

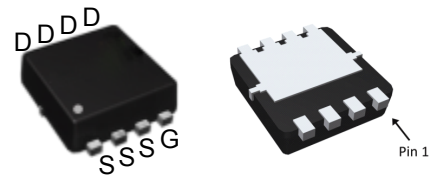
Features

- 30V/22A
 - $R_{DS(ON)}=14m\Omega(\text{typ.})@V_{GS}=10V$
 - $R_{DS(ON)}=21m\Omega(\text{typ.})@V_{GS}=4.5V$
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

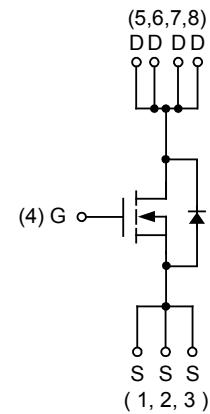
Applications

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

Pin Description



PDFN3.3*3.3-8L



N-Channel MOSFET

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
Common Ratings				
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	22	A
I _D	Continuous Drain Current	T _C =25°C	22	A
		T _C =100°C	17	
I _{DM} ^b	Pulsed Drain Current	T _C =25°C	66	
P _D	Maximum Power Dissipation	T _C =25°C	18	W
		T _C =100°C	7.1	
R _{θJC}	Thermal Resistance-Junction to Case	Steady state	7	°C/W
R _{θJA} ^c	Thermal Resistance-Junction to Ambient	t ≤ 10s	42	°C/W
		Steady state	83	
I _{AS} ^b	Avalanche Current, Single pulse	L=0.1mH	13	A
E _{AS} ^b	Avalanche Energy, Single pulse	L=0.1mH	7.9	mJ

Note a : Max. continuous current is limited by bonding wire.

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

Note c : Surface mounted on 1in^2 pad area, steady state $t = 999\text{s}$.

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

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

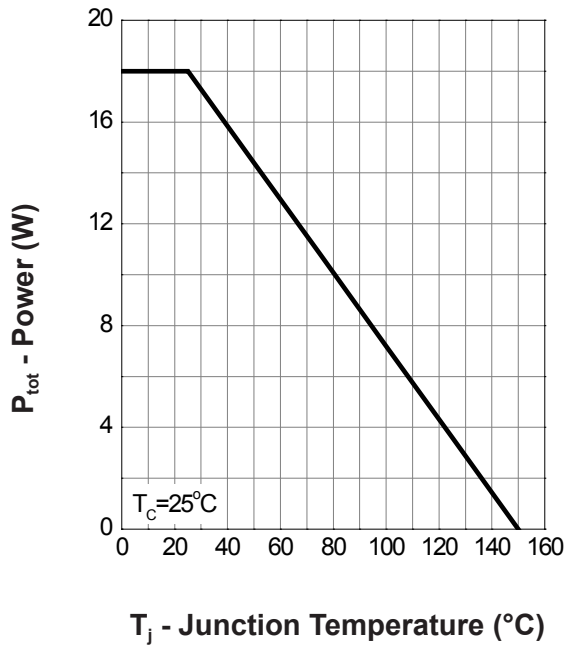
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =24V, V _{GS} =0V T _J =85°C	-	-	1 30	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1.0	1.7	2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^e	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =8A T _J =125°C V _{GS} =4.5V, I _{DS} =5A	- - -	14 20.3 21	18 - 25	mΩ
Gfs	Forward Transconductance	V _{DS} =5V, I _{DS} =5A	-	7.7	-	S
Diode Characteristics						
V _{SD} ^e	Diode Forward Voltage	I _{SD} =1A, V _{GS} =0V	-	0.75	1.1	V
t _{rr}	Reverse Recovery Time	I _{SD} =8A, dI _{SD} /dt=100A/μs	-	11.2	-	ns
t _a	Charge Time		-	7.2	-	
t _b	Discharge Time		-	4.1	-	
Q _{rr}	Reverse Recovery Charge		-	4.9	-	nC
Dynamic Characteristics ^f						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V,F=1MHz	-	1.8	3.6	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, Frequency=1.0MHz	-	430	559	pF
C _{oss}	Output Capacitance		-	80	-	
C _{rss}	Reverse Transfer Capacitance		-	50	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =15V, R _L =15Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	7.5	14	ns
t _r	Turn-on Rise Time		-	9.6	18	
t _{d(OFF)}	Turn-off Delay Time		-	15.7	29	
t _f	Turn-off Fall Time		-	3.4	7	
Gate Charge Characteristics ^f						
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =10V, I _{DS} =8A	-	8.8	12.3	nC
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =4.5V, I _{DS} =8A	-	4.2	-	
Q _{gth}	Threshold Gate Charge		-	0.68	-	
Q _{gs}	Gate-Source Charge		-	1.35	-	
Q _{gd}	Gate-Drain Charge		-	1.65	-	

