

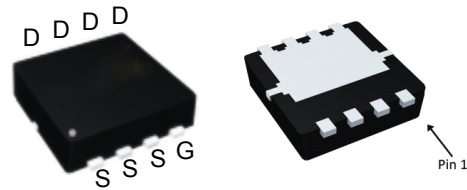
Features

- 20V/90A,
 $R_{DS(ON)} = 1.8m\Omega(\text{typ.}) @ V_{GS} = 4.5V$
 $R_{DS(ON)} = 3m\Omega(\text{typ.}) @ V_{GS} = 2.5V$
 $R_{DS(ON)} = 4m\Omega(\text{typ.}) @ V_{GS} = 1.8V$
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available
(RoHS Compliant)

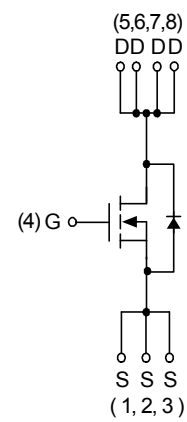
Applications

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

Pin Description



PDFN3.3x3.3-8L



N-Channel MOSFET

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ 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	90	A
I _D ^a	Continuous Drain Current	T _C =25°C	90	A
		T _C =100°C	68	
I _{DM} ^b	Pulsed Drain Current	T _C =25°C	270	
P _D	Maximum Power Dissipation	T _C =25°C	35	W
		T _C =100°C	14	
R _{θJC}	Thermal Resistance-Junction to Case	Steady State	3.5	°C/W
R _{θJA} ^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 $T_J=25^\circ\text{C}$).

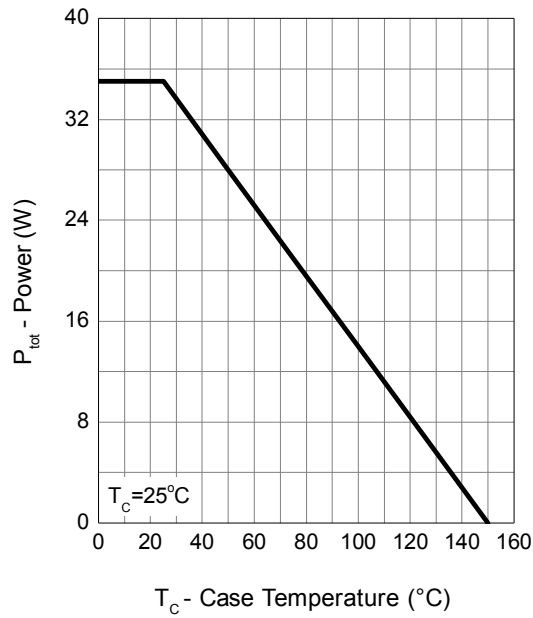
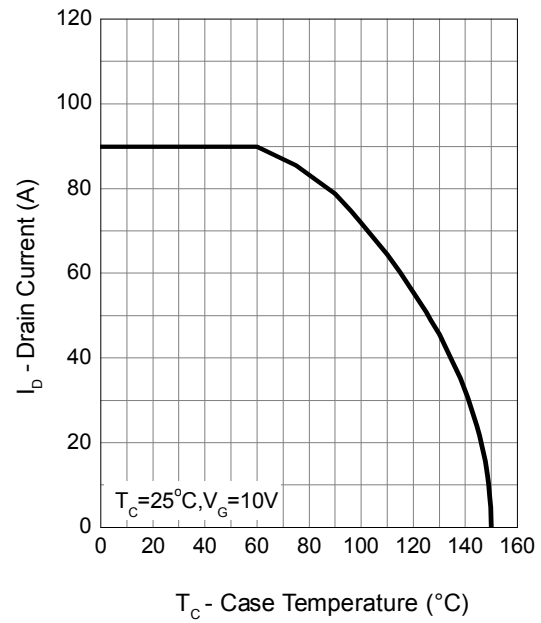
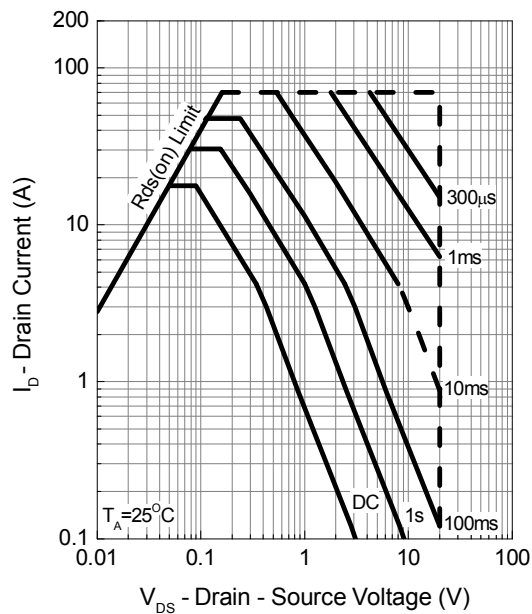
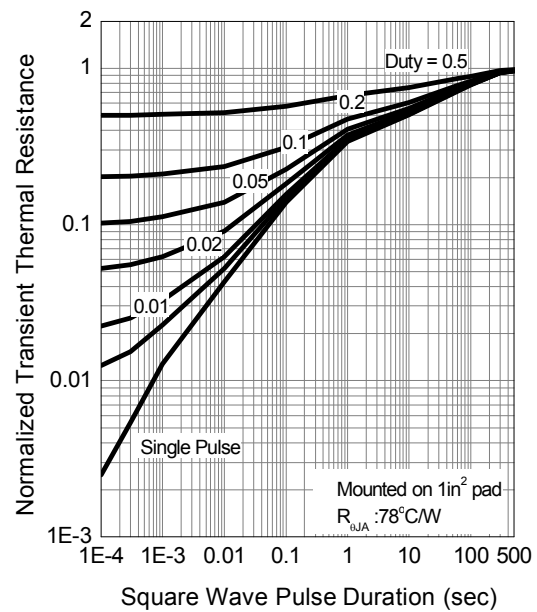
Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

