ASR015N04S

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
40V	1.5mΩ@10V	120A

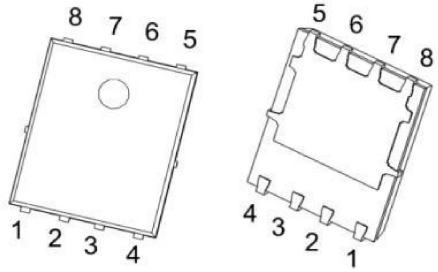
Feature

- Fast Switching
- Low Gate Charge and Rdson
- Advanced Split Gate Trench Technology

Application

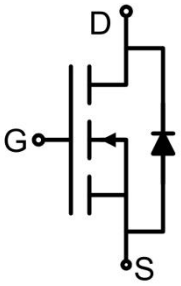
- Power Switching Application
- PWM Application
- DC-DC Converter

Package

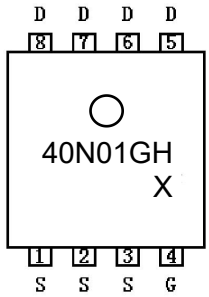


PDFN5*6-8L

Circuit diagram



Marking



Absolute maximum ratings (Ta=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	120	A
Continuous Drain Current(T_C =100℃)	I_D(100℃)	80	A
Pulsed Drain Current	I_{DM}	480	A
Power Dissipation (T_C =25℃)	P_D	130	W
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	0.96	℃/W
Single pulse avalanche energy[1)]	E_{AS}	1089	mJ
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (Ta=25℃, unless otherwise noted)

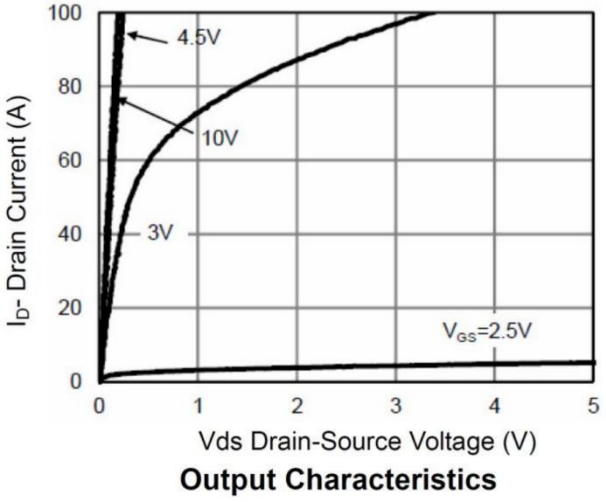
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	40			V
Zero gate voltage drain current	I_{DSS}	V_{DS}=32V,V_{GS}=0V,T_J=25℃			1	μA
Gate-body leakage current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	2.0	2.8	4.0	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=20A		1.2	1.5	mΩ
Dynamic characteristics[2)]						
Input Capacitance	C_{iss}	V_{DS}=20V, V_{GS}=0V, f =1MHz		5750		pF
Output Capacitance	C_{oss}			1950		
Reverse Transfer Capacitance	C_{rss}			69		
Total Gate Charge	Q_g	V_{DS}=20V, V_{GS}=20V, I_D=30A		126		nC
Gate-Source Charge	Q_{gs}			18		
Gate-Drain Charge	Q_{gd}			15.5		
Turn-on delay time	$t_{d(on)}$	V_{DD}=20V, V_{GS}=20V, I_D=30A, R_G=3.0Ω		18		nS
Turn-on rise time	t_r			5		
Turn-off delay time	$t_{d(off)}$			52		
Turn-off fall time	t_f			9.5		
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	V_{GS}=0V, I_S=1A,T_J =25℃			1.2	V
Diode Continuous Current	I_S				120	A
Reverse recover time	T_{rr}	I_S=20A,di/dt=100A/us, T_J=25℃		29		nS
Reverse recovery charge	Q_{rr}			113		nC

Notes:

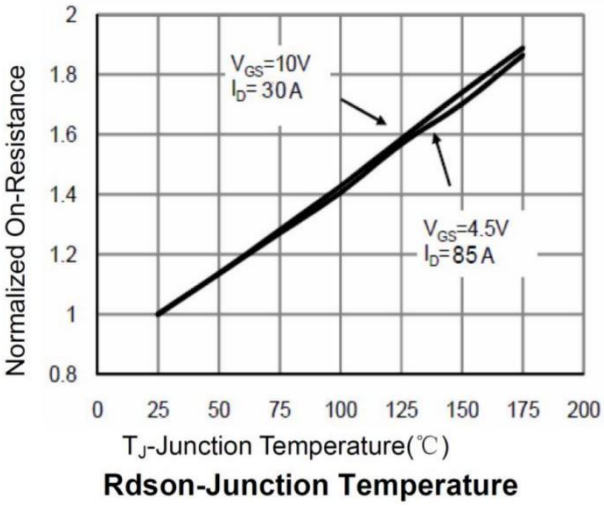
1) The EAS Test condition is VDD=20V,VGS =10V,L = 0.5mH, Rg=25Ω

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

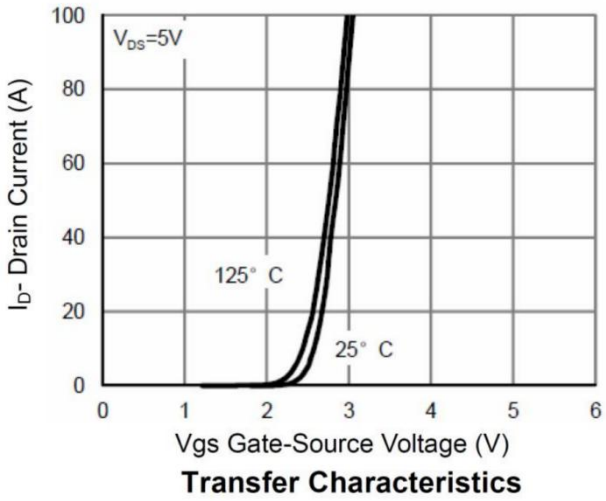
Typical Characteristics



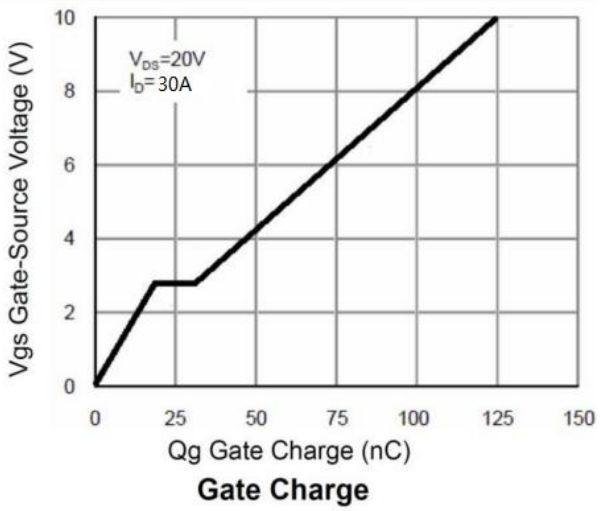
Output Characteristics



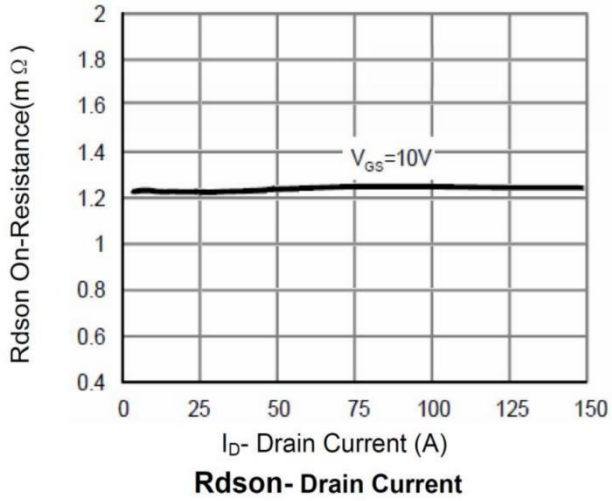
Rdson-Junction Temperature