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

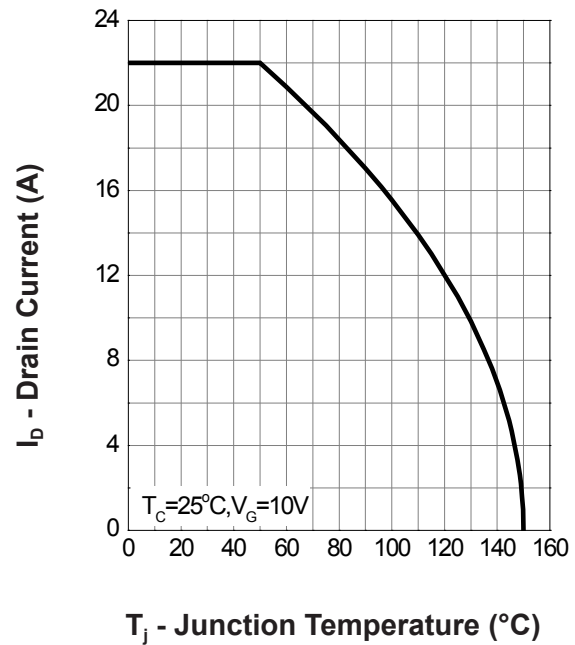
Note f : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

