

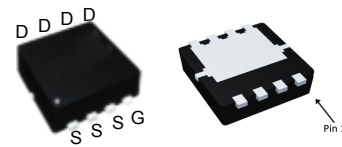
Features

- 30V/50A
 $R_{DS(ON)} = 1.8m\Omega (typ.) @ V_{GS} = 10V$
 $R_{DS(ON)} = 2.4m\Omega (typ.) @ V_{GS} = 4.5V$
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available
(RoHS Compliant)

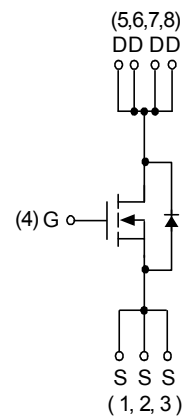
Applications

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

Pin Description



DFN3.3x3.3A-8_EP



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	50	A
I _D	Continuous Drain Current	T _C =25°C	50	A
		T _C =100°C	30	
I _{DM}	Pulsed Drain Current	T _C =25°C	150	
P _D	Maximum Power Dissipation	T _C =25°C	50	W
		T _C =100°C	20	
R _{θJC}	Thermal Resistance-Junction to Case	Steady state	2.5	°C/W
R _{θJA} ^c	Thermal Resistance-Junction to Ambient	t ≤ 10s	36	°C/W
		Steady state	80	
I _{AS} ^d	Avalanche Current, Single pulse	L=0.1mH	60	A
E _{AS} ^d	Avalanche Energy, Single pulse	L=0.1mH	180	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 $T_J=25^{\circ}\text{C}$).

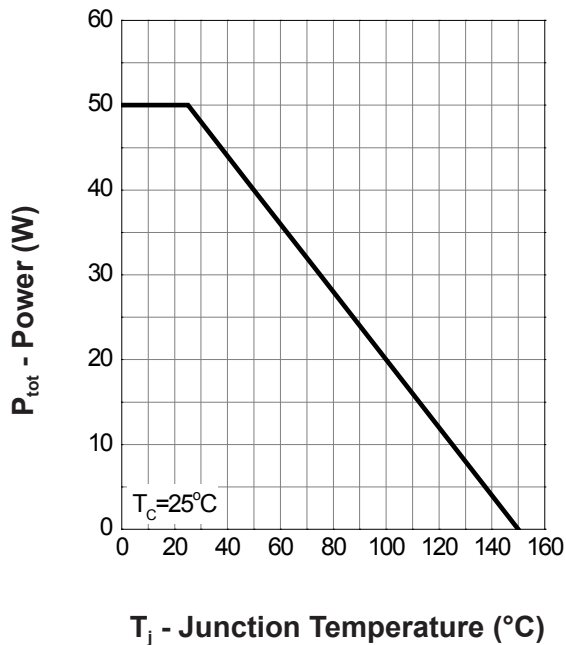
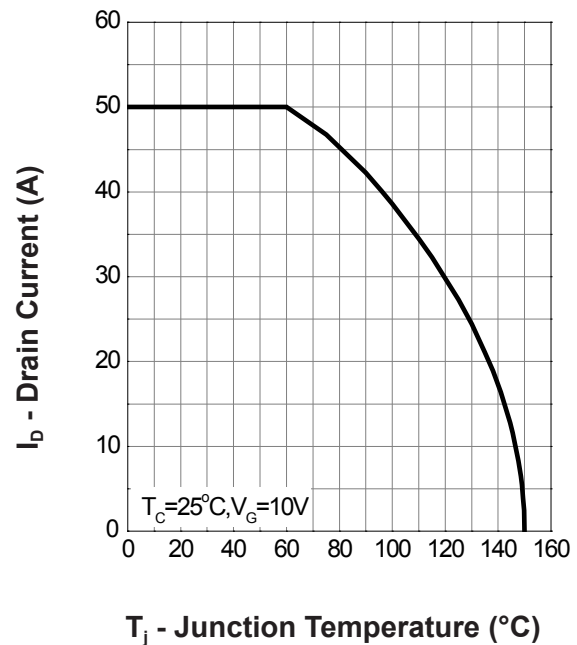
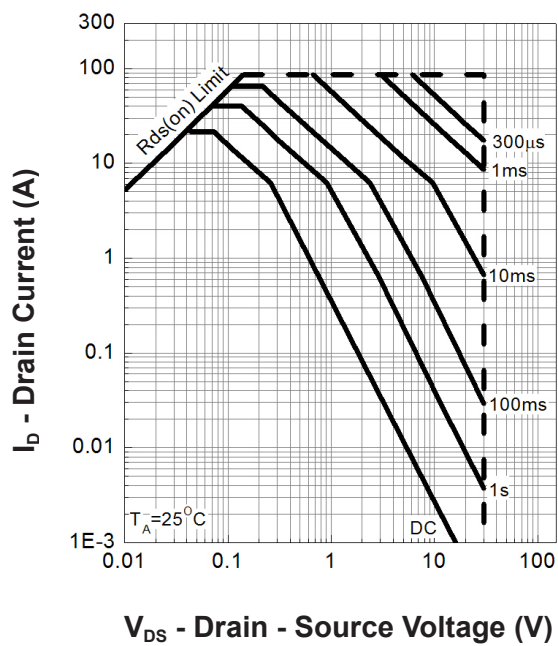
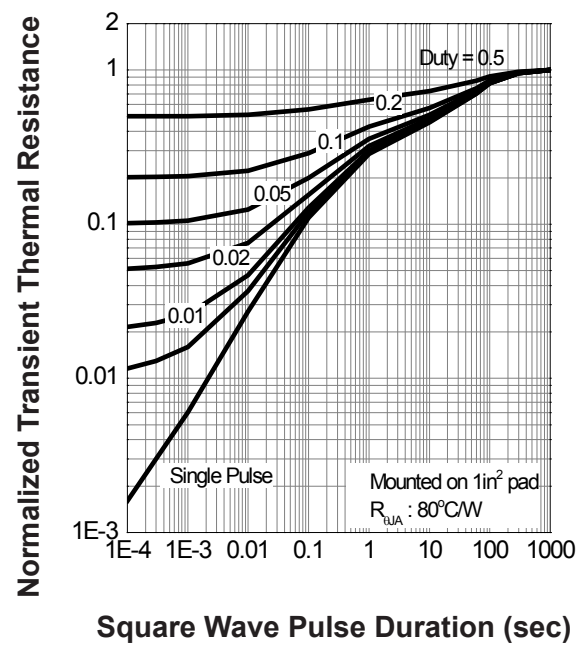
Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

