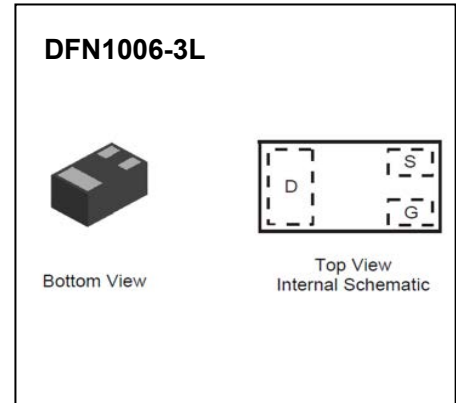




# DFN1006-3L Plastic-Encapsulate MOSFETs

## BA7002KL N-Channel MOSFET

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
60V	3.5Ω@10V	0.34A
	4.0Ω@4.5V	



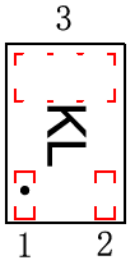
### FEATURE

- High density cell design for Low  $R_{DS(on)}$
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability
- ESD protected

### APPLICATION

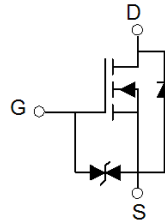
- Load Switch for Portable Devices
- DC/DC Converter

### MARKING



Top View  
 KL=Device code  
 Solid dot = Pin 1 indicator

### Equivalent Circuit



### MOSFET MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	0.34	A
Power Dissipation(note1)	$P_D$	275	mW
Thermal Resistance from Junction to Ambient(note1)	$R_{\theta JA}$	455	$^\circ\text{C/W}$
Operation Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~ +150	$^\circ\text{C}$

## MOSFET ELECTRICAL CHARACTERISTICS

### MOSFET ELECTRICAL CHARACTERISTICS( $T_a=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{DS}$	$V_{GS} = 0V, I_D = 250\mu A$	60			V
Gate Threshold Voltage*	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 1mA$	1	1.6	2.5	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 48V, V_{GS} = 0V$			1	$\mu A$
Gate –Source leakage current	$I_{GSS1}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 10$	$\mu A$
	$I_{GSS2}$	$V_{GS} = \pm 10V, V_{DS} = 0V$			$\pm 200$	nA
	$I_{GSS3}$	$V_{GS} = \pm 5V, V_{DS} = 0V$			$\pm 100$	nA
Drain-Source On-Resistance*	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 340mA$			3.5	$\Omega$
		$V_{GS} = 4.5V, I_D = 200mA$			4	$\Omega$
Diode Forward Voltage	$V_{SD}$	$V_{GS} = 0V, I_S = 240mA$			1.5	V
Recovered charge	$Q_r$	$V_{GS} = 0V, I_S = 240mA, V_R = 25V,$ $di_S/dt = -100A/\mu S$		30		nC
<b>Dynamic Characteristics**</b>						
Input Capacitance	$C_{iss}$	$V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$			40	pF
Output Capacitance	$C_{oss}$				30	pF
Reverse Transfer Capacitance	$C_{rss}$				10	pF
<b>Switching Characteristics**</b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = 10V, V_{DD} = 50V, R_G = 50\Omega,$ $R_{GS} = 50\Omega, R_L = 250\Omega$			10	ns
Turn-Off Delay Time	$t_{d(off)}$				15	ns
Reverse recovery Time	$t_{rr}$	$V_{GS} = 0V, I_S = 300mA, V_R = 25V,$ $di_S/dt = -100A/\mu S$		30		ns
<b>GATE-SOURCE ZENER DIODE</b>						
Gate-Source Breakdown Voltage	$BV_{GSO}$	$I_{GS} = \pm 1mA$ (Open Drain)	$\pm 21.5$		$\pm 30$	V

