

### Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D$
40V	1.2mΩ@10V	120A

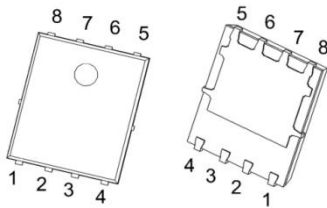
### Feature

- Fast Switching
- Low Gate Charge and Rdson
- Advanced Split Gate Trench Technology
- 100% Single Pulse avalanche energy Test

### Applications

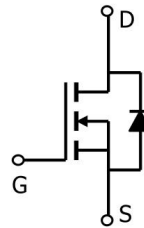
- Power switching application
- PWM Application
- DC-DC Converter

### Package

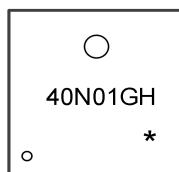


PDFN5X6-8L

### Circuit diagram



### Marking



40N01GH  
\*

=Device Code  
=Month Code

**Absolute maximum ratings (Ta=25°C, unless otherwise noted)**

Parameter	Symbol	Rating	Units
Drain-Source Voltage	$V_{DS}$	40	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current (Tc=25°C, Package Limit)	$I_D$	120	A
Continuous Drain Current (Tc=25°C, Silicon Limit)	$I_D$	200	A
Pulsed Drain Current <sup>2</sup>	$I_{DM}$	480	A
Single Pulse Avalanche Energy <sup>3</sup>	$E_{AS}$	490	mJ
Total Power Dissipation <sup>4</sup> (Tc=25°C)	$P_D$	98	W
Thermal Resistance Junction-Case <sup>1</sup>	$R_{\theta JC}$	1.27	°C/W
Storage Temperature Range	$T_{STG}$	-55 to 150	°C
Operating Junction Temperature Range	$T_J$	-55 to 150	°C

**Electrical characteristics (Ta=25°C, unless otherwise noted)**

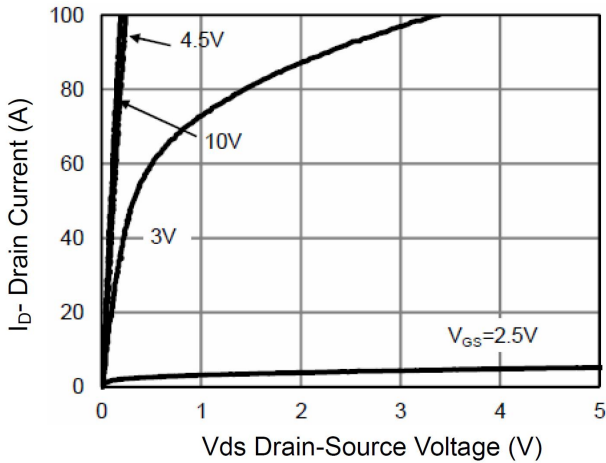
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	40	---	---	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=32V, V_{GS}=0V, T_J=25^\circ C$	---	---	1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	2.0	2.8	4.0	V
Static Drain-Source On-Resistance <sup>2</sup>	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$	---	1.2	1.5	m $\Omega$
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=40V, V_{GS}=0V, f=1MHz$	---	7107	---	pF
Output Capacitance	$C_{oss}$		---	1951	---	
Reverse Transfer Capacitance	$C_{rss}$		---	116	---	
<b>Switching Characteristics</b>						
Total Gate Charge	$Q_g$	$V_{DS}=20V, V_{GS}=10V, I_D=85A$	---	119	---	nC
Gate-Source Charge	$Q_{gs}$		---	19	---	
Gate-Drain Charge	$Q_{gd}$		---	12	---	
Turn-On Delay Time	$T_{d(on)}$	$V_{DD}=20V, V_{GS}=10V, R_G=1.6\Omega, I_D=85A$	---	14	---	ns
Rise Time	$T_r$		---	8	---	
Turn-Off Delay Time	$T_{d(off)}$		---	56	---	
Fall Time	$T_f$		---	10	---	
<b>Source-Drain Diode Characteristics</b>						
Diode Forward Voltage <sup>2</sup>	$V_{SD}$	$V_{GS}=0V, I_S=1A, T_J=25^\circ C$	---	---	1.2	V

Note :

