

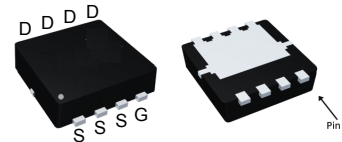
Features

- -20V/-45A,
 $R_{DS(ON)} = 13m\Omega(\text{typ.}) @ V_{GS} = -4.5V$
 $R_{DS(ON)} = 18m\Omega(\text{typ.}) @ V_{GS} = -2.5V$
- 100% UIS & RG Tested
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

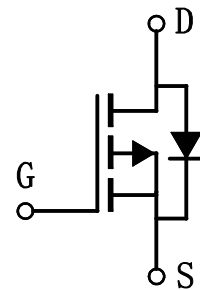
Applications

- Power Management for Industrial DC/DC Converters

Pin Description



PDFN3.3*3.3-8L



P-Channel MOSFET

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter		Rating	Unit
V_{DSS}	Drain-Source Voltage		-20	V
V_{GSS}	Gate-Source Voltage		± 12	
I_D^a	Continuous Drain Current ($V_{GS} = -4.5\text{V}$)	$T_A = 25^\circ\text{C}$	-45	A
		$T_A = 70^\circ\text{C}$	-36	
I_{DM}^a	Pulsed Drain Current ($V_{GS} = -4.5\text{V}$)		-44 *	
I_D^c	Continuous Drain Current	$T_C = 25^\circ\text{C}$	-35	
		$T_C = 100^\circ\text{C}$	-22	
I_S^a	Diode Continuous Forward Current		-10	
T_J	Maximum Junction Temperature		150	$^\circ\text{C}$
I_{AS}^d	Avalanche Current, Single pulse	$L = 0.5\text{mH}$	-12	A
E_{AS}^d	Avalanche Energy, Single pulse	$L = 0.5\text{mH}$	36	mJ
T_{STG}	Storage Temperature Range		-55 to 150	$^\circ\text{C}$
P_D^a	Maximum Power Dissipation	$T_A = 25^\circ\text{C}$	3.1	W
		$T_A = 70^\circ\text{C}$	2	
P_D^c	Maximum Power Dissipation	$T_C = 25^\circ\text{C}$	31.25	
		$T_C = 100^\circ\text{C}$	12.5	
$R_{\theta JA}^{a,b}$	Thermal Resistance-Junction to Ambient	$t \leq 10\text{s}$	40	$^\circ\text{C/W}$
		Steady State	80	
$R_{\theta JC}^c$	Thermal Resistance-Junction to Case		4	$^\circ\text{C/W}$

Note * : Package limited.

Note a : Surface Mounted on 1in^2 pad area, $t \leq 10\text{sec}$.

Note b : Maximum under Steady State conditions is 75°C/W .

Note c : The power dissipation P_D is based on $T_{J(MAX)} = 150^\circ\text{C}$, and it is useful for reducing junction-to-case thermal resistance ($R_{\theta JC}$) when additional heat sink is used.

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

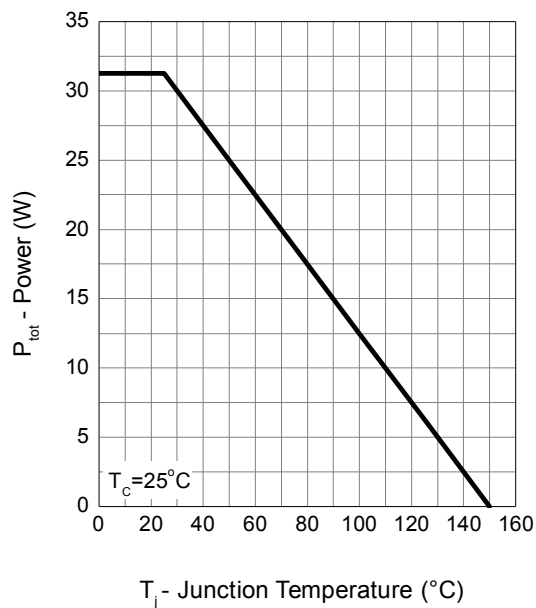
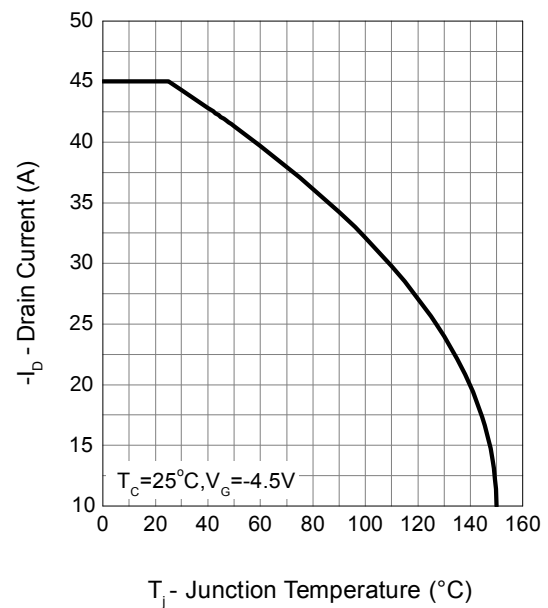
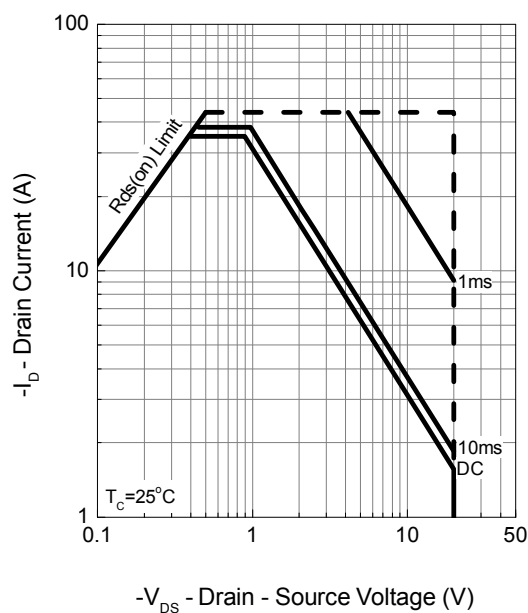
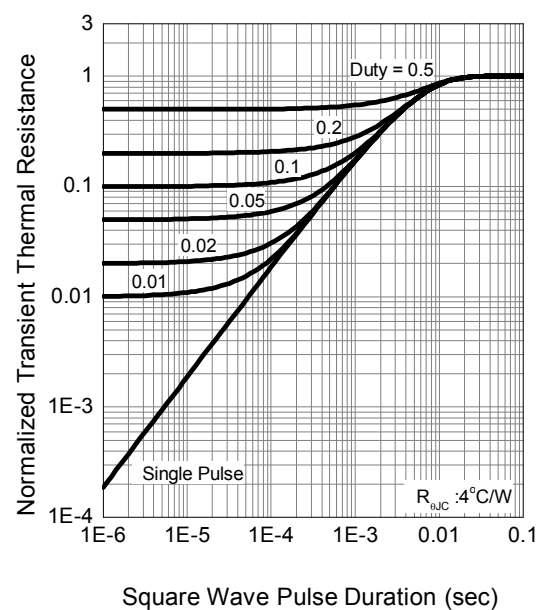
Electrical Characteristics (T_A = 25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-20	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-16V, V _{GS} =0V T _J =85°C	-	-	-1 -30	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-0.5	-0.7	-1	V
I _{GSS}	Gate Leakage Current	V _{GS} =±12V, V _{DS} =0V	-	-	±10	μA
R _{DS(ON)} ^e	Drain-Source On-state Resistance	V _{GS} =-4.5V, I _{DS} =-11A V _{GS} =-2.5V, I _{DS} =-6A V _{GS} =-1.8V, I _{DS} =-1A	- - -	13 18 26	17 25 45	mΩ
Diode Characteristics						
V _{SD} ^e	Diode Forward Voltage	I _{SD} =-1A, V _{GS} =0V	-	-0.7	-1	V
t _{rr} ^f	Reverse Recovery Time	I _{SD} =-11A, dI _{SD} /dt=100A/μs	-	63	-	ns
Q _{rr} ^f	Reverse Recovery Charge		-	54	-	nC
Dynamic Characteristics ^f						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-10V, Frequency=1.0MHz	-	1620	-	pF
C _{oss}	Output Capacitance		-	320	-	
C _{rss}	Reverse Transfer Capacitance		-	290	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-10V, R _L =10Ω, I _{DS} =-1A, V _{GEN} =-4.5V, R _G =6Ω	-	9	-	ns
t _r	Turn-on Rise Time		-	13	-	
t _{d(OFF)}	Turn-off Delay Time		-	26	-	
t _f	Turn-off Fall Time		-	167	-	
Gate Charge Characteristics ^f						
Q _g	Total Gate Charge	V _{DS} =-10V, V _{GS} =-4.5V, I _{DS} =-11A	-	25	-	nC
Q _{gs}	Gate-Source Charge		-	1.6	-	
Q _{gd}	Gate-Drain Charge		-	11	-	

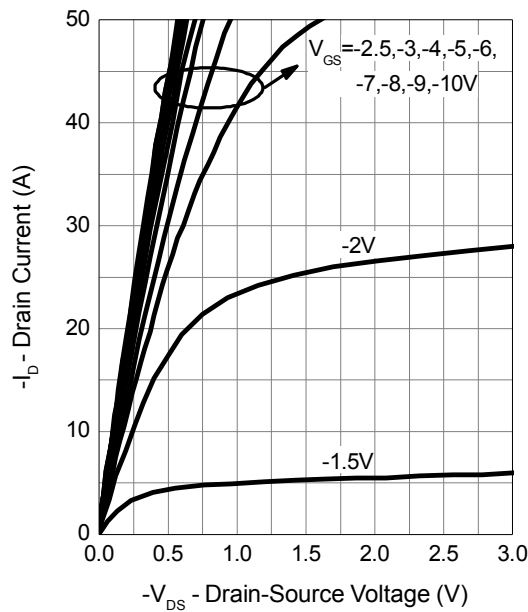
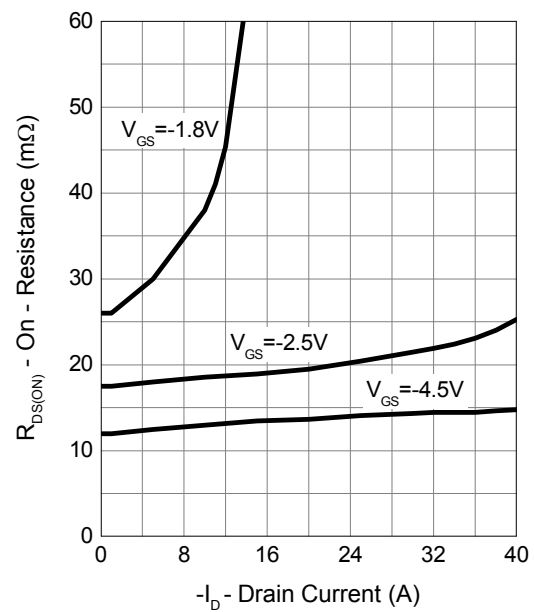
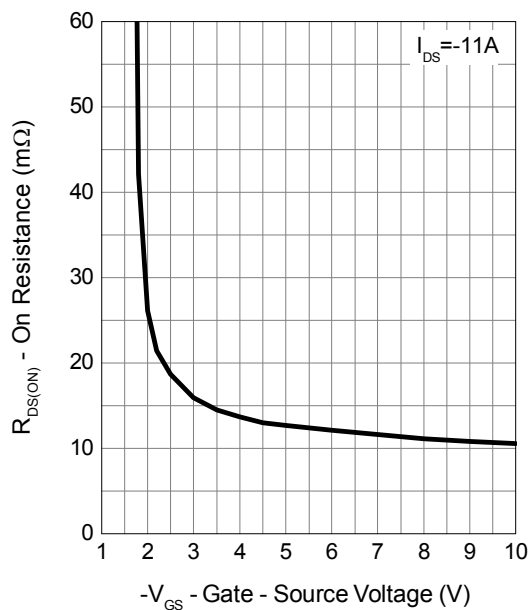
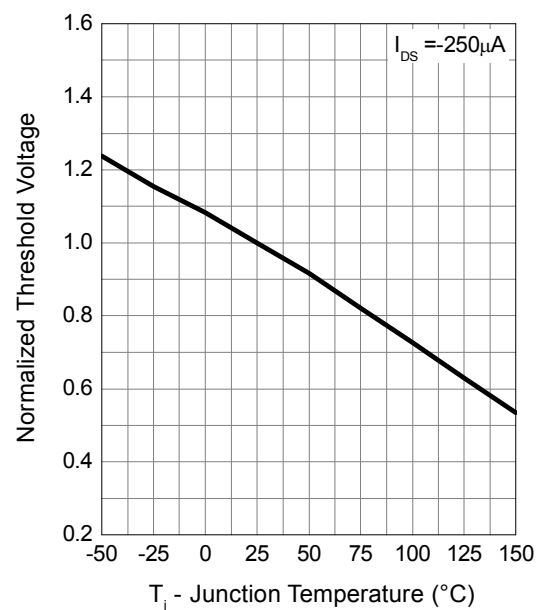
Note e : Pulse test; pulse width≤300μs, duty cycle≤2%.

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

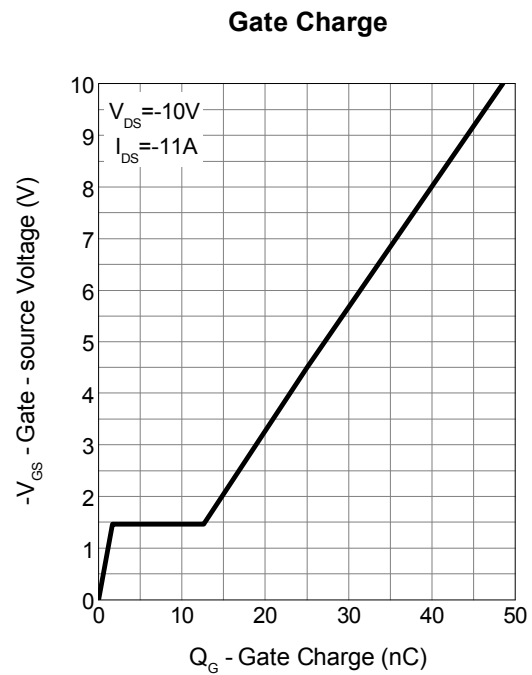
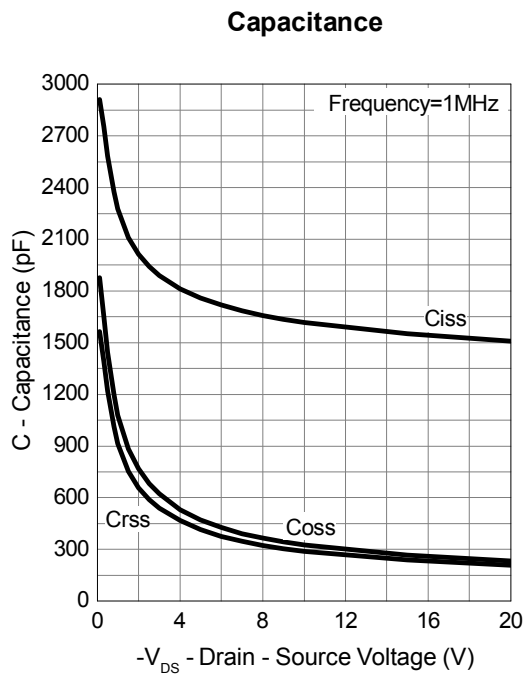
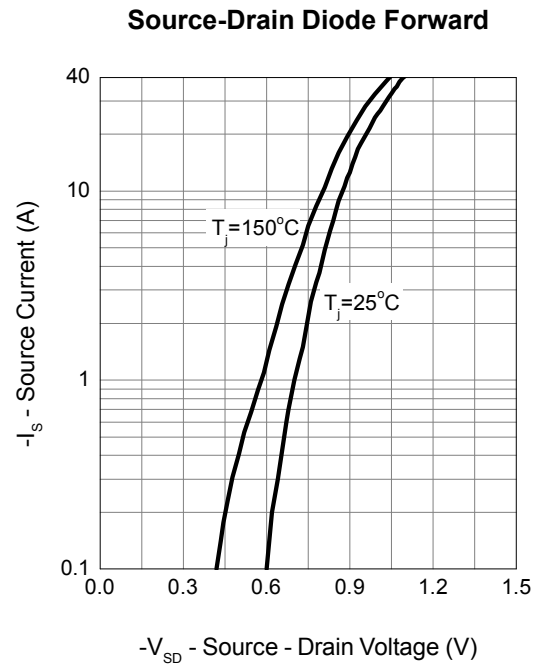
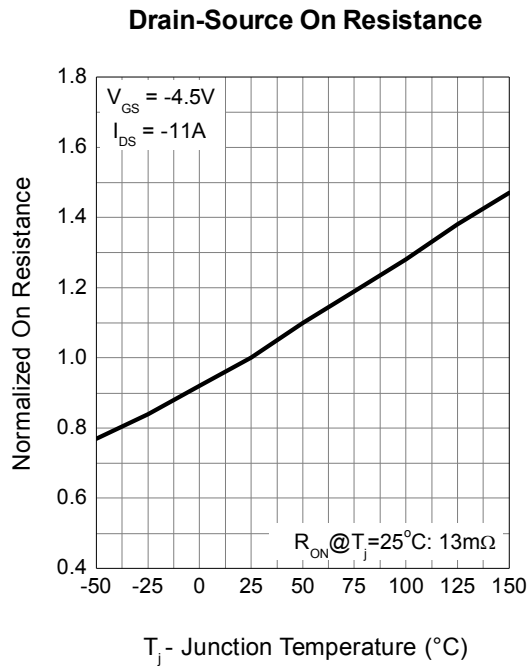
Typical Operating Characteristics

Power Dissipation

Drain Current

Safe Operation Area

Thermal Transient Impedance


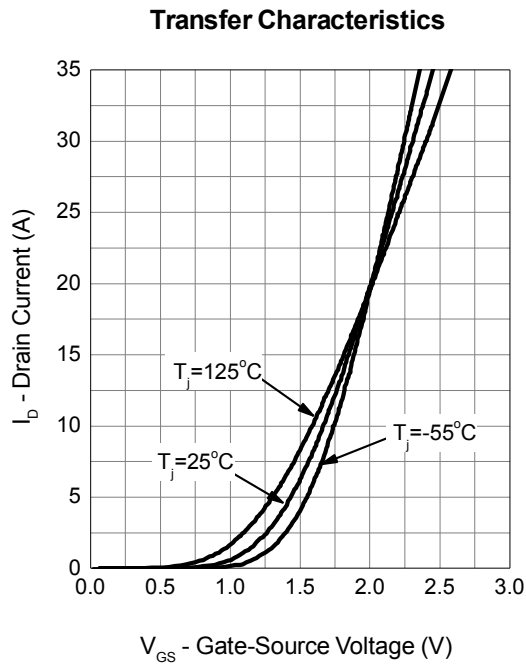
Typical Operating Characteristics (Cont.)

Output Characteristics

Drain-Source On Resistance

Gate-Source On Resistance

Gate Threshold Voltage


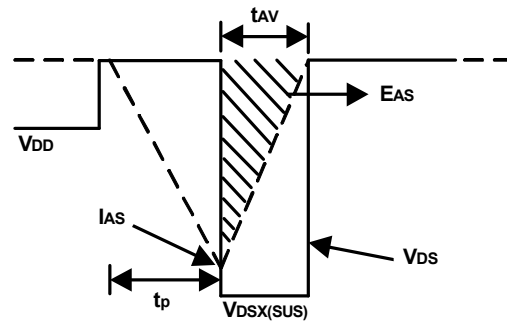
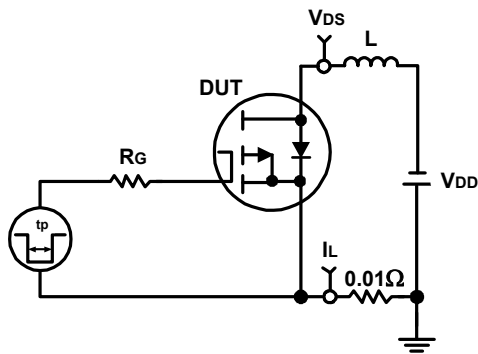
Typical Operating Characteristics (Cont.)



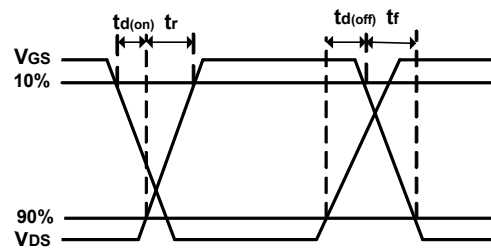
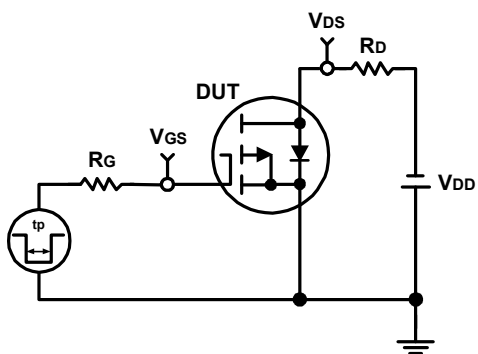
Typical Operating Characteristics (Cont.)



Avalanche Test Circuit and Waveforms

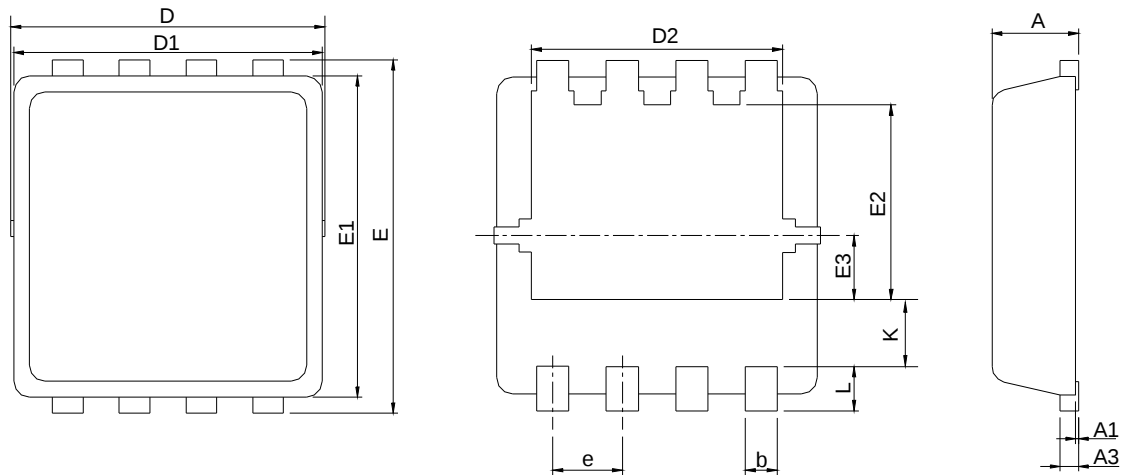


Switching Time Test Circuit and Waveforms



Package Information

PDFN3.3*3.3-8L



SYMBOL	PDFN3.3*3.3-8L			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.80	1.00	0.031	0.039
A1	0.00	0.05	0.000	0.002
A3	0.10	0.25	0.004	0.010
b	0.24	0.35	0.009	0.014
D	2.90	3.30	0.114	0.130
D1	2.90	3.10	0.114	0.122
D2	2.25	2.45	0.089	0.096
E	3.10	3.30	0.122	0.130
E1	2.90	3.10	0.114	0.122
E2	1.65	1.85	0.065	0.073
E3	0.56	0.58	0.022	0.023
e	0.65 BSC		0.026 BSC	
K	0.475	0.775	0.019	0.031
L	0.30	0.50	0.012	0.020

RECOMMENDED LAND PATTERN

