

- ★ 100% EAS Guaranteed
- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology

### Product Summary



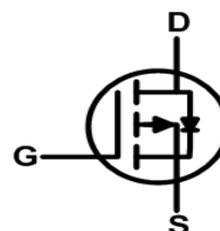
BVDSS	RDS(on)	ID
65V	3.5mΩ	100A

### Description

The JHS100N06LF is the high cell density trenched N-ch MOSFETs, which provide excellent RDS(on) and gate charge for most of the synchronous buck converter applications.

The JHS100N06LF meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

### PDFN5X6 Pin Configuration



### Absolute Maximum Ratings (T<sub>A</sub> = 25°C, unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V <sub>DS</sub>	65	V
Gate-Source Voltage		V <sub>GS</sub>	±20	V
Continuous Drain Current	T <sub>C</sub> =25°C	I <sub>D</sub>	100	A
	T <sub>C</sub> =100°C		61	
Pulsed Drain Current <sup>1</sup>		I <sub>DM</sub>	380	A
Single Pulse Avalanche Energy <sup>2</sup>		EAS	80	mJ
Total Power Dissipation	T <sub>C</sub> =25°C	P <sub>D</sub>	73.5	W
Operating Junction and Storage Temperature Range		T <sub>J</sub> , T <sub>STG</sub>	-55 to 150	°C

### Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction-to-Ambient <sup>3</sup>	R <sub>θJA</sub>	51	°C/W
Thermal Resistance from Junction-to-Case	R <sub>θJC</sub>	1.7	°C/W

## Electrical Characteristics (T<sub>J</sub> = 25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	65	-	-	V
Gate-body Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V	-	-	±100	nA
Zero Gate Voltage Drain Current	T <sub>J</sub> =25°C	I <sub>DSS</sub> V <sub>DS</sub> = 65V, V <sub>GS</sub> = 0V	-	-	1	μA
	T <sub>J</sub> =100°C		-	-	100	
Gate-Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	1.2	1.7	2.5	V
Drain-Source On-Resistance <sup>4</sup>	R <sub>DS(on)</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 20A	-	3.5	4.8	mΩ
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 10A	-	4.8	6.6	
Forward Transconductance <sup>4</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 10V, I <sub>D</sub> = 20A	-	89	-	S
<b>Dynamic Characteristics<sup>5</sup></b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V, f = 1MHz	-	2180	-	pF
Output Capacitance	C <sub>oss</sub>		-	735	-	
Reverse Transfer Capacitance	C <sub>rss</sub>		-	42	-	
Gate Resistance	R <sub>g</sub>	f = 1MHz	-	1.8	-	Ω
<b>Switching Characteristics<sup>5</sup></b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 30V, I <sub>D</sub> = 20A	-	35	-	nC
Gate-Source Charge	Q <sub>gs</sub>		-	6.6	-	
Gate-Drain Charge	Q <sub>gd</sub>		-	8.4	-	
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>GS</sub> = 10V, V <sub>DD</sub> = 30V, R <sub>G</sub> = 3Ω, I <sub>D</sub> = 20A	-	9.4	-	ns
Rise Time	t <sub>r</sub>		-	8.4	-	
Turn-Off Delay Time	t <sub>d(off)</sub>		-	32.5	-	
Fall Time	t <sub>f</sub>		-	12.5	-	
Body Diode Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 20A, dI/dt = 100A/μs	-	50	-	ns
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>		-	20	-	nC
<b>Drain-Source Body Diode Characteristics</b>						
Diode Forward Voltage <sup>4</sup>	V <sub>SD</sub>	I <sub>S</sub> = 20A, V <sub>GS</sub> = 0V	-	-	1.2	V
Continuous Source Current	T <sub>C</sub> = 25°C	I <sub>S</sub>	-	-	100	A

### Notes:

1. Repetitive rating, pulse width limited by junction temperature T<sub>J(MAX)</sub> = 150°C
2. The EAS data shows Max. rating. The test condition is V<sub>DD</sub> = 25V, V<sub>GS</sub> = 10V, L = 0.1mH, I<sub>AS</sub> = 40A.
3. The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
4. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
- 5 This value is guaranteed by design hence it is not included in the production test.

## Typical Characteristics

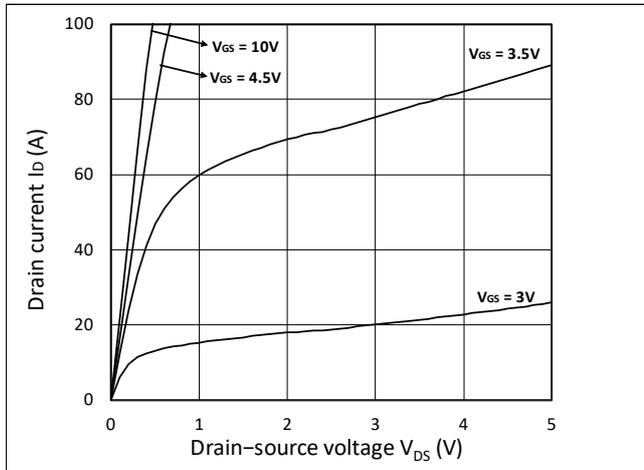


Figure 1. Output Characteristics

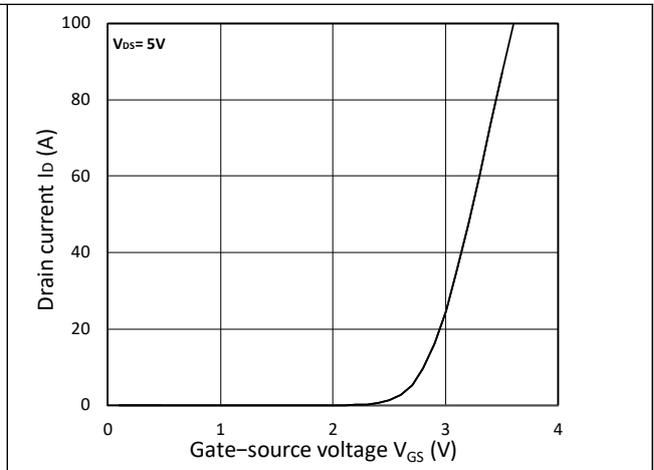


Figure 2. Transfer Characteristics

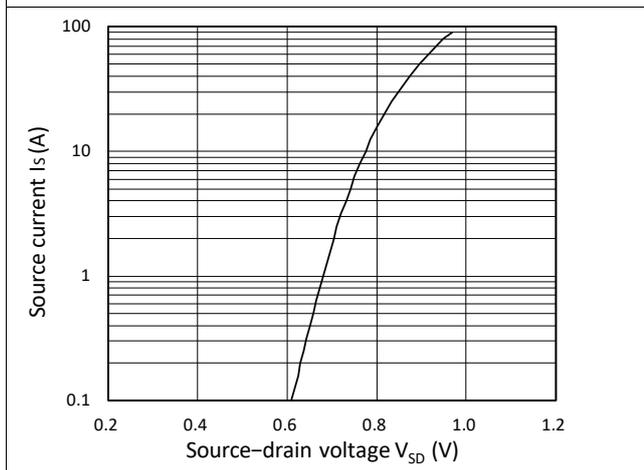


Figure 3. Forward Characteristics of Reverse

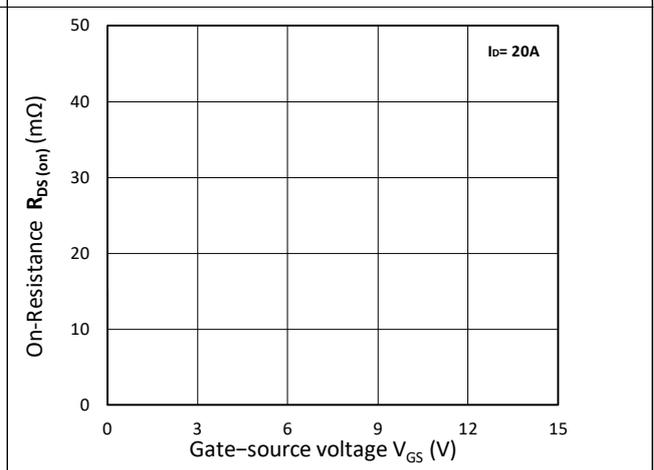


Figure 4.  $R_{DS(on)}$  vs.  $V_{GS}$

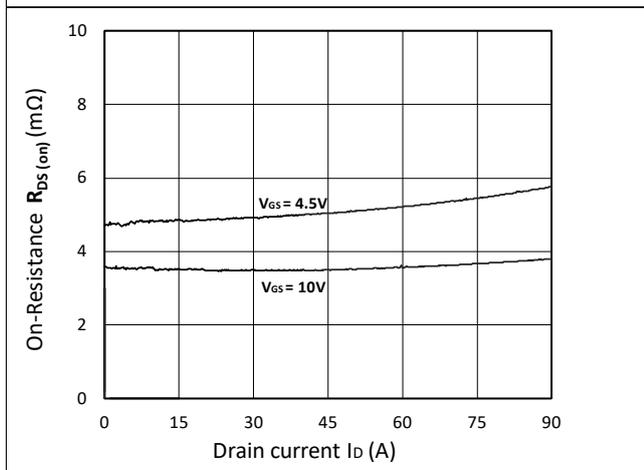


Figure 5.  $R_{DS(on)}$  vs.  $I_D$

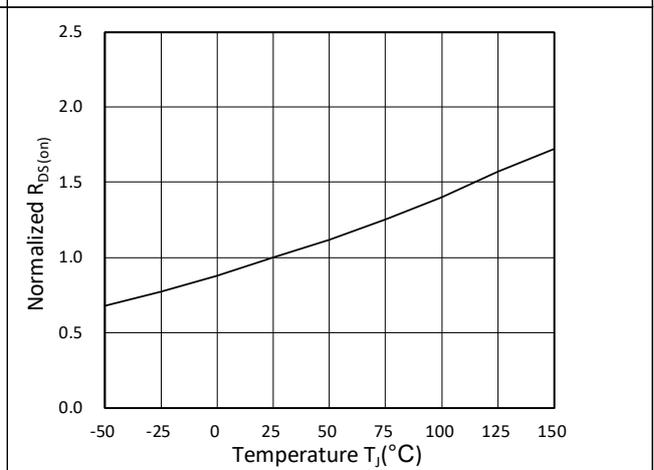


Figure 6. Normalized  $R_{DS(on)}$  vs. Temperature

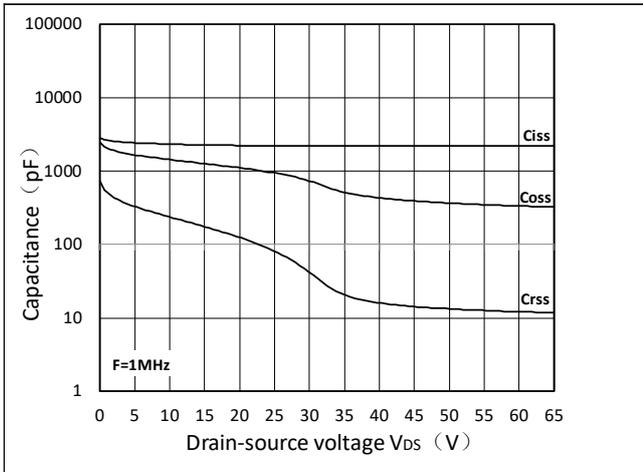


Figure 7. Capacitance Characteristics

