Features

- Green Device Available
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

Product Summary

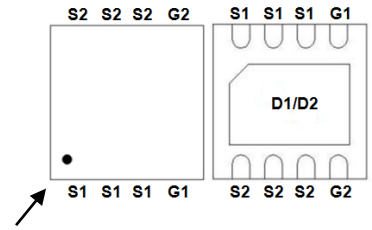
BVDSS	RDSON	ID
12V	4.3mΩ	56A

General Description

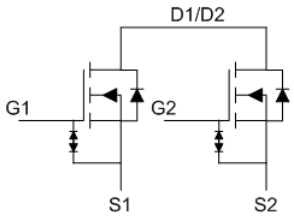
The JHQ1030 is the low RDSON trenched N-CH MOSFETs with robust ESD protection. This product is suitable for Lithium-ion battery pack applications.

The JHQ1030 meet the RoHS and Green Product requirement with full function reliability approved.

DFN3x3 Pin Configuration



Pin1



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	12	V
V_{GS}	Gate-Source Voltage	±8	V
I_D@T_C=25°C	Continuous Drain Current, V_{GS} @ 4.5V[1]	56	A
I_D@T_C=100°C	Continuous Drain Current, V_{GS} @ 4.5V[1]	35.6	A
I_D@T_A=25°C	Continuous Drain Current, V_{GS} @ 4.5V[1]	19	A
I_D@T_A=70°C	Continuous Drain Current, V_{GS} @ 4.5V[1]	15	A
I_{DM}	Pulsed Drain Current[2]	100	A
P_D@T_C=25°C	Total Power Dissipation[1]	31	W
P_D@T_A=25°C	Total Power Dissipation[1]	3.6	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1]	---	35	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	---	4	°C/W

N-Channel Electrical Characteristics (T_J=25 ˚C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	12	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=4.5V , I_D=3A	2.3	3.3	4.3	mΩ
		V_{GS}=4.0V , I_D=3A	2.4	3.4	4.4	
		V_{GS}=3.1V , I_D=3A	2.6	3.6	4.7	
		V_{GS}=2.5V , I_D=3A	3	4	5.6	
		V_{GS}=1.8V , I_D=3A	4	5.4	7.6	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	0.4	0.6	1.0	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=12V , V_{GS}=0V , T_J=25˚C	---	---	1	uA
		V_{DS}=12V , V_{GS}=0V , T_J=55˚C	---	---	5	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±8V , V_{DS}=0V	---	---	±10	uA
gfs	Forward Transconductance	V_{DS}=5V , I_D=3A	---	42	---	S
Q_g	Total Gate Charge (4.5V)	V_{DS}=10V , I_D=3A	---	38	---	nC
	Total Gate Charge (3.9V)		---	33	---	
Q_{gs}	Gate-Source Charge		---	4.5	---	
Q_{gd}	Gate-Drain Charge		---	12	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=10V , V_{GS}=4.5V , R_G=6Ω I_D=3A	---	22	---	ns
T_r	Rise Time		---	41	---	
$T_{d(off)}$	Turn-Off Delay Time		---	77	---	
T_f	Fall Time		---	21	---	
C_{iss}	Input Capacitance	V_{DS}=10V , V_{GS}=0V , f=1MHz	---	3165	---	pF
C_{oss}	Output Capacitance		---	380	---	
C_{rss}	Reverse Transfer Capacitance		---	325	---	

Diode Characteristics

I_S	Continuous Source Current[1]	V_G=V_D=0V , Force Current	---	---	30	A
I_{SM}	Pulsed Source Current[2]		---	---	100	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=3A , T_J=25˚C	---	---	1.2	V

Note :
1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper, t ≤10s.
2.The data tested by pulsed , pulse width ≦ 10us , duty cycle ≦ 1%