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	1.3	1.7	2.3	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} =20A T _J =125°C	-	1.8 2.5	2.2 -	mΩ
Gfs	Forward Transconductance	V _{DS} =5V, I _{DS} =20A	-	49	-	S
Diode Characteristics						
V _{SD} ^e	Diode Forward Voltage	I _{SD} =2A, V _{GS} =0V	-	0.75	1.1	V
t _{rr}	Reverse Recovery Time	I _{SD} =20A, dI _{SD} /dt=100A/μs	-	39.8	-	ns
t _a	Charge Time		-	20.1	-	
t _b	Discharge Time		-	19.7	-	
Q _{rr}	Reverse Recovery Charge		-	30.6	-	nC
Dynamic Characteristics ^f						
R _G	Gate Resistance	V _{GS} =0V,V _{DS} =0V,F=1MHz	-	1	2	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, Frequency=1.0MHz	-	6345	-	pF
C _{oss}	Output Capacitance		-	540	-	
C _{rss}	Reverse Transfer Capacitance		-	410	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =15V, R _L =15Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	15.3	28	ns
t _r	Turn-on Rise Time		-	10.9	20	
t _{d(OFF)}	Turn-off Delay Time		-	37.4	68	
t _f	Turn-off Fall Time		-	48.4	88	
Gate Charge Characteristics ^f						
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =10V, I _{DS} =20A	-	31.2	43.7	nC
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =4.5V, I _{DS} =20A	-	15	-	
Q _{gth}	Threshold Gate Charge		-	3.5	-	
Q _{gs}	Gate-Source Charge		-	5.7	-	
Q _{gd}	Gate-Drain Charge		-	4.3	-	