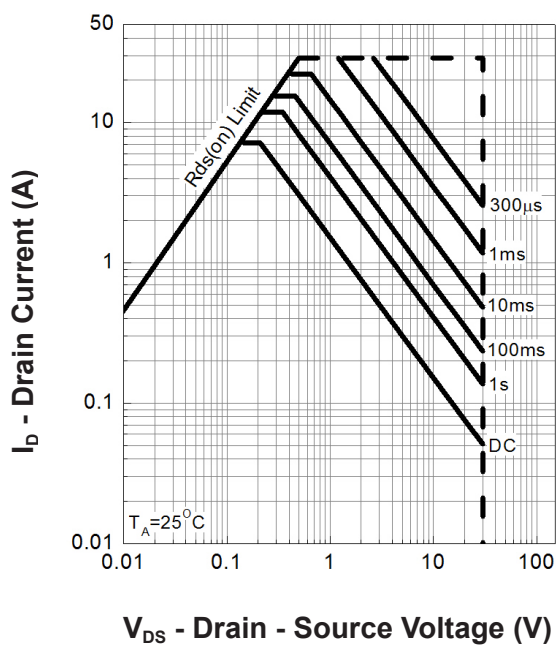
Power Dissipation



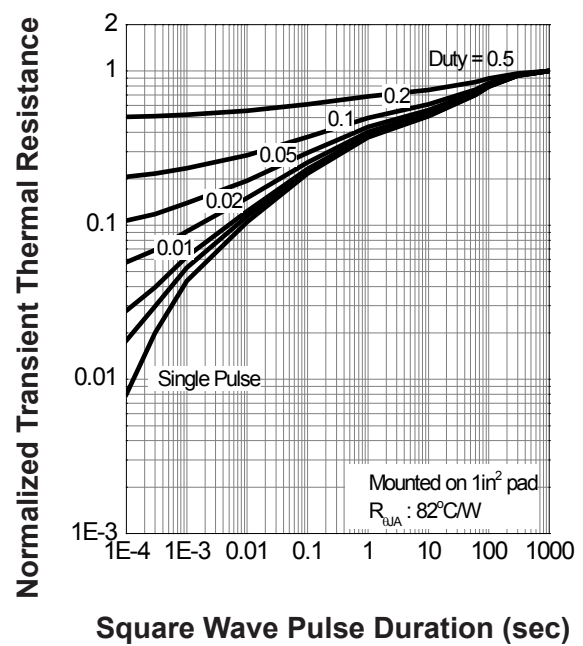
Drain Current



Safe Operation Area

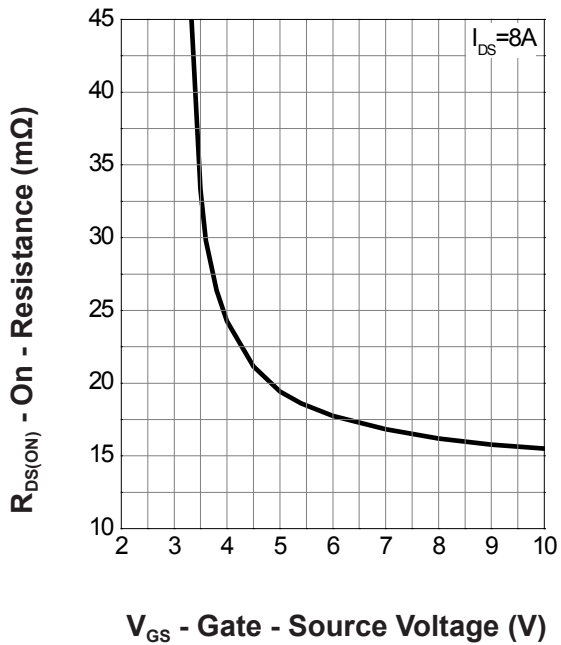


Thermal Transient Impedance

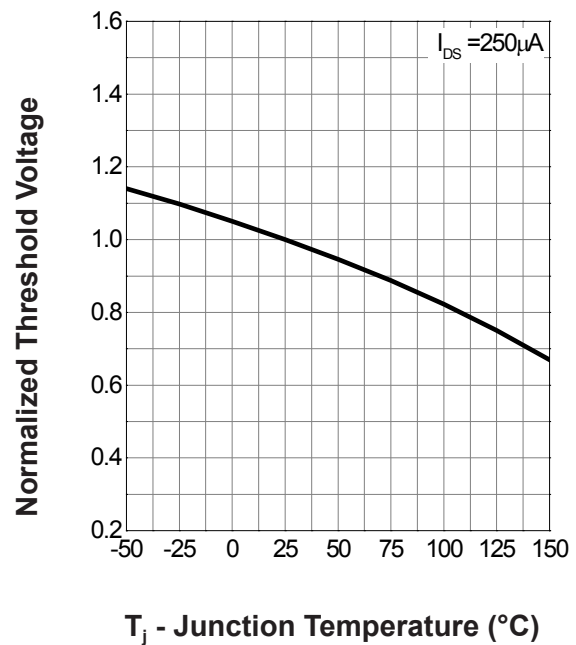


Typical Operating Characteristics(Cont.)

