

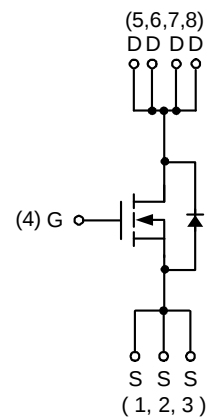
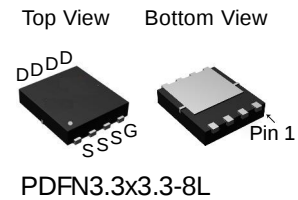
Features

- 30V/40A,
 $R_{DS(ON)} = 6.2 \text{ m}\Omega(\text{Typ.}) @ V_{GS} = 10\text{V}$
 $R_{DS(ON)} = 9\text{m}\Omega(\text{Typ.}) @ V_{GS} = 4.5\text{VR}$
- Avalanche Rated
- 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



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		30	V
V _{GSS}	Gate-Source Voltage		±20	
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	40	A
I _D	Continuous Drain Current	T _C =25°C	40	
		T _C =100°C	30	
P _D	Maximum Power Dissipation	T _C =25°C	24	W
		T _C =100°C	9.6	
R _{θJC}	Thermal Resistance-Junction to Case	Steady State	4.2	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient	t ≤ 10s	42	°C/W
		Steady State	62	
I _{AS} ^c	Avalanche Current, Single pulse (L=0.1mH)		24	A
E _{AS} ^c	Avalanche Energy, Single pulse (L=0.2mH)		28.8	mJ

Note a : Package is limited to 40A.

Note b : Pulse width limited by max. junction temperature.

Note c : UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature $T_J = 25^\circ\text{C}$).