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

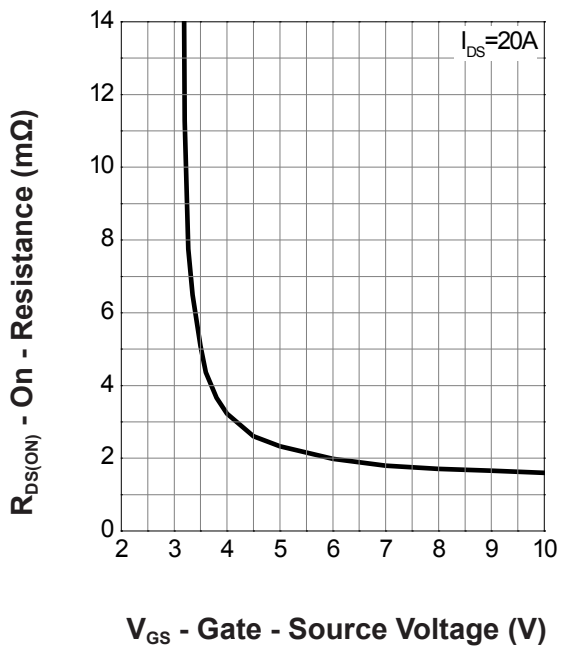
Note f : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

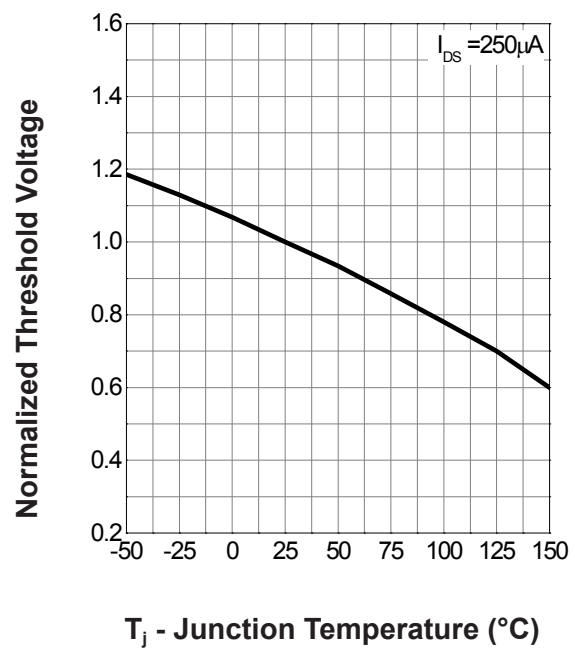
Power Dissipation

Drain Current

Safe Operation Area

Thermal Transient Impedance


Typical Operating Characteristics(Cont.)