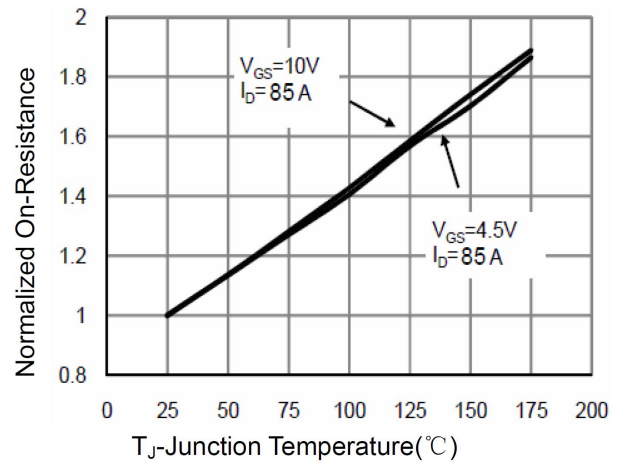
- The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper.
- The data tested by pulsed, pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$
- The EAS data shows Max. rating. The test condition is  $V_{DD}=20V, V_{GS}=10V, L=0.5mH$
- The power dissipation is limited by 150°C junction temperature



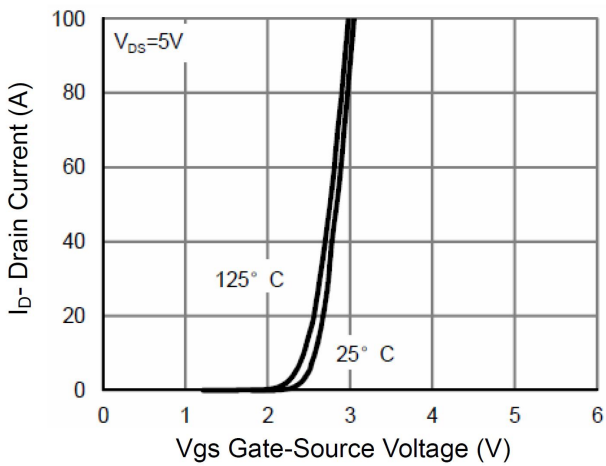
Typical Characteristics



