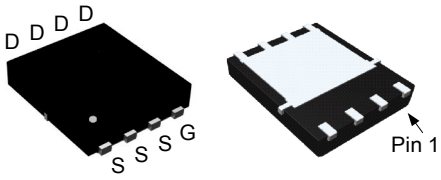
Features

- 20V/120A,
  $R_{DS(ON)}$ = 1 .6mΩ(typ.) @ V_{GS} =4.5V
  $R_{DS(ON)}$ = 2 .5mΩ(typ.) @ V_{GS} =2.5V
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

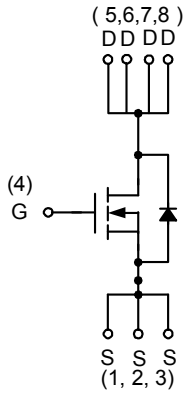
Applications

- Power Management in Notebook Computer, Portable Equipment and Battery Powered Systems.

Pin Description



PDFN5*6-8L



N-Channel MOSFET

Absolute Maximum Ratings (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
Common Ratings (T_A=25°C Unless Otherwise Noted)				
V_{DSS}	Drain-Source Voltage		20	V
V_{GSS}	Gate-Source Voltage		±12	
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	
I_S	Diode Continuous Forward Current	T_C=25°C	120	A
I_D [a]	Continuous Drain Current	T_C=25°C	120	A
		T_C=100°C	48	
I_{DM} [b]	Pulsed Drain Current	T_C=25°C	360	
P_D	Maximum Power Dissipation	T_C=25°C	35	W
		T_C=100°C	14	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	Steady State	3.5	°C/W
I_D	Continuous Drain Current	T_A=25°C	17	A
		T_A=70°C	6.8	
P_D [c]	Maximum Power Dissipation	T_A=25°C	1.6	W
		T_A=70°C	1	
$R_{\theta JA}$ [d]	Thermal Resistance-Junction to Ambient	Steady State	78	°C/W
I_{AS} [e]	Avalanche Current, Single pulse (L=0.1mH)		45	A
E_{AS} [e]	Avalanche Energy, Single pulse (L=0.1mH)		100	mJ

Note a: Package is limited by 50A
Note b: Pulse width limited by max. junction temperature.
Note c: $R_{\theta JA}$ steady state=999s.
Note d: $R_{\theta JA}$ steady state=999s. $R_{\theta JA}$ is measured with the device mounted on 1in2, Fr-4 board with 2oz.Copper.
Note e: UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature Tj=25°C).

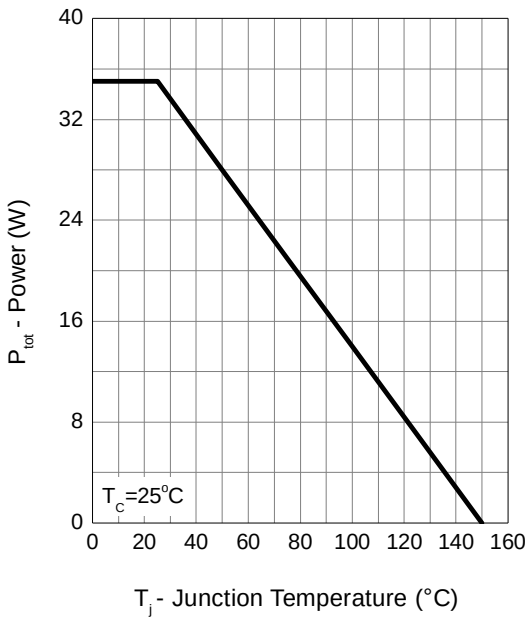
Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=16V, V_{GS}=0V	-	-	1	μA
		T_J=85°C	-	-	30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	0.5	0.7	1	V
I_{GSS}	Gate Leakage Current	V_{GS}=±12V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$ [g]	Drain-Source On-state Resistance	V_{GS}=4.5V, I_{DS}=13.5A	-	1.6	2.0	mΩ
		V_{GS}=2.5V, I_{DS}=10A	-	2.5	3.0	
Gfs	Forward Transconductance	V_{DS}=5V, I_{DS}=10A	-	34	-	S
Diode Characteristics						
V_{SD} [d]	Diode Forward Voltage	I_{SD}=2A, V_{GS}=0V	-	0.7	1.1	V
t_{rr}	Reverse Recovery Time	I_{SD}=13.5A, dI_{SD}/dt=100A/μs	-	18	-	ns
Q_{rr}	Reverse Recovery Charge		-	6.2	-	nC
Dynamic Characteristics [g]						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,f=1MHz	-	2	3.6	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=10V, Frequency=1.0MHz	-	3775	4910	pF
C_{oss}	Output Capacitance		-	730	-	
C_{rss}	Reverse Transfer Capacitance		-	525	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=10V, R_L=10Ω, I_{DS}=1A, V_{GEN}=10V, R_G=6Ω	-	14	26	ns
t_r	Turn-on Rise Time		-	14.5	27	
$t_{d(OFF)}$	Turn-off Delay Time		-	130	234	
t_f	Turn-off Fall Time		-	70	126	
Gate Charge Characteristics [g]						
Q_g	Total Gate Charge	V_{DS}=10V, V_{GS}=4.5V, I_{DS}=13.5A	-	35	50	nC
Q_{gs}	Gate-Source Charge		-	4.7	-	
Q_{gd}	Gate-Drain Charge		-	11.5	-	