Typical Characteristics

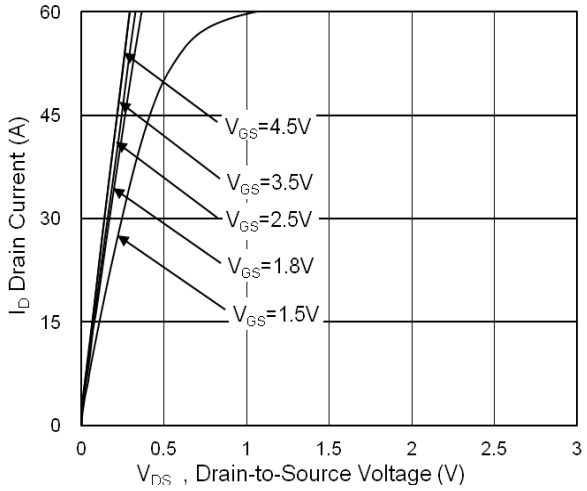


Fig.1 Typical Output Characteristics

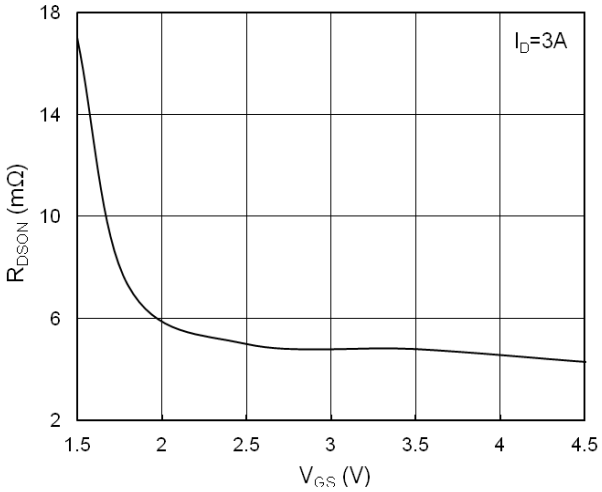


Fig.2 On-Resistance vs. Gate-Source Voltage

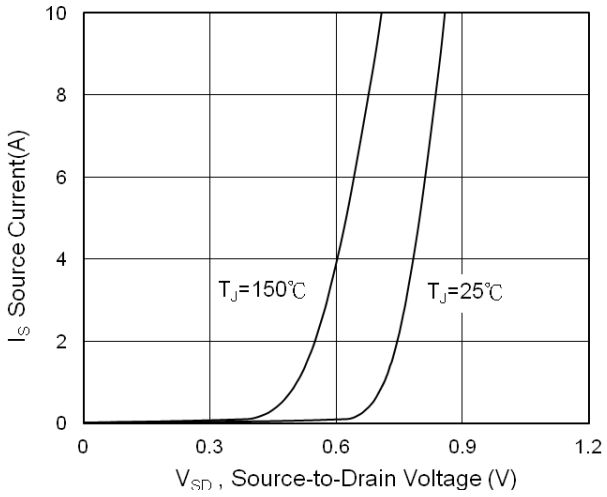


Fig.3 Source Drain Forward Characteristics

