

## A2N7002HL-HF

**N-Channel  
RoHS Device  
Halogen Free**



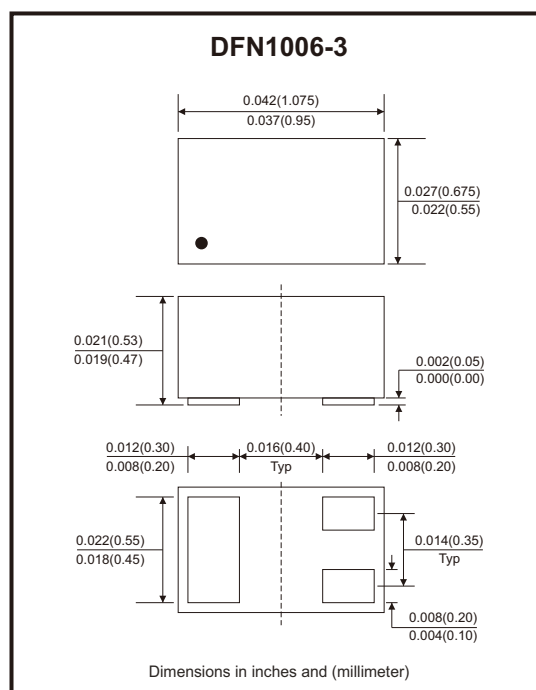
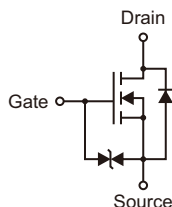
### Features

- Low on-resistance.
- ESD protected gate up to 2KV HBM.
- High-speed switching.
- Drive circuits can be simple.
- Parallel use is easy.
- AEC-Q101 Qualified.

### Mechanical data

- Case: DFN1006-3, molded plastic.
- Molding compound, UL flammability classification rating 94V-0.
- Terminals: Matte tin plated leads, solderable per MIL-STD-202, method 208.

### Circuit Diagram



### Maximum Rating (at $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-source voltage	$V_{DSS}$	60	V
Gate-source voltage	$V_{GSS}$	$\pm 20$	V
Continuous drain current	$I_D$	300	mA
Pulsed drain current (Note) $t_p = 10\mu\text{s}$	$I_{DM}$	2000	mA
Power dissipation	$P_D$	0.15	W
Thermal resistance junction to ambient air	$R_{\theta JA}$	833	$^{\circ}\text{C/W}$
Thermal resistance junction to lead	$R_{\theta JL}$	521	$^{\circ}\text{C/W}$
Thermal resistance junction to case	$R_{\theta JC}$	434	$^{\circ}\text{C/W}$
Operating junction temperature range	$T_J$	-55 to +150	$^{\circ}\text{C}$
Storage temperature range	$T_{STG}$	-55 to +150	$^{\circ}\text{C}$

Note: Pulse width limited by maximum junction temperature.

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## Electrical Characteristics (at TA=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
<b>Off Characteristics</b>						
Drain-source breakdown voltage	$V_{DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60			V
Drain-source leakage current	$I_{DSS}$	$V_{DS} = 60V, V_{GS} = 0V$			1	$\mu A$
Gate-body leakage	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 10$	$\mu A$
<b>On Characteristics (Note 2)</b>						
Static drain-source on resistance	$R_{DS(on)}$	$V_{GS} = 5V, I_D = 0.05A$		1.5	3	$\Omega$
		$V_{GS} = 10V, I_D = 0.5A$		1.45	2.5	
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	1.5	2.5	V
<b>Dynamic Characteristics (Note 3)</b>						
Input capacitance	$C_{iss}$	$V_{GS} = 0V, V_{DS} = 20V, f = 1MHz$		41		pF
Output capacitance	$C_{oss}$			15		
Reverse transfer capacitance	$C_{rss}$			4		
<b>Switching Characteristics (Note 3)</b>						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 30V, I_D = 0.2A,$ $V_{GS} = 10V, R_G = 25\Omega,$ $R_L = 150\Omega$		6		nS
Turn-on rise time	$t_r$			5		
Turn-off delay time	$t_{d(off)}$			25		
Turn-off fall time	$t_f$			15		
<b>Drain-Source Diode Characteristics</b>						
Diode forward voltage (Note 1)	$V_{SD}$	$I_S = 0.3A, V_{GS} = 0V$		0.85	1.2	V
Diode continuous forward current	$I_S$	$T_C = 25^\circ C$			0.3	A

Notes: 1. Surface mounted on FR4 board,  $t \leq 10$  sec.

2. Pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .

3. Guaranteed by design, not subject to production.

## Rating and Characteristic Curves (A2N7002HL-HF)

Fig.1 - On-Region Characteristics

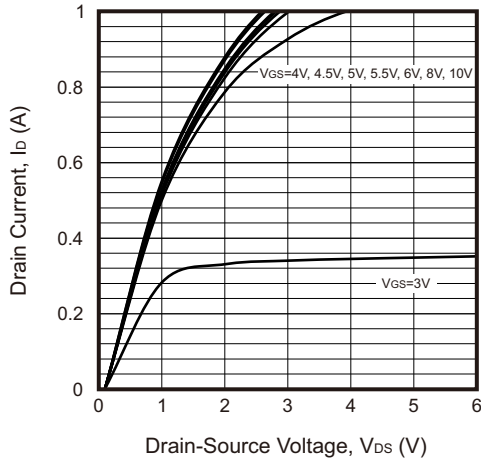


Fig.2 - On-Resistance vs. Drain Current and Gate Voltage

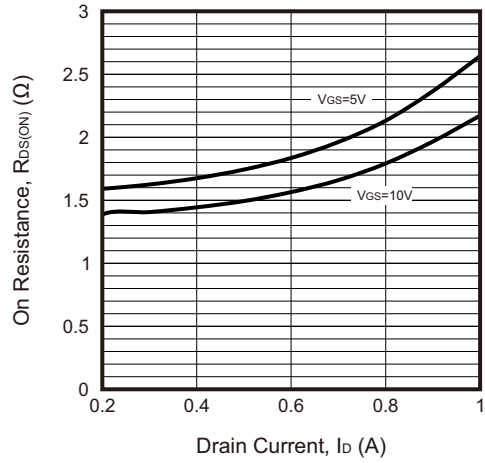


Fig.3 - On-Resistance vs. Gate-Source Voltage

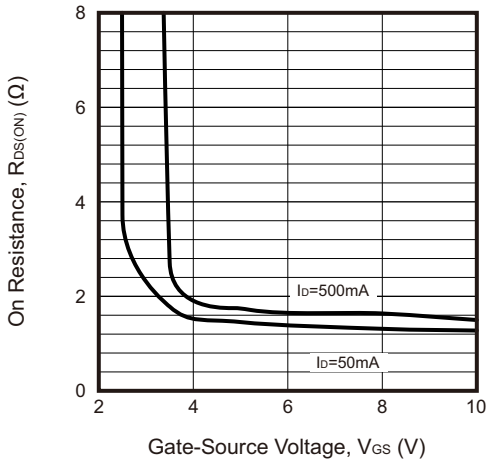


Fig.4 - Gate Voltage vs. Junction Temperature

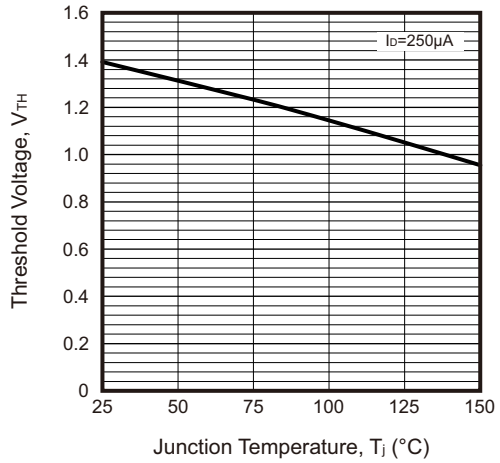


Fig.5 - On Resistance vs. Junction Temperature

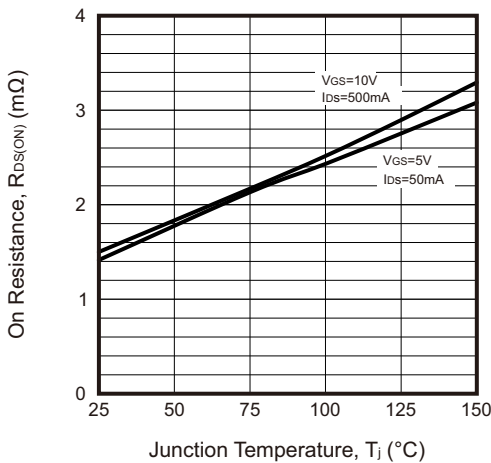
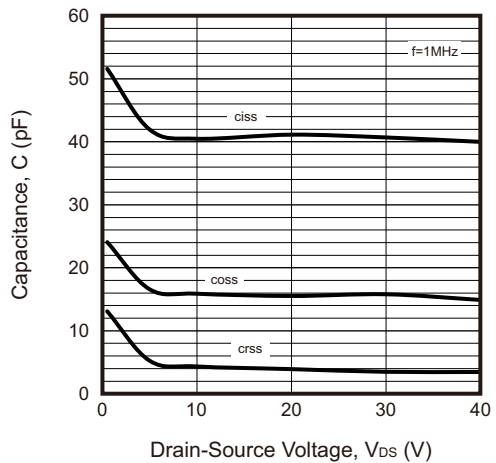
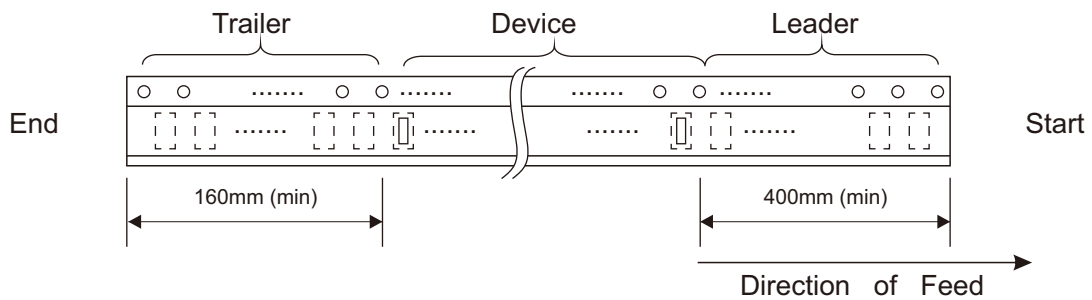
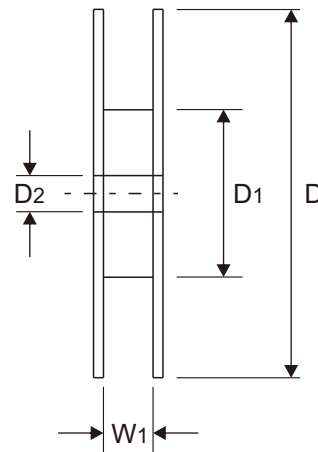
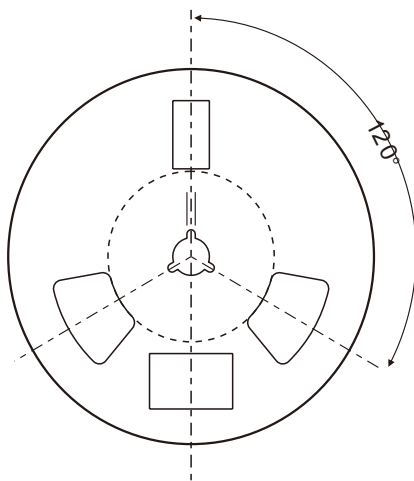
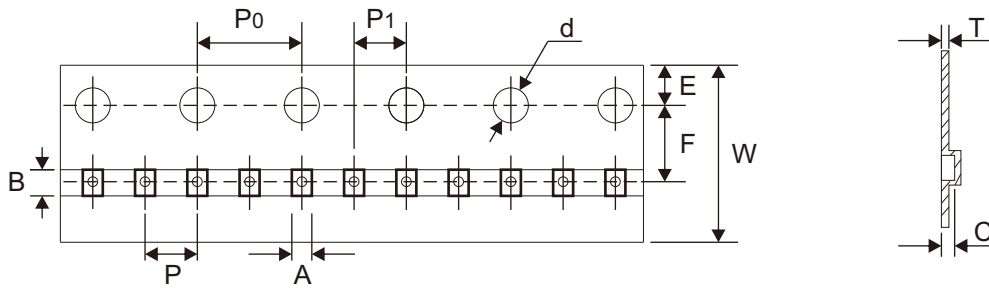


Fig.6 - Capacitance Characteristics



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## Reel Taping Specification



DFN1006 -3L	SYMBOL	A	B	C	d	D	D1	D2
	(mm)	0.66 ± 0.10	1.15 ± 0.02	0.66 ± 0.10	1.50 ± 0.10	178 ± 1.00	54.00 ± 0.50	13.00 ± 0.50
	(inch)	0.026 ± 0.004	0.045 ± 0.001	0.026 ± 0.004	0.059 ± 0.004	7.008 ± 0.039	2.126 ± 0.020	0.512 ± 0.020

DFN1006 -3L	SYMBOL	E	F	P	P0	P1	T	W	W1
	(mm)	1.75 ± 0.05	3.50 ± 0.05	2.00 ± 0.05	4.00 ± 0.10	2.00 ± 0.05	0.20 ± 0.02	8.00 + 0.30 - 0.10	9.50 ± 1.00
	(inch)	0.069 ± 0.002	0.138 ± 0.002	0.079 ± 0.002	0.157 ± 0.004	0.079 ± 0.002	0.008 ± 0.001	0.315 + 0.012 - 0.004	0.374 ± 0.039

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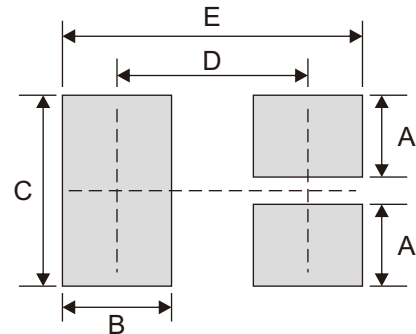
## Marking Code

Part Number	Marking Code
A2N7002HL-HF	72



## Suggested PAD Layout

SIZE	DFN1006-3	
	(mm)	(inch)
A	0.30	0.012
B	0.40	0.016
C	0.70	0.028
D	0.70	0.028
E	1.10	0.043



Note: 1.The pad layout is for reference purposes only.

## Standard Packaging

Case Type	REEL PACK	
	REEL (pcs)	Reel Size (inch)
DFN1006-3	10,000	7