AG040SN040APG

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
40V	6.3mΩ@10V	40A
	10.5mΩ@4.5V	

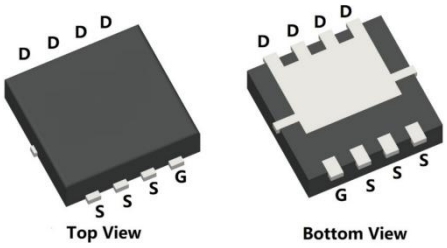
Feature

- Fast switching
- Low gate charge and $R_{DS(ON)}$
- Advanced Split Gate Trench technology

Application

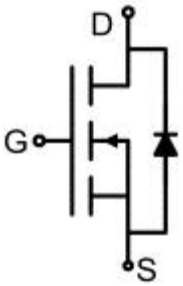
- DC-DC converter
- Motor control
- Portable equipment application

Package

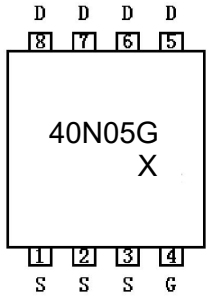


PDFN3*3-8L

Circuit diagram



Marking



Absolute maximum ratings (T_A=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 (T_C=25℃)	I_D	40	A
Continuous Drain Current (T_C=100℃)	I_D (100 ℃)	27	A
Pulsed Drain Current	I_{DM}	160	A
Single Pulse Avalanche Energy[1]	E_{AS}	56	mJ
Power Dissipation (T_C=25℃)	P_D	35	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	3.57	℃/W
Operating Junction Temperature	T_J	-55 ~ +150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_A=25℃ unless otherwise noted)

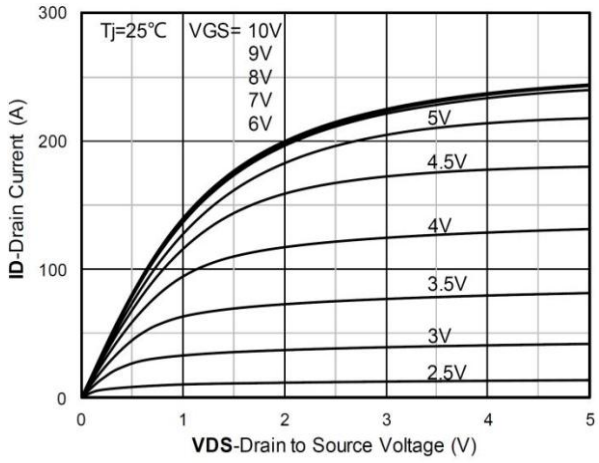
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} =0V, I_D =250μA	40			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =32V, V_{GS} =0V			1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.1	1.5	2.1	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =20A		5	6.3	mΩ
		V_{GS} =4.5V, I_D =10A		8	10.5	
Dynamic characteristics[2]						
Input Capacitance	C_{iss}	V_{DS} =20V, V_{GS} =0V, f =1MHz		1048		pF
Output Capacitance	C_{oss}			187		
Reverse Transfer Capacitance	C_{rss}			11		
Total Gate Charge	Q_g	V_{DS} =20V, V_{GS} =10V, I_D =30A		20		nC
Gate-Source Charge	Q_{gs}			4		
Gate-Drain Charge	Q_{gd}			6		
Turn-on delay time	$t_{d(on)}$	V_{DS} =20V, V_{GS} =10V, I_D =30A R_G =3Ω		6		nS
Turn-on rise time	t_r			2.5		
Turn-off delay time	$t_{d(off)}$			22		
Turn-off fall time	t_f			3.5		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				40	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =1A, T_J =25℃			1.2	V
Reverse Recovery Time	T_{rr}	I_S =20A, di/dt =-100A/μs T_J =25℃		12		nS
Reverse Recovery Charge	Q_{rr}			14		nC

Notes:

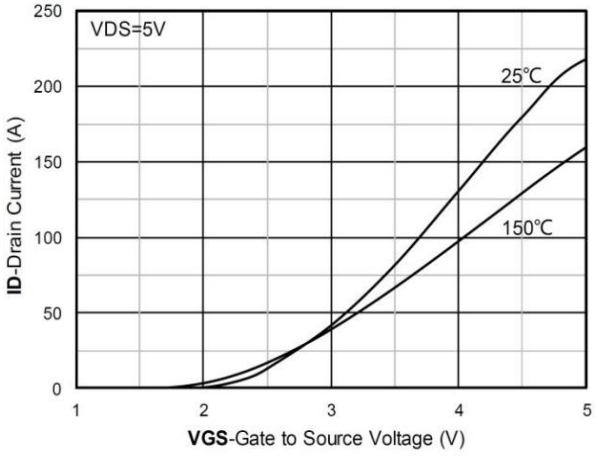
1) The EAS test condition is V_{DD} =20V, V_{GS} =10V, L =0.5mH, R_G =25Ω.

