

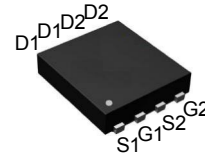
Features

- 30V/30A,
 $R_{DS(ON)} = 13m\Omega(\text{typ.}) @ V_{GS} = 10V$
 $R_{DS(ON)} = 18m\Omega(\text{typ.}) @ V_{GS} = 4.5V$
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lead Free Available (RoHS Compliant)

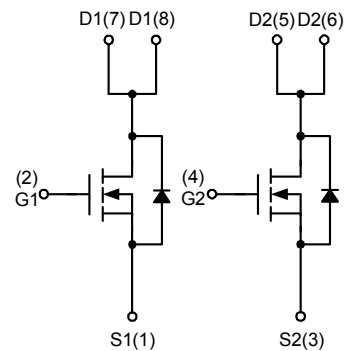
Applications

- Motor Control.
- High Current, High Speed Switching.
- Portable equipment application.

Pin Description



Top View of DFN3.3x3.3-8-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	30	A
I _D	Continuous Drain Current	T _C =25°C	30	A
		T _C =100°C	12	
I _{DM} ^b	Pulsed Drain Current	T _C =25°C	90	
P _D	Maximum Power Dissipation	T _C =25°C	13	W
		T _C =100°C	5.1	
R _{θJC}	Thermal Resistance-Junction to Case	Steady State	9.8	°C/W
I _D	Continuous Drain Current	T _A =25°C	5.7	A
		T _A =70°C	4.5	
I _{DM} ^b	Pulsed Drain Current	T _A =25°C	23	A
P _D	Maximum Power Dissipation	T _A =25°C	1.3	W
		T _A =70°C	0.83	
R _{θJA}	Thermal Resistance-Junction to Ambient	t = 10s	55	°C/W
		Steady State	96	
I _{AS} ^c	Avalanche Current, Single pulse	L=0.1mH	20	A
E _{AS} ^c	Avalanche Energy, Single pulse	L=0.1mH	20	mJ

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

Note b : Pulse width limited by maximum junction temperature.

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

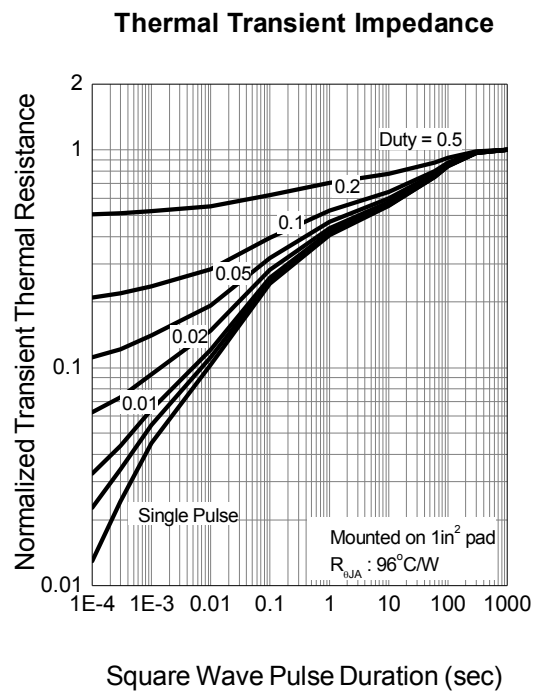
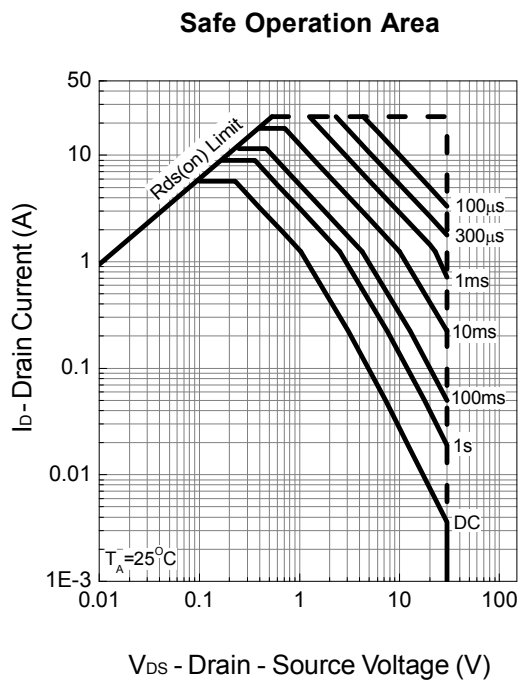
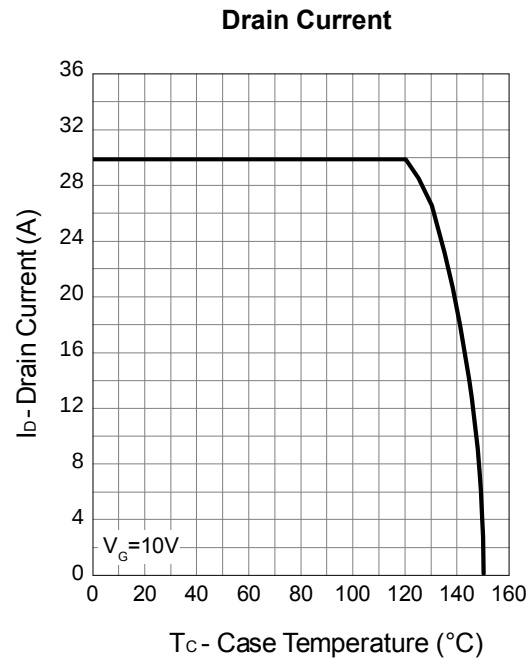
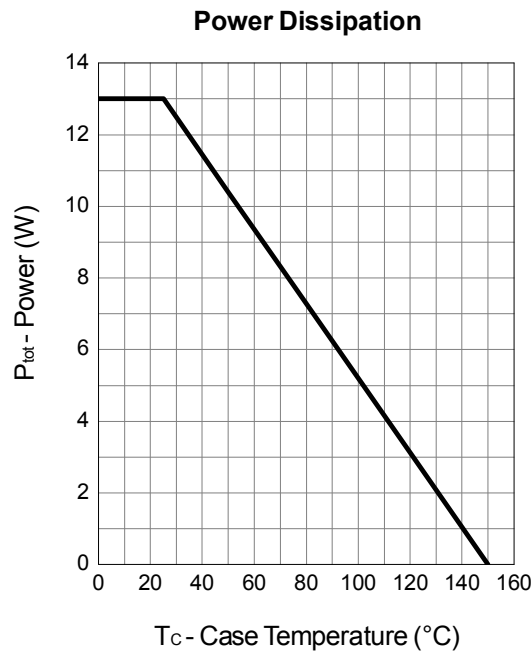
Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	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	1.4	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} =6A T _J =125°C	-	13 21	18 -	mΩ
G _{fs}	Forward Transconductance	V _{DS} =5V, I _{DS} =5A	-	7.2	-	S
Diode Characteristics						
V _{SD} ^d	Diode Forward Voltage	I _{SD} =1A, V _{GS} =0V	-	0.75	1.1	V
t _{rr}	Reverse Recovery Time	I _{SD} =6A, dI _{SD} /dt=100A/μs	-	8.8	-	ns
t _a	Charge Time		-	5	-	
t _b	Discharge Time		-	3.8	-	
Q _{rr}	Reverse Recovery Charge		-	4.1	-	nC
Dynamic Characteristics ^e						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	2.4	4.8	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, Frequency=1.0MHz	-	327	426	pF
C _{oss}	Output Capacitance		-	58	-	
C _{rss}	Reverse Transfer Capacitance		-	34	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =15V, R _L =15Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	5.2	10	ns
t _r	Turn-on Rise Time		-	9.1	17	
t _{d(OFF)}	Turn-off Delay Time		-	14.3	26	
t _f	Turn-off Fall Time		-	3.3	6	
Gate Charge Characteristics ^e						
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =10V, I _{DS} =6A	-	7	9.8	nC
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =4.5V, I _{DS} =6A	-	3.4	-	
Q _{gth}	Threshold Gate Charge		-	0.6	-	
Q _{gs}	Gate-Source Charge		-	1.1	-	
Q _{gd}	Gate-Drain Charge		-	1.2	-	

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

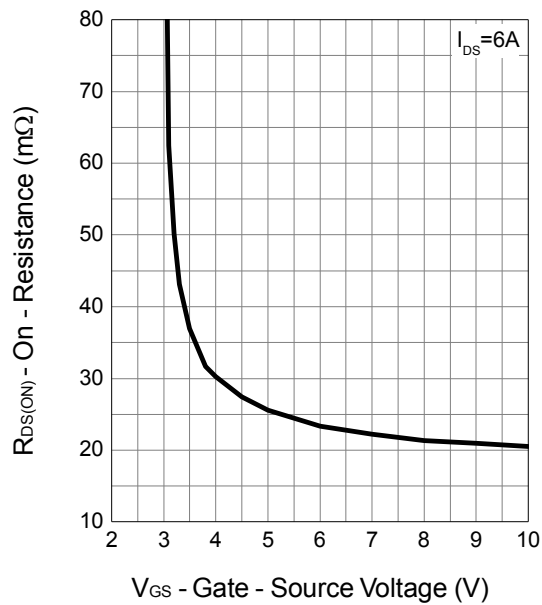
Note e : Guaranteed by design, not subject to production testing.

Typical Operating Characteristics

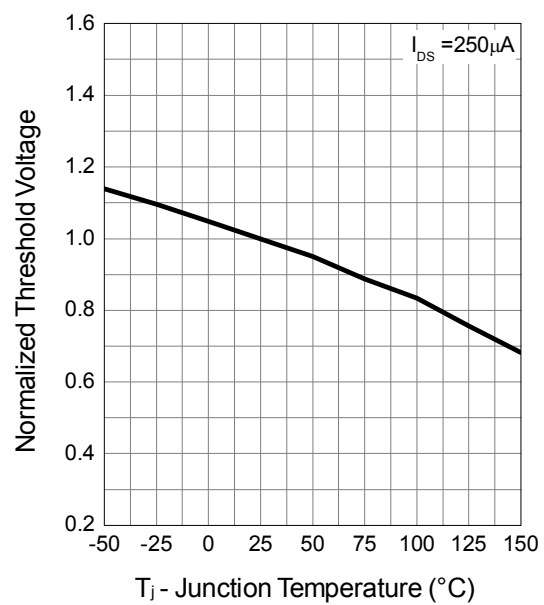


Typical Operating Characteristics (Cont.)

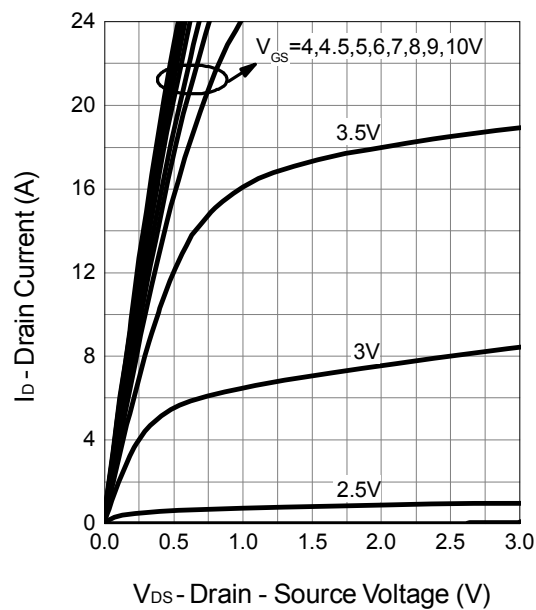
Gate-Source On Resistance



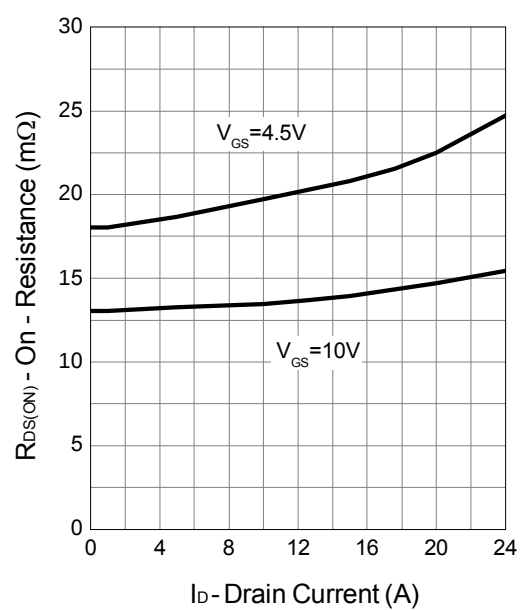
Gate Threshold Voltage



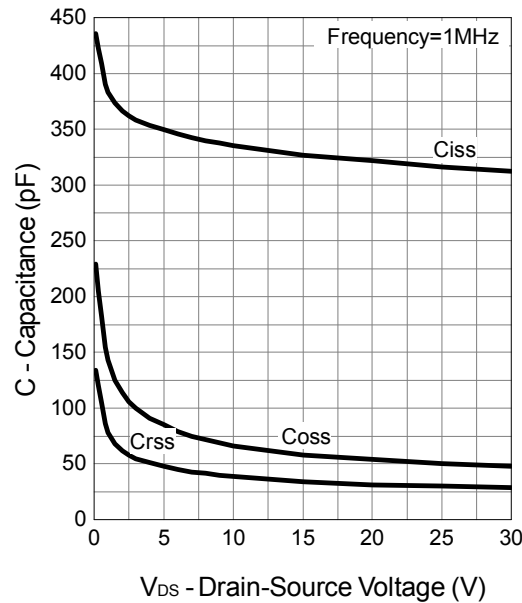
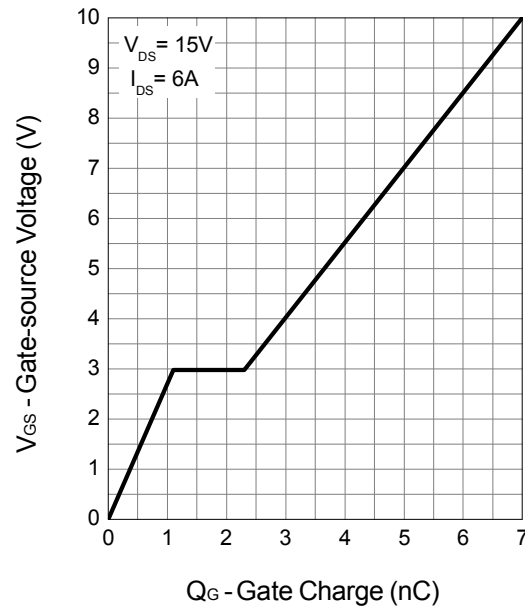
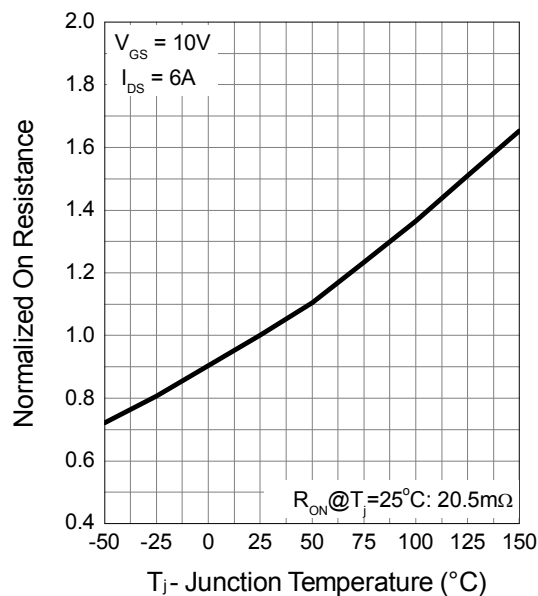
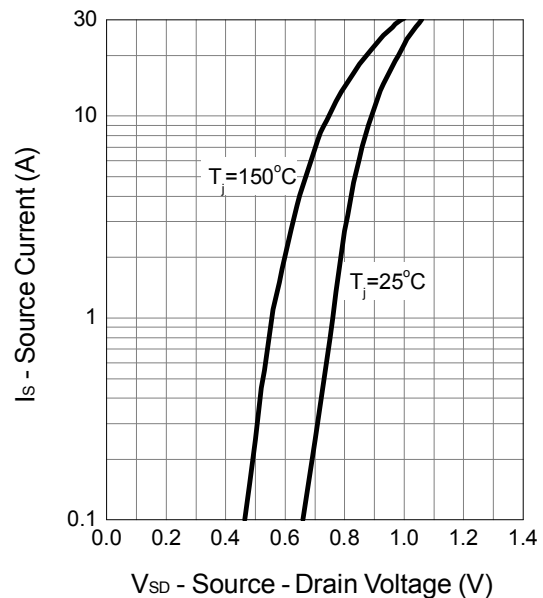
Output Characteristics



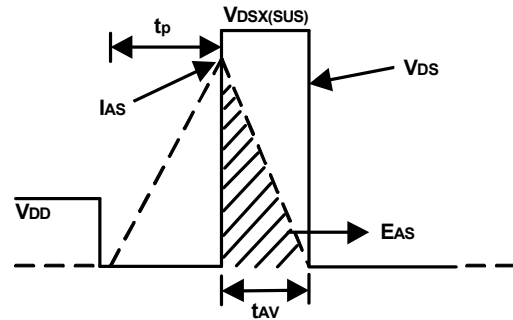
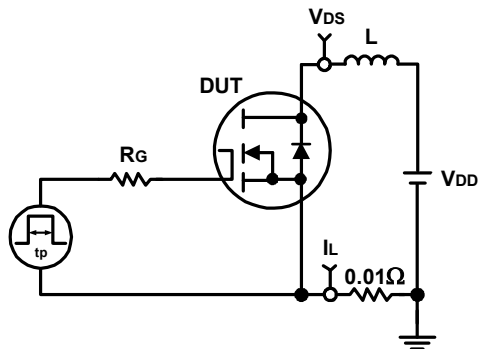
Drain-Source On Resistance



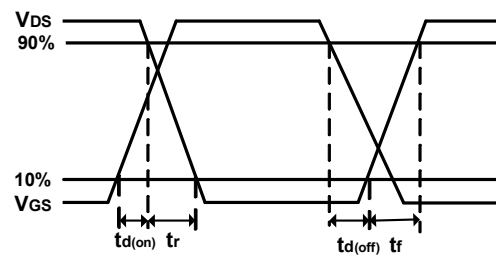
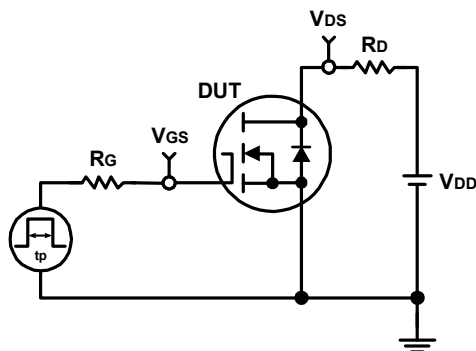
Typical Operating Characteristics (Cont.)

Capacitance

Gate Charge

Drain-Source On Resistance

Source-Drain Diode Forward


Avalanche Test Circuit and Waveforms

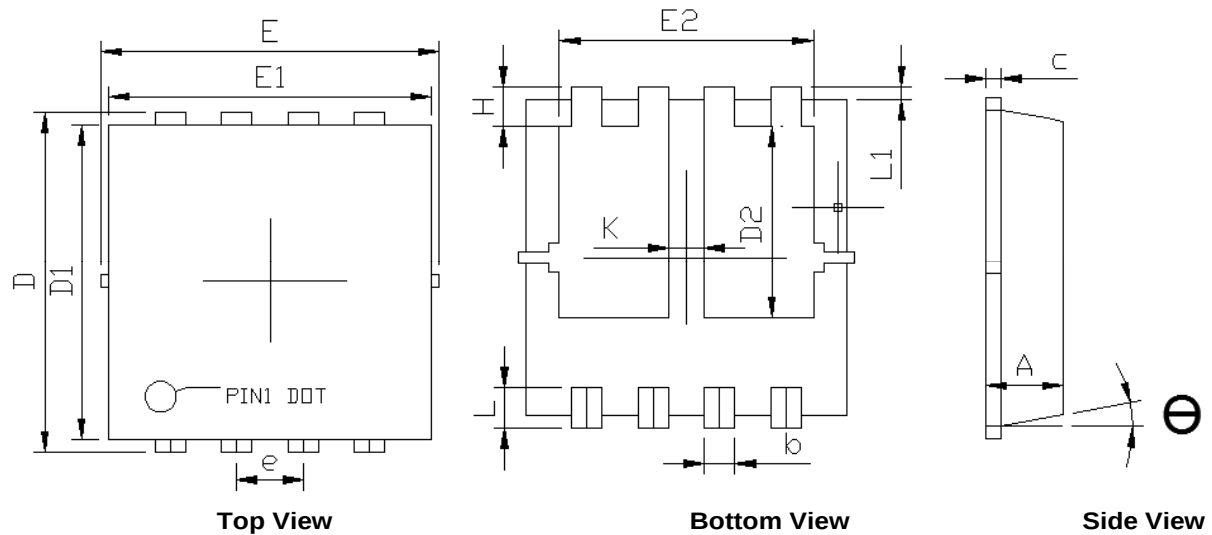


Switching Time Test Circuit and Waveforms



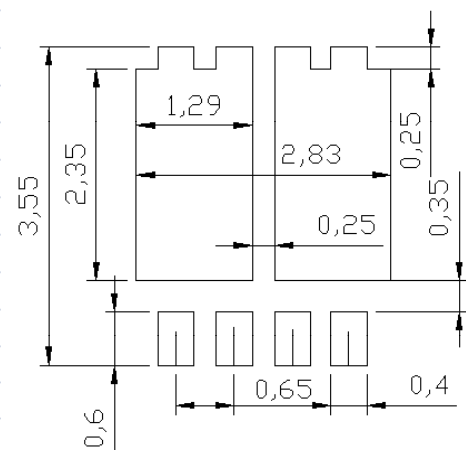
Package Information

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