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 T _J =85°C	-	-	1 30	μA
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	-	-	±10	μA
R _{DS(ON)} ^g	Drain-Source On-state Resistance	V _{GS} =4.5V, I _{DS} =13.5A	-	1.8	3.0	mΩ
		V _{GS} =2.5V, I _{DS} =10A	-	3	4.5	
		V _{GS} =1.8V, I _{DS} =2A	-	4	7	
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,	-	18	-	ns
Q _{rr}	Reverse Recovery Charge	dI _{SD} /dt=100A/μs	-	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	-	

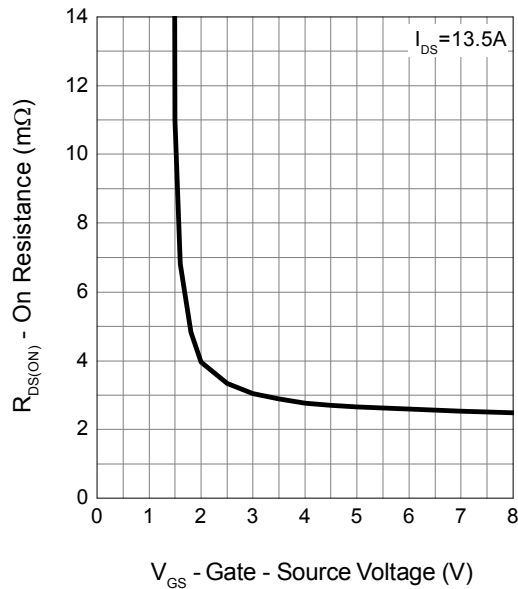
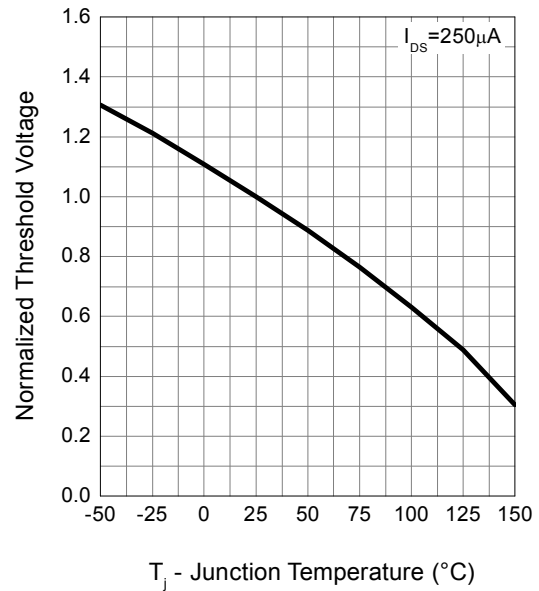
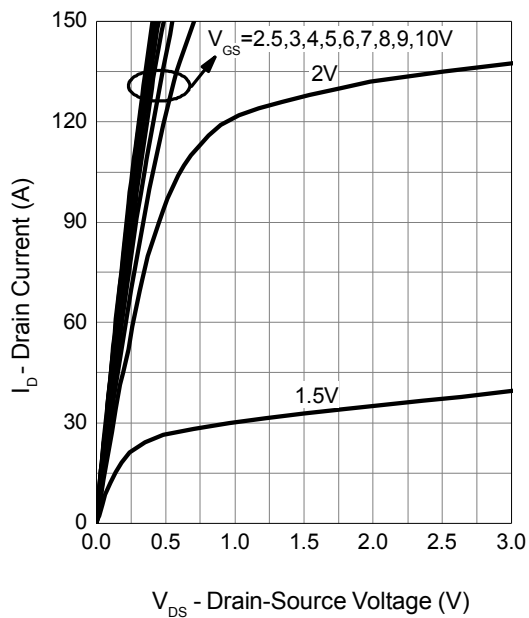
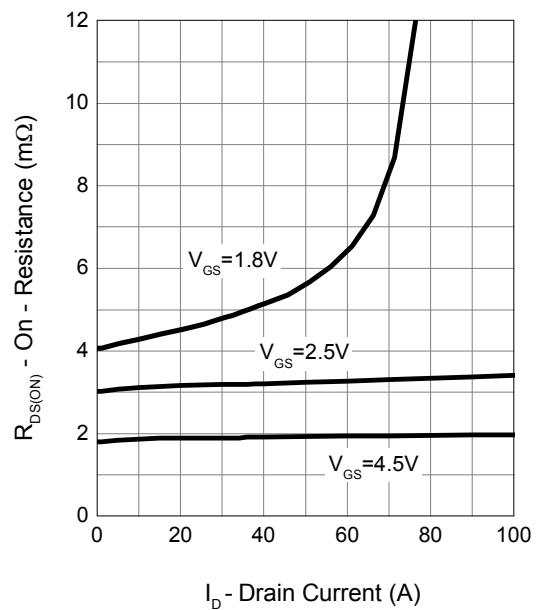
Note f: Pulse test; pulse width≤300μs, duty cycle≤2%.

Note g: Guaranteed by design, not subject to production testing.