2) Guaranteed by design, not subject to production.

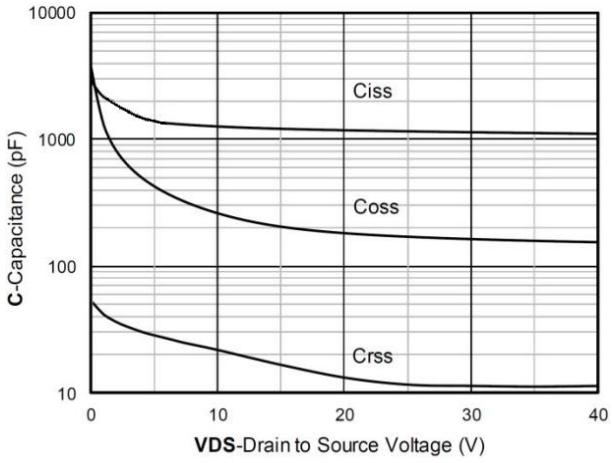
Typical Characteristics



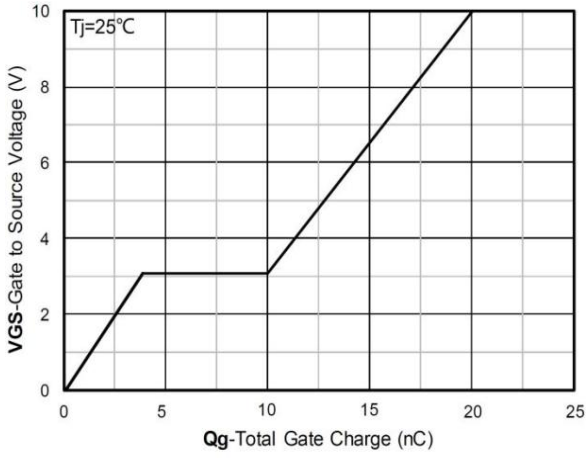
Output Characteristics



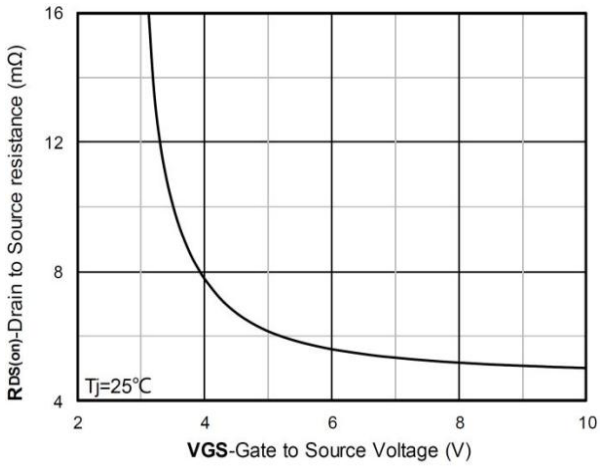
Transfer Characteristics



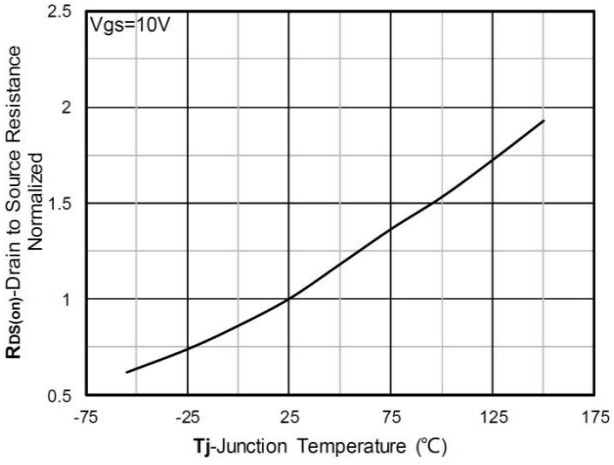
Capacitance Characteristics



Gate Charge