**Notes :**

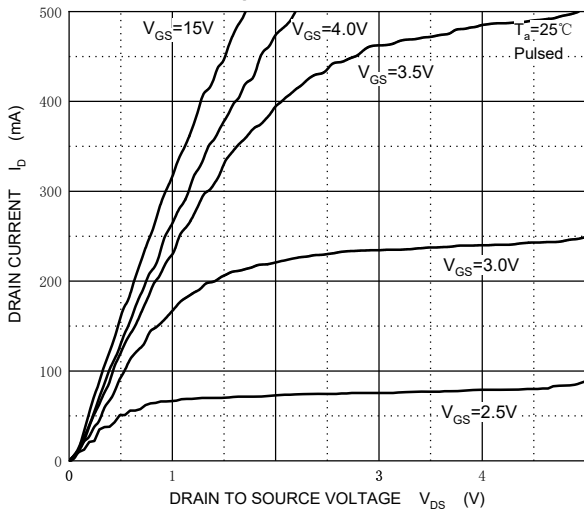
\*Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .

\*\*These parameters have no way to verify.

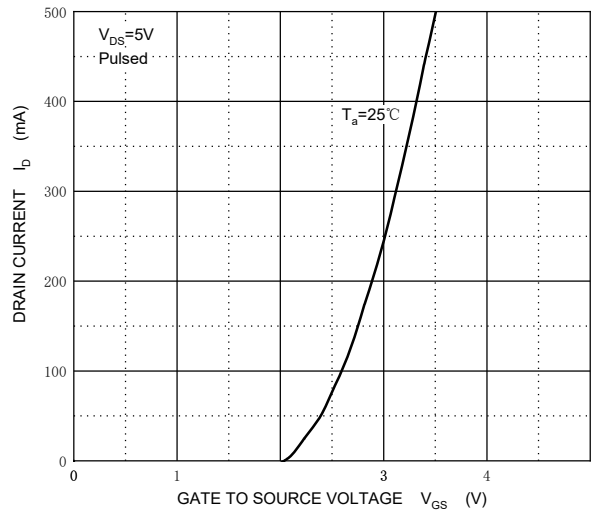
1.Surface mounted on FR4 board using 1 square inch pad size, 1oz copper.