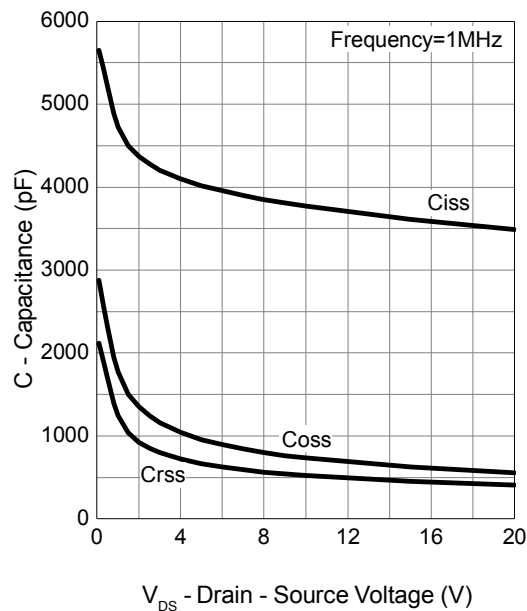
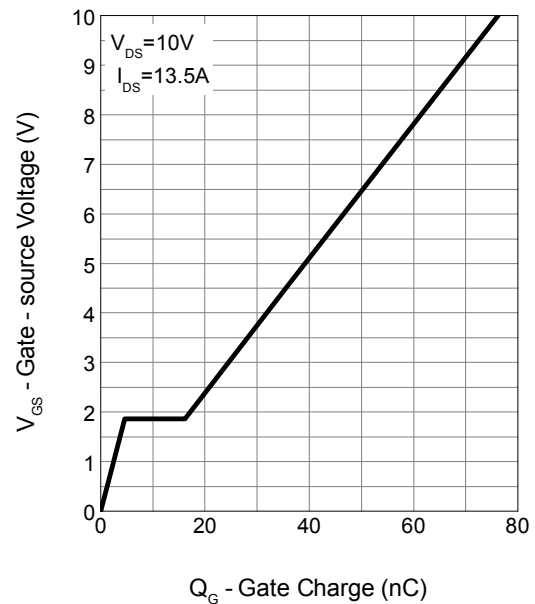
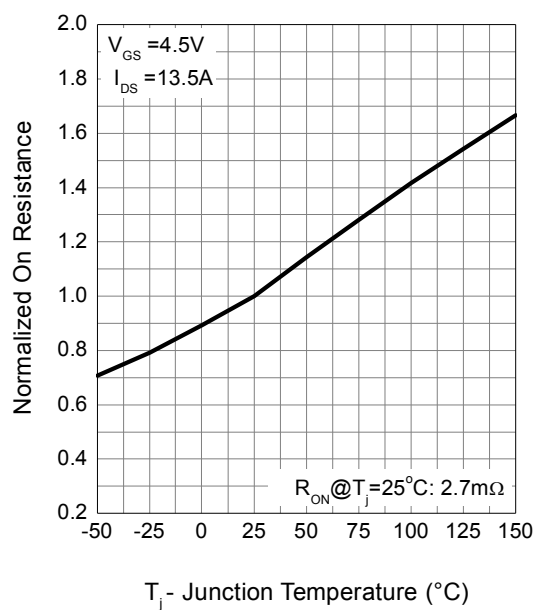
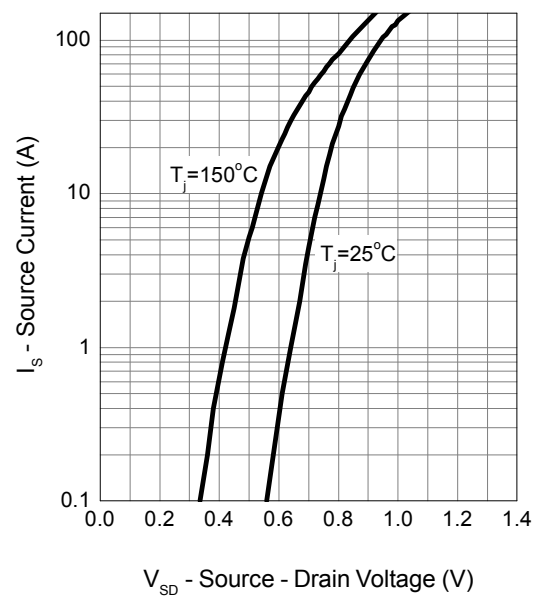
Typical Operating Characteristics

Power Dissipation

Drain Current

Safe Operation Area

Thermal Transient Impedance


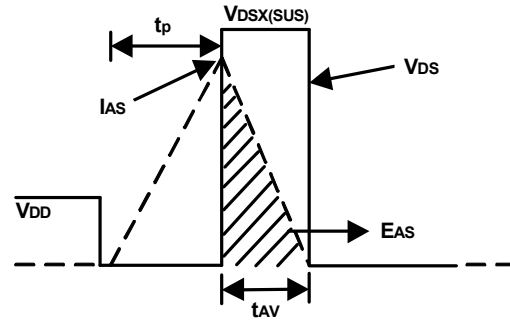