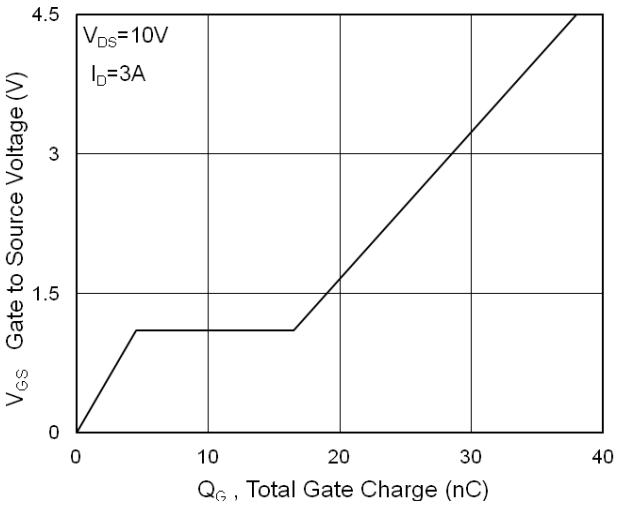


Fig.4 Gate-Charge Characteristics

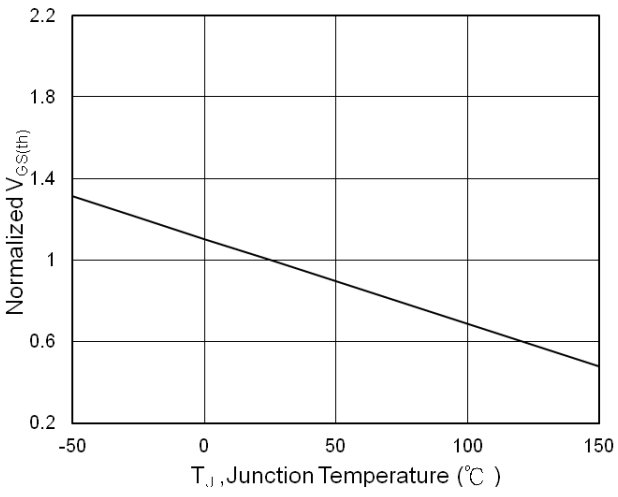


Fig.5 $V_{GS(th)}$ vs. T_J

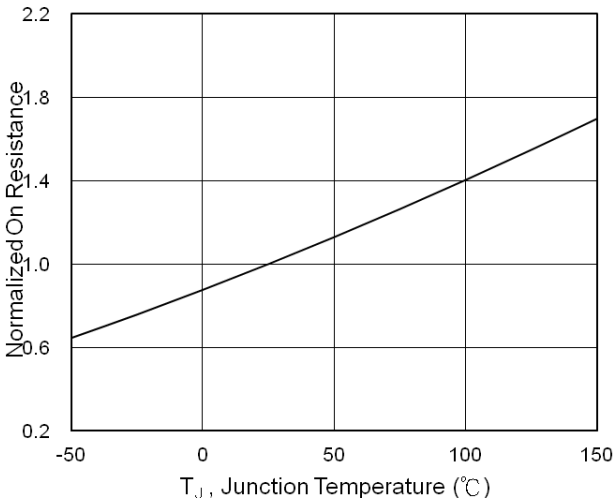


Fig.6 Normalized R_{DSON} vs. T_J

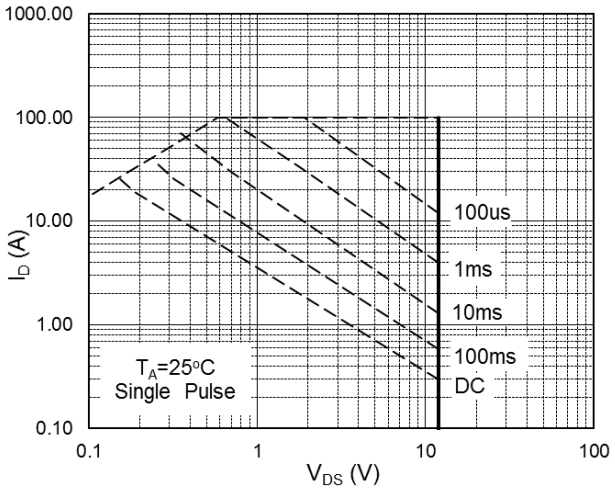


Fig.7 Safe Operating Area

