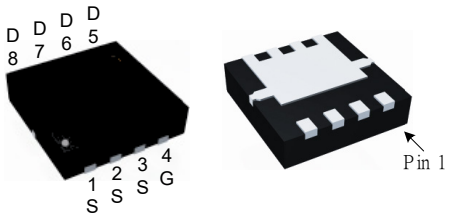
Features

- -60V/-25A
  $R_{DS(ON)}$=50mΩ(typ.)@V_{GS}=-10V
  $R_{DS(ON)}$=60mΩ(typ.)@V_{GS}=-4.5V
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)
- Moisture Sensitivity Level MSL1 (per JEDEC J-STD-020D)

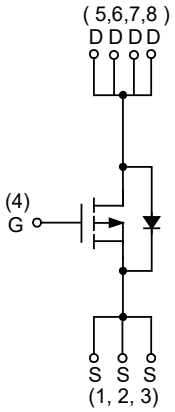
Applications

- Power Management for SMPS Charger adaptor SR.
- DC-DC Converter.

Pin Description



DFN3.3x3.3-8_EP



P-Channel MOSFET

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

Symbol	Parameter		Rating	Unit
Common Ratings				
V_{DSS}	Drain-Source Voltage		-60	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	-25	A
I_D	Continuous Drain Current	T_C=25°C	-25	A
		T_C=100°C	-17.8	
I_{DM}	Pulsed Drain Current	T_C=25°C	-75	A
P_D	Maximum Power Dissipation	T_C=25°C	83.3	W
		T_C=100°C	33.3	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	Steady State	1.5	°C/W
$R_{\theta JA}$[b]	Thermal Resistance-Junction to Ambient	Steady State	60	°C/W
I_{AS}[c]	Avalanche Current, Single pulse	L=0.5mH	-20	A
E_{AS}[c]	Avalanche Energy, Single pulse	L=0.5mH	100	mJ

Note a : Pulse width limited by maximum junction temperature.
Note b : Surface mounted on 1in^2 pad area.
Note c : UIS tested and pulse width limited by maximum junction temperature (initial temperature T_j=25°C).

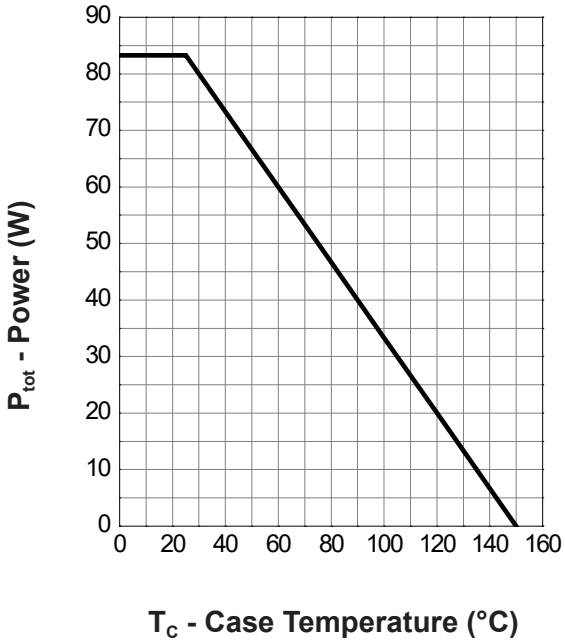
Electrical Characteristics (T_A = 25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=-250μA	-60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-48V, V_{GS}=0V	-	-	-1	μA
		T_J=85°C	-	-	-30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250μA	-1	-2	-3	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}=-9A	-	50	60	mΩ
		V_{GS}=-4.5V, I_{DS}=-5.4A	-	60	70	
Diode Characteristics						
V_{SD}[d]	Diode Forward Voltage	I_{SD}=-4.5A, V_{GS}=0V	-	-0.8	-1.1	V
t_{rr}	Reverse Recovery Time	I_{SD}=-9A, dI_{SD}/dt=100A/μs	-	41	-	ns
Q_{rr}	Reverse Recovery Charge		-	78	-	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}=-50V, Frequency=1.0MHz	-	2545	3308	pF
C_{oss}	Output Capacitance		-	125	-	
C_{rss}	Reverse Transfer Capacitance		-	75	-	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=-30V, R_L=30Ω, I_{DS}=-1A, V_{GEN}=-10V, R_G=6Ω	-	15	27	ns
t_r	Turn-on Rise Time		-	8	14	
$t_{d(OFF)}$	Turn-off Delay Time		-	86	155	
t_f	Turn-off Fall Time		-	25	45	
Gate Charge Characteristics[e]						
Q_g	Total Gate Charge	V_{DS}=-30V, V_{GS}=-4.5V, I_{DS}=-9A	-	28	-	nC
Q_g	Total Gate Charge	V_{DS}=-30V, V_{GS}=-10V, I_{DS}=-9A	-	59	89	
Q_{gs}	Gate-Source Charge		-	7.2	-	
Q_{gd}	Gate-Drain Charge		-	13	-	