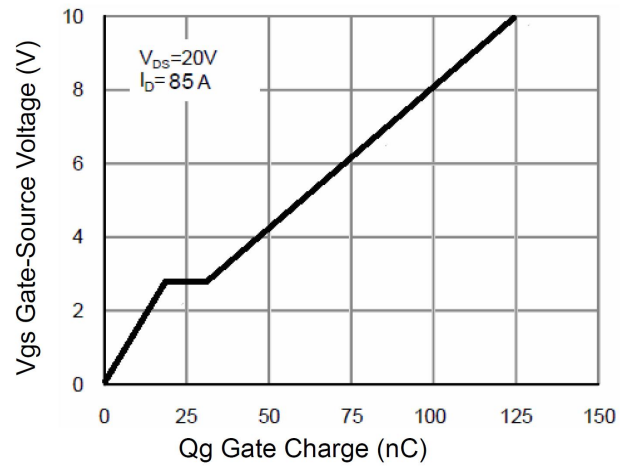
Output Characteristics



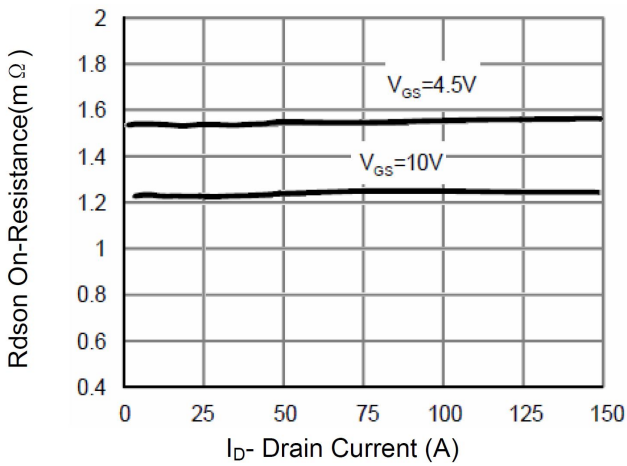
Rdson-Junction Temperature



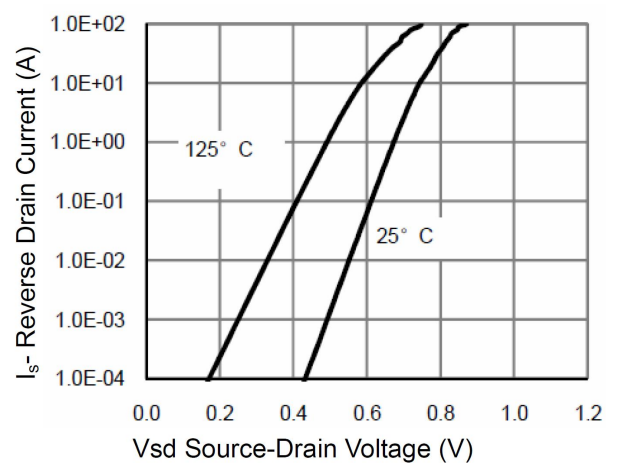
Transfer Characteristics



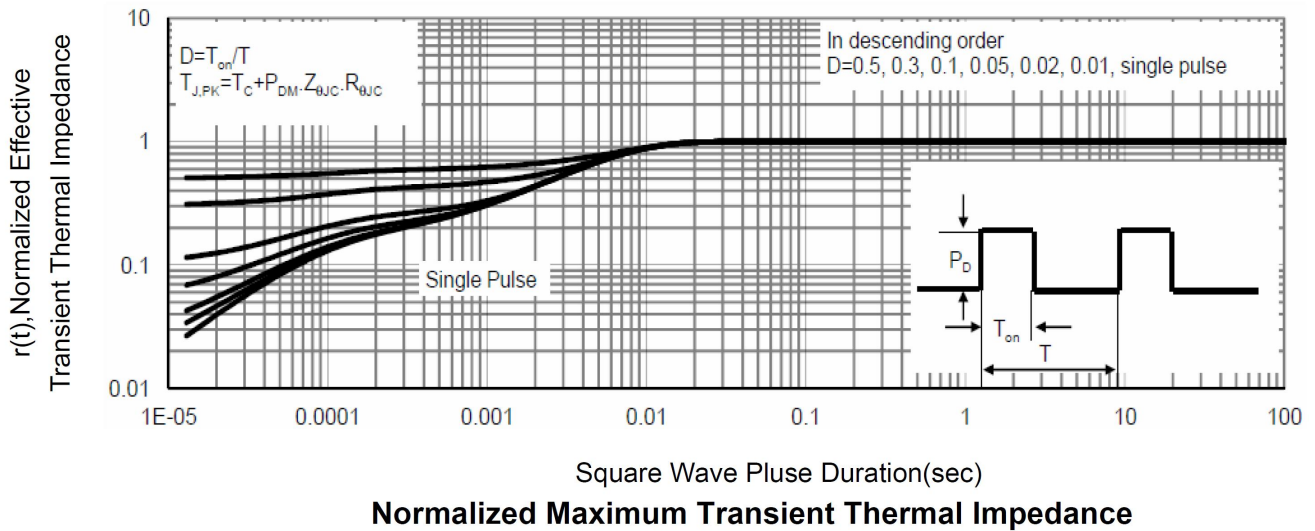
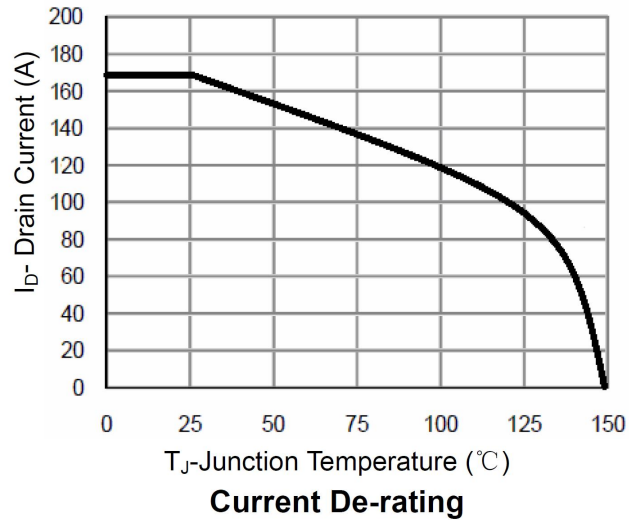
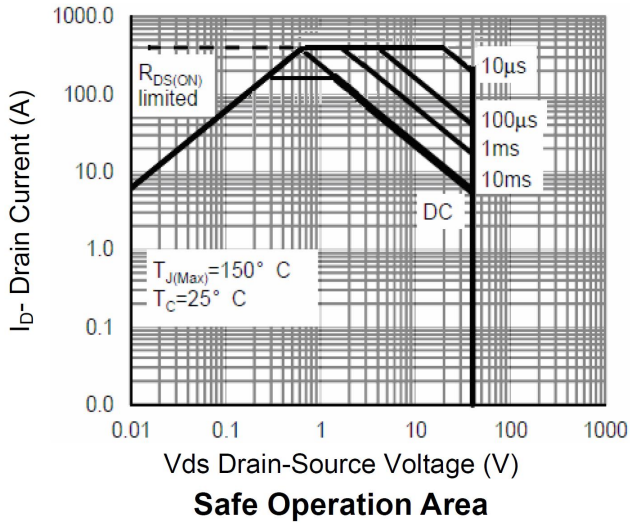
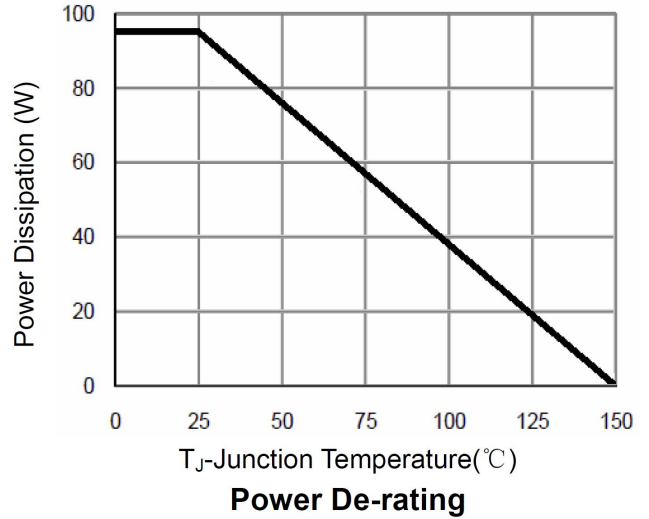
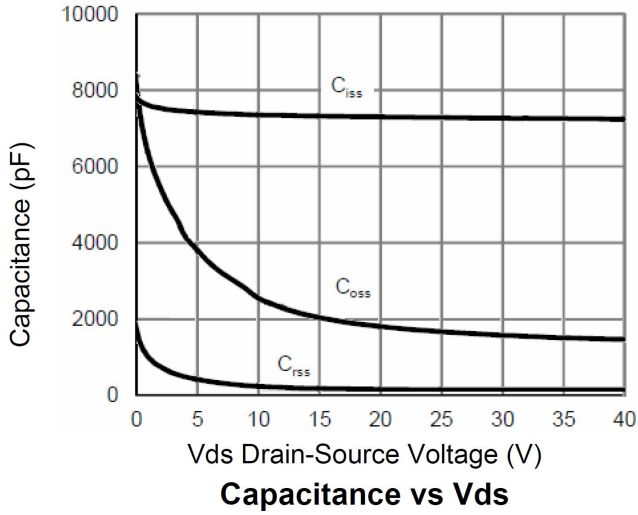
Gate Charge



