

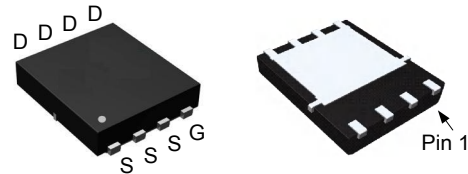
Features

- 30V/160A,
 $R_{DS(ON)} = 1.35m\Omega$ (typ.) @ $V_{GS}=10V$
 $R_{DS(ON)} = 2.4m\Omega$ (typ.) @ $V_{GS}=4.5V$
- 100% UIS + R_g Tested
- Reliable and Rugged
- Lower Q_g and Q_{gd} for high-speed switching
- Lower $R_{DS(ON)}$ to Minimize Conduction Losses
- Lead Free and Green Devices Available
(RoHS Compliant)

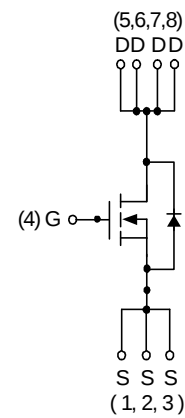
Applications

- Power Management in Desktop Computer or DC/DC Converters.
- Power Load Switch.
- Notebook Battery Management.

Pin Description



DFN5x6_8L_EP1_P



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	160	A
I _D ^a	Continuous Drain Current	T _C =25°C	160	
		T _C =100°C	96	
I _{DM} ^b	Pulsed Drain Current	T _C =25°C	552	
P _D	Maximum Power Dissipation	T _C =25°C	78	W
		T _C =100°C	31	
R _{θJC}	Thermal Resistance-Junction to Case	Steady State	1.6	°C/W
I _D ^c	Continuous Drain Current	T _A =25°C	28	A
		T _A =70°C	22	
P _D ^c	Maximum Power Dissipation	T _A =25°C	2.3	W
		T _A =70°C	1.5	
R _{θJA} ^c	Thermal Resistance-Junction to Ambient	t ≤ 10s	20	°C/W
		Steady State	55	
I _{AS} ^d	Avalanche Current, Single pulse	L=0.1mH	110	A
E _{AS} ^d	Avalanche Energy, Single pulse	L=0.1mH	605	mJ

Note a,* : Max. continue current is limited by bonding wire.

Note b : Pulse width is limited by max. junction temperature.

Note c : $R_{\theta JA}$ steady state $t=999\text{s}$.

