

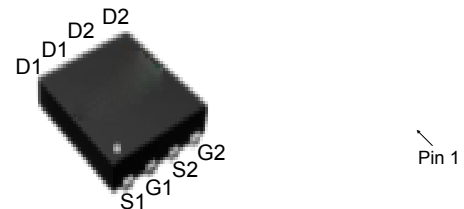
Features

- 40V/35A,
 $R_{DS(ON)} = 11m\Omega(\text{typ.}) @ V_{GS} = 10V$
 $R_{DS(ON)} = 14.5m\Omega(\text{typ.}) @ V_{GS} = 4.5V$
- 100% UIS + R_g Tested
- Lower Q_g and Q_{gd} for high-speed switching
- Lead Free and Green Devices Available (RoHS Compliant)
- Moisture Sensitivity Level MSL1 (per JEDEC J-STD-020D)

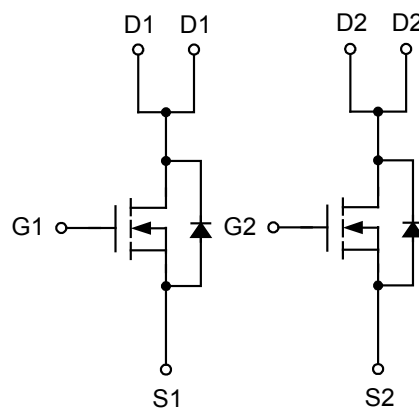
Applications

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

Pin Description



DFN3.3x3.3G-8_EP2



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		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	35	A
I _D	Continuous Drain Current	T _C =25°C	35	
		T _C =100°C	27	
I _{DM}	Pulsed Drain Current	T _C =25°C	105	
P _D	Maximum Power Dissipation	T _C =25°C	27.8	W
		T _C =100°C	11.1	
R _{θJC}	Thermal Resistance-Junction to Case	Steady State	4.5	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient	t ≤ 10s	40	°C/W
		Steady State ^b	60	
I _{AS} ^c	Avalanche Current, Single pulse	L=0.1mH	28	A
E _{AS} ^c	Avalanche Energy, Single pulse	L=0.1mH	39	mJ

Note a : Pulse width is limited by maximum junction temperature.

Note b : $R_{\theta JA}$ steady state $t = 100\text{s}$. $R_{\theta JA}$ is measured with the device mounted on 1in^2 , FR-4 board with 2oz. Copper.

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

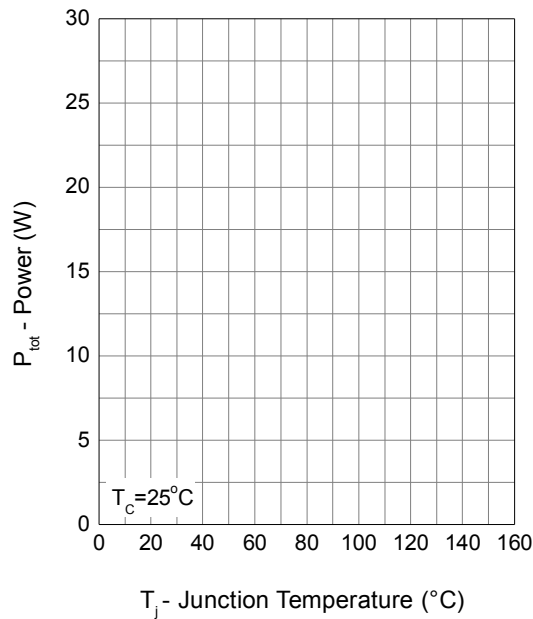
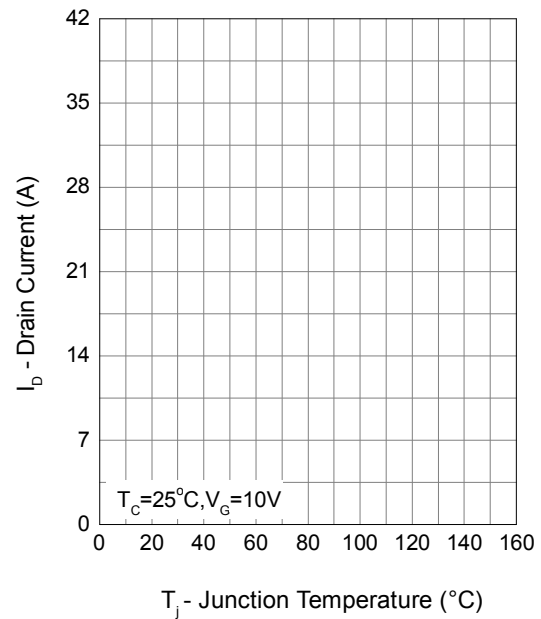
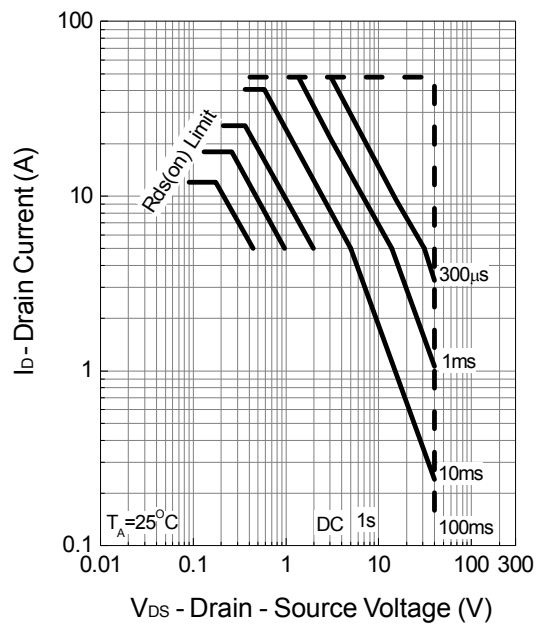
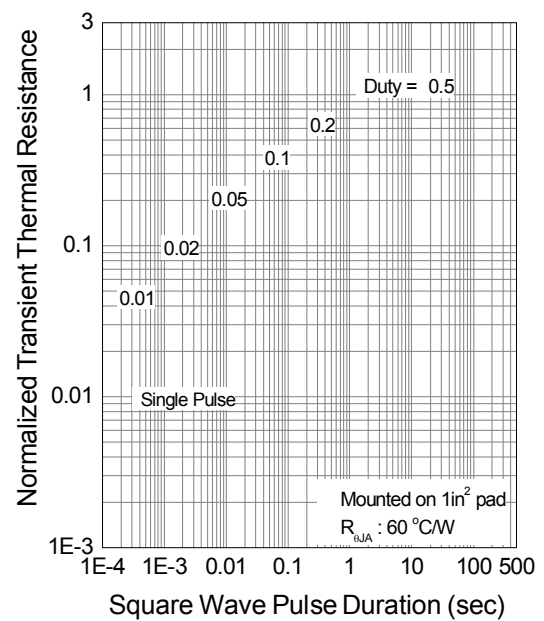
Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	40	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =32V, V _{GS} =0V T _J =85°C	- -	- -	1 30	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250μA	1.4	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} =15A T _J =125°C V _{GS} =4.5V, I _{DS} =8A	- - -	11 14.8 14.5	13.5 - 13.5	mΩ
Gfs	Forward Transconductance	V _{DS} =5V, I _{DS} =8A	-	18	-	S
Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =10A, V _{GS} =0V	-	0.82	1.1	V
t _{rr}	Reverse Recovery Time	I _F =5A, dI _{SD} /dt=100A/μs	-	18.8	-	ns
t _a	Charge Time		-	10.8	-	
t _b	Discharge Time		-	7.9	-	
Q _{rr}	Reverse Recovery Charge		-	10.5	-	nC
Dynamic Characteristics ^e						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	1.7	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =20V, Frequency=1.0MHz	-	1050	-	pF
C _{oss}	Output Capacitance		-	97	-	
C _{rss}	Reverse Transfer Capacitance		-	81	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =20V, R _L =20Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	10	-	ns
t _r	Turn-on Rise Time		-	6.6	-	
t _{d(OFF)}	Turn-off Delay Time		-	18	-	
t _f	Turn-off Fall Time		-	12	-	
Gate Charge Characteristics ^e						
Q _g	Total Gate Charge	V _{DS} =20V, V _{GS} =10V, I _{DS} =15A	-	10.7	-	nC
Q _g	Total Gate Charge	V _{DS} =20V, V _{GS} =4.5V, I _{DS} =15A	-	5.1	-	
Q _{gth}	Threshold Gate Charge		-	1.55	-	
Q _{gs}	Gate-Source Charge		-	2.9	-	
Q _{gd}	Gate-Drain Charge		-	1.1	-	

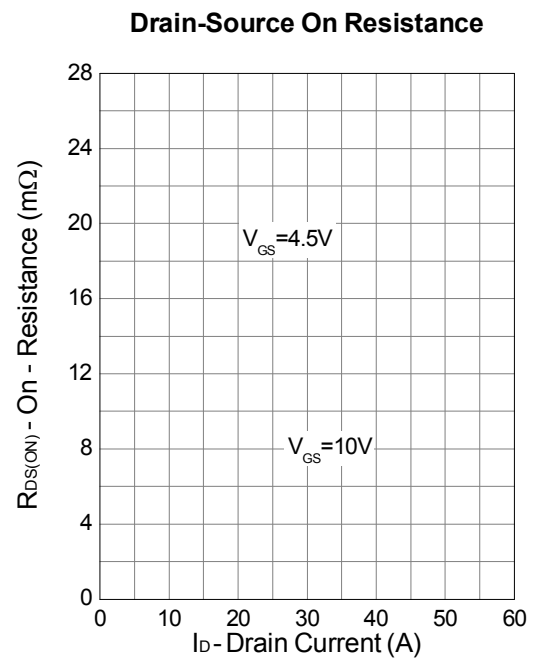
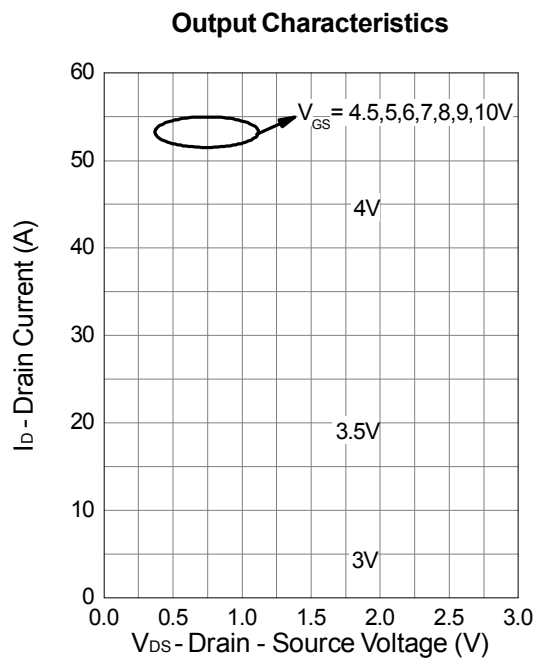
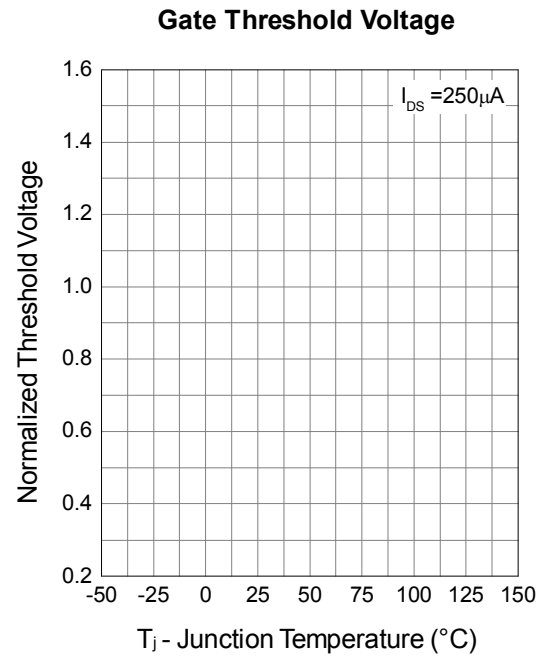
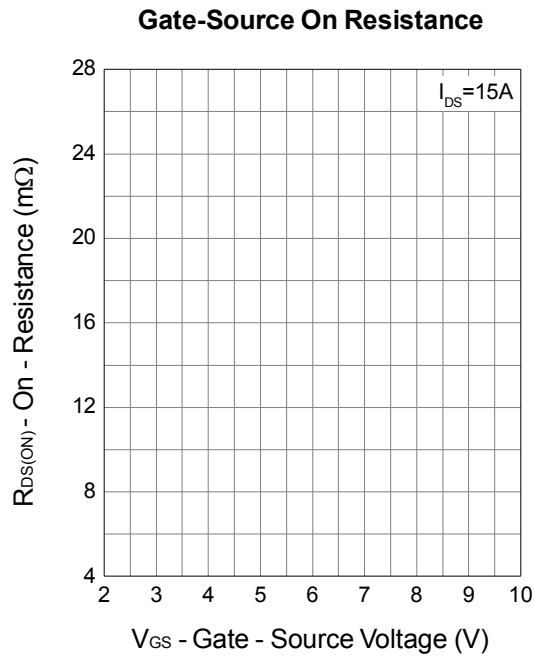
Note d : Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.

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

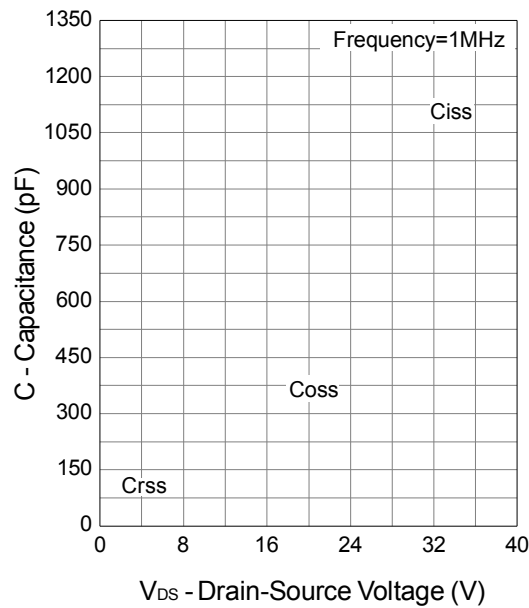
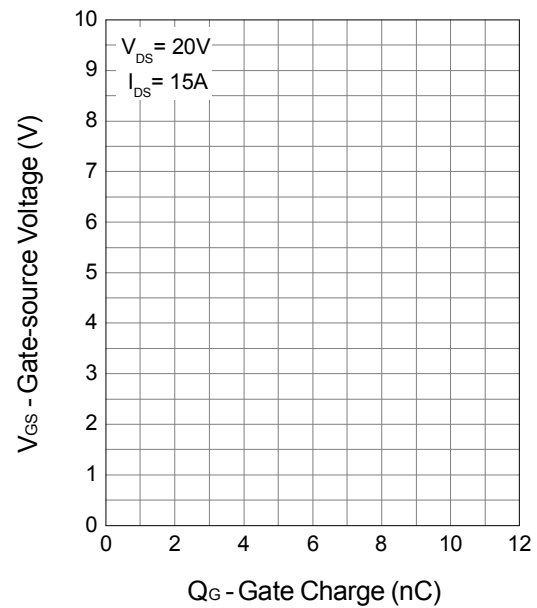
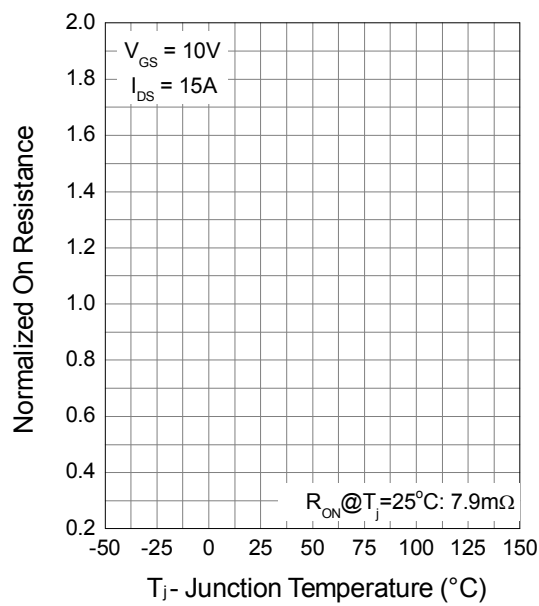
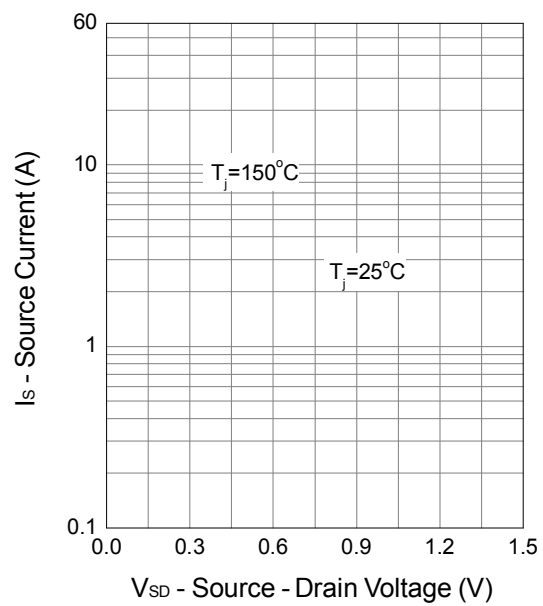
Typical Operating Characteristics

Power Dissipation

Drain Current

Safe Operation Area

Thermal Transient Impedance


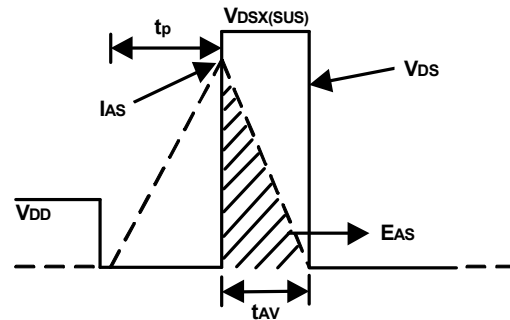
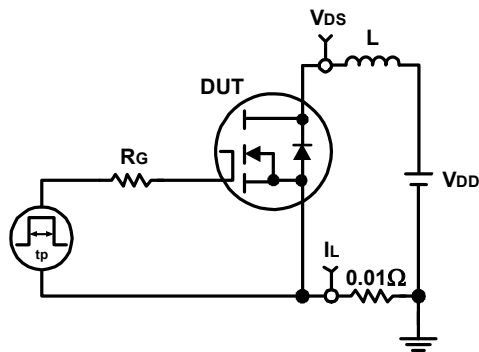
Typical Operating Characteristics (Cont.)



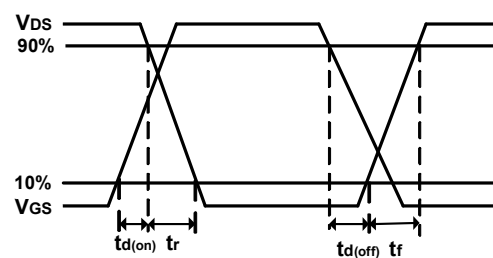
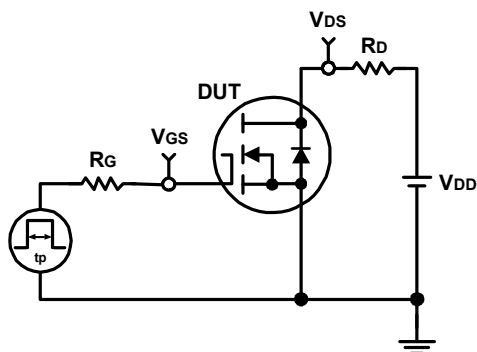
Typical Operating Characteristics (Cont.)

Capacitance

Gate Charge

Drain-Source On Resistance

Source-Drain Diode Forward


Avalanche Test Circuit and Waveforms

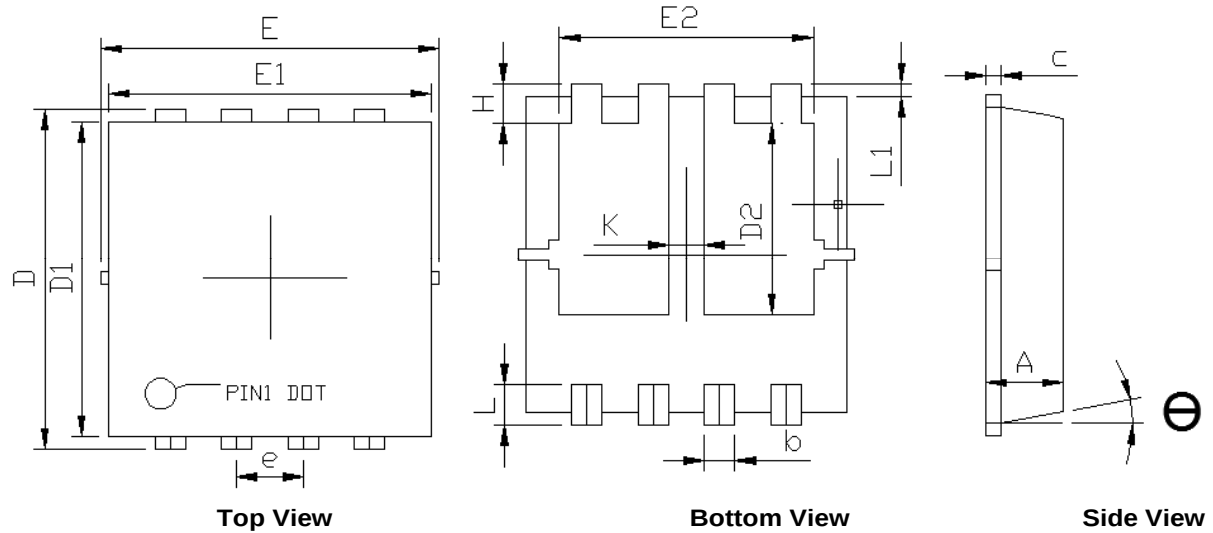


Switching Time Test Circuit and Waveforms



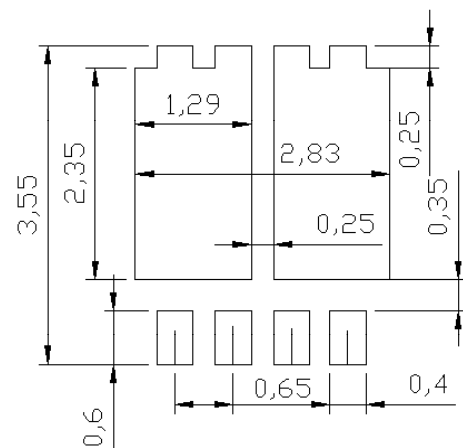
Package Information

DFN3.3x3.3-8L_EP2_P



SYMBOLS	DFN3.3x3.3G-8_EP2_P			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.70	0.80	0.028	0.031
b	0.25	0.35	0.010	0.014
c	0.10	0.25	0.004	0.010
D	3.25	3.45	0.128	0.136
D1	3.00	3.20	0.118	0.126
D2	1.78	1.98	0.070	0.078
E	3.20	3.40	0.126	0.134
E1	3.00	3.20	0.118	0.126
E2	2.39	2.59	0.094	0.102
e	0.65BSC		0.026 BSC	
H	0.30	0.50	0.012	0.020
L	0.30	0.50	0.012	0.020
L1	0.13 REF		0.005 REF	
K	0.30	-	0.012	-
θ	-	12°	-	12°

RECOMMENDED LAND PATTERN



UNIT: mm