Rdson- Drain Current

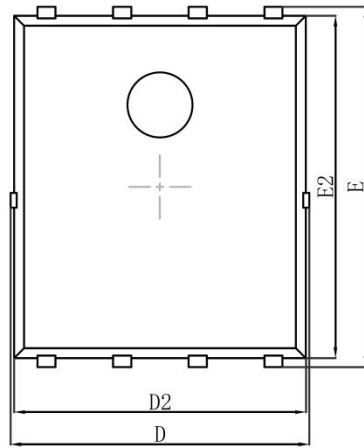


Source- Drain Diode Forward

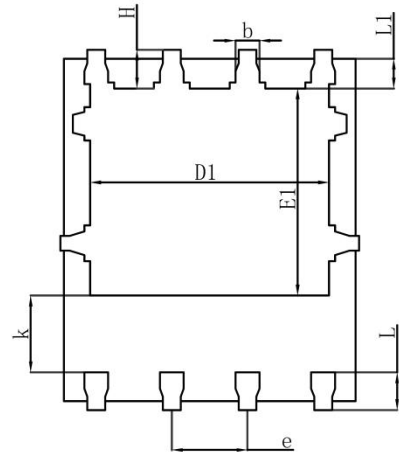




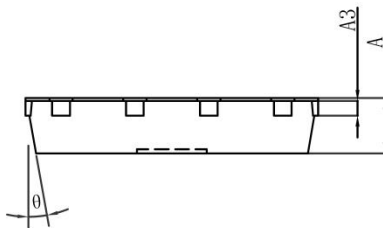
PDFN5X6-8L Package Outline Dimensions



Top View  
[顶视图]



Bottom View  
[背视图]



Side View  
[侧视图]

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°

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