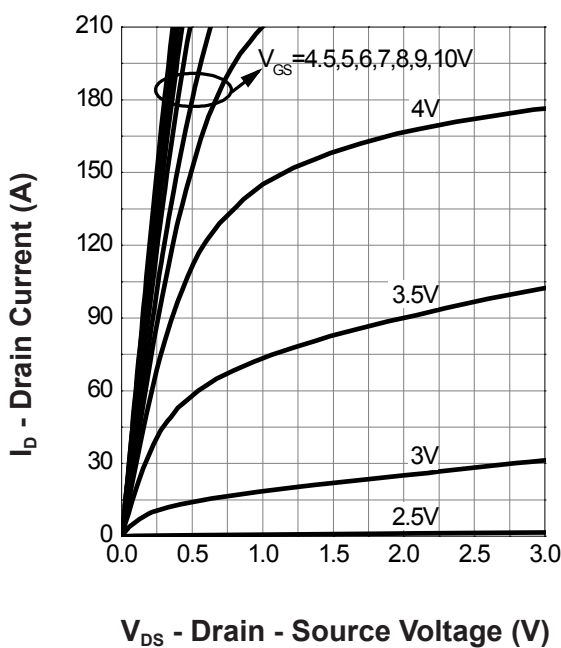
Gate-Source On Resistance



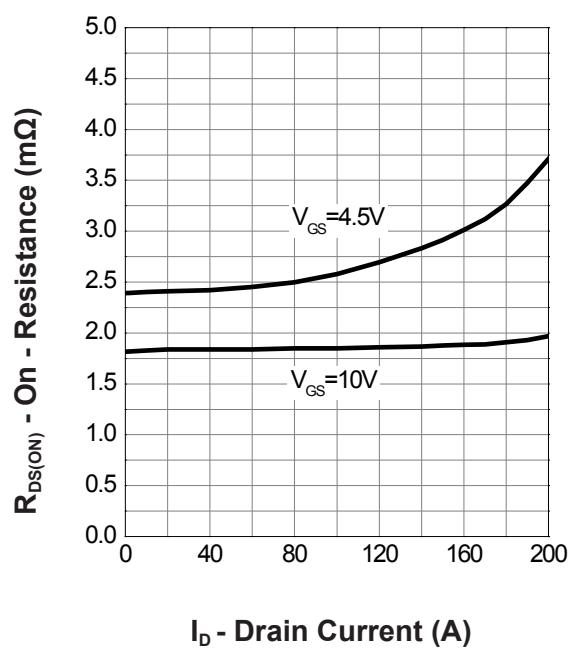
Gate Threshold Voltage



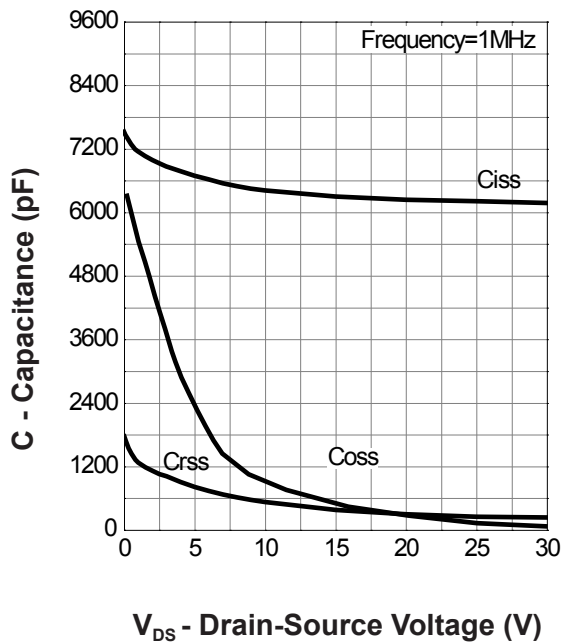
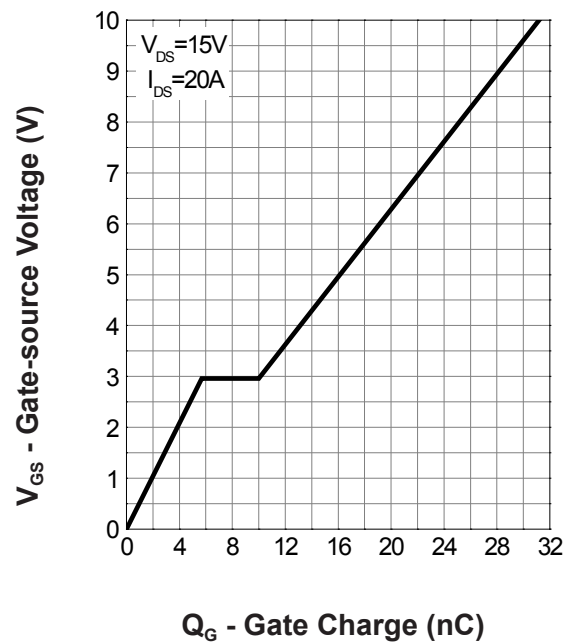
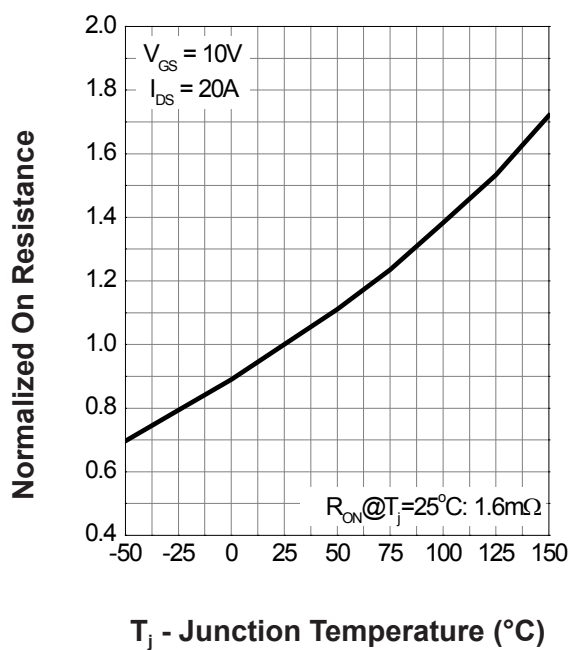
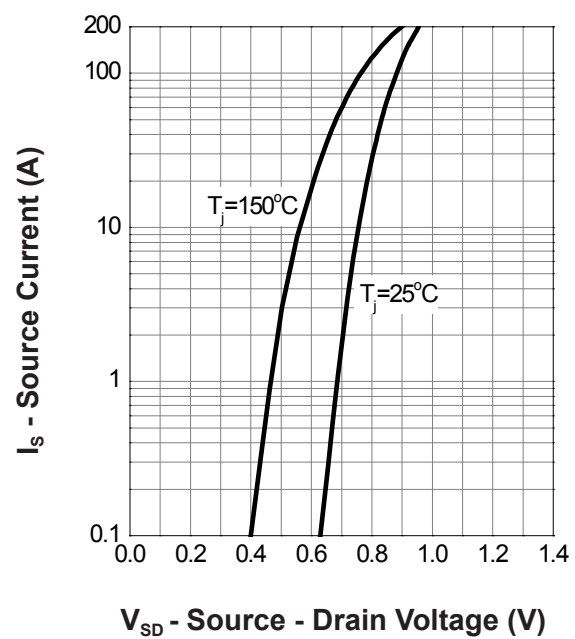
Output Characteristics