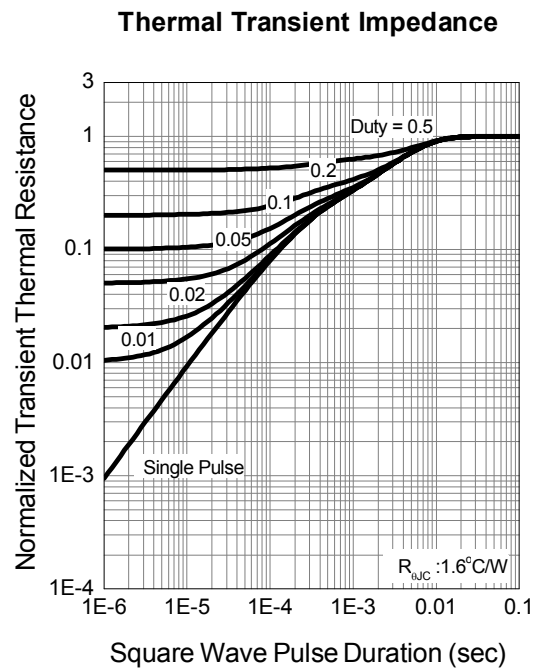
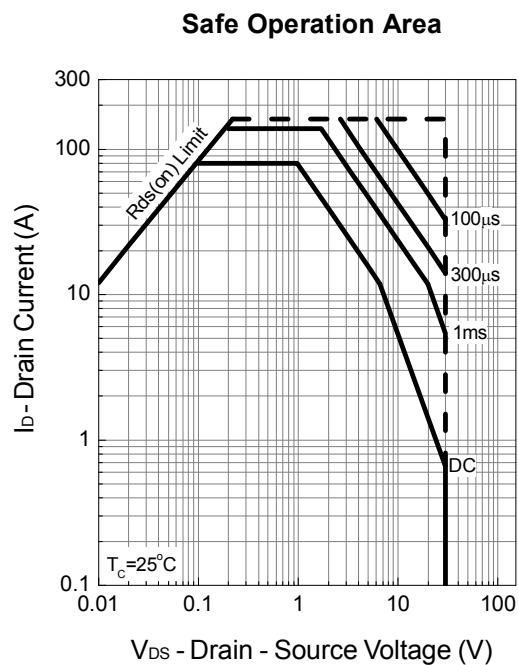
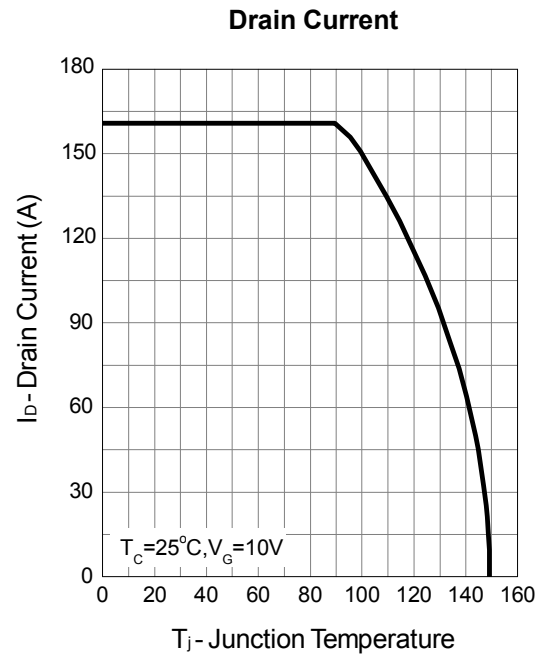
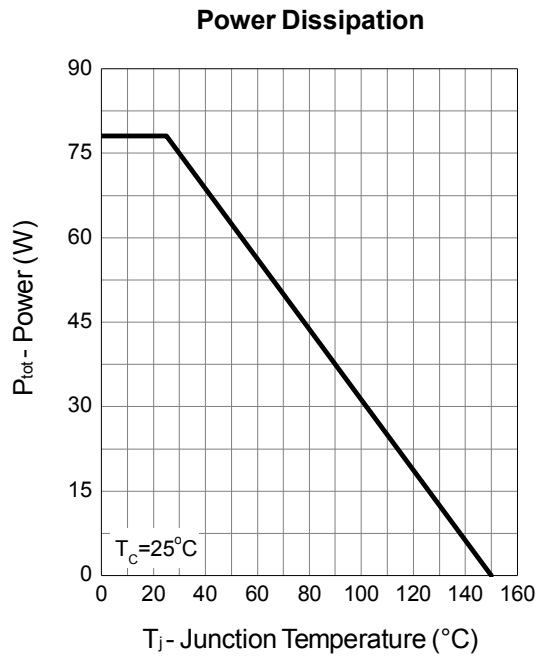
Note d : UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature $T_J=25^\circ\text{C}$).