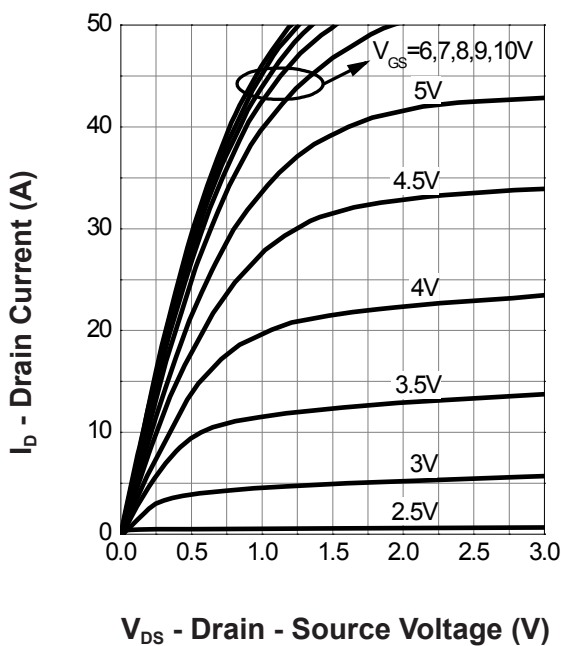
Gate-Source On Resistance



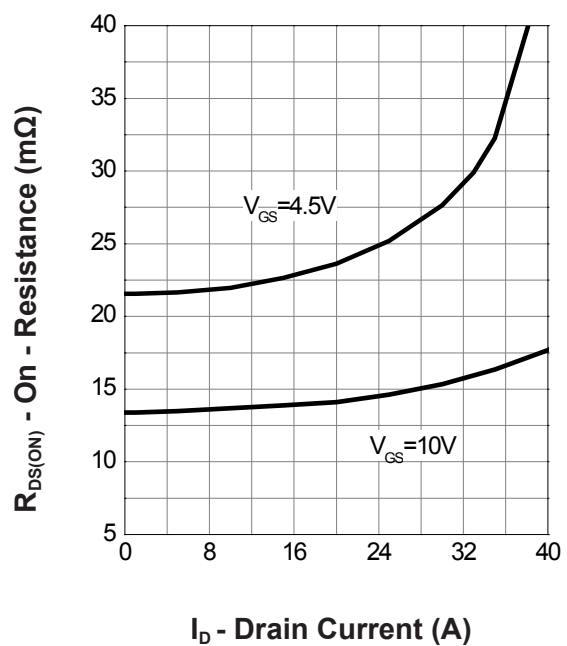
Gate Threshold Voltage



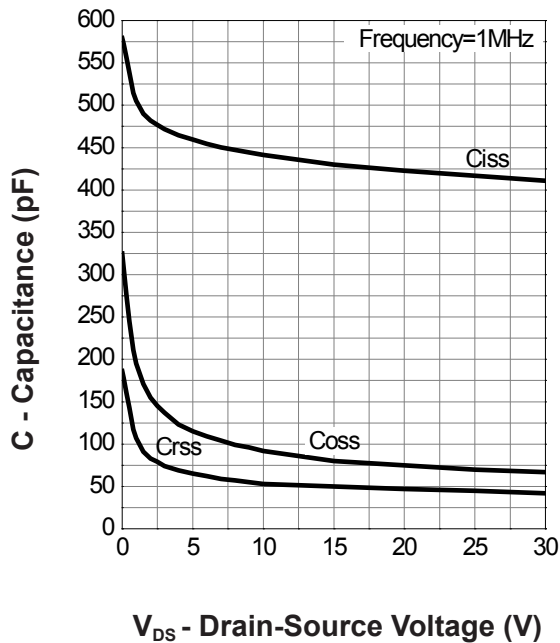
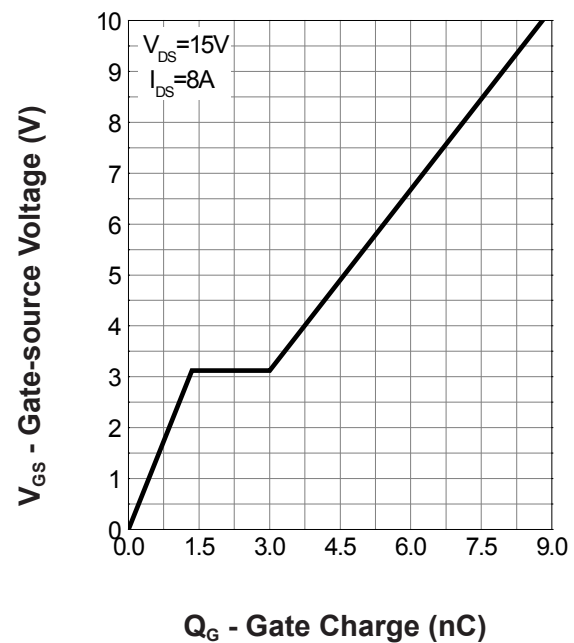
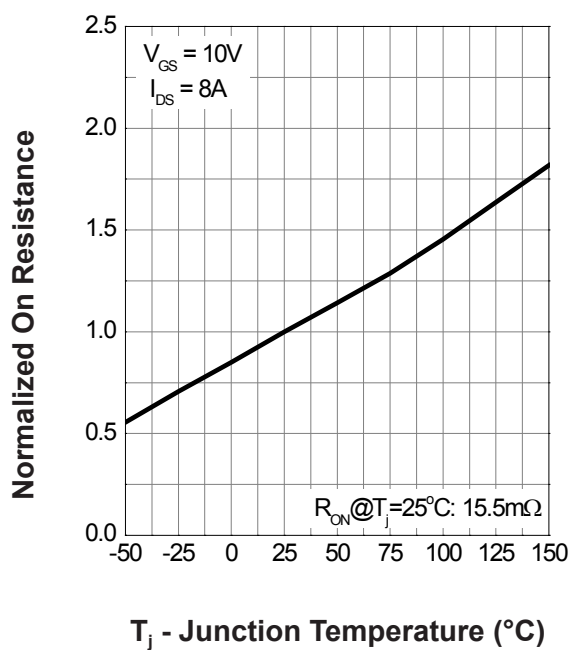
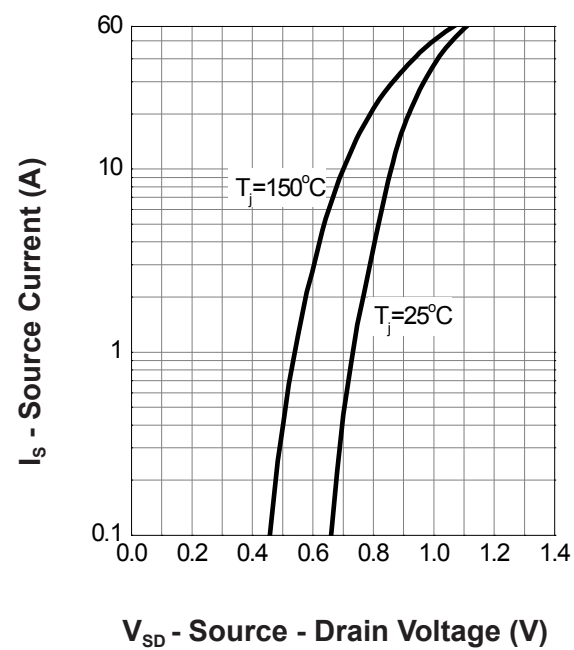
Output Characteristics