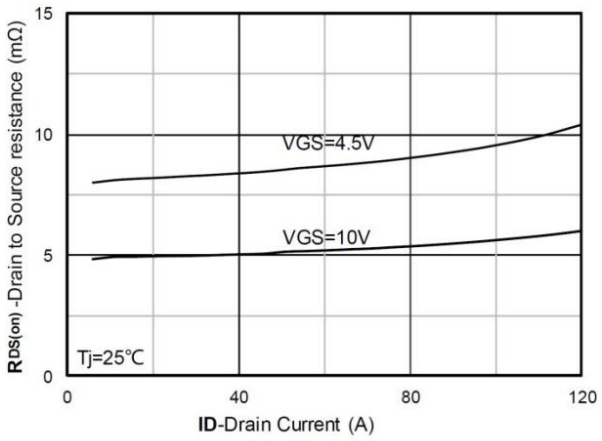


On-Resistance vs Gate to Source Voltage

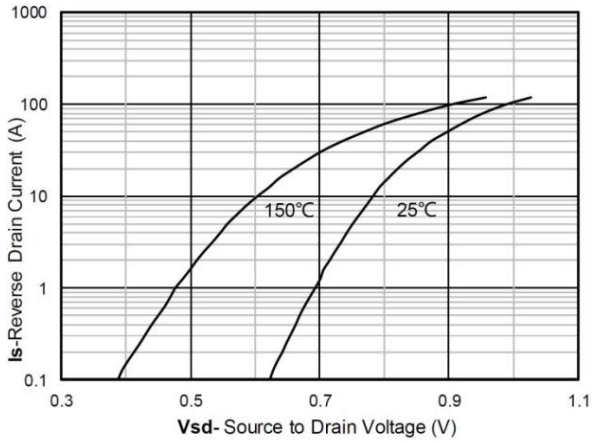


Normalized On-Resistance

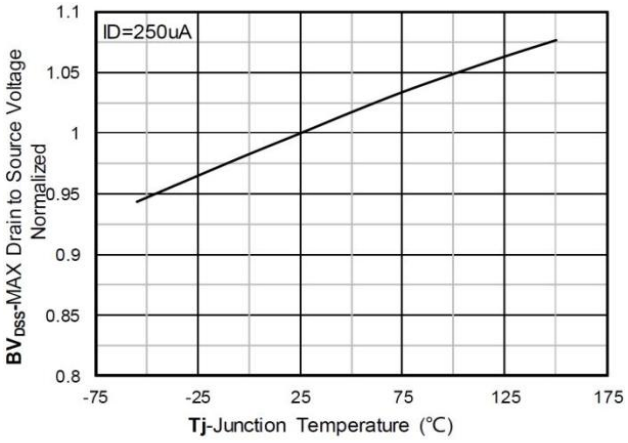
Typical Characteristics



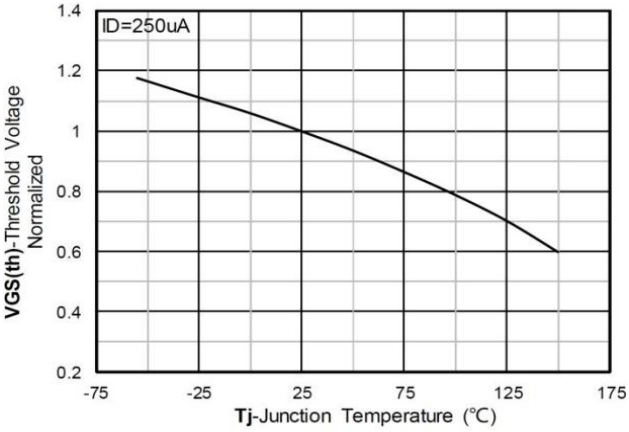
RDS(on) VS Drain Current



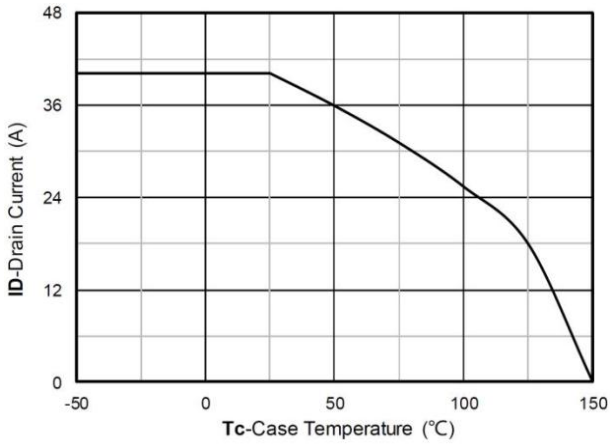
Forward characteristics of reverse diode