# Typical Characteristics

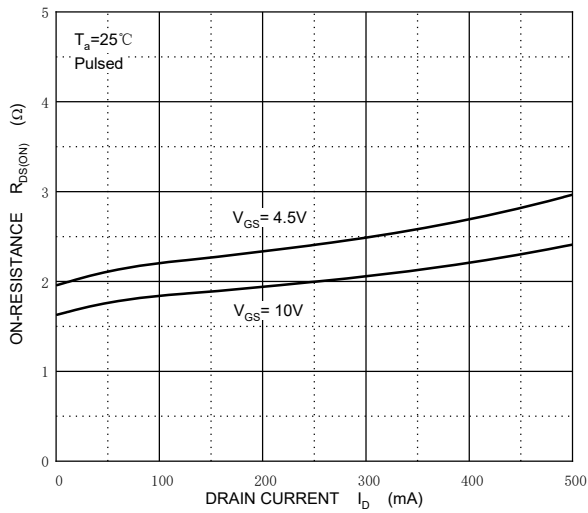
**Output Characteristics**



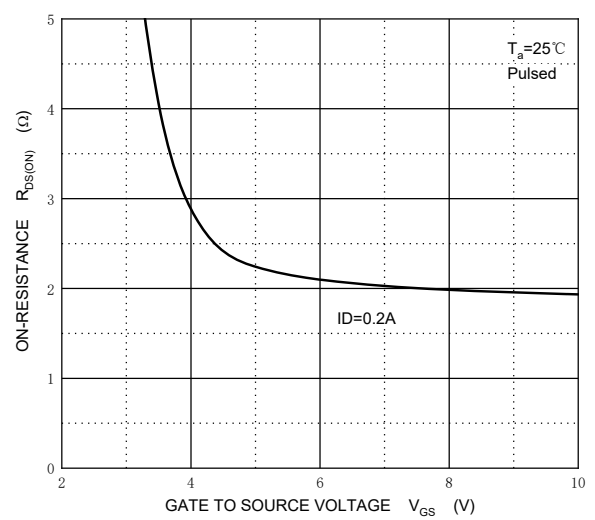
**Transfer Characteristics**



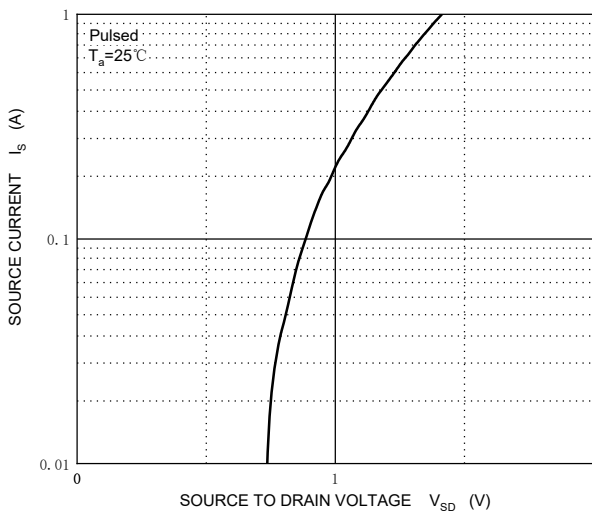
**$R_{DS(ON)}$  —  $I_D$**



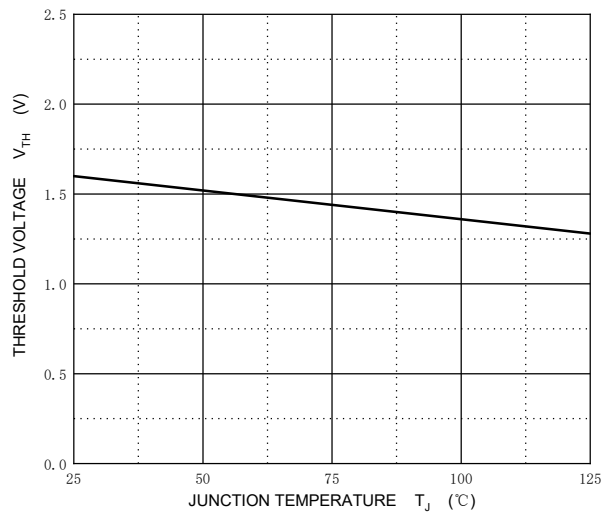
**$R_{DS(ON)}$  —  $V_{GS}$**



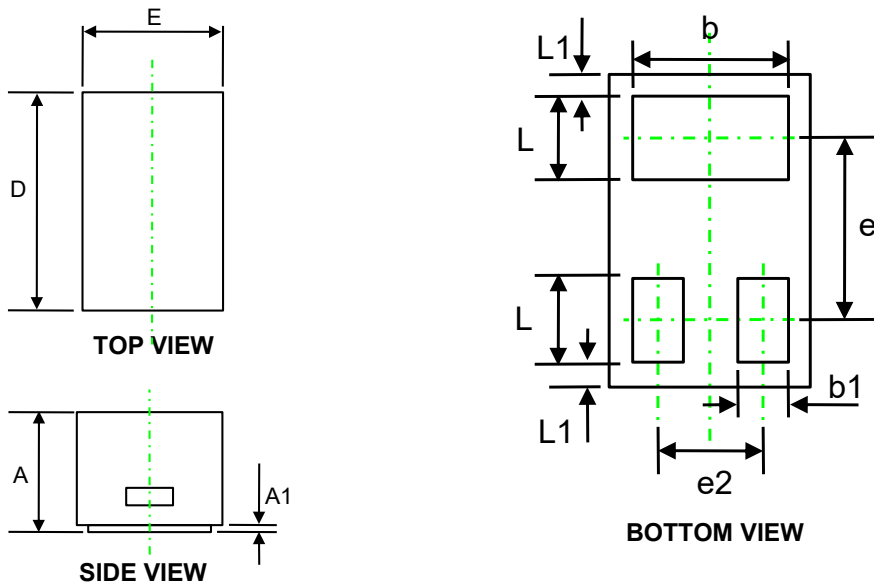
**$I_S$  —  $V_{SD}$**



**Threshold Voltage**

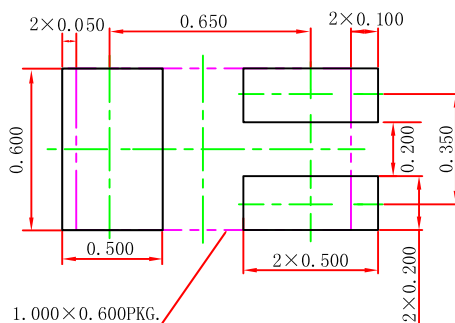