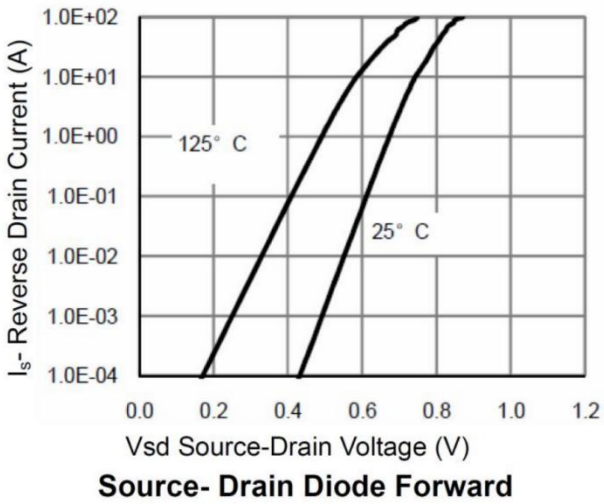
Transfer Characteristics



Gate Charge

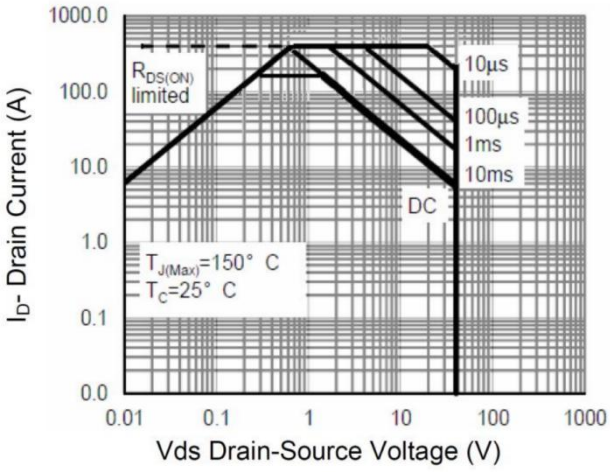


Rdson- Drain Current

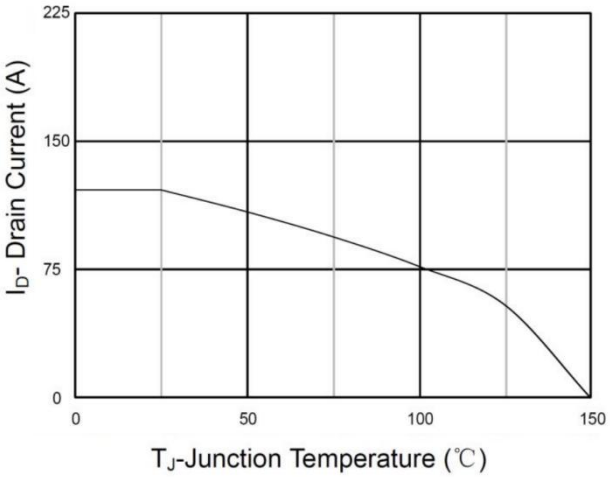


Source- Drain Diode Forward

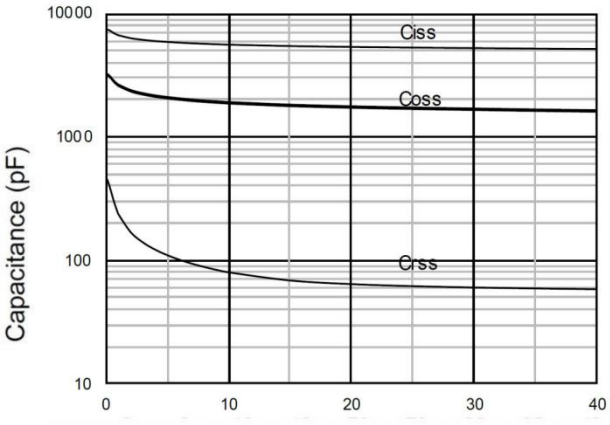
Typical Characteristics



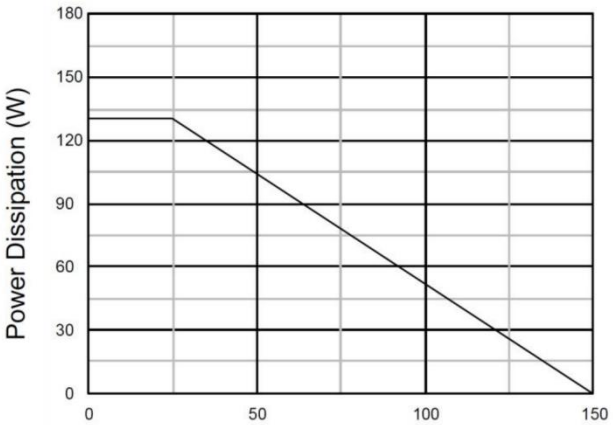
Safe Operation Area



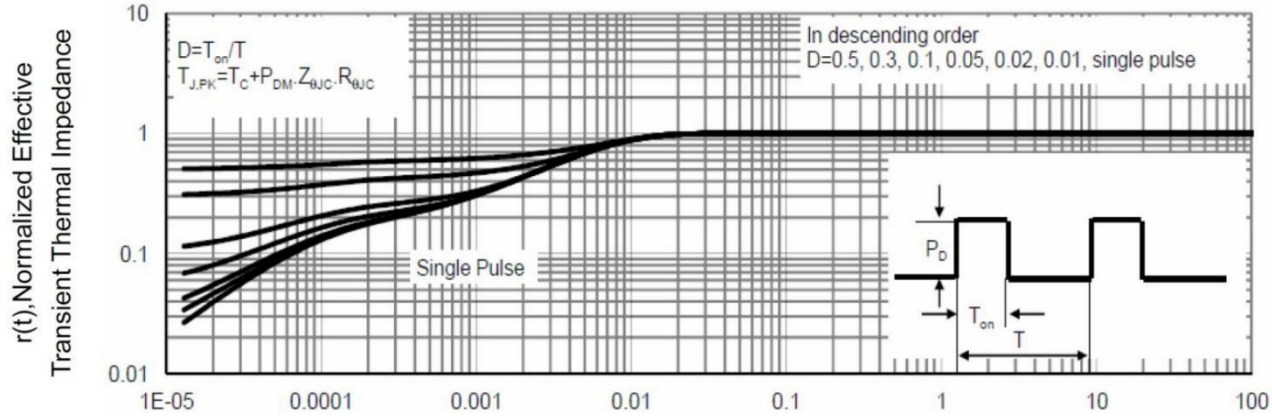
