

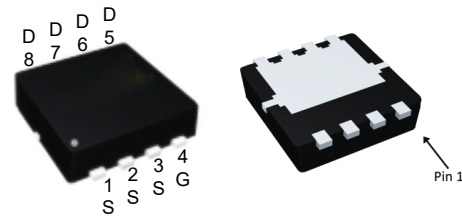
Features

- 40V/-40A
 $R_{DS(ON)} = 10\text{m}\Omega(\text{typ.}) @ V_{GS} = -10\text{V}$
 $R_{DS(ON)} = 14\text{m}\Omega(\text{typ.}) @ V_{GS} = -4.5\text{V}$
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free and Green Devices Available
 (RoHS Compliant)

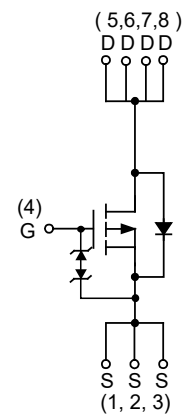
Applications

- Power Management in LCD TV Inverter.

Pin Description



DFN3.3x3.3C-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		-40	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	A
		T _C =100°C	-16	
I _{DM} ^a	Pulsed Drain Current	T _C =25°C	-120	A
P _D	Maximum Power Dissipation	T _C =25°C	42	W
		T _C =100°C	17	
R _{θJC}	Thermal Resistance-Junction to Case		3	°C/W
I _D	Continuous Drain Current	T _A =25°C	-9.3	A
		T _A =70°C	-7.4	
P _D	Maximum Power Dissipation	T _A =25°C	1.6	W
		T _A =70°C	1	
R _{θJA} ^c	Thermal Resistance-Junction to Ambient		80	°C/W
I _{AS} ^b	Avalanche Current, Single pulse	L=0.5mH	-24	A
E _{AS} ^b	Avalanche Energy, Single pulse	L=0.5mH	144	mJ

Note * : Current limited by bonding wire.

Note a : Pulse width limited by maximum junction temperature.

Note b : UIS tested and pulse width limited by maximum junction temperature (initial temperature T_J=25°C).

Note c : Surface mounted on 1in² pad area.

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

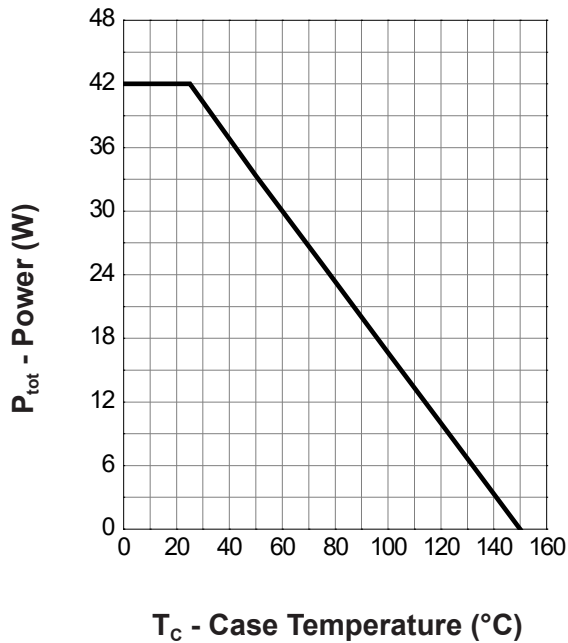
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-40	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-32V, V _{GS} =0V T _J =85°C	-	-	-1	μA
			-	-	-30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-1.2	-1.6	-2	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±10	μA
R _{DS(ON)} ^d	Drain-Source On-state Resistance	V _{GS} =-10V, I _{DS} =-16A	-	10	13.5	mΩ
		V _{GS} =-4.5V, I _{DS} =-10A	-	14	17.5	
Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =-1A, V _{GS} =0V	-	-0.75	-1	V
t _{rr}	Reverse Recovery Time	I _{SD} =-16A, dI _{SD} /dt=100A/μs	-	29	-	ns
Q _{rr}	Reverse Recovery Charge		-	24	-	nC
Dynamic Characteristics ^e						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	2.9	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-20V, Frequency=1.0MHz	-	2840	3692	pF
C _{oss}	Output Capacitance		-	415	-	
C _{rss}	Reverse Transfer Capacitance		-	285	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-20V, R _L =20Ω, I _{DS} =-1A, V _{GEN} =-10V, R _G =6Ω	-	18	33	ns
t _r	Turn-on Rise Time		-	16	29	
t _{d(OFF)}	Turn-off Delay Time		-	94	170	
t _f	Turn-off Fall Time		-	50	90	
Gate Charge Characteristics ^e						
Q _g	Total Gate Charge	V _{DS} =-20V, V _{GS} =-4.5V, I _{DS} =-16A	-	32	44	nC
Q _g	Total Gate Charge	V _{DS} =-20V, V _{GS} =-10V, I _{DS} =-16A	-	62	-	
Q _{gs}	Gate-Source Charge		-	9	-	
Q _{gd}	Gate-Drain Charge		-	17	-	

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

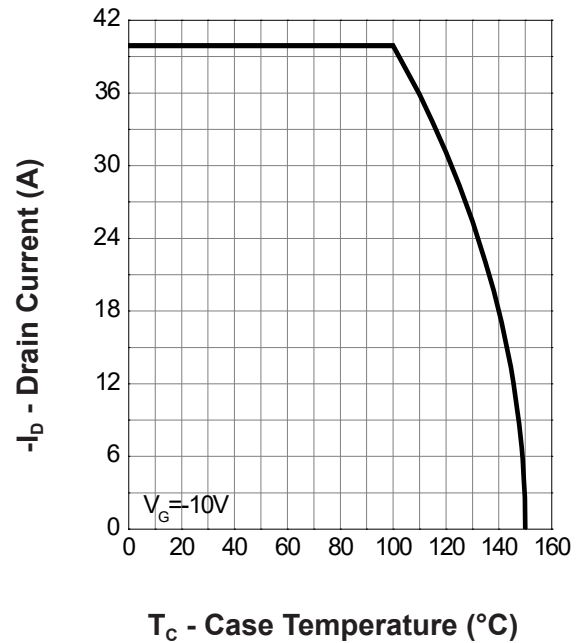
Note e : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

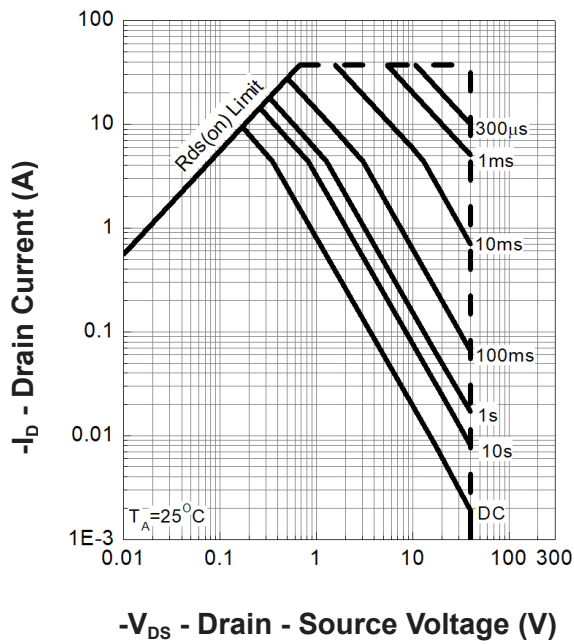
Power Dissipation



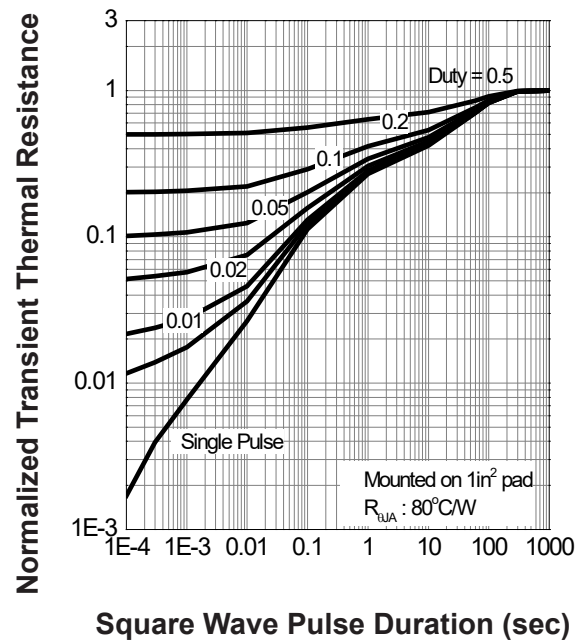
Drain Current



Safe Operation Area

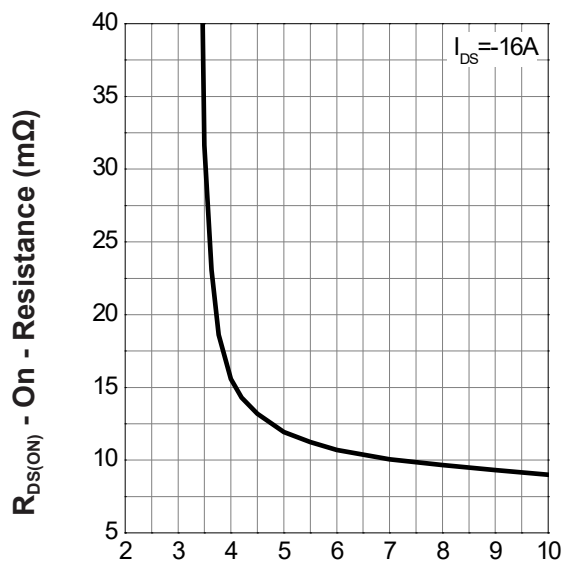


Thermal Transient Impedance



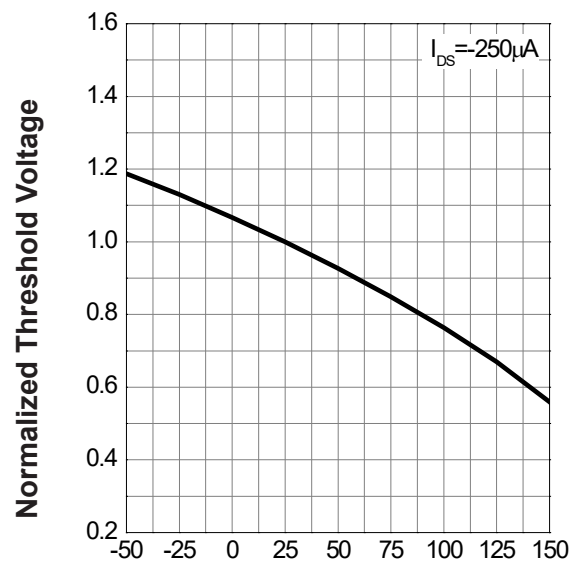
Typical Operating Characteristics(Cont.)

Gate-Source On Resistance



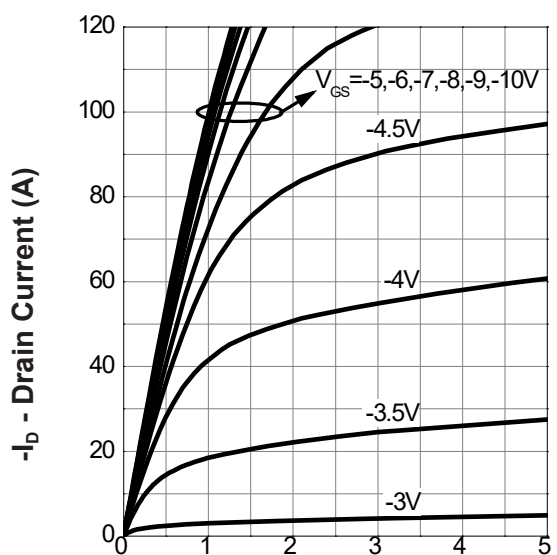
$-V_{GS}$ - Gate - Source Voltage (V)

Gate Threshold Voltage



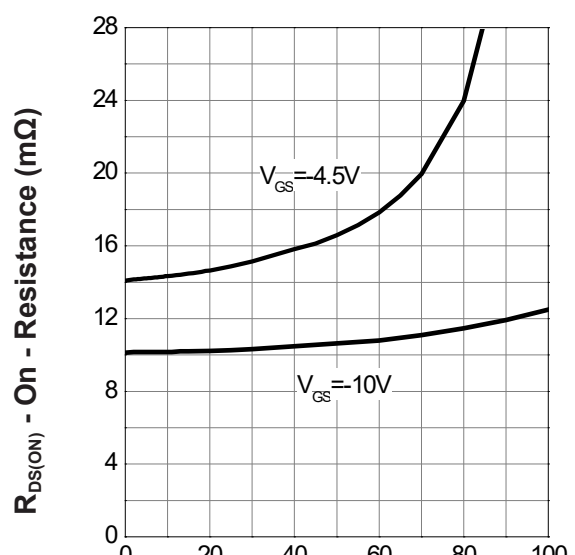
T_j - Junction Temperature ($^{\circ}C$)

Output Characteristics



$-V_{DS}$ - Drain - Source Voltage (V)

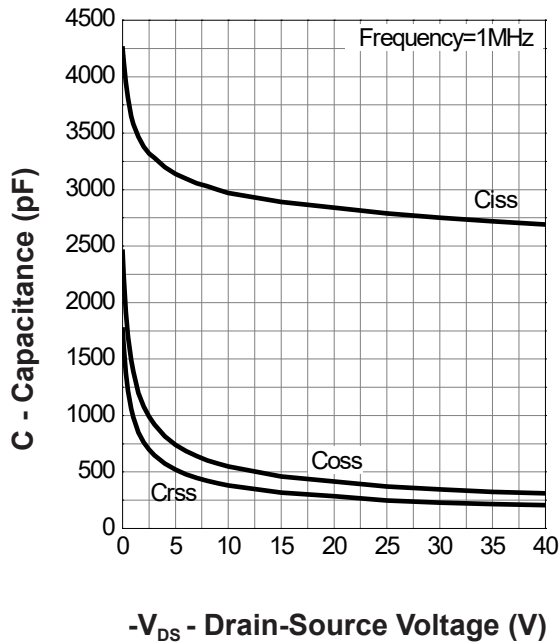
Drain-Source On Resistance



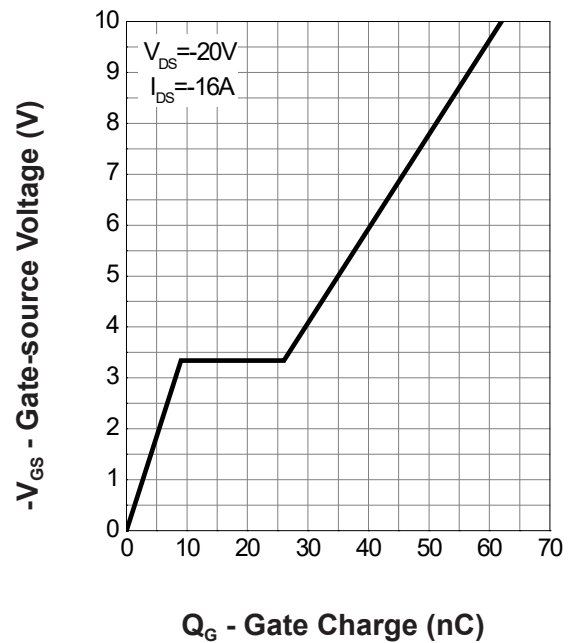
$-I_D$ - Drain Current (A)

Typical Operating Characteristics(Cont.)

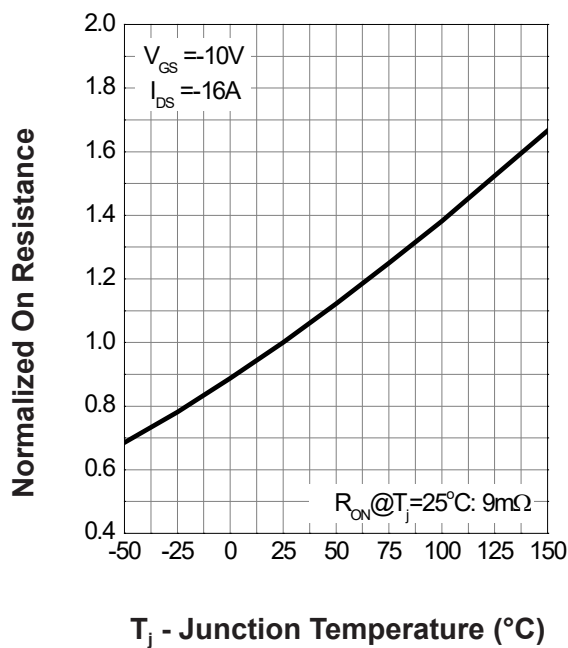
Capacitance



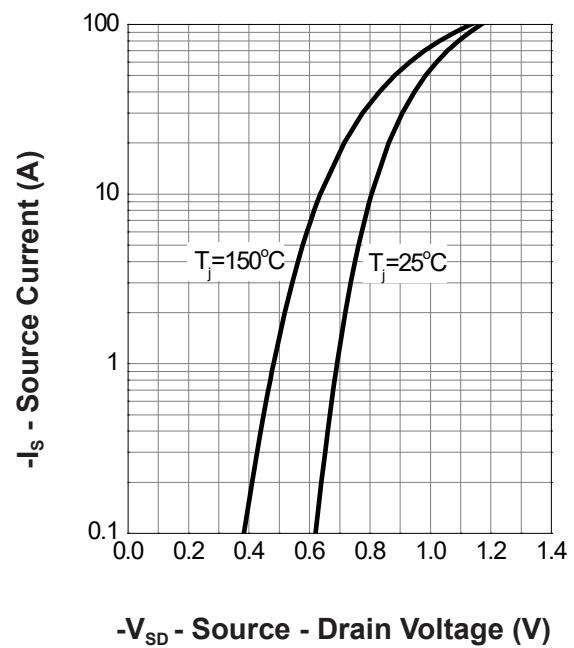
Gate Charge



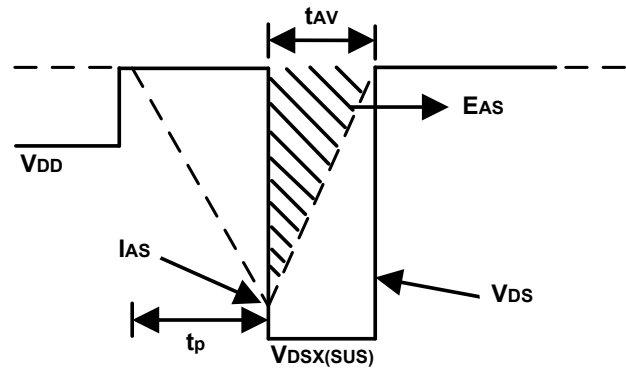
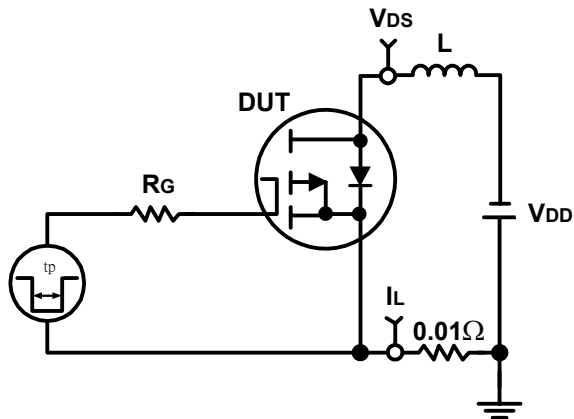
Drain-Source On Resistance



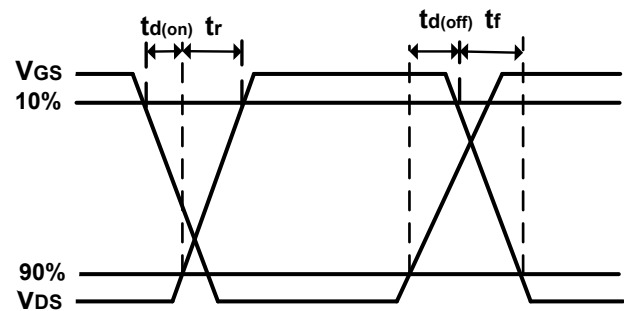
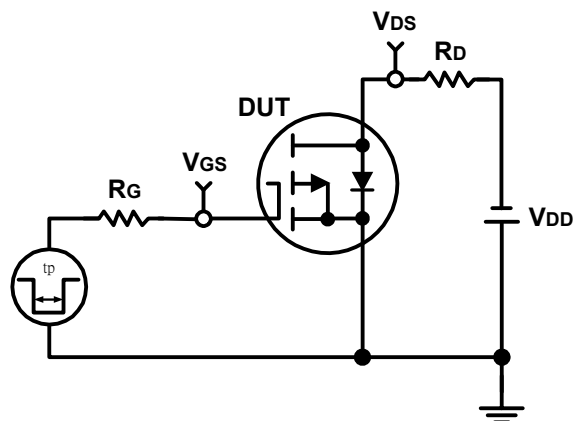
Source-Drain Diode Forward



Avalanche Test Circuit and Waveforms

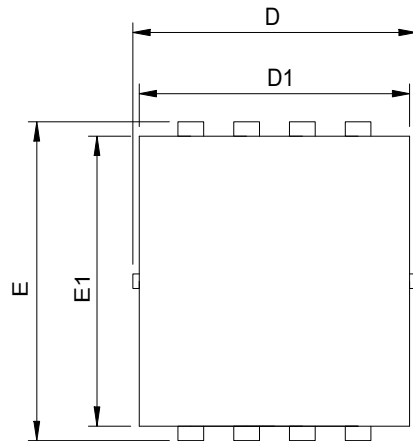


Switching Time Test Circuit and Waveforms

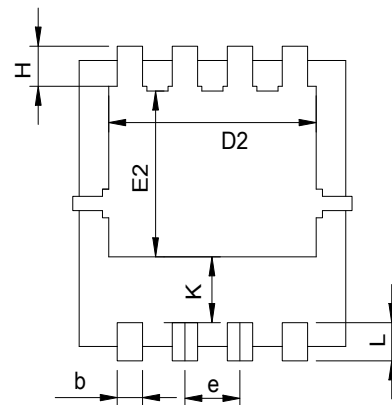


Package Information

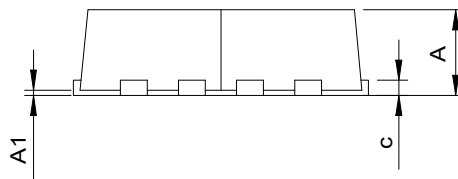
DFN3.3x3.3A-8_EP1_P



Top View



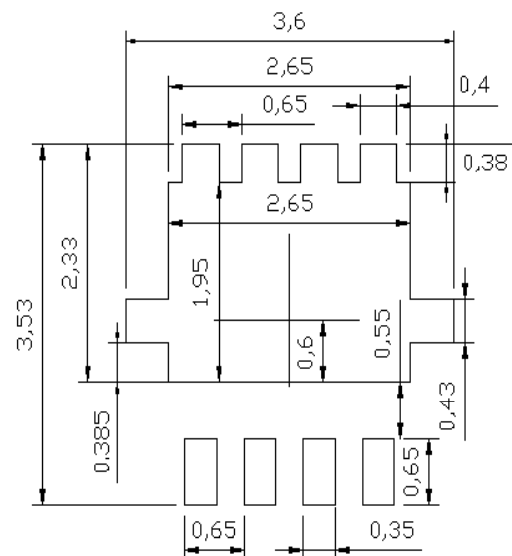
Bottom View



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