## DFN1006-3L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.400	0.550	0.016	0.022
A1	0.000	0.050	0.000	0.002
D	0.950	1.050	0.037	0.041
E	0.550	0.650	0.022	0.026
b	0.450	0.550	0.018	0.022
e	0.650 REF.		0.026 REF.	
e2	0.350 REF.		0.014 REF.	
L1	0.050 REF.		0.002 REF.	
L	0.200	0.300	0.008	0.012
b1	0.100	0.200	0.004	0.008

## DFN1006-3L Suggested Pad Layout

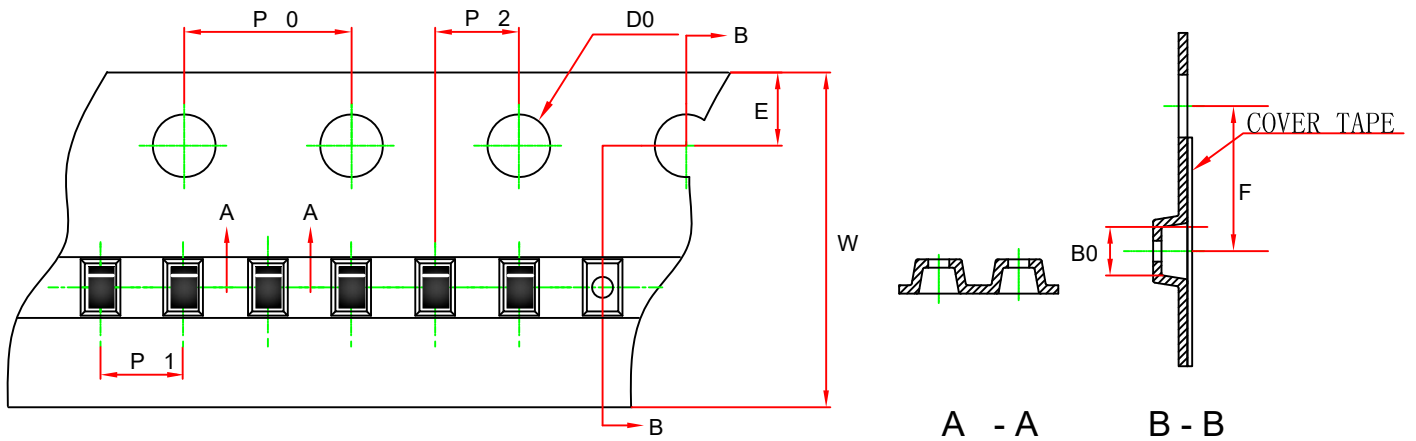


**Note:**

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.050$  mm.
3. The pad layout is for reference purposes only.

