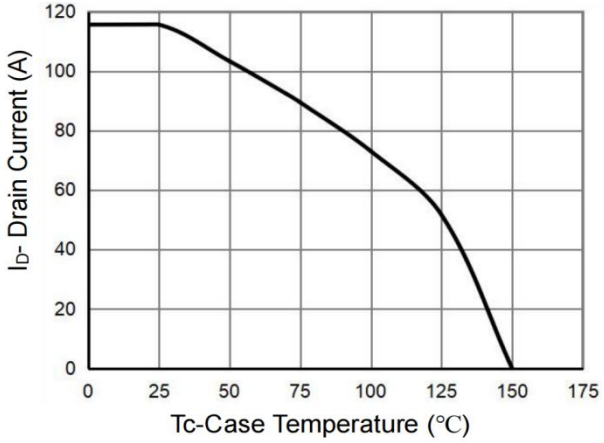


Figure 10 Current De-rating

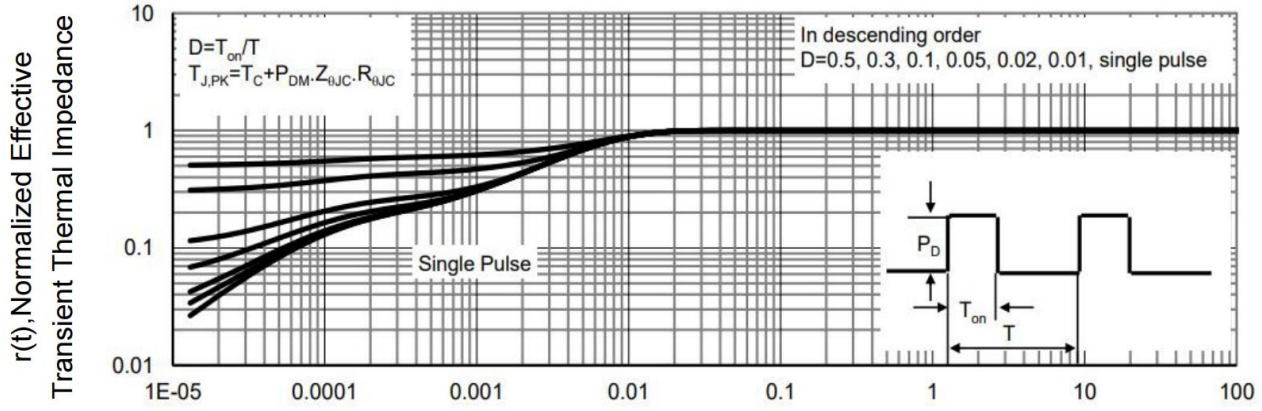
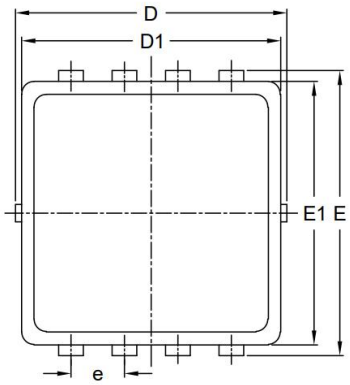
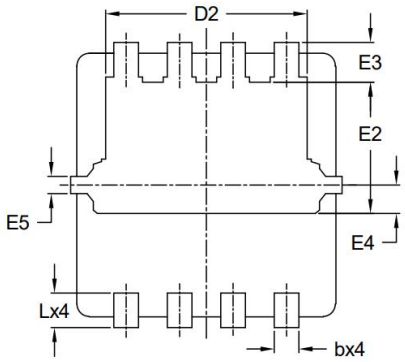


Figure 11 Normalized Maximum Transient Thermal Impedance

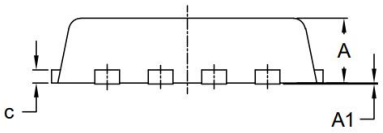
PDFN3.3*3.3-8L Package Information



TOP VIEW



BOTTOM VIEW



SIDE VIEW

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.850	0.028	0.033
A1	0.000	0.050	0.000	0.002
b	0.200	0.400	0.008	0.016
c	0.100	0.250	0.004	0.010
D	3.150	3.450	0.124	0.136
D1	3.000	3.250	0.118	0.128
D2	2.290	2.650	0.090	0.104
E	3.150	3.450	0.124	0.136
E1	2.900	3.200	0.114	0.126
E2	1.540	1.940	0.061	0.076
E3	0.280	0.650	0.011	0.026
E4	0.370	0.770	0.015	0.030
E5	0.100	0.300	0.004	0.012
e	0.600	0.700	0.024	0.028
L	0.300	0.500	0.012	0.020