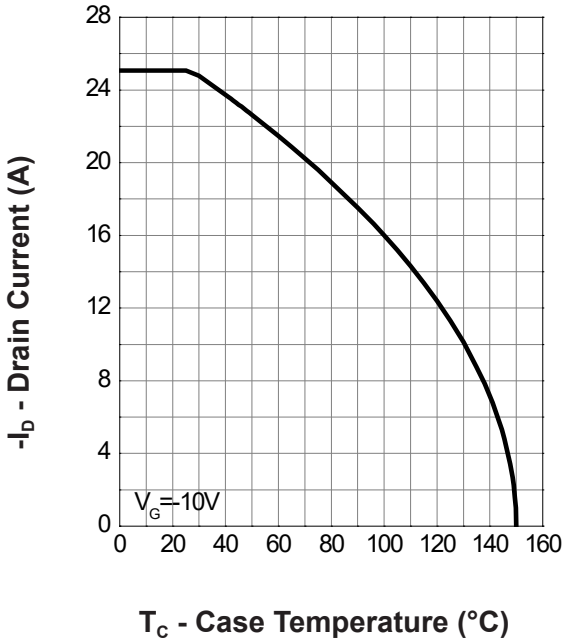
Note d : Pulse test ; pulse width≤300μs, duty cycle≤2%.
Note e : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

