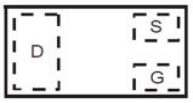
DFN1006-3L Plastic-Encapsulate MOSFETs

BA7002K N-Channel MOSFET

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	1.5Ω@10V	0.41A
	1.8Ω@4.5V	

DFN1006-3L

Bottom View



Top View
Internal Schematic

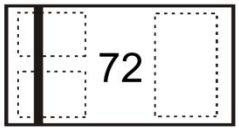
FEATURE

- Low On-Resistance
- Low Threshold Voltage
- Fast Switching Speed
- ESD Protected Gate

APPLICATION

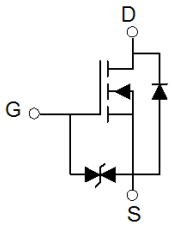
- Load Switch
- Portable Applications
- Power Management Functions

MARKING:



Top View
Bar Denotes Gate
and Source Side

Equivalent Circuit



ABSOLUTE MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_a=25℃	I_D	0.41	A
	T_a=85℃		0.30	
Pulsed Drain Current		I_{DM}	1.2	A
Power Dissipation		P_D③	275	mW
Thermal Resistance from Junction to Ambient		$R_{\theta JA}$③	455	℃/W
Operation Junction and Storage Temperature Range		T_J,T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS

MOSFET ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	60			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =60V,V_{GS} = 0V			100	nA
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±10	μA
		V_{GS} =±5V, V_{DS} = 0V			±1	
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.3	1.4	2.3	V
Drain-source on-resistance①	$R_{DS(on)}$	V_{GS} =10V, I_D =40mA		1.2	1.5	Ω
		V_{GS} =4.5V, I_D =35mA		1.3	1.8	
Forward tranconductance①	gfs	V_{DS} = 5V, I_D = 40mA	100			mS
Diode forward voltage	V_{SD}	V_{GS} =0V, I_S =300mA		0.84	1.1	V
Dynamic characteristics						
Input Capacitance②	C_{iss}	V_{DS} =40V,V_{GS} =0V,f =1MHz		41	80	pF
Output Capacitance②	C_{oss}			3.6	7	
Reverse Transfer Capacitance②	C_{rss}			2.9	5.6	
Gate resistance	R_g	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz		81	200	Ω
Total Gate Charge	Q_g	V_{GS} =4.5V; V_{DS} = 50V, I_D = 0.41A		0.72	1.5	nC
		V_{GS} =10V; V_{DS} = 50V, I_D = 0.41A		1.41	2.8	
Gate-Source Charge	Q_{gs}	V_{GS} =10V; V_{DS} = 50V, I_D = 0.41A		0.24	0.4	
Gate-Drain Charge	Q_{gd}	V_{GS} =10V; V_{DS} = 50V, I_D = 0.41A		0.24	0.5	
Turn-on delay time②	$t_{d(on)}$	V_{DS}=30V,RL=50R, V_{GS}=10V,RG=6Ω		3.98	10	ns
Turn-on rise time②	t_r			4.95	10	
Turn-off delay time②	$t_{d(off)}$			18.52	40	
Turn-off fall time②	t_f			11.94	25	

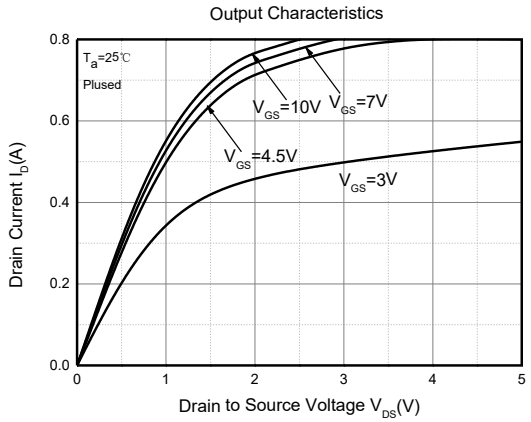
Notes:

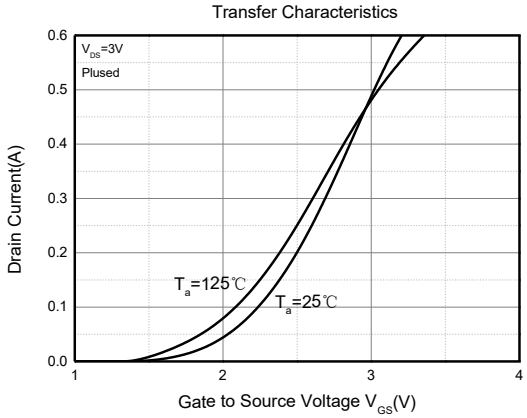
1.Pulse Test : Pulse width≤300μs, duty cycle ≤2%.