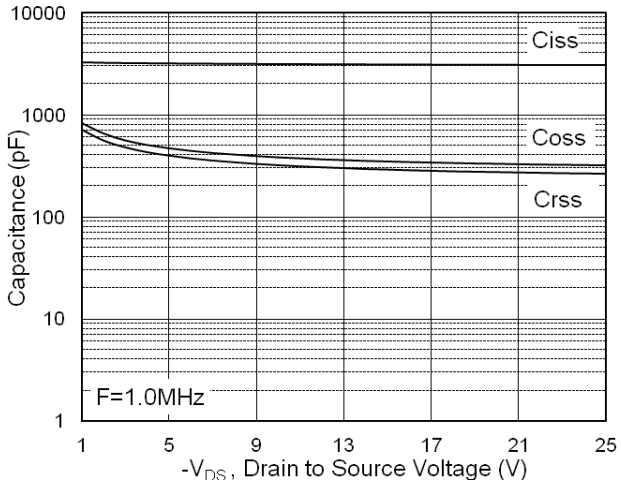


Fig.8 Capacitance

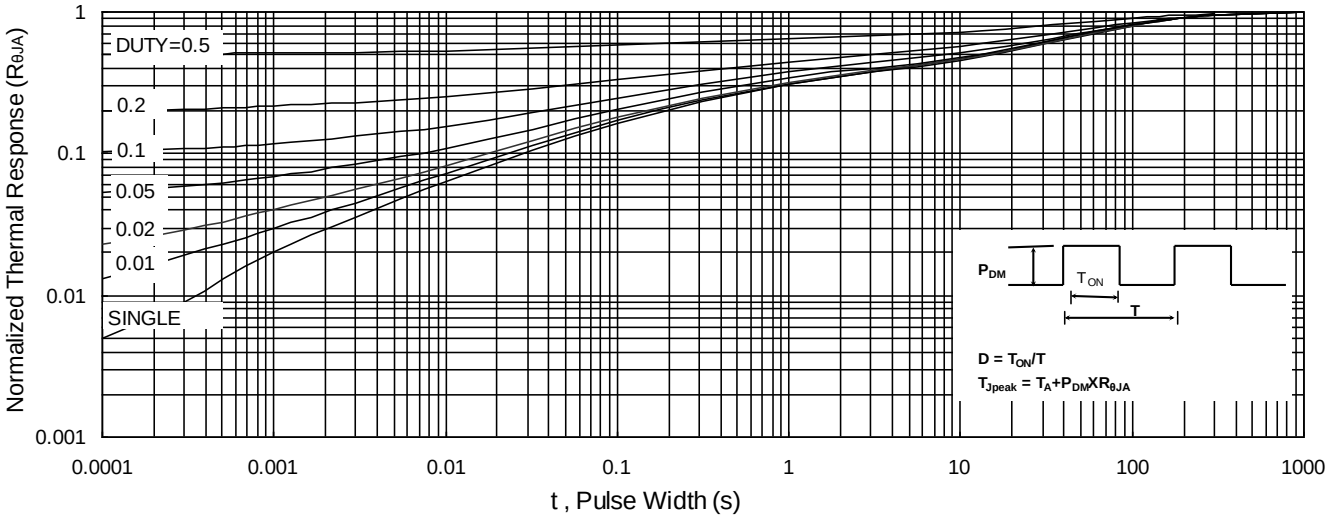


Fig.9 Normalized Maximum Transient Thermal Impedance

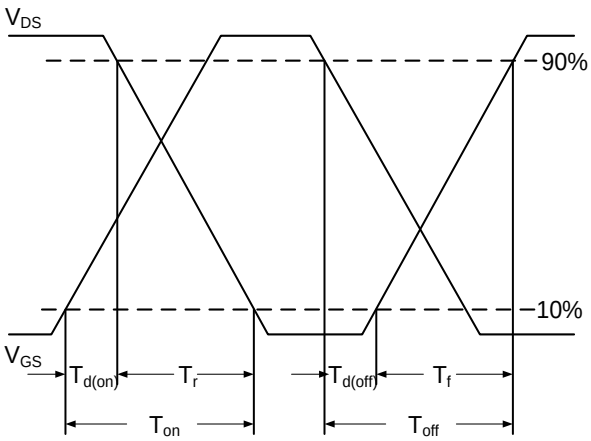


Fig.10 Switching Time Waveform

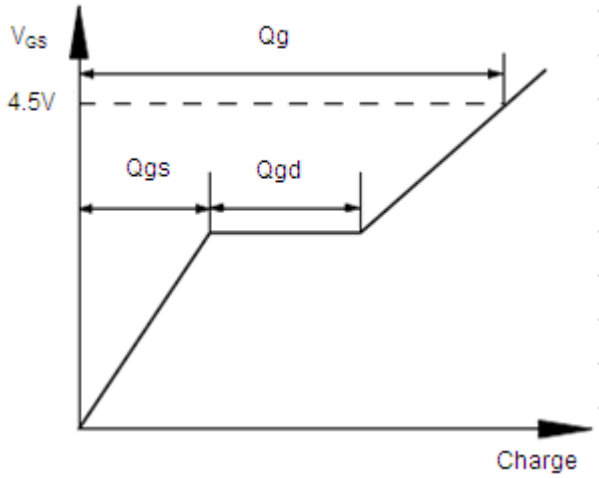
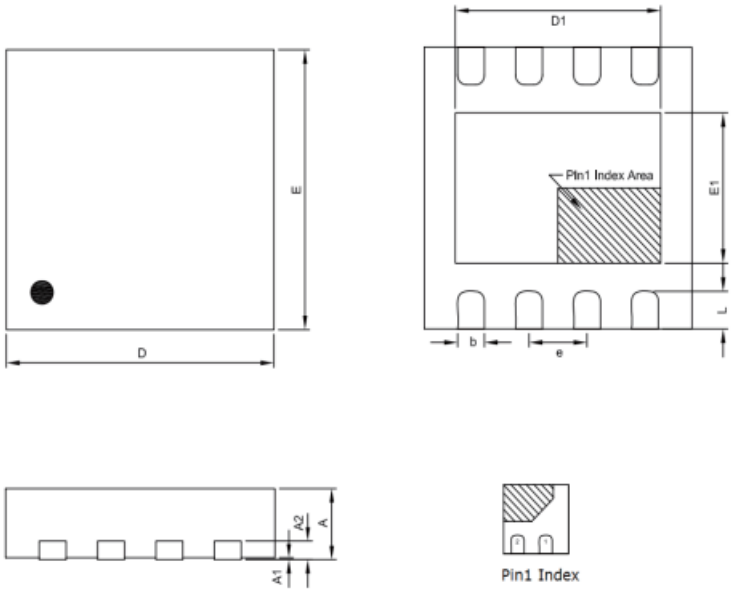


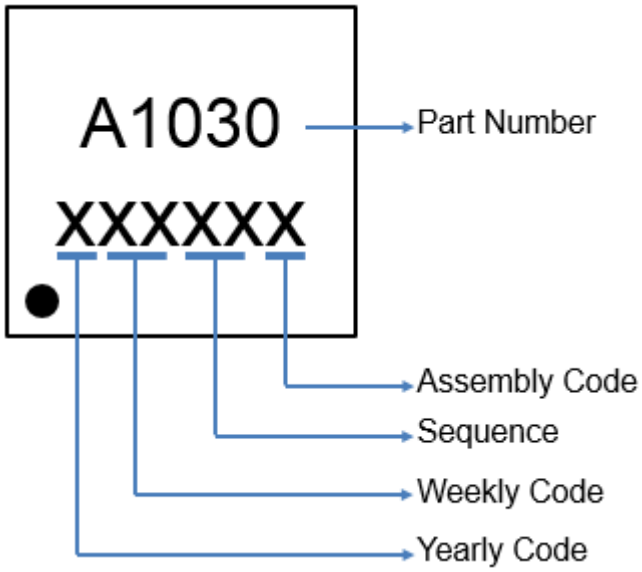
Fig.11 Gate Charge Waveform

DFN3x3 Package Outline Dimensions

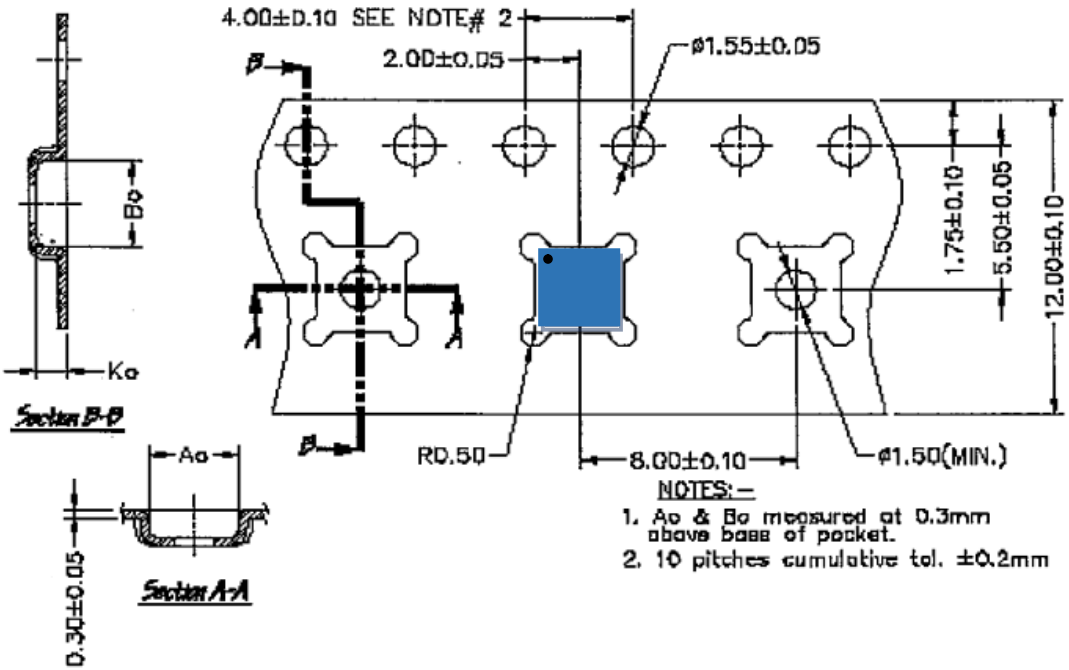


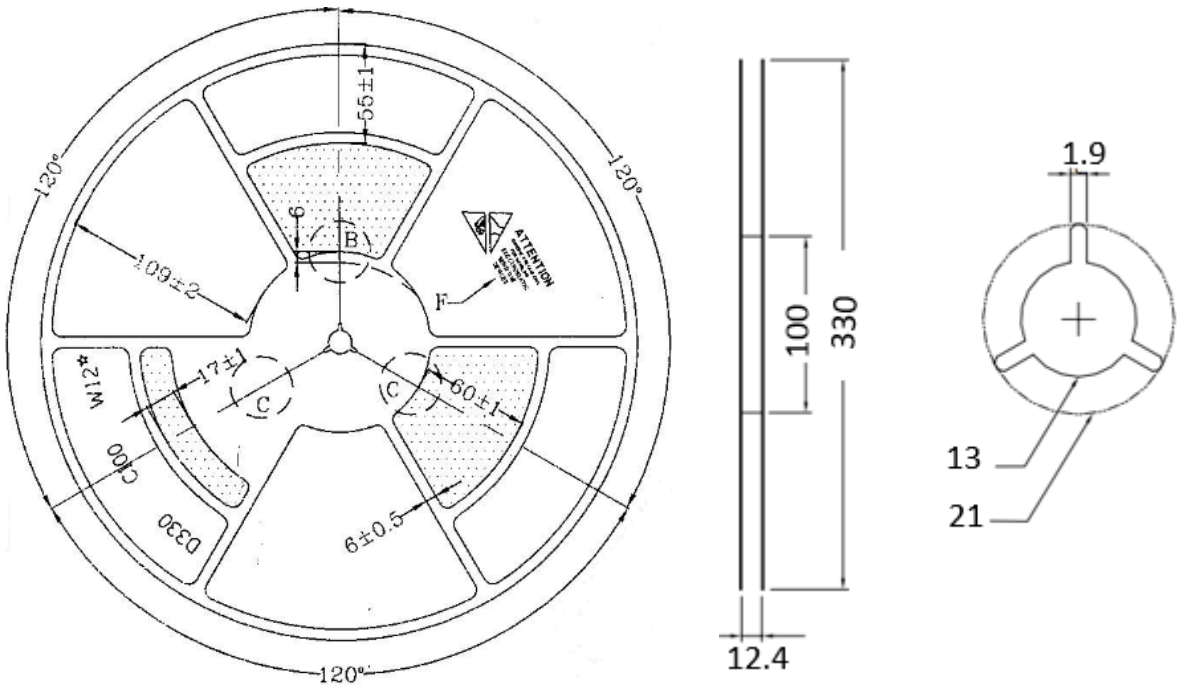
SYMBOLS	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.70	0.75	0.80	0.0276	0.0295	0.0315
A1	0.00	--	0.05	0.000	--	0.002
A2	0.19	0.20	0.21	0.0075	0.0079	0.0083
D	2.90	3.00	3.10	0.114	0.118	0.122
E	2.90	3.00	3.10	0.114	0.118	0.122
D1	2.25	2.30	2.35	0.0886	0.0906	0.0925
E1	1.55	1.6	1.65	0.061	0.063	0.065
L	0.35	0.40	0.45	0.0138	0.0177	0.0207
b	0.25	0.30	0.35	0.0098	0.0118	0.0138
e	--	0.65	--	--	0.0256	--

Marking Instruction



DFN3x3 Tape and Reel Data





Friendship Reminder

■ JiNan JingHeng（hereinafter referred to as JH） reserves the right to make changes to this document and its products and specifications at anytime without notice.

■ Customers should obtain and confirm the latest product information and specifications before final design, purchase or use.

■ JH makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does JH assume any liability for application assistance or customer product design.

■ JH does not warrant or accept any liability with products which are purchased or used for any unintended or unauthorized application.

■ No license is granted by implication or otherwise under any intellectual property rights of JH.

■ JH's products are not authorized for use as critical components in life support devices or systems without express written approval of JH.