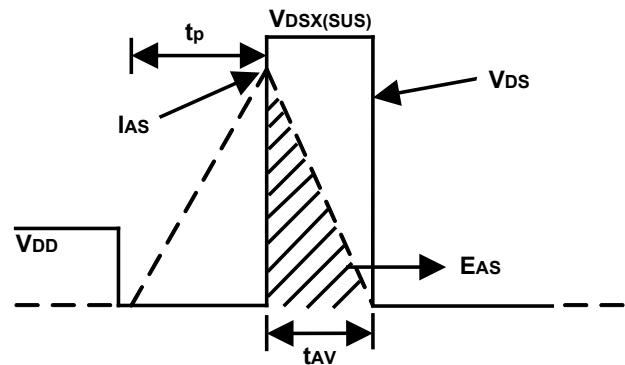
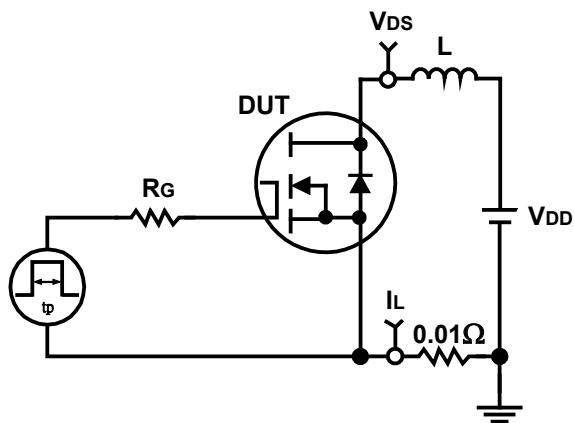
Drain-Source On Resistance



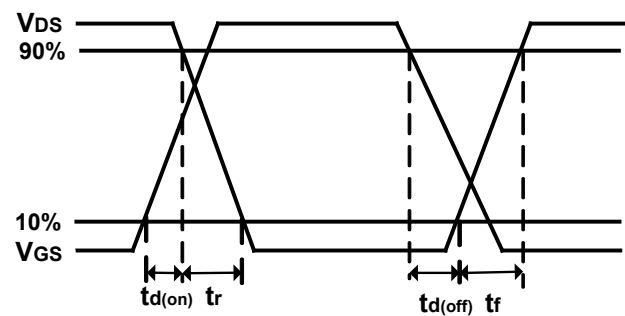
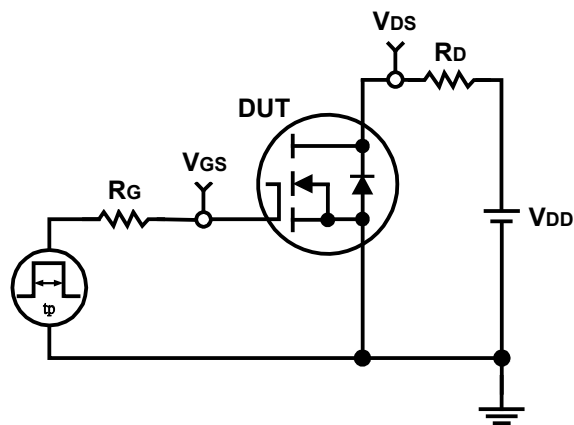
Typical Operating Characteristics(Cont.)

Capacitance

Gate Charge

Drain-Source On Resistance

Source-Drain Diode Forward


Avalanche Test Circuit and Waveforms

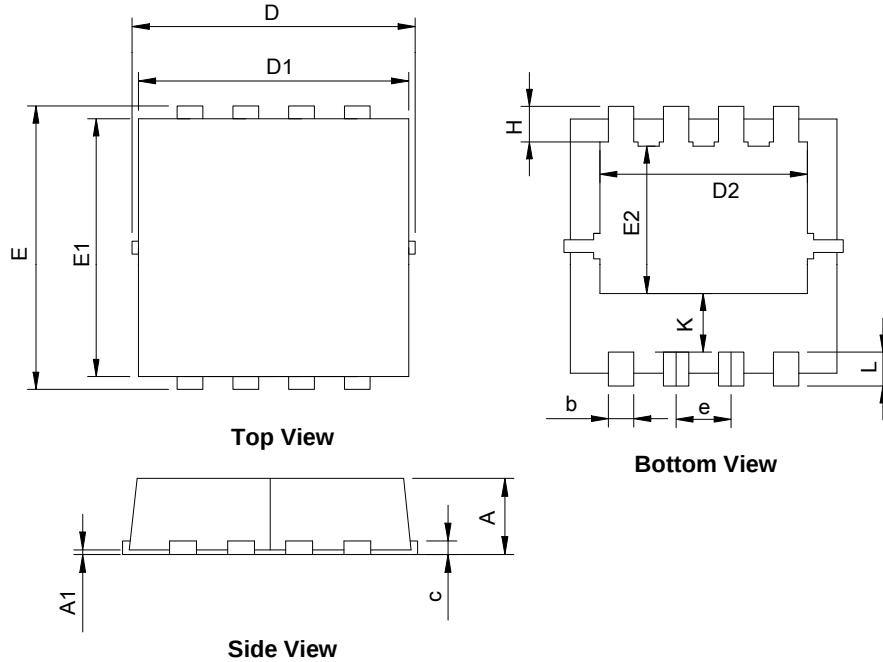


Switching Time Test Circuit and Waveforms



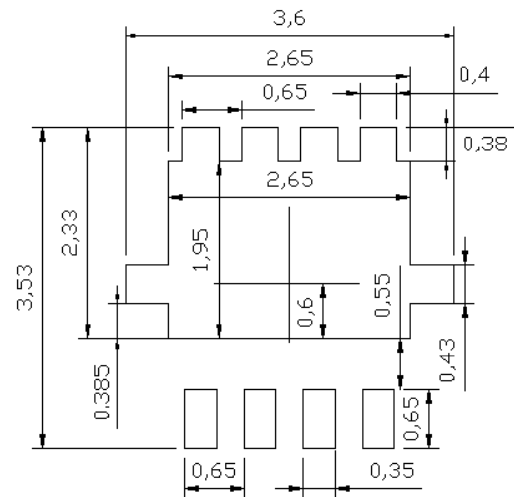
Package Information

PDFN3.3*3.3-8L



SYMBOL	PDFN3.3*3.3-8L			
	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