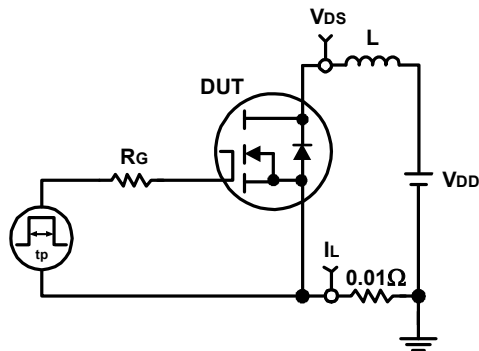
Typical Operating Characteristics (Cont.)

Gate-Source On Resistance

Gate Threshold Voltage

Output Characteristics

Drain-Source On Resistance


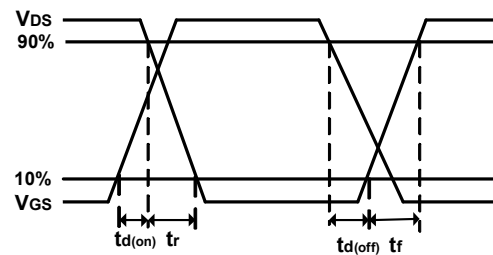
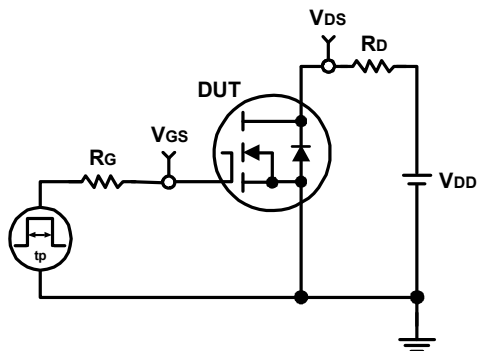
Typical Operating Characteristics (Cont.)