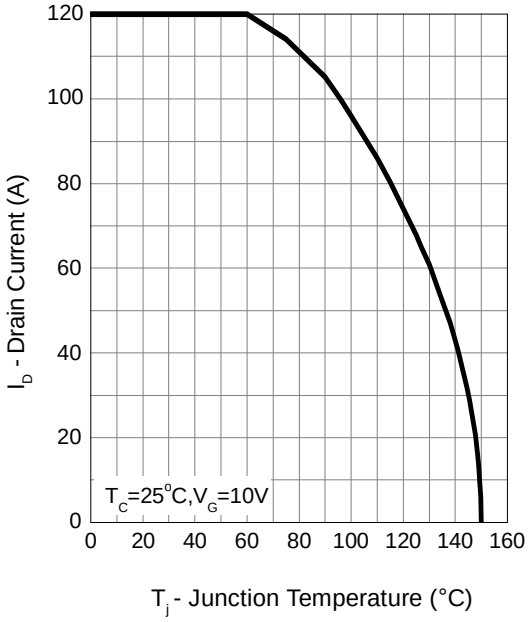
Note f: Pulse test; pulse width≤300μs, duty cycle≤2%.
Note g: Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

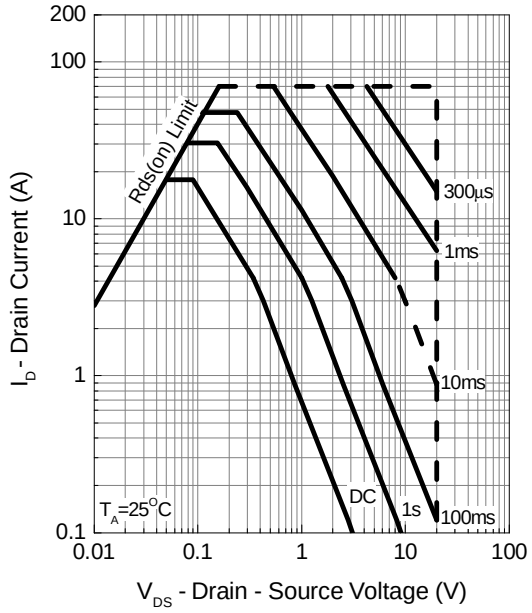
Power Dissipation



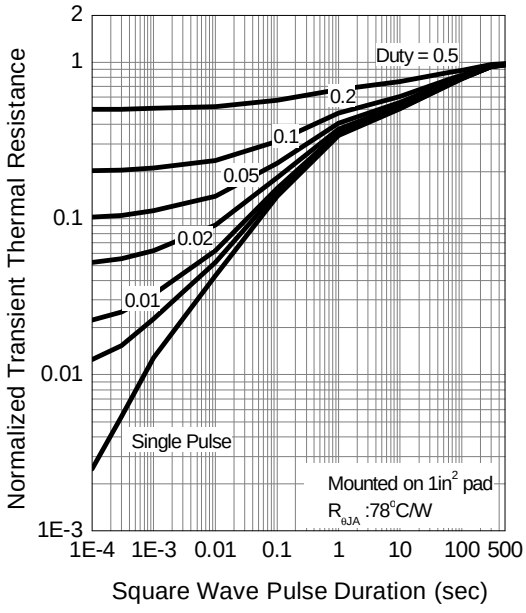
Drain Current



Safe Operation Area

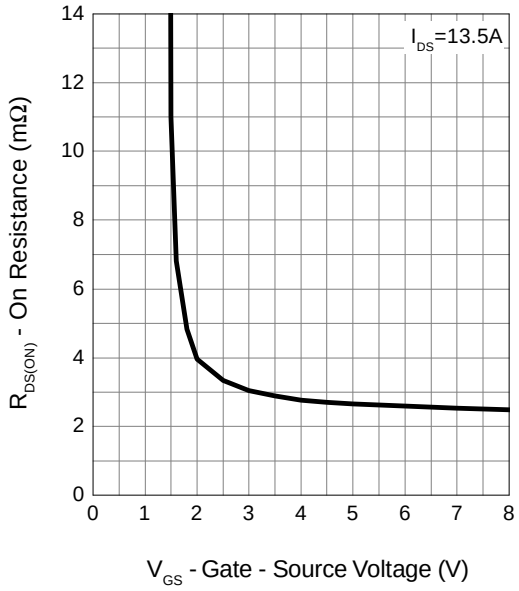


Thermal Transient Impedance

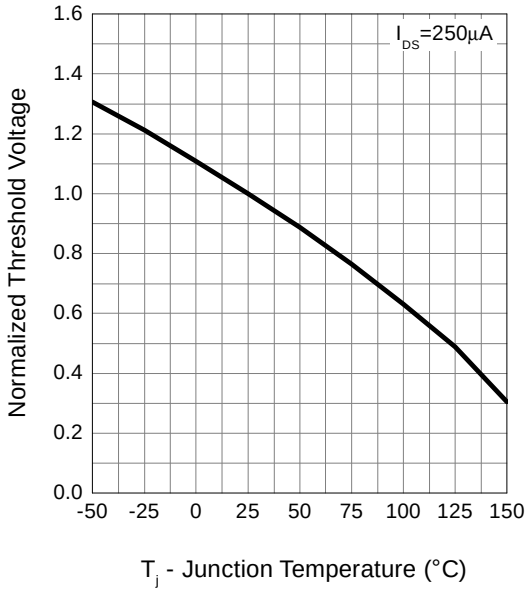


Typical Operating Characteristics (Cont.)