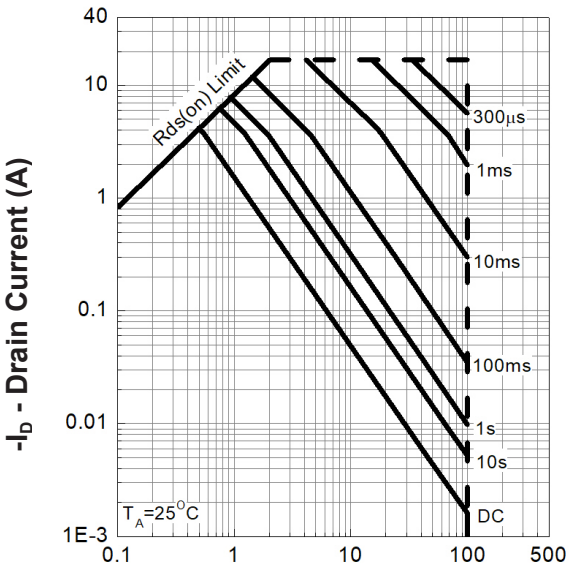
Power Dissipation



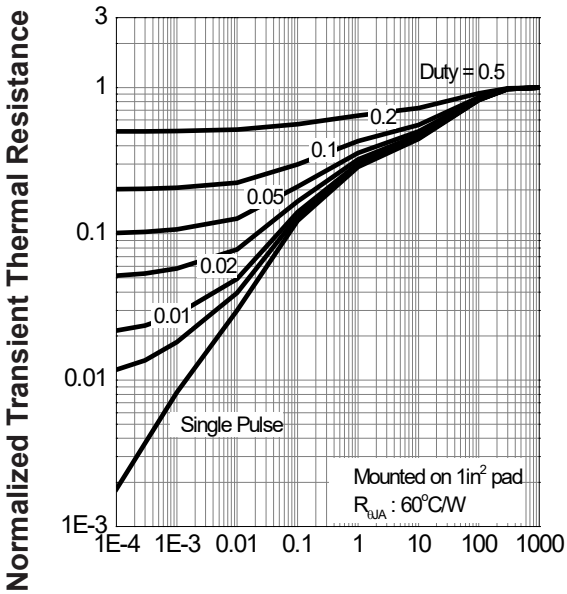
Drain Current



Safe Operation Area

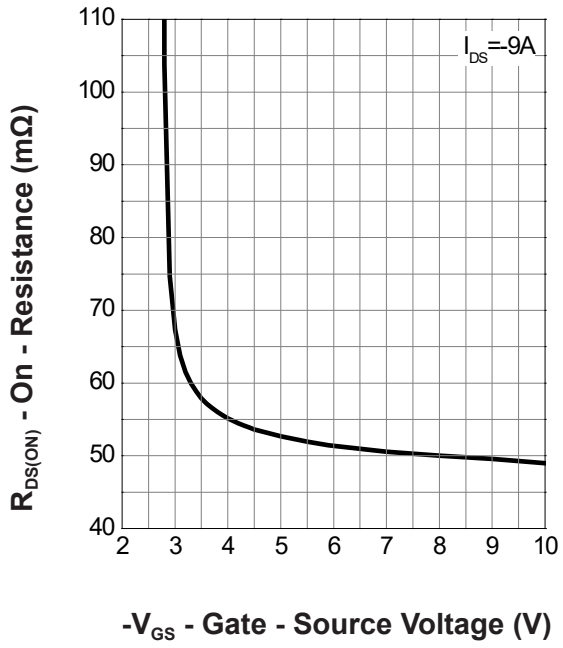


Thermal Transient Impedance

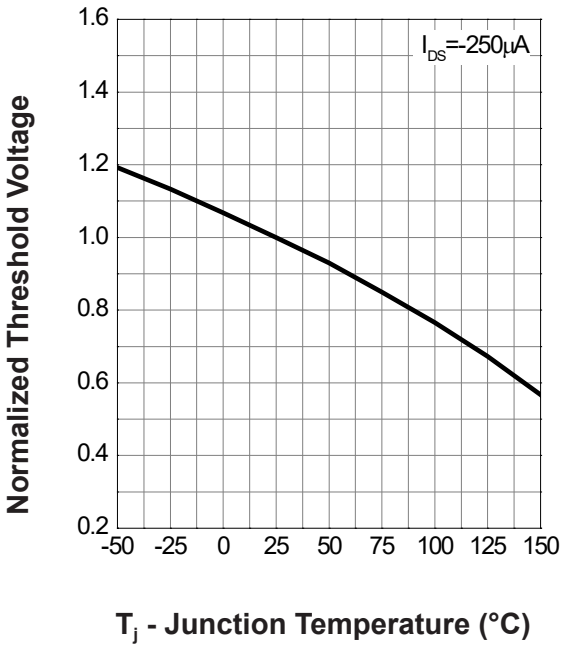


Typical Operating Characteristics(Cont.)