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

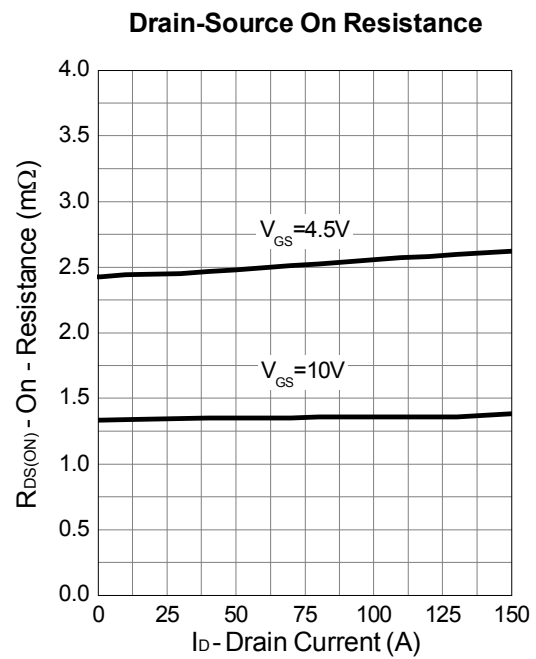
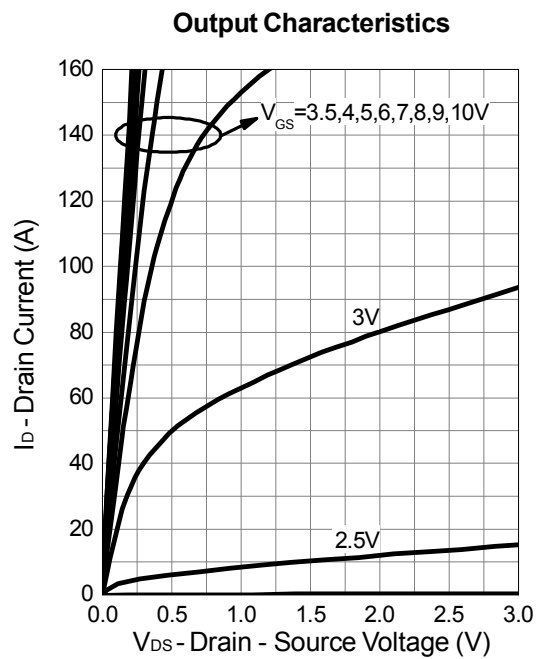
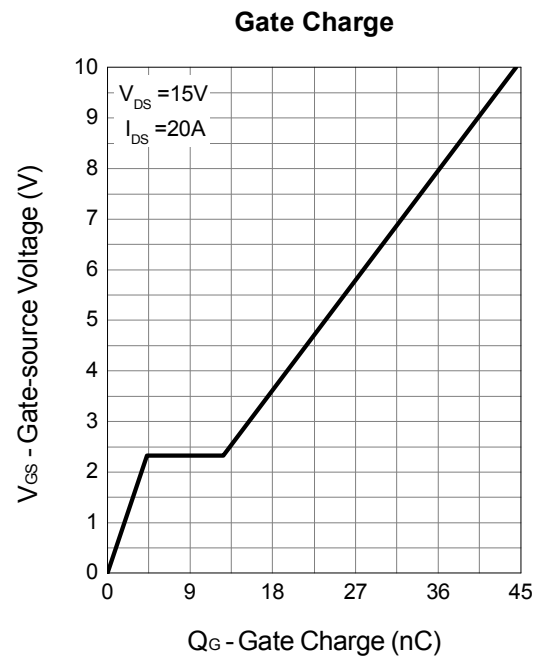
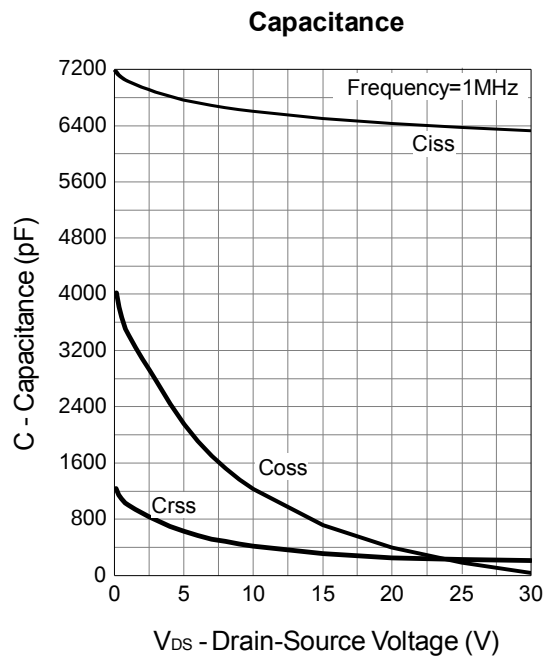
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250μA	30	-	-	V
BV _{DSS} t	Drain-Source Breakdown Voltage (transient)	V _{GS} =0V, I _{D(aval)} =40A T _{case} =25°C, t _{transient} =100ns	34	-	-	V
I _{DSS}	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	1.0	1.7	2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
R _{DS(ON)} ^e	Drain-Source On-state Resistance	V _{GS} =10V, I _{DS} =20A T _J =125°C	- -	1.35 1.9	1.8 -	mΩ
		V _{GS} =4.5V, I _{DS} =12A	-	2.4	3.1	
G _{fs}	Forward Transconductance	V _{DS} =5V, I _{DS} =15A	-	32	-	S
Diode Characteristics						
V _{SD} ^e	Diode Forward Voltage	I _{SD} =20A, V _{GS} =0V	-	0.8	1.1	V
t _{rr}	Reverse Recovery Time	I _{SD} =20A, dI _{SD} /dt=100A/μs	-	50	-	ns
t _a	Charge Time		-	23.5	-	
t _b	Discharge Time		-	27.5	-	
Q _{rr}	Reverse Recovery Charge		-	45	-	nC
Dynamic Characteristics						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	0.9	2	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =25V, Frequency=1.0MHz	-	6536		pF
C _{oss}	Output Capacitance		-	761		
C _{rss}	Reverse Transfer Capacitance		-	461		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =15V, R _L =15Ω, I _{DS} =1A, V _{GEN} =10V, R _G =6Ω	-	15.5	-	ns
t _r	Turn-on Rise Time		-	11	-	
t _{d(OFF)}	Turn-off Delay Time		-	35	-	
t _f	Turn-off Fall Time		-	40	-	
Gate Charge Characteristics						
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =10V, I _{DS} =20A	-	115	57.8	nC
Q _g	Total Gate Charge	V _{DS} =15V, V _{GS} =4.5V, I _{DS} =20A	-	15.4	-	
Q _{gth}	Threshold Gate Charge		-	2.9	-	
Q _{gs}	Gate-Source Charge		-	4.3	-	
Q _{gd}	Gate-Drain Charge		-	27.2	-	

