

A2N7002HL-HF

**N-Channel
RoHS Device
Halogen Free**



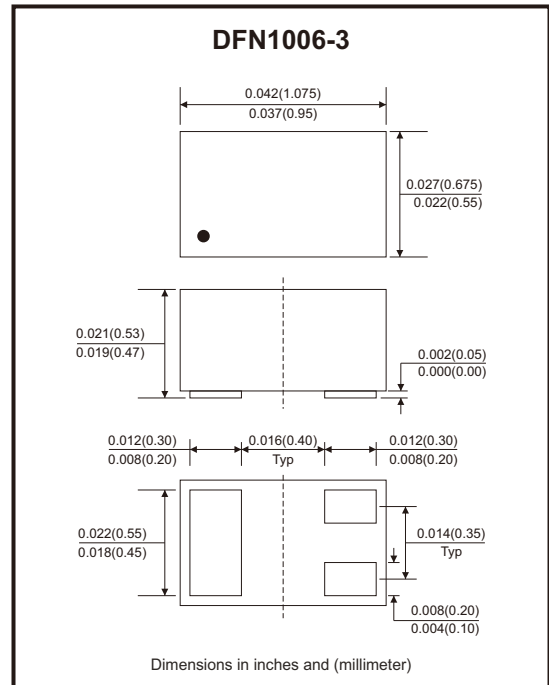
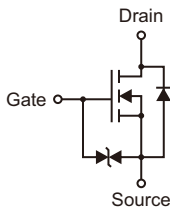
Features

- 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}	± 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
Off Characteristics						
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	μA
Gate-body leakage	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 10	μA
On Characteristics (Note 2)						
Static drain-source on resistance	$R_{DS(on)}$	$V_{GS} = 5V, I_D = 0.05A$		1.5	3	Ω
		$V_{GS} = 10V, I_D = 0.5A$		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
Dynamic Characteristics (Note 3)						
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		
Switching Characteristics (Note 3)						
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		
Drain-Source Diode Characteristics						
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

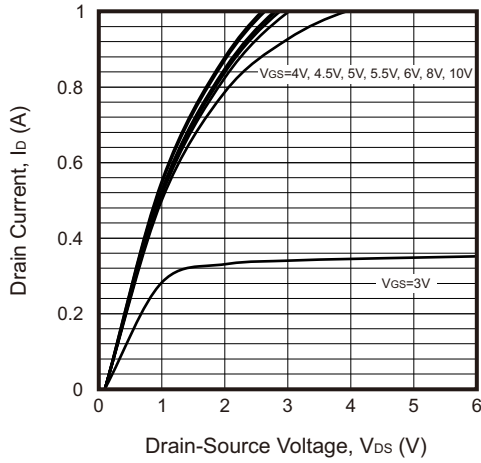


Fig.2 - On-Resistance vs. Drain Current and Gate Voltage

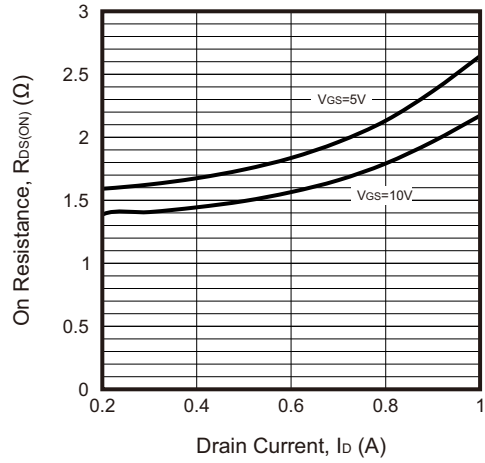


Fig.3 - On-Resistance vs. Gate-Source Voltage

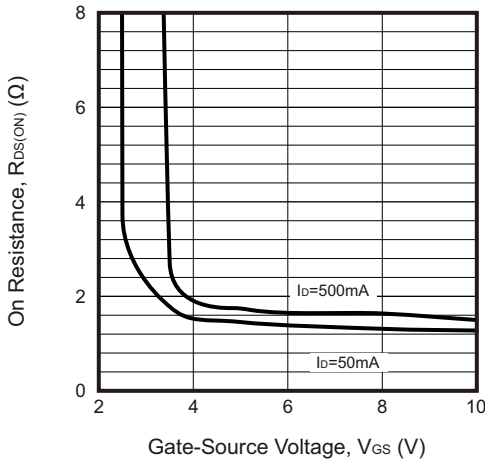


Fig.4 - Gate Voltage vs. Junction Temperature

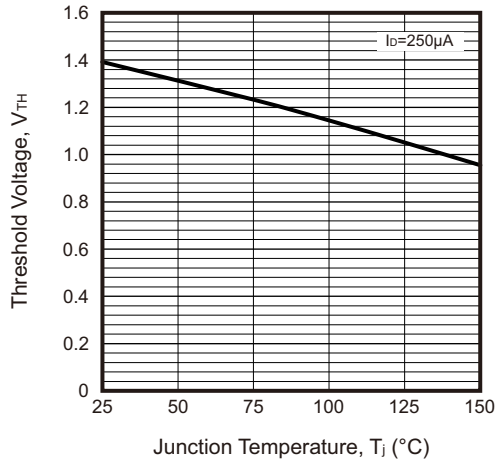


Fig.5 - On Resistance vs. Junction Temperature

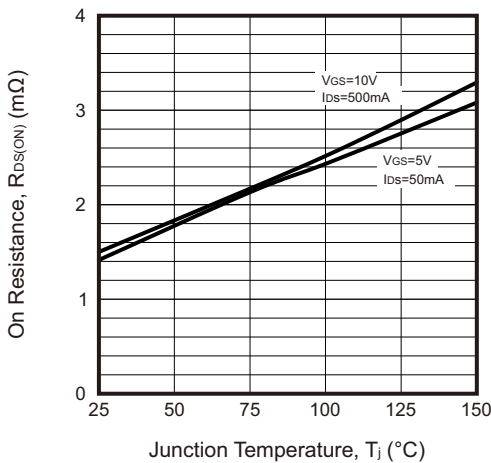
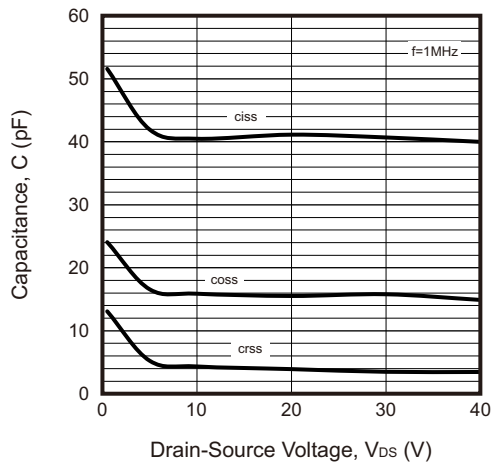
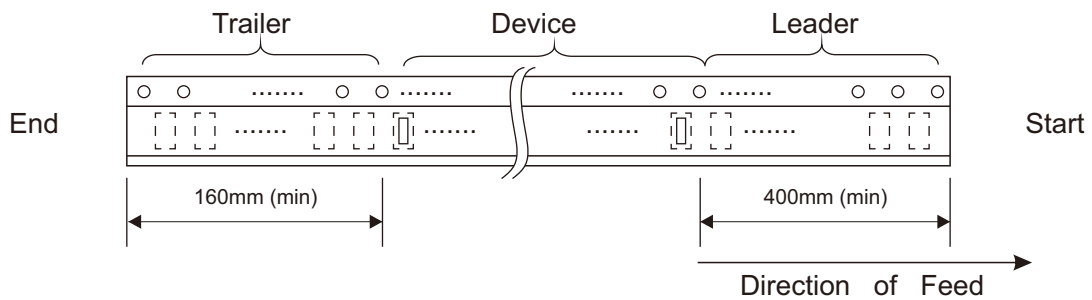
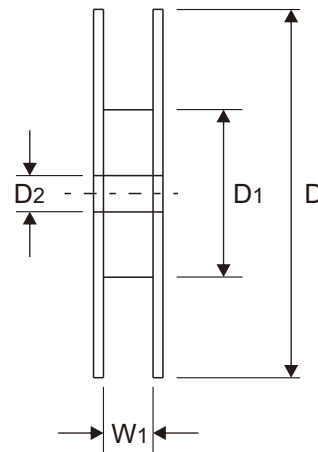
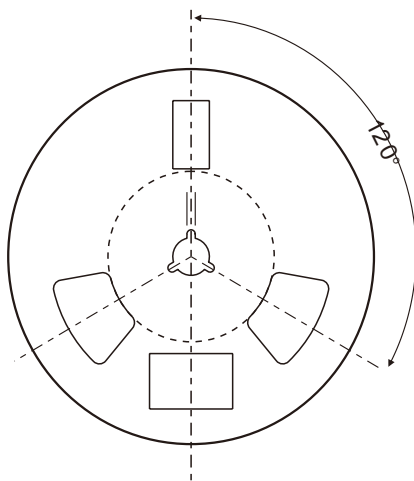
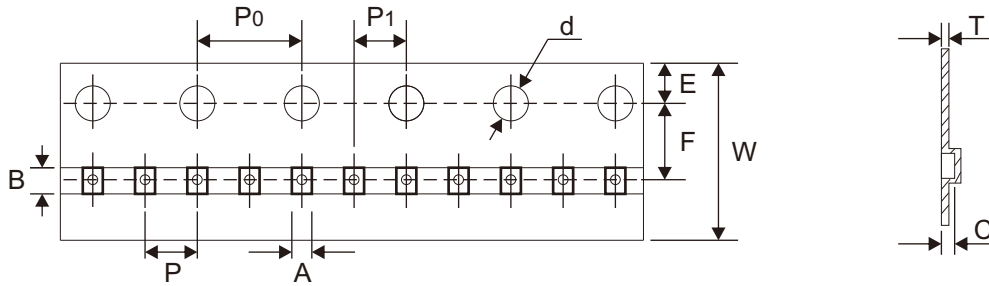


Fig.6 - Capacitance Characteristics



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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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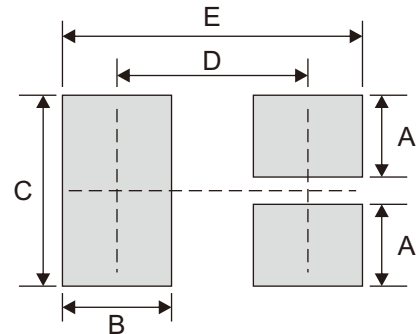
Marking Code

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