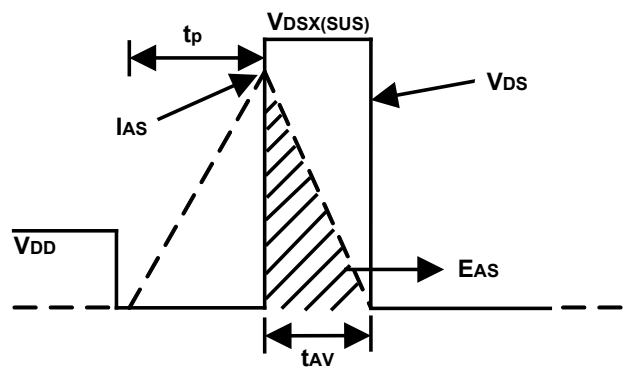
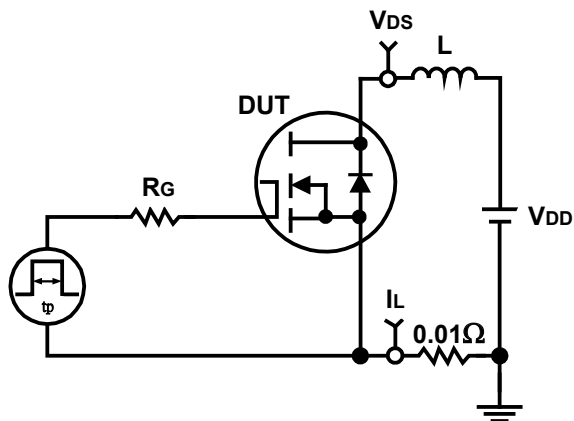
Drain-Source On Resistance