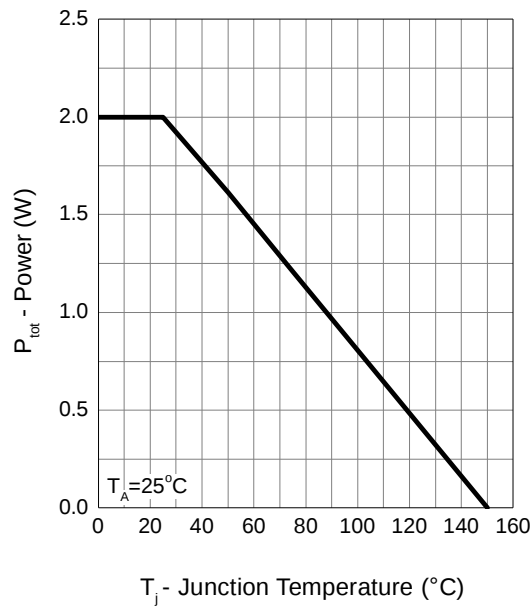
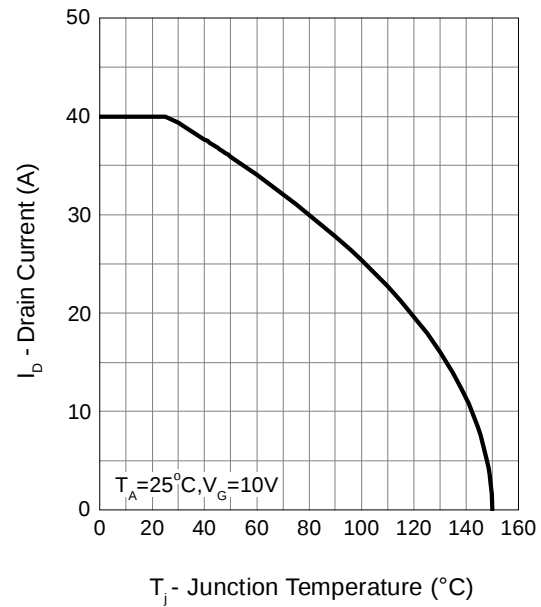
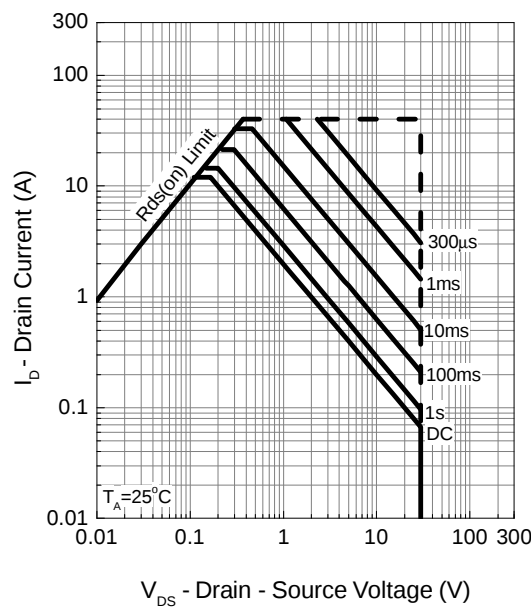
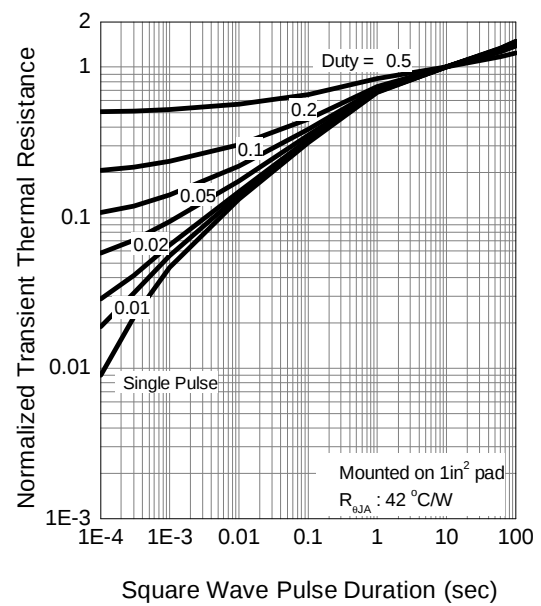
Electrical Characteristics (Cont.) ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =24V, V _{GS} =0V	-	-	1	μA
		T _J =85°C	-	-	30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1.5	1.8	2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^d	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =12A	-	6.2	8	mΩ
		V _{GS} =4.5V, I _{DS} =9A	-	9	13	
Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =2A, V _{GS} =0V	-	0.75	1.1	V
t _{rr} ^e	Reverse Recovery Time	I _{SD} =12A, dI _{SD} /dt=100A/μs	-	6.6	-	ns
t _a	Charge Time		-	3.9	-	
t _b	Discharge Time		-	2.6	-	
Q _{rr} ^e	Reverse Recovery Charge		-	2	-	nC
Dynamic Characteristics ^e						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	2.5	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, Frequency=1.0MHz	592	740	888	pF
C _{oss}	Output Capacitance		133	190	247	
C _{rss}	Reverse Transfer Capacitance		44	74	104	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =15V, R _L =15Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	9	17	ns
t _r	Turn-on Rise Time		-	12	23	
t _{d(OFF)}	Turn-off Delay Time		-	23	42	
t _f	Turn-off Fall Time		-	6	12	
Gate Charge Characteristics ^e						
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =10V, I _{DS} =12A	-	14.5	21	nC
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =4.5V, I _{DS} =12A	-	6.8	9.5	
Q _{gth}	Threshold Gate Charge		-	1.1	1.5	
Q _{gs}	Gate-Source Charge		-	2.4	3.3	
Q _{gd}	Gate-Drain Charge		-	3.9	5.4	