Current De-rating



Capacitance vs Vds

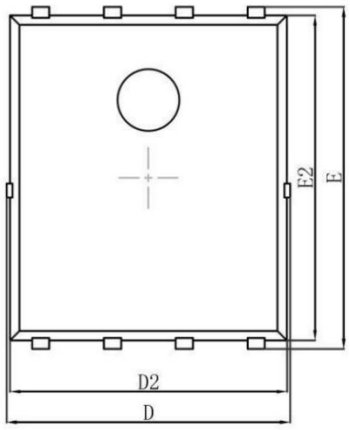


Power De-rating

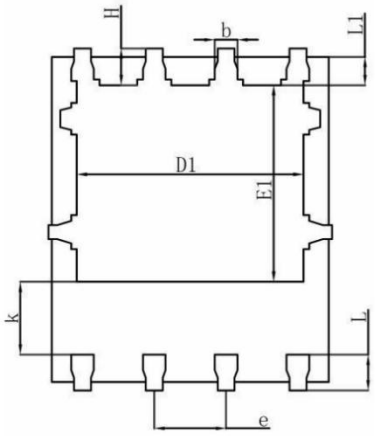


Normalized Maximum Transient Thermal Impedance

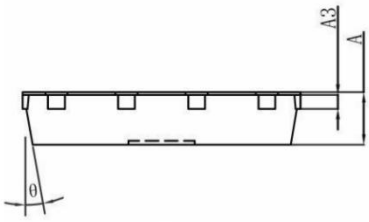
PDFN5*6-8L Package Information



Top View



Bottom View



Side View

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°