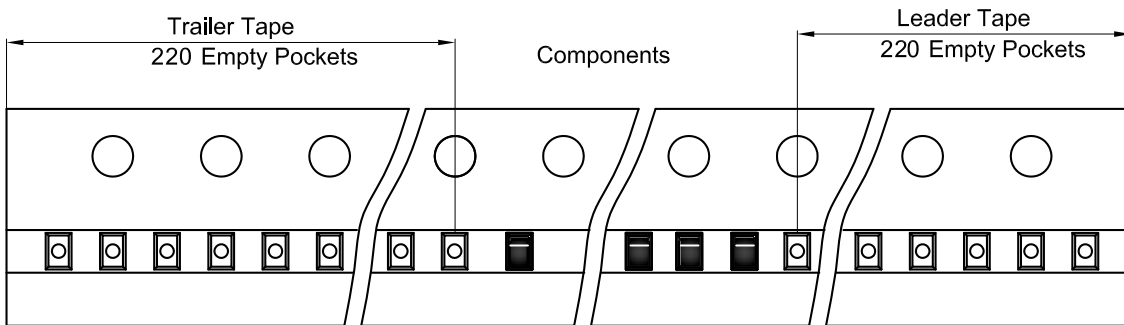
# DFN1006-3L Tape and Reel

## DFN1006-3L Embossed Carrier Tape

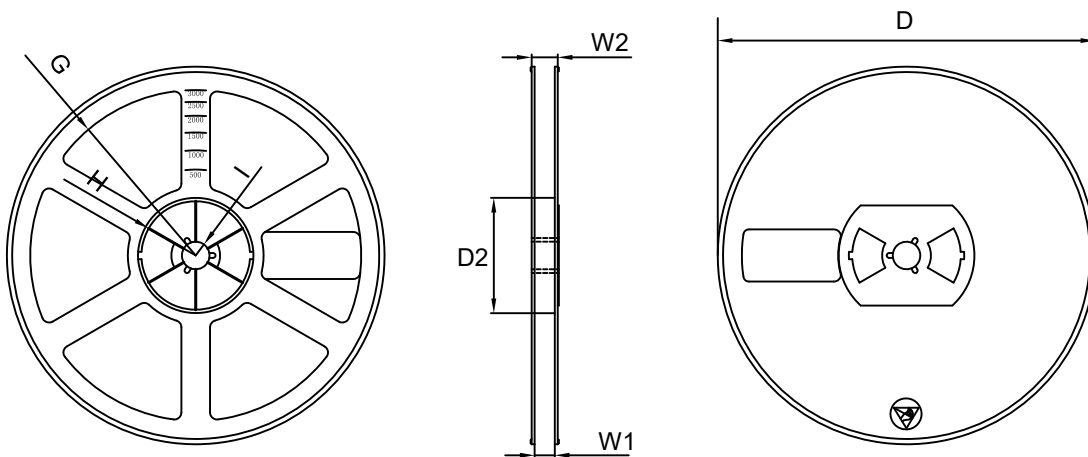


Dimensions In Millimeters (mm)								
Pkg type	B0	P0	P1	P2	E	F	W	D0
DFN1006-3L	1.11	4.00	2.00	2.00	1.75	3.50	8.00	1.55
Tolerance	+/-0.06	+/-0.1	+/-0.1	+/-0.1	+/-0.1	+/-0.1	+/-0.3	+/-0.1

## DFN1006-3L Tape Leader and Trailer



## DFN1006-3L Reel



Symbol	Dimensions In Millimeters (mm)						
	D	D2	G	H	I	W1	W2
7" Dia	Φ178.00	54.50	R78.00	R25.6	R6.5	9.50	12.30
Tolerance	+/-2	+/-1	+/-1	+/-1	+/-1	+/-2	+/-1.5

REEL	Reel Size	Box	Box size(mm)	Carton	Carton Size(mm)
10000 pcs	7 inch	150000 pcs	220×220×210	6 00000 pcs	450×450×240