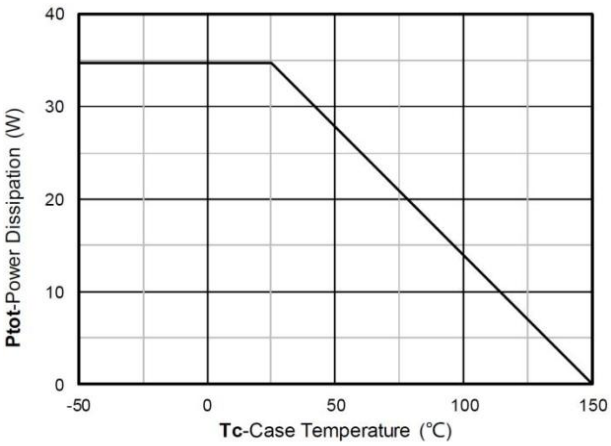
Normalized breakdown voltage



Normalized Threshold voltage

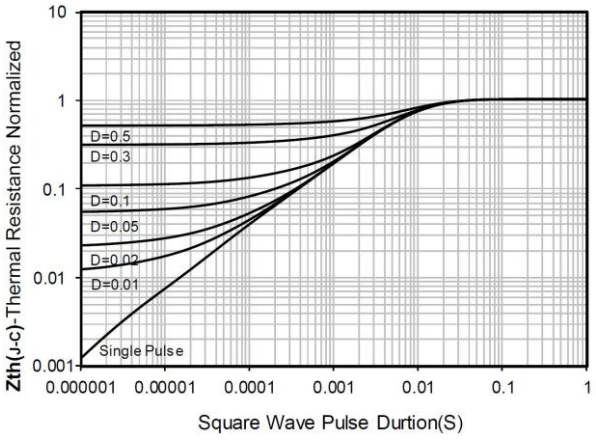


Current dissipation

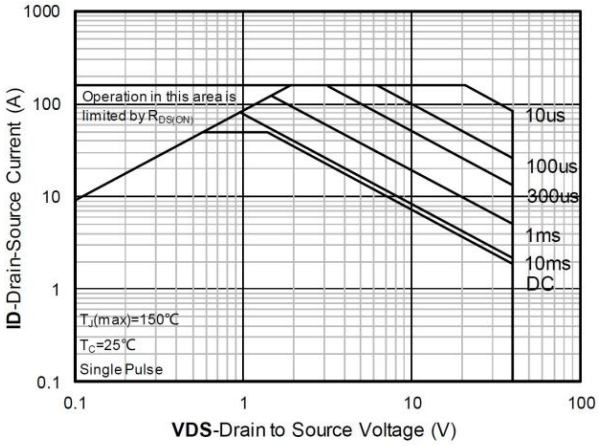


Power dissipation

Typical Characteristics

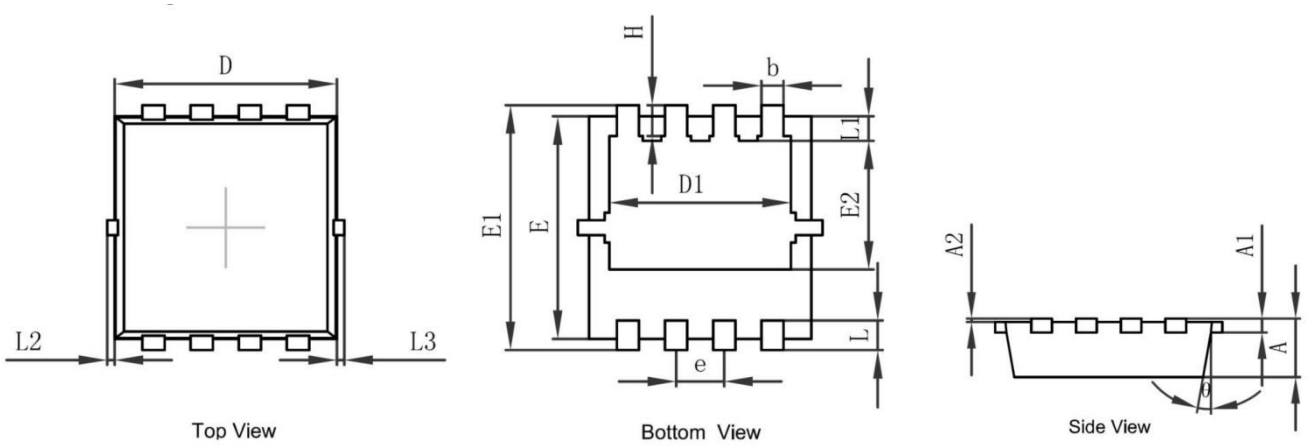


Normalized Maximum Transient Thermal Impedance



Safe Operation Area

PDFN3*3-8L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	0.000	0.050	0.000	0.002
D	2.900	3.200	0.114	0.126
D1	2.300	2.600	0.091	0.102
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0.000	0.100	0.000	0.004
L3	0.000	0.100	0.000	0.004
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°