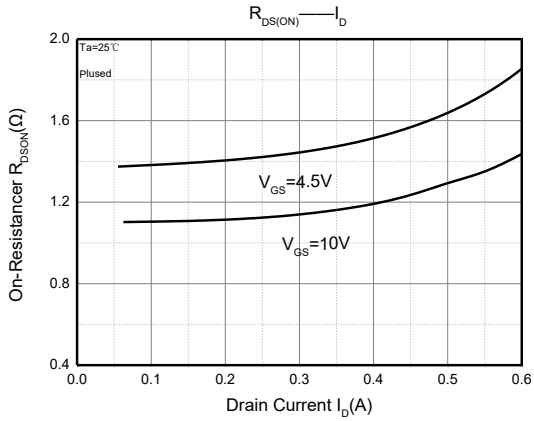
2.These parameters have no way to verify.

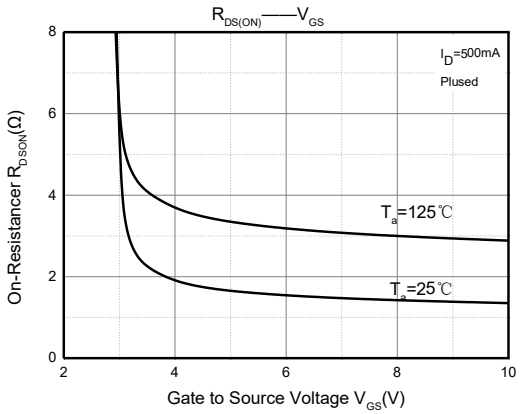
3.Surface mounted on FR4 board using 1 square inch pad size, 1oz copper.

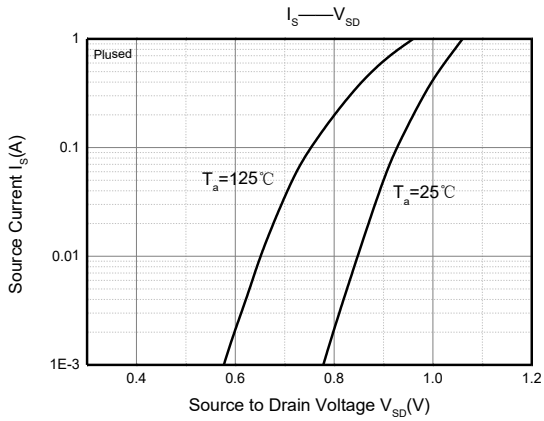
Typical Characteristics

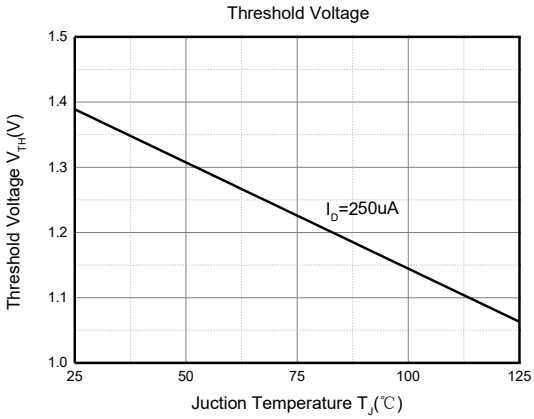






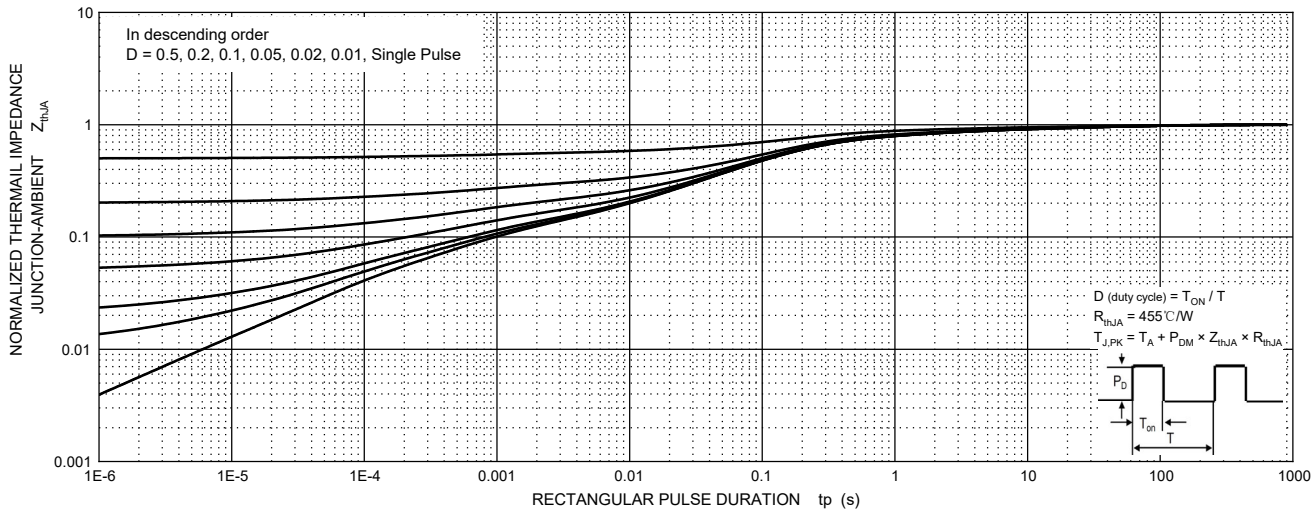




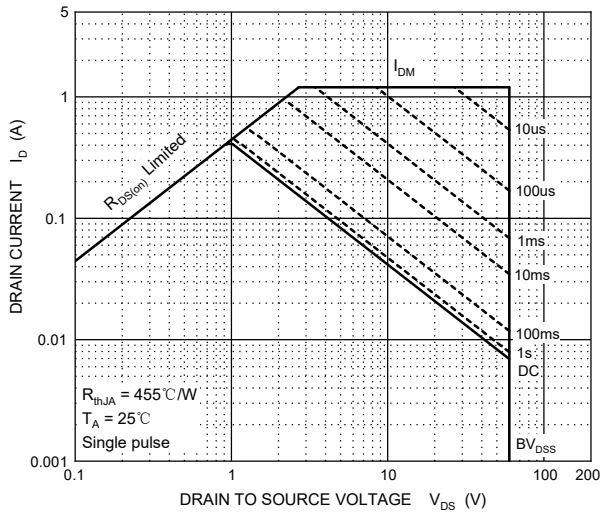


Typical Characteristics

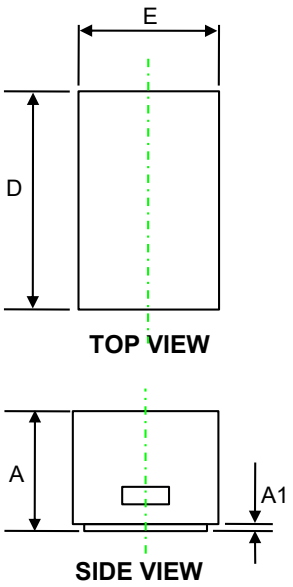
Transient Thermal Impedance, Junction-Ambient

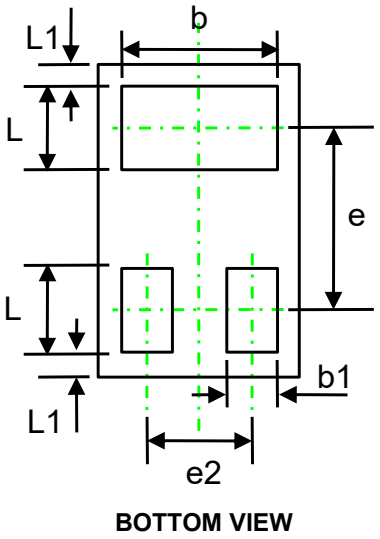


Maximum Safe Operating Area



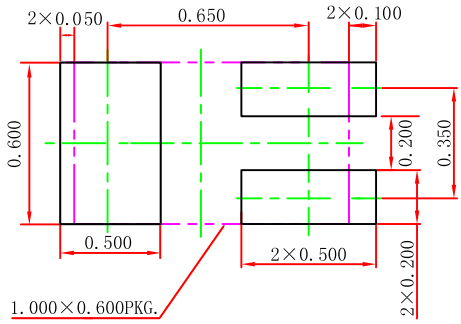
DFN1006-3L Package Outline Dimensions





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

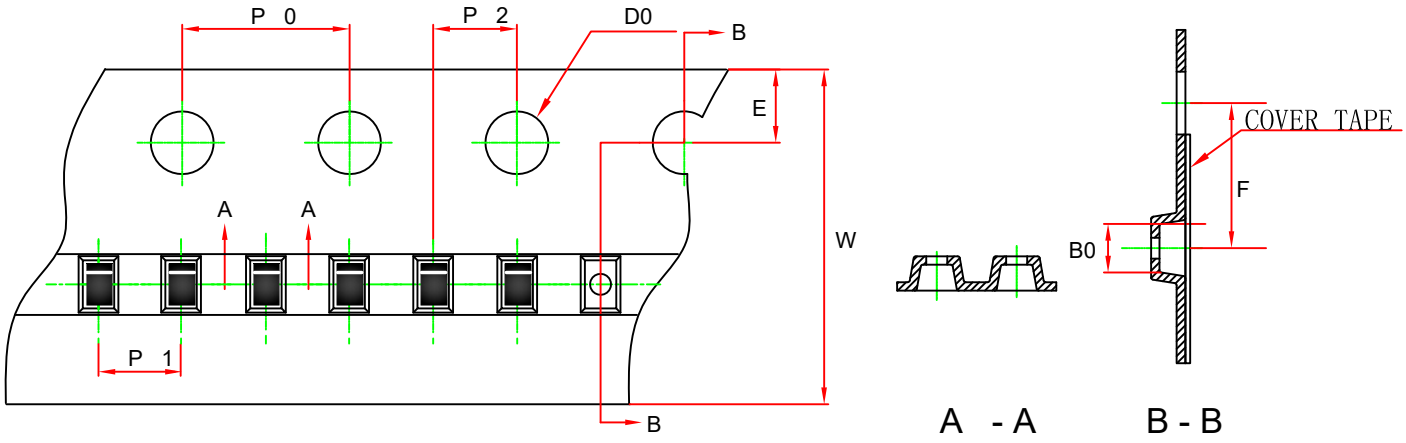
DFN1006-3L Suggested Pad Layout



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

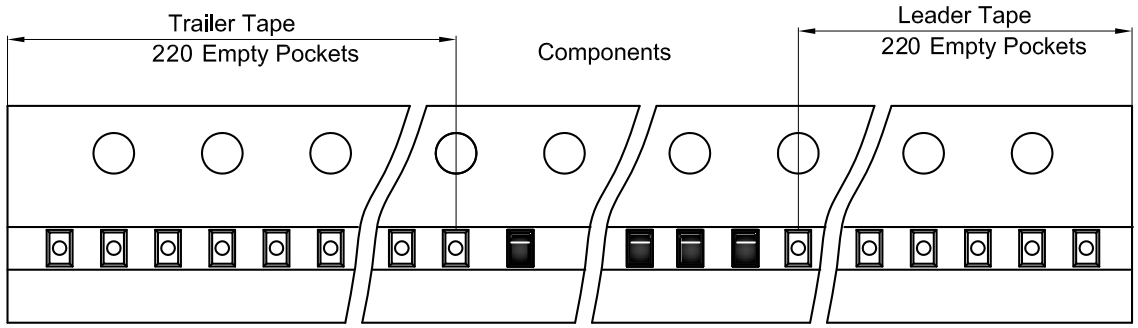
DFN1006-3L Tape and Reel

DFN1006-3L Embossed Carrier Tape

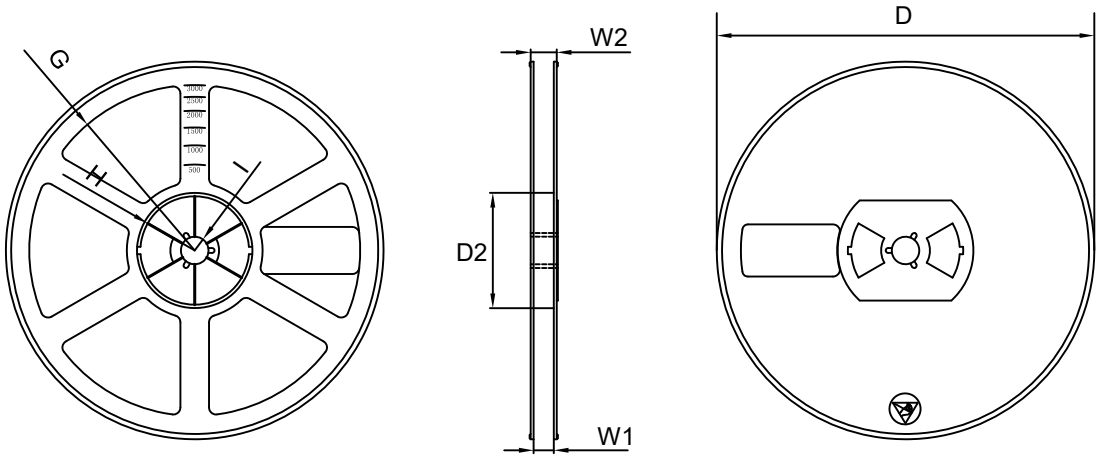


Dimensions In Millimeters (mm)								
Pkg type	B0	P0	P1	P2	E	F	W	D0
DFN1006-3L	1.11	4.00	2.00	2.00	1.75	3.50	8.00	1.55
Tolerance	+/-0.06	+/-0.1	+/-0.1	+/-0.1	+/-0.1	+/-0.1	+/-0.3	+/-0.1

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 00000pcs	450×450×240