

0.75A, 20V N-CHANNEL MOSFET

DESCRIPTION:



The ALPL3134KD2 is a 0.75A, 20V N-Channel MOSFET and it has Excellent $R_{DS(ON)}$ Surface Mount Package ideal for ESD Protection, that the material of product compliance with RoHS requirement and Halogen Free.

FEATURES:

- $V_{DS} = 20V$, $I_D = 0.75A$
- $R_{DS(ON)} = 380m\Omega$ @ $V_{GS} = 4.5V$, $I_D = 0.65A$
- $R_{DS(ON)} = 450m\Omega$ @ $V_{GS} = 2.5V$, $I_D = 0.55A$
- $R_{DS(ON)} = 800m\Omega$ @ $V_{GS} = 1.8V$, $I_D = 0.45A$
- N-Channel Switch with Low $R_{DS(ON)}$
- Surface Mount Package
- Lead-free parts meet RoHS requirements
- Halogen Free

APPLICATIONS:

- Load switch
- Interfacing, Load switch
- Power management

MECHANICAL CHARACTERISTICS

- Epoxy: UL94-V0 rated flame retardant.
- Case: Molded plastic, DFN1006-3L
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position: Any.

MAXIMUM RATINGS

MAXIMUM RATINGS @ $T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise specified			
PARAMETER	SYMBOL	VALUE	UNIT
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current ⁽¹⁾	I_D	0.75	A
Pulsed Drain Current	I_{DM}	1.8	A
Power Dissipation ⁽¹⁾	P_D	0.15	W
Thermal Resistance from Junction to Ambient ⁽¹⁾	$R_{\theta JA}$	833	$^{\circ}\text{C/W}$
Junction Temperature	T_J	+150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS @ TA = 25 °C unless otherwise specified

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP.	MAX	UNIT
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250 \mu A$	$V_{(BR)DSS}$	20			V
Zero gate voltage drain current	$V_{DS} = 20V, V_{GS} = 0V$	I_{DSS}			1.0	μA
Gate-body leakage current	$V_{GS} = \pm 10V, V_{DS} = 0V$	I_{GSS}			± 20	μA
ON CHARACTERISTICS						
Gate-Threshold Voltage ⁽²⁾	$V_{DS} = V_{GS}, I_D = 250 \mu A$	$V_{GS(th)}$	0.35		1.1	V
Drain-Source On-Resistance ⁽²⁾	$V_{GS} = 4.5V, I_D = 0.65A$	$R_{DS(ON)}$			380	m Ω
	$V_{GS} = 2.5V, I_D = 0.55A$				450	
	$V_{GS} = 1.8V, I_D = 0.45A$				800	
Forward Transconductance	$V_{DS} = 10V, I_D = 0.8A$	g_{FS}		1.6		S

DYNAMIC CHARACTERISTICS ⁽⁴⁾						
PARAMETER	CONDITIONS	SYMBOL	MIN	TYP.	MAX	UNIT
Input Capacitance	$V_{DS} = 16V, V_{GS} = 0V, f = 1.0 \text{ MHz}$	C_{iss}		79	120	pF
Output Capacitance	$V_{DS} = 16V, V_{GS} = 0V, f = 1.0 \text{ MHz}$	C_{oss}		13	30	pF
Reverse Transfer Capacitance	$V_{DS} = 16V, V_{GS} = 0V, f = 1.0 \text{ MHz}$	C_{rss}		9	10	pF

SWITCHING CHARACTERISTICS ⁽⁴⁾						
PARAMETER	CONDITIONS	SYMBOL	MIN	TYP.	MAX	UNIT
Turn-On Delay Time ⁽³⁾	$V_{DS} = 10V, V_{GS} = 4.5V, R_{GEN} = 10\Omega, I_D = 0.5A$	$t_{d(on)}$		6.7		nS
Turn-On Rise time ⁽³⁾	$V_{DS} = 10V, V_{GS} = 4.5V, R_{GEN} = 10\Omega, I_D = 0.5A$	t_r		4.8		nS
Turn-Off Delay Time ⁽³⁾	$V_{DS} = 10V, V_{GS} = 4.5V, R_{GEN} = 10\Omega, I_D = 0.5A$	$t_{d(off)}$		17.3		nS
Turn-Off Fall time ⁽³⁾	$V_{DS} = 10V, V_{GS} = 4.5V, R_{GEN} = 10\Omega, I_D = 0.5A$	t_f		7.4		nS

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ⁽⁴⁾						
PARAMETER	CONDITIONS	SYMBOL	MIN	TYP.	MAX	UNIT
Drain Forward Voltage	$I_S = 0.15A, V_{GS} = 0V$	V_{DS}			1.2	V

Note:

1. Surface mounted on FR4 board using the minimum recommended pad size.
2. Pulse Test: Pulse Width=300 μ s, Duty Cycle=2%.
3. Switching characteristics are independent of operating junction temperatures.
4. Guaranteed by design, not subject to producing.