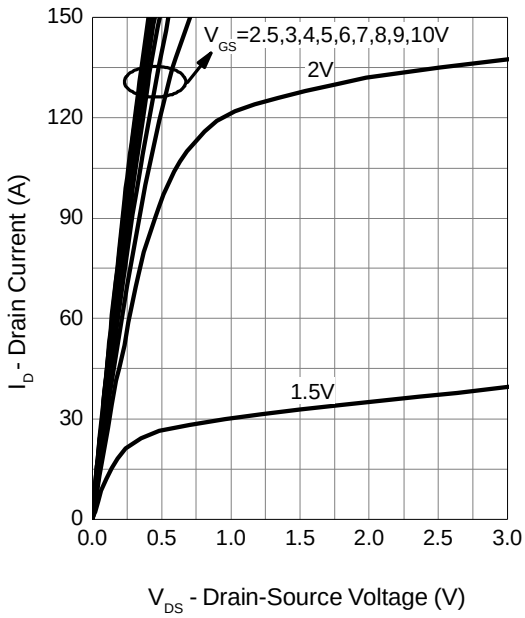
Gate-Source On Resistance



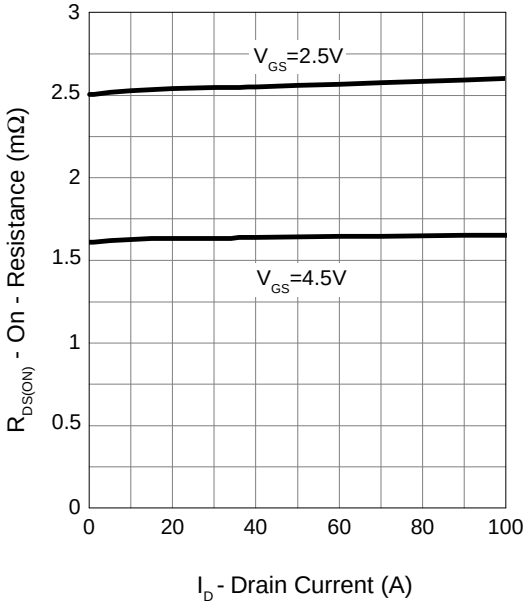
Gate Threshold Voltage



Output Characteristics

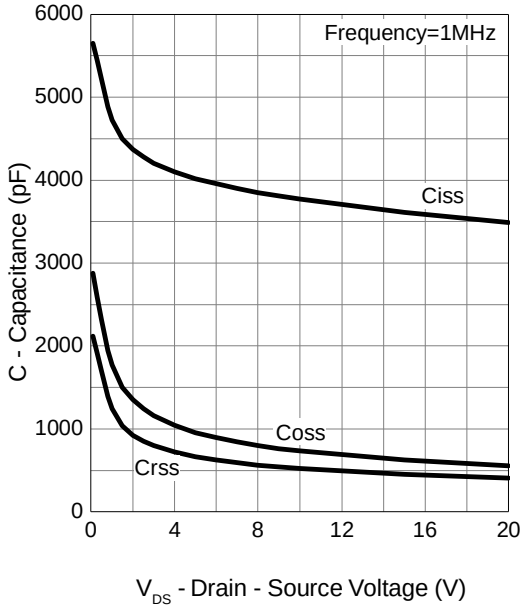


Drain-Source On Resistance

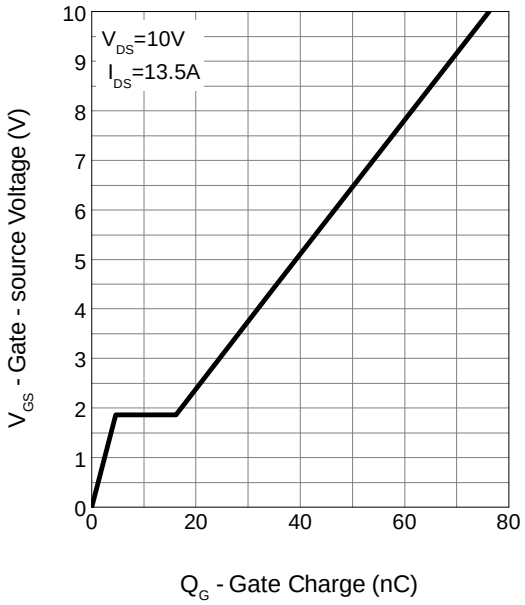


Typical Operating Characteristics (Cont.)