Capacitance

Gate Charge

Drain-Source On Resistance

Source-Drain Diode Forward


Avalanche Test Circuit and Waveforms

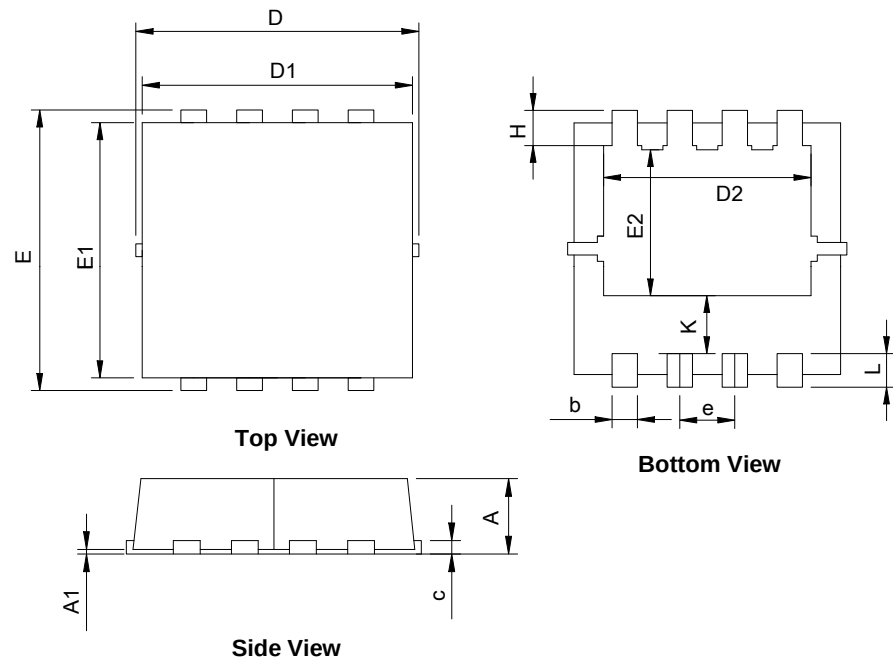


Switching Time Test Circuit and Waveforms



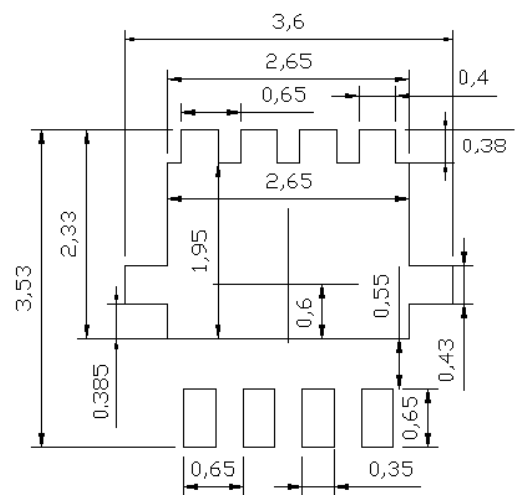
Package Information

PDFN3.3x3.3-8 L



SYMBOL	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.70	1.00	0.028	0.039
A1	0.00	0.05	0.000	0.002
b	0.25	0.35	0.010	0.014
c	0.10	0.25	0.004	0.010
D	3.10	3.50	0.122	0.138
D1	3.05	3.25	0.120	0.128
D2	2.35	2.59	0.093	0.102
E	3.10	3.50	0.122	0.138
E1	2.90	3.10	0.114	0.122
E2	1.64	1.98	0.065	0.078
e	0.65 BSC		0.026 BSC	
H	0.32	0.52	0.013	0.020
K	0.59	0.79	0.023	0.031
L	0.25	0.55	0.010	0.022

RECOMMENDED LAND PATTERN



UNIT: mm