TYPICAL DEVICE RATING AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)

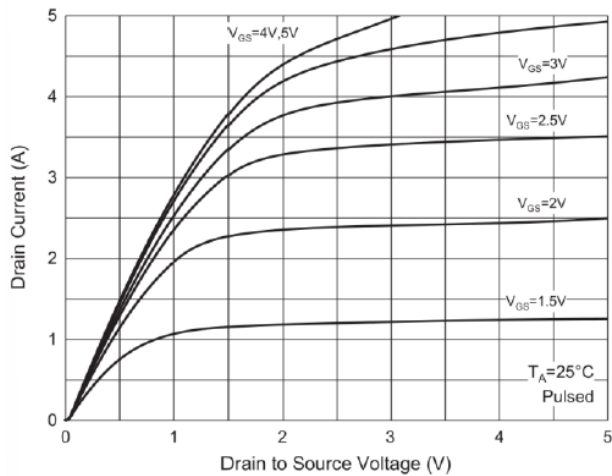


Fig.1 OUTPUT CHARACTERISTICS

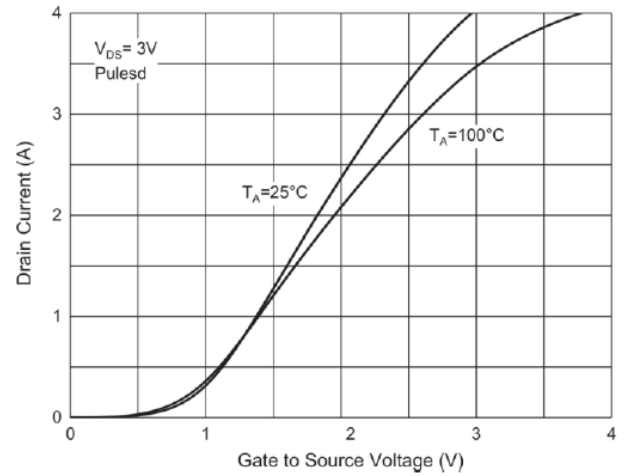


Fig.2 TRANSFER CHARACTERISTICS

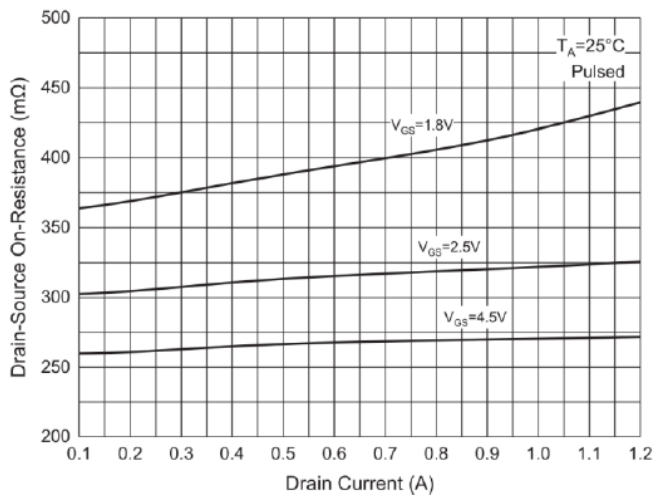


Fig.3 $R_{DS(ON)}$ Vs. I_D

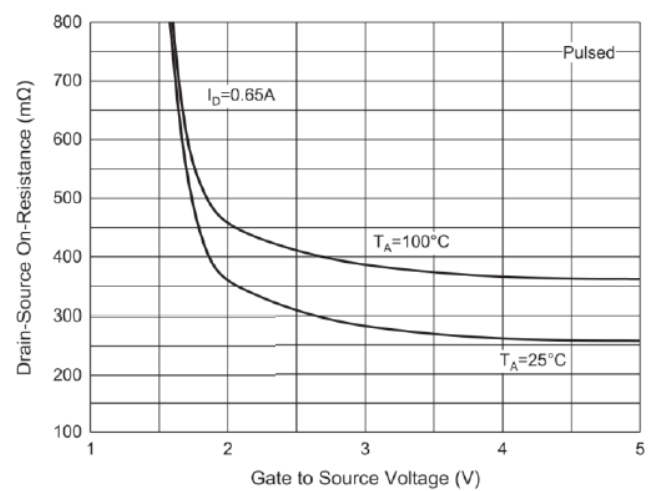


Fig.4 $R_{DS(ON)}$ Vs. V_{GS}

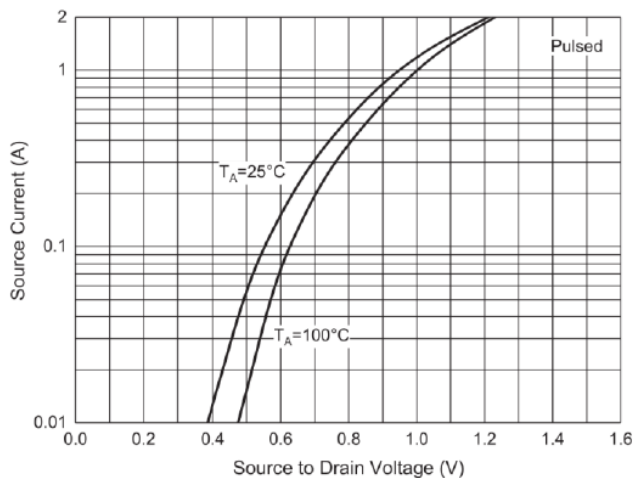


Fig.5 I_S Vs. V_{SD}

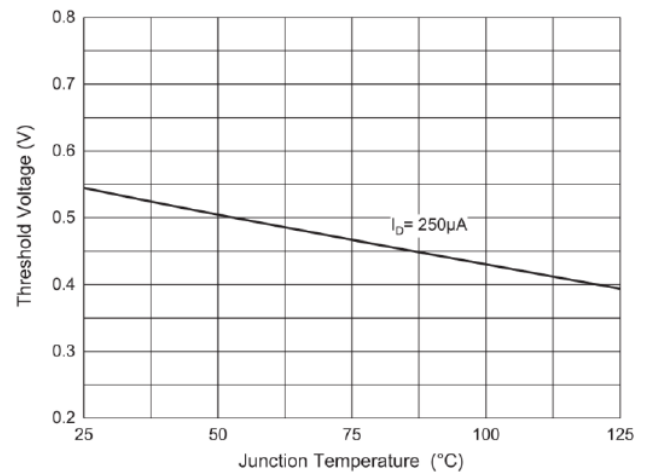
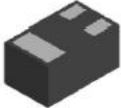
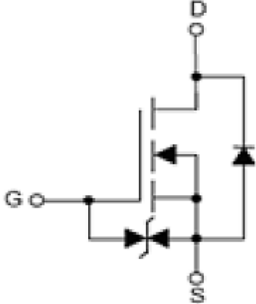
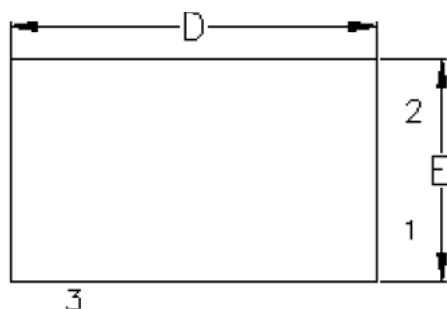
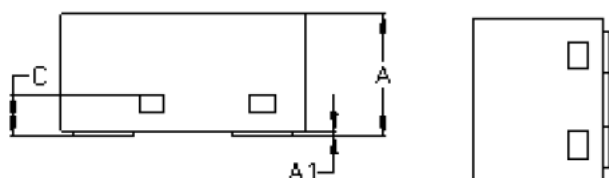
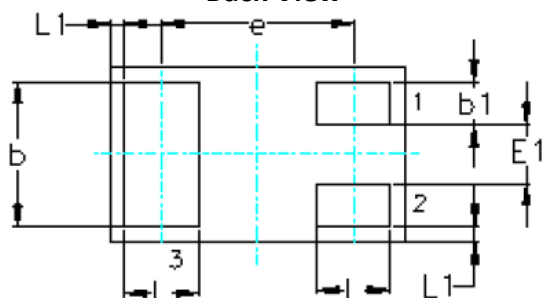


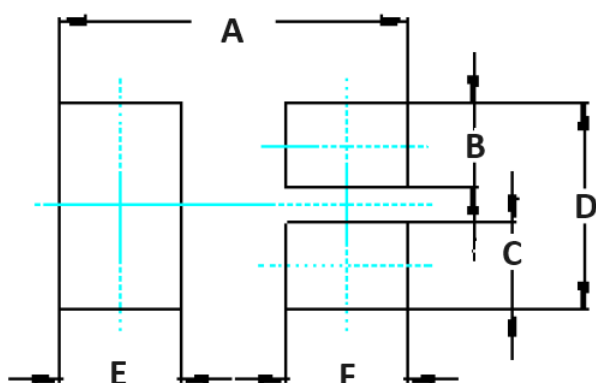
Fig.6 THRESHOLD VOLTAGE

PINNING INFORMATION

PIN	SIMPLIFIED OUTLINE	SCHEMATIC DIAGRAM
Pin D Drain Pin G Gate Pin S Source	 Bottom View  Top View Internal Schematic	

PACKAGE INFORMATION
DFN1006-3L
Top View

Side View

Back View

OUTLINE DIMENSIONS

SYMBOL	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.45	0.50	0.55	0.018	0.020	0.022
A1	0.00	0.025	0.05	0.000	0.001	0.002
b1	0.45	0.50	0.55	0.018	0.020	0.022
b1	0.10	0.15	0.20	0.004	0.006	0.008
C	0.12	0.15	0.18	0.005	0.006	0.007
D	0.95	1.00	1.05	0.037	0.039	0.041
E	0.55	0.60	0.65	0.022	0.024	0.026
E1	0.15	0.20	0.25	0.006	0.008	0.010
e	0.65 BSC.			0.026 BSC.		
L	0.20	0.25	0.30	0.008	0.010	0.012
L1	0.05 REF.			0.002 REF.		

SUGGESTED SOLDER PAD LAYOUT

OUTLINE DIMENSIONS

SYMBOL	MILLIMETERS	INCHES
A	1.00	0.039
B	0.25	0.010
C	0.25	0.010
D	0.60	0.024
E	0.35	0.014
F	0.35	0.014

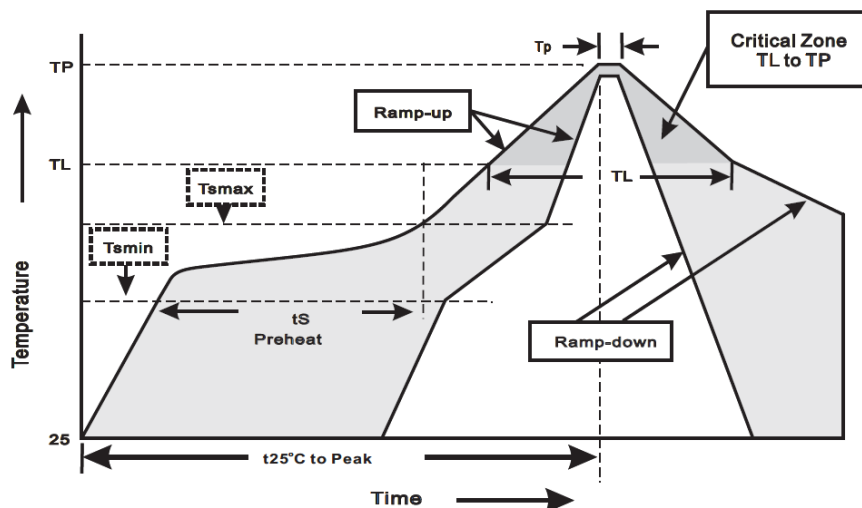
Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$
3. Lead Plating: P_b free solder
4. Lead thickness includes solder plating
5. Dimensions are exclusive of Burrs, Mold Flash and Tie Bar extrusions.

SOLDERING PARAMETERS

SUGGESTED THERMAL PROFILES FOR SOLDERING PROCESSES

1. Storage environment: Temperature=5 °C~40 °C Humidity=55% ±25%
2. Reflow soldering of surface-mount devices



3. Reflow soldering

PROFILE FEATURE	SOLDERING CONDITION
Average ramp-up rate (T_L to T_P)	<3 °C/sec
Preheat	
- Temperature Min (T_{smin})	150 °C
- Temperature Max (T_{smax})	200 °C
- Time (min to max) (t_s)	60 ~ 120 sec
T_{smax} to T_L	
- Ramp-upRate	<3 °C/sec
Time maintained above:	
- Temperature (T_L)	217 °C
- Time(t_L)	60 ~ 260 sec
Peak Temperature (T_P)	255 °C-0/+5 °C
Time within 5 °C of actual Peak Temperature(t_P)	10 ~ 30 sec
Ramp-down Rate	<6 °C/sec
Time 25 °C to Peak Temperature	<6 minutes



beyond boundaries...

ALPL3134KD2

DFN1006-3L

CUSTOMER NOTE:

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sales@alpinesemi.com

www.alpinesemi.com