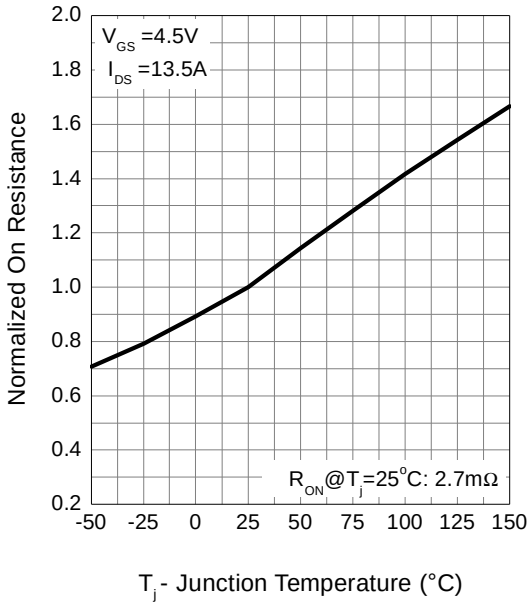
Capacitance



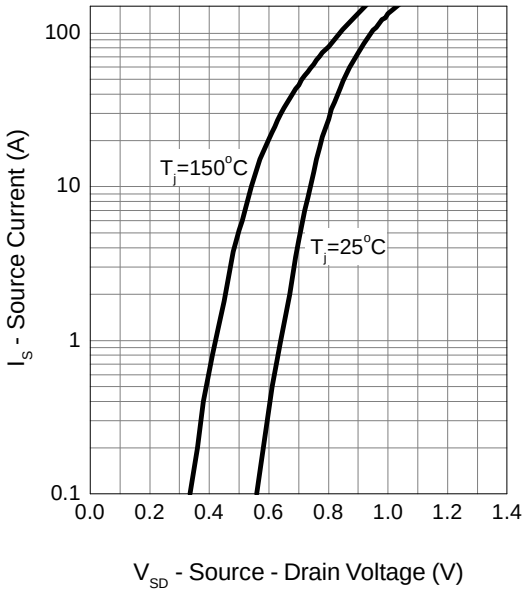
Gate Charge



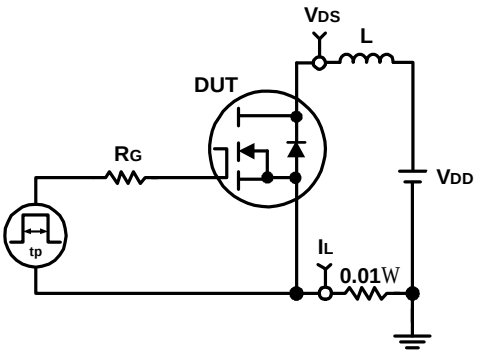
Drain-Source On Resistance

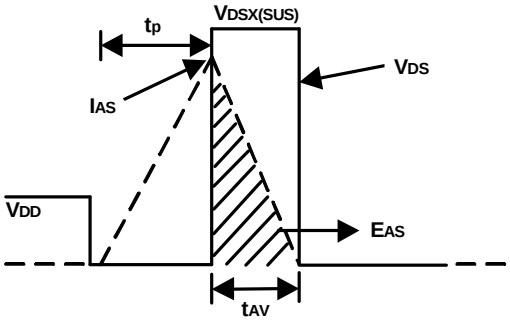


Source-Drain Diode Forward

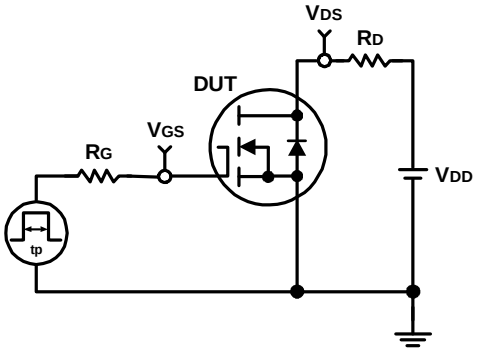


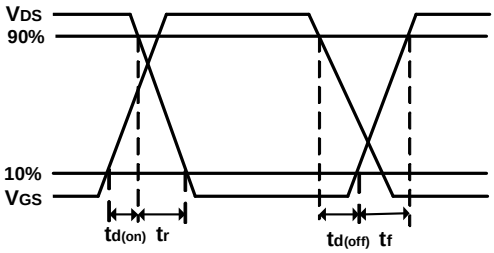
Avalanche Test Circuit and Waveforms





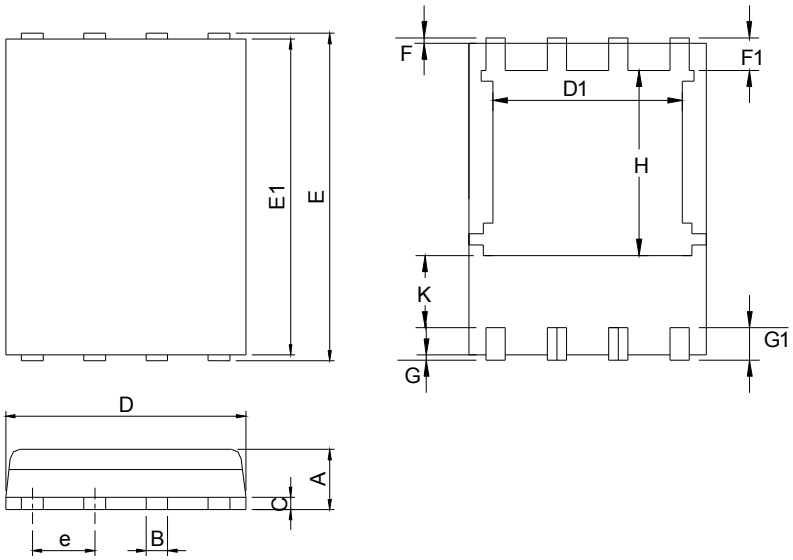
Switching Time Test Circuit and Waveforms





Package Information

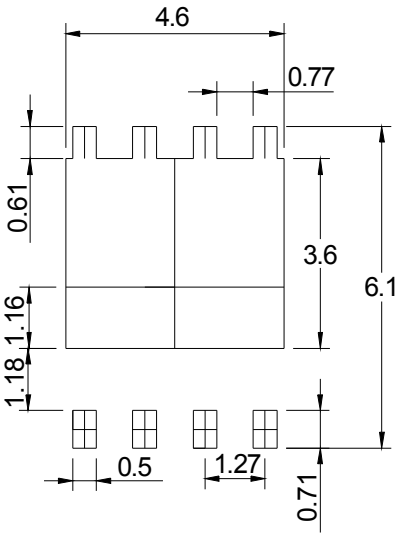
PDFN5*6-8L



SYMBOL	PDFN5*6-8L			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.90	1.20	0.035	0.047
B	0.3	0.51	0.012	0.020
C	0.19	0.25	0.007	0.010
D	4.80	5.30	0.189	0.209
D1	4.00	4.40	0.157	0.173
E	5.90	6.20	0.232	0.244
E1	5.50	5.80	0.217	0.228
e	1.27 BSC		0.050 BSC	
F	0.05	0.30	0.002	0.012
F1	0.35	0.75	0.014	0.030
G	0.05	0.30	0.002	0.012
G1	0.35	0.75	0.014	0.030
H	3.34	3.9	0.131	0.154
K	0.762	-	0.03	-

Note : 1.Dimension D, D1,D2 and E1 do not include mold flash or protrusions.
Mold flash or protrusions shall not exceed 10 mil.

RECOMMENDED LAND PATTERN



UNIT: mm