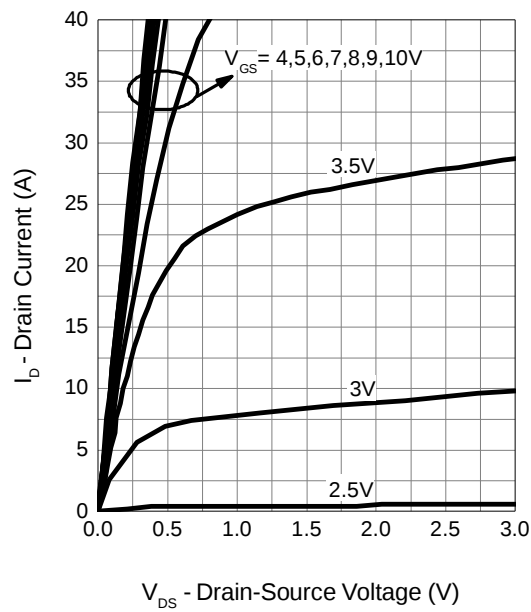
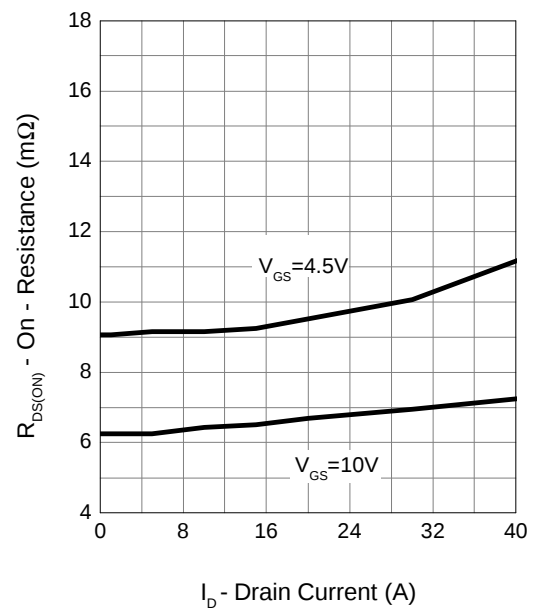
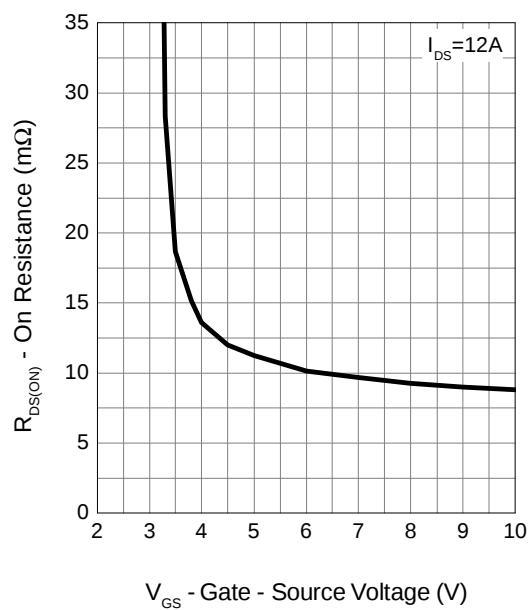
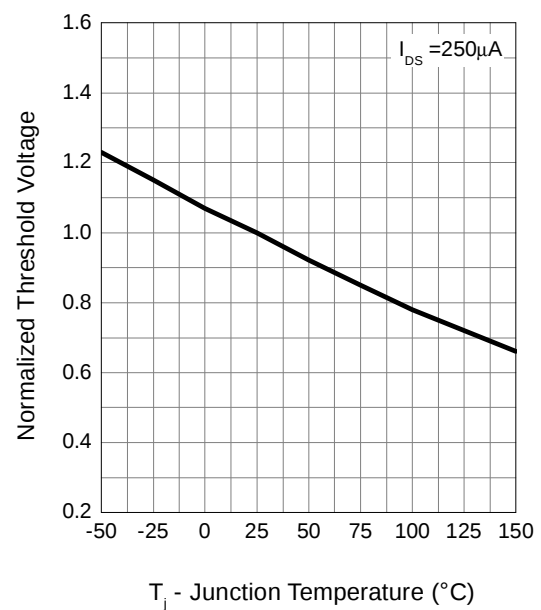
Note d : Pulse test ; pulse width $\leq 300 \mu s$, duty cycle $\leq 2\%$.

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

Typical Operating Characteristics

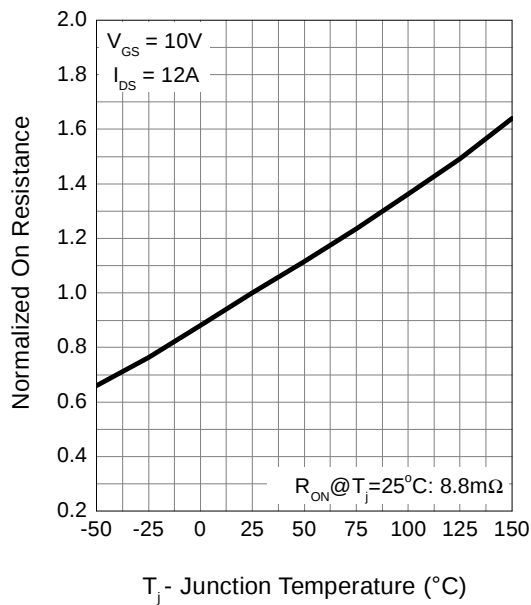
Power Dissipation

Drain Current

Safe Operation Area

Thermal Transient Impedance


Typical Operating Characteristics (Cont.)