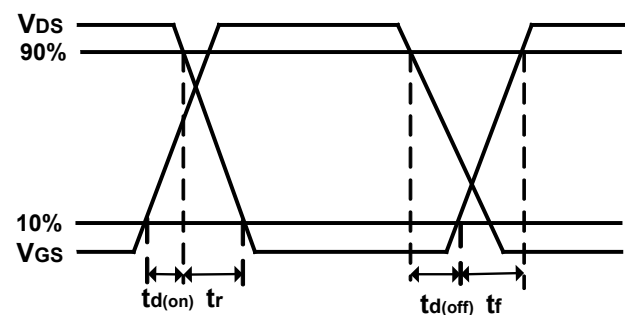
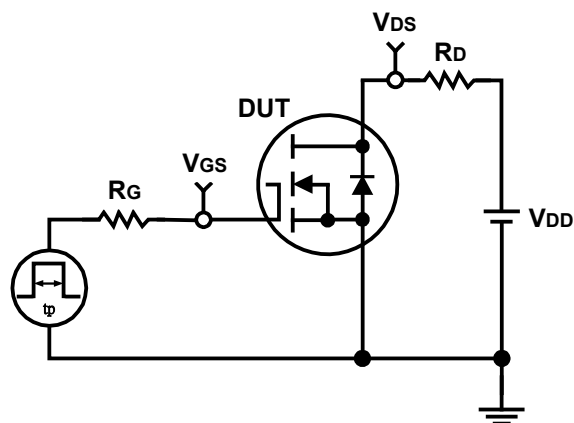
Typical Operating Characteristics(Cont.)

Capacitance

Gate Charge

Drain-Source On Resistance

Source-Drain Diode Forward


Avalanche Test Circuit and Waveforms

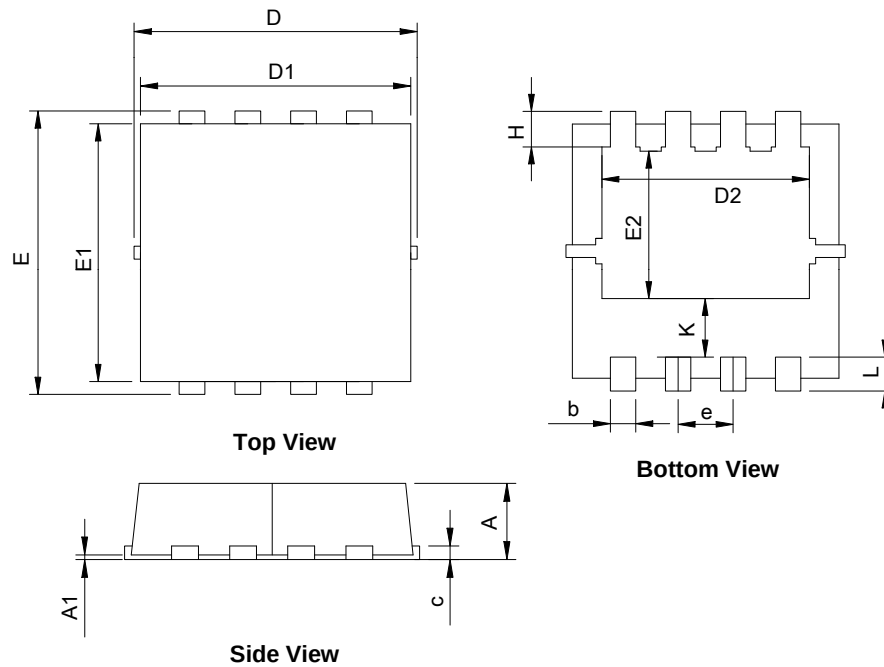


Switching Time Test Circuit and Waveforms



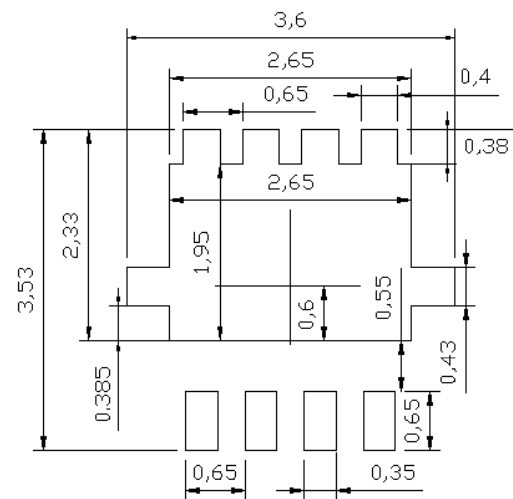
Package Information

DFN3x3-8



SYMBOL	DFN3.3x3.3A-8_EP1_P			
	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