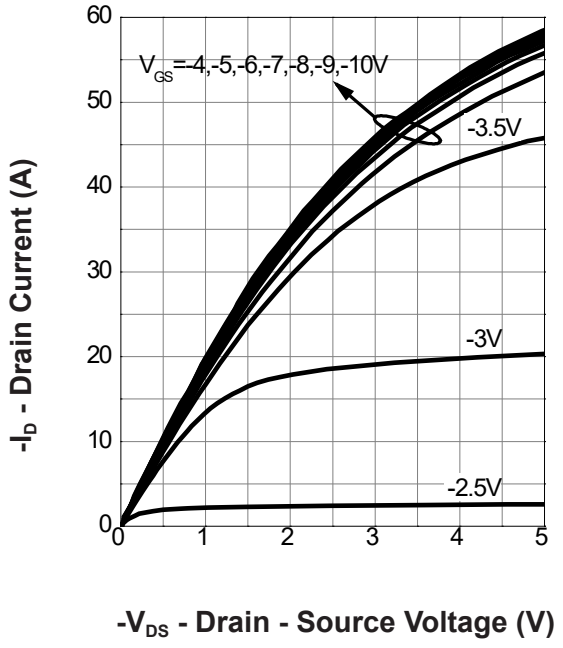
Gate-Source On Resistance



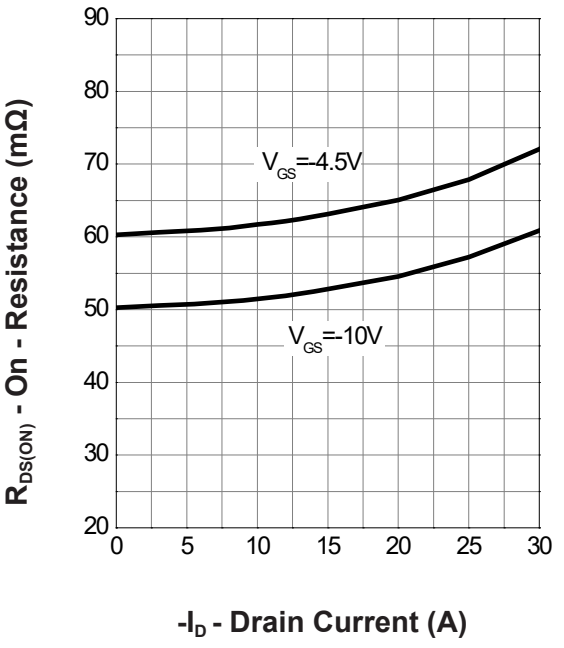
Gate Threshold Voltage



Output Characteristics

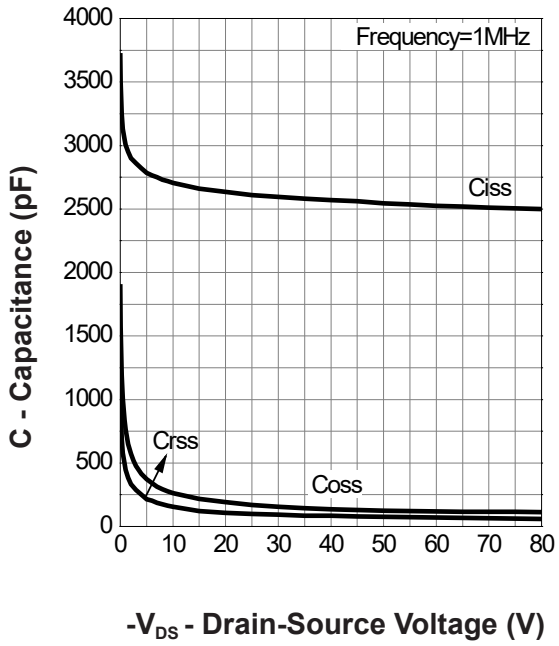


Drain-Source On Resistance

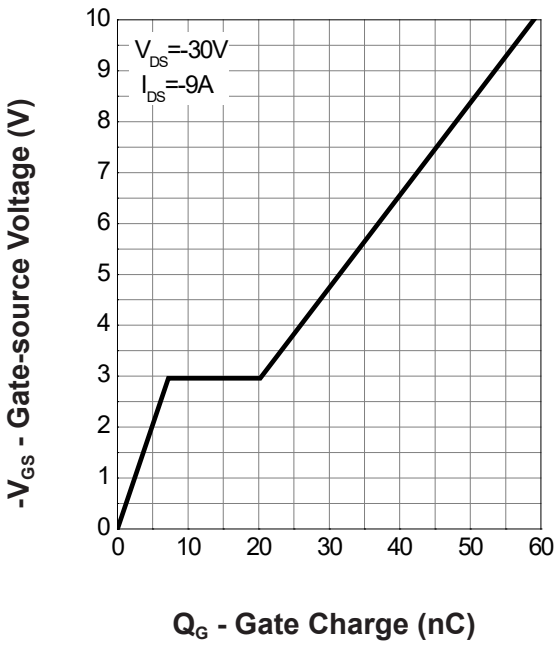


Typical Operating Characteristics(Cont.)

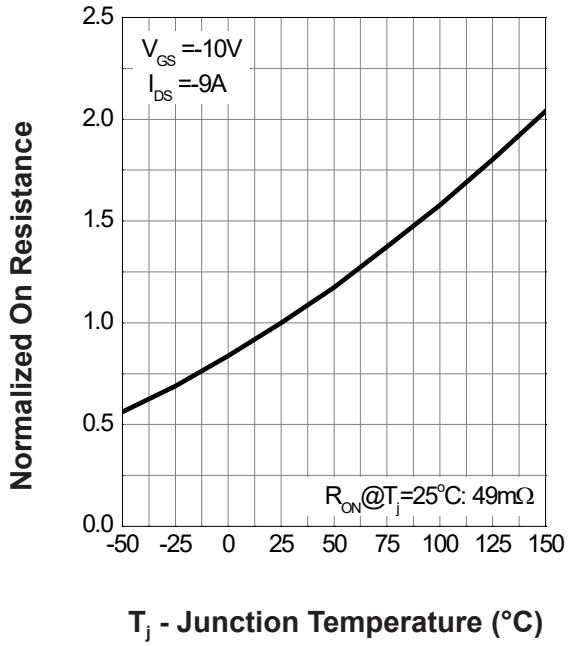
Capacitance



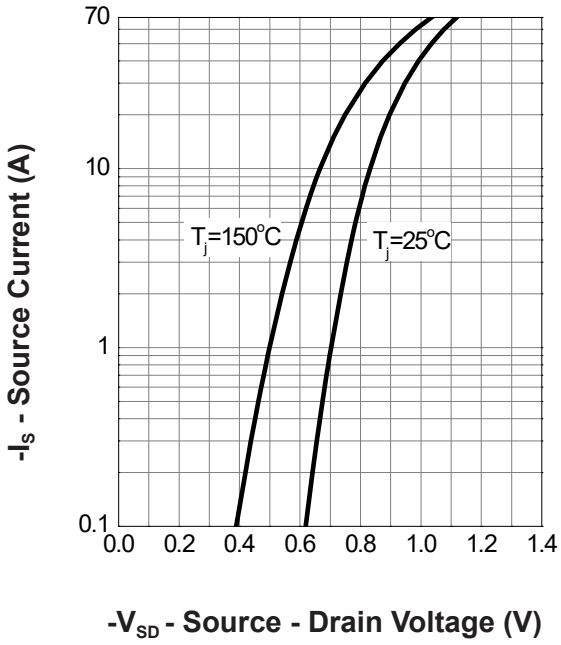
Gate Charge



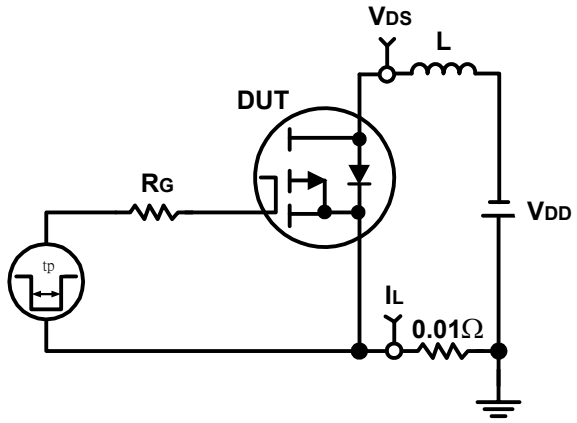
Drain-Source On Resistance

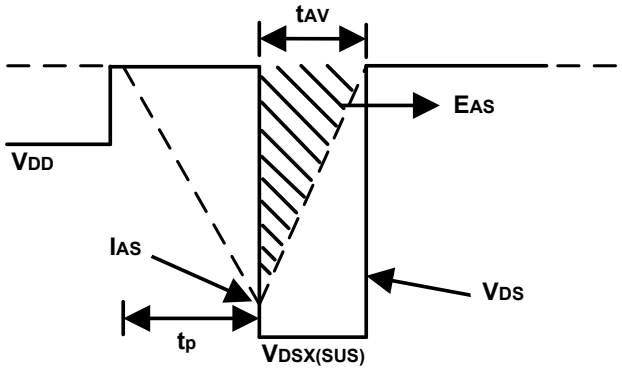


Source-Drain Diode Forward

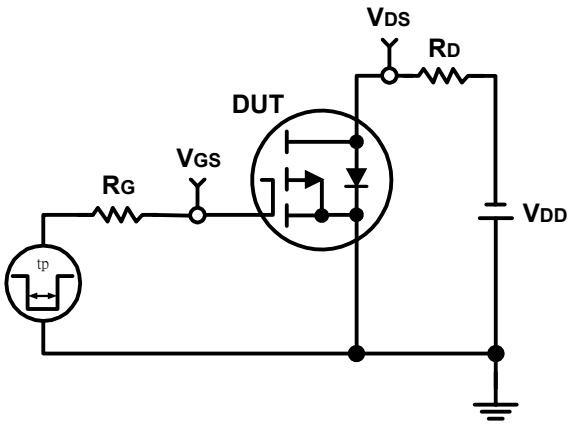


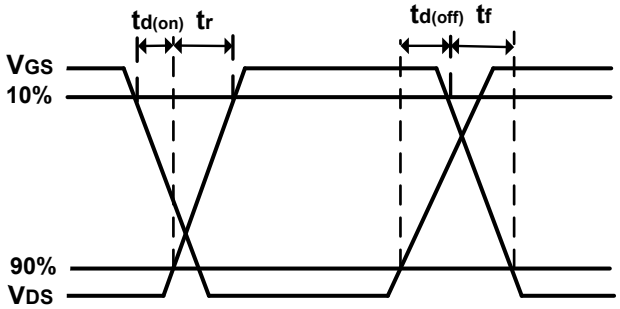
Avalanche Test Circuit and Waveforms





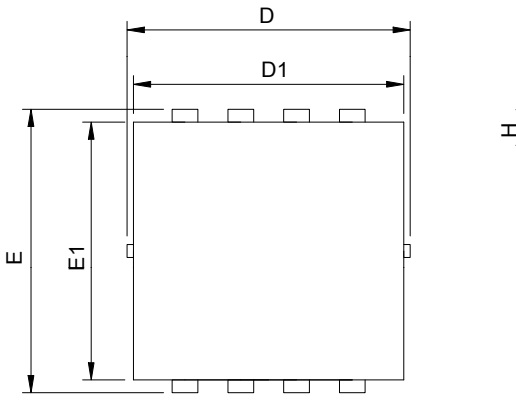
Switching Time Test Circuit and Waveforms



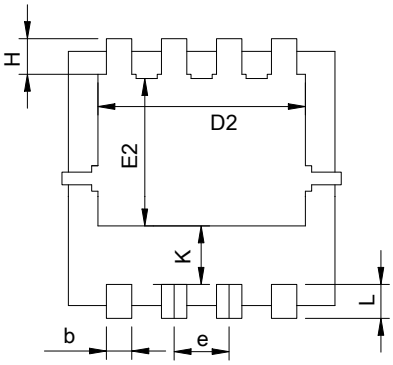


Package Information

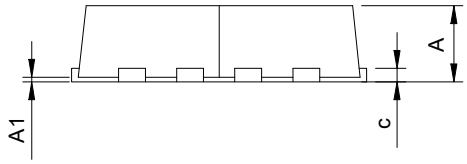
DFN3x3-8



Top View



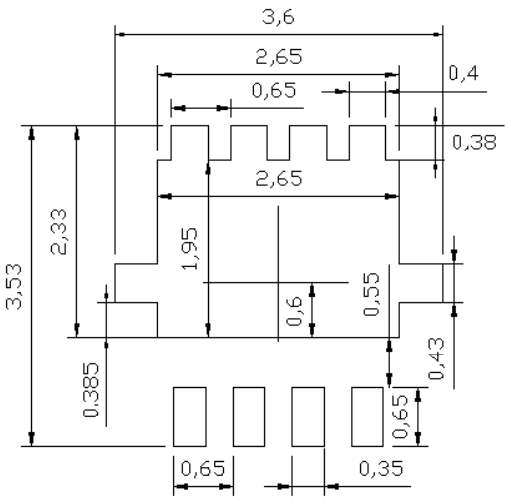
Bottom View



Side View

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