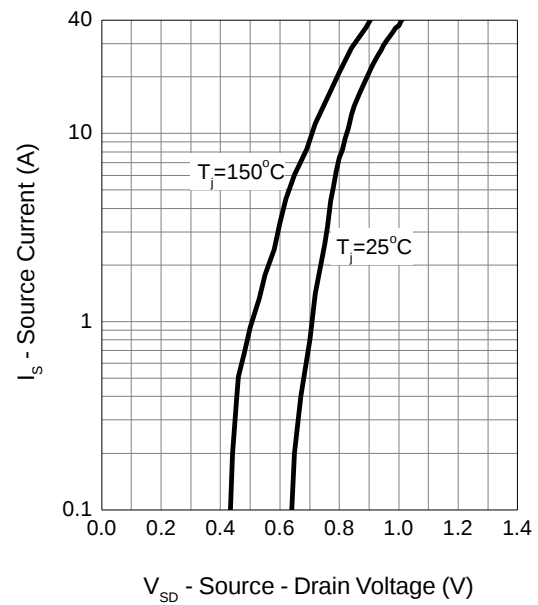
Output Characteristics

Drain-Source On Resistance

Gate-Source On Resistance

Gate Threshold Voltage


Typical Operating Characteristics (Cont.)

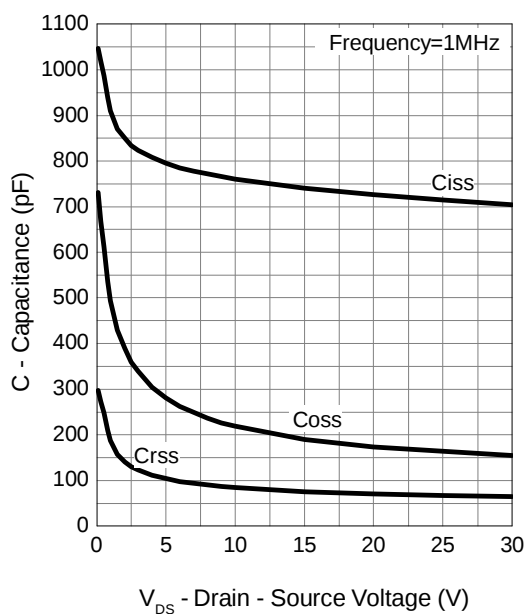
Drain-Source On Resistance



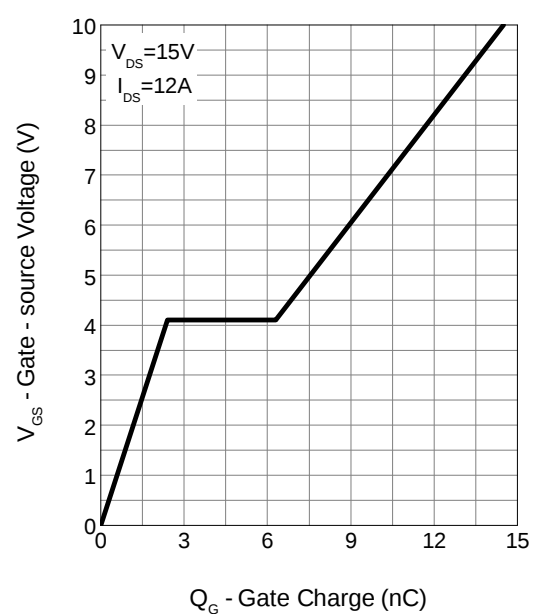
Source-Drain Diode Forward



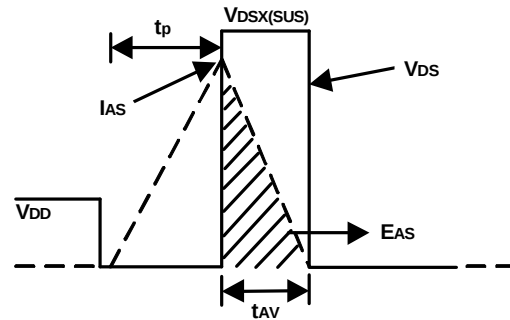
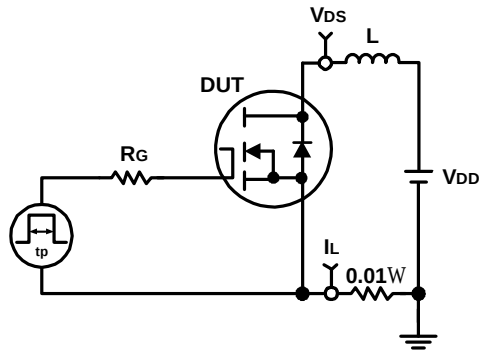
Capacitance



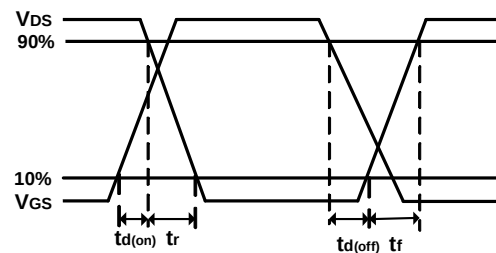
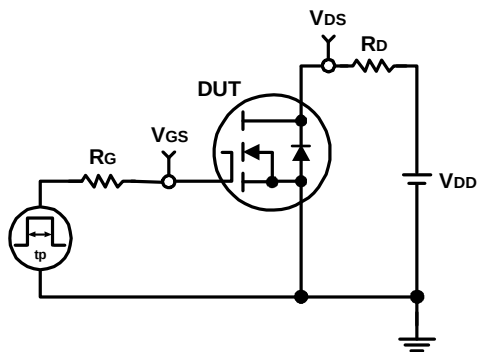
Gate Charge



Avalanche Test Circuit and Waveforms

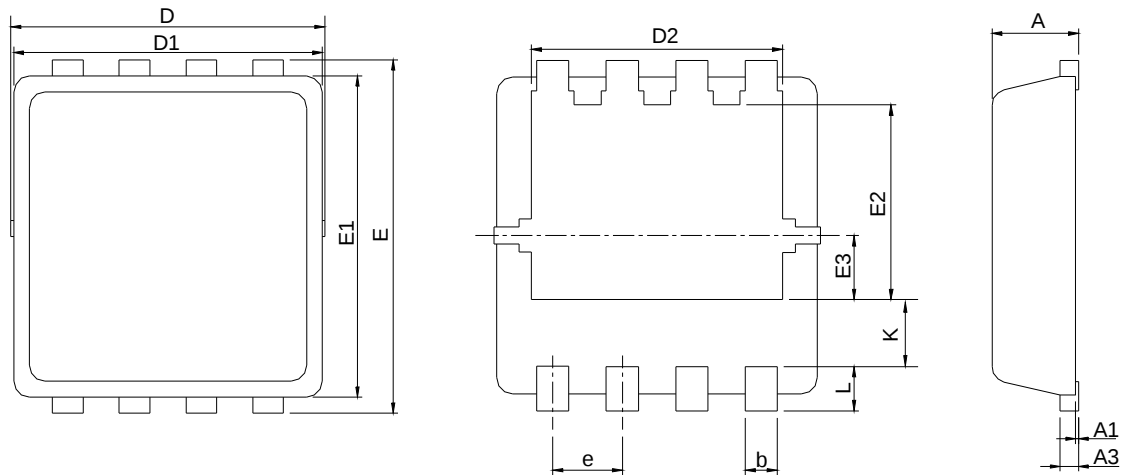


Switching Time Test Circuit and Waveforms



Package Information

PDFN3.3x3.3-8L



SYMBOL	PDFN3.3x3.3-8L			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.80	1.00	0.031	0.039
A1	0.00	0.05	0.000	0.002
A3	0.10	0.25	0.004	0.010
b	0.24	0.35	0.009	0.014
D	2.90	3.30	0.114	0.130
D1	2.90	3.10	0.114	0.122
D2	2.25	2.45	0.089	0.096
E	3.10	3.30	0.122	0.130
E1	2.90	3.10	0.114	0.122
E2	1.65	1.85	0.065	0.073
E3	0.56	0.58	0.022	0.023
e	0.65 BSC		0.026 BSC	
K	0.475	0.775	0.019	0.031
L	0.30	0.50	0.012	0.020

RECOMMENDED LAND PATTERN