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

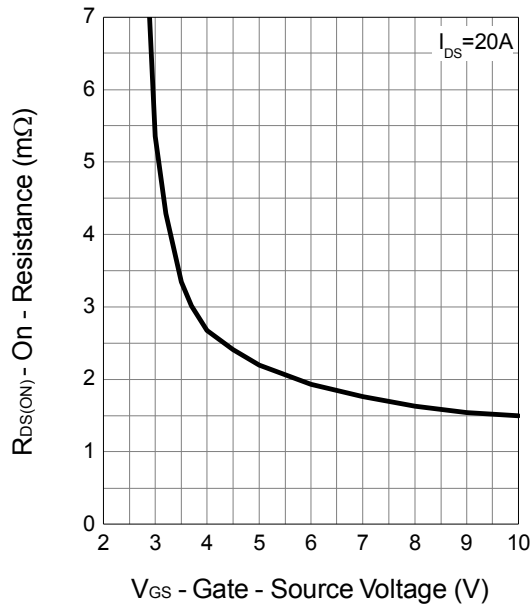
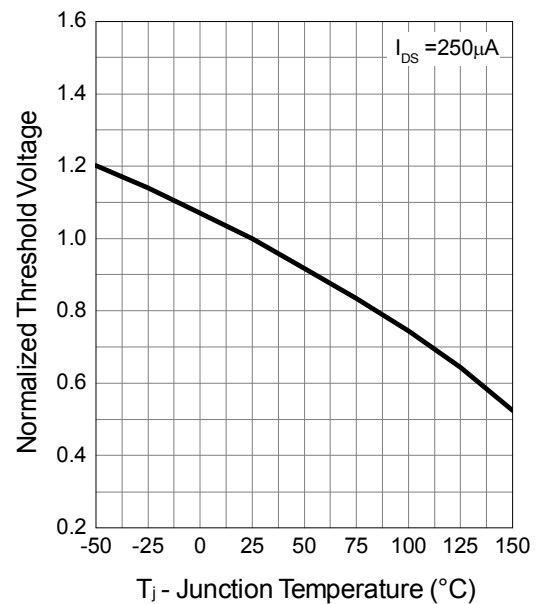
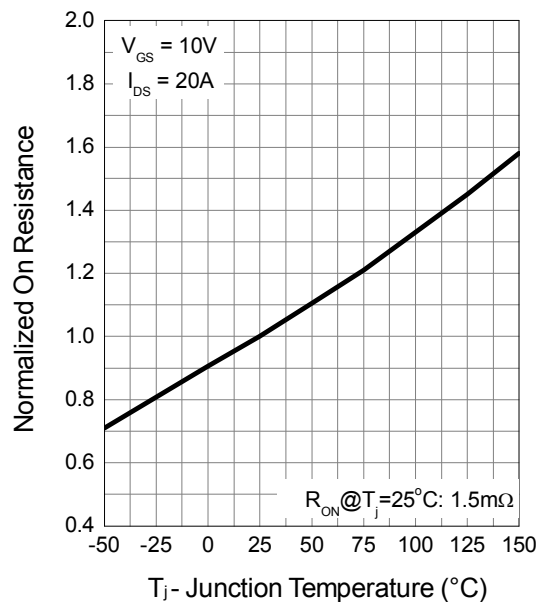
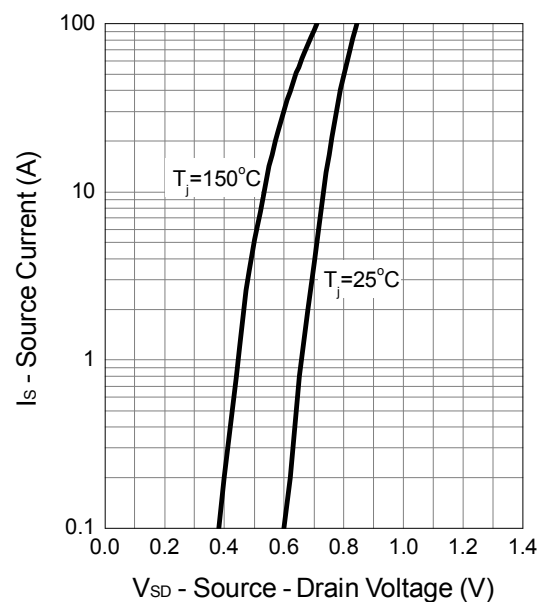
Typical Operating Characteristics



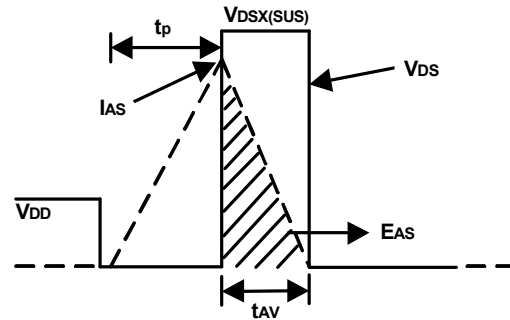
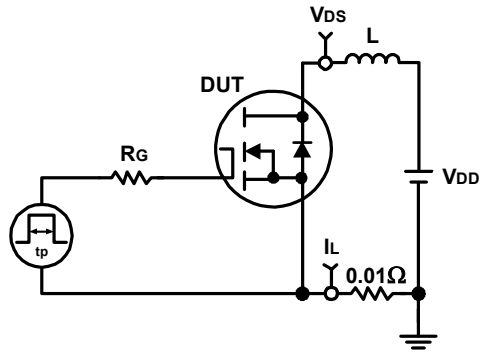
Typical Operating Characteristics (Cont.)



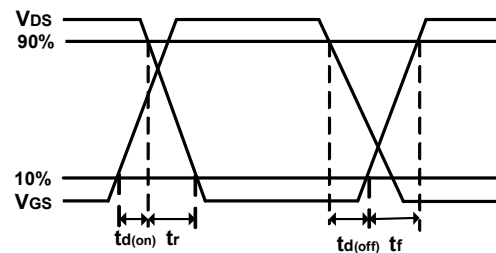
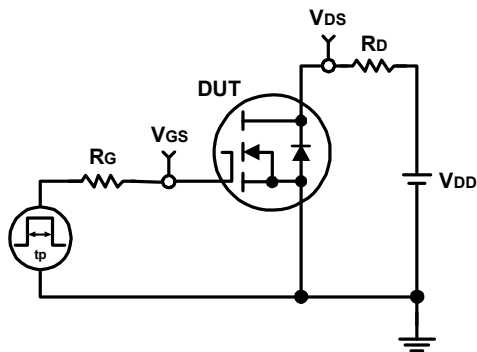
Typical Operating Characteristics (Cont.)

Gate-Source On Resistance

Gate Threshold Voltage

Drain-Source On Resistance

Source-Drain Diode Forward


Avalanche Test Circuit and Waveforms

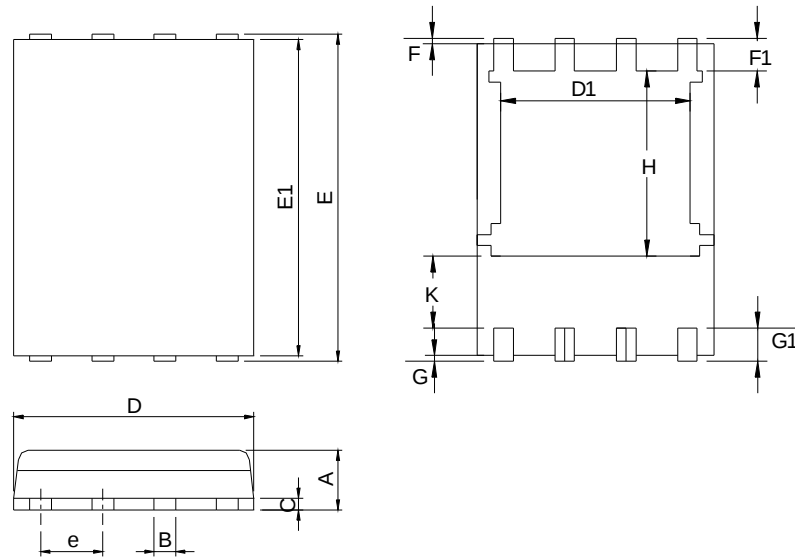


Switching Time Test Circuit and Waveforms



Package Information

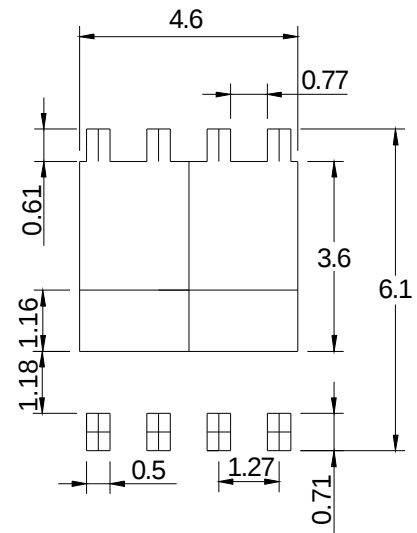
DFN5x6-8



SYMBOL	DFN5x6-8			
	MILLIMETERS		INCHES	
	MIN.	MAX.	MIN.	MAX.
A	0.90	1.20	0.035	0.047
B	0.3	0.51	0.012	0.020
C	0.19	0.25	0.007	0.010
D	4.80	5.30	0.189	0.209
D1	4.00	4.40	0.157	0.173
E	5.90	6.20	0.232	0.244
E1	5.50	5.80	0.217	0.228
e	1.27 BSC		0.050 BSC	
F	0.05	0.30	0.002	0.012
F1	0.35	0.75	0.014	0.030
G	0.05	0.30	0.002	0.012
G1	0.35	0.75	0.014	0.030
H	3.34	3.9	0.131	0.154
K	0.762	-	0.03	-

Note : 1.Dimension D, D1,D2 and E1 do not include mold flash or protrusions.
Mold flash or protrusions shall not exceed 10 mil.

RECOMMENDED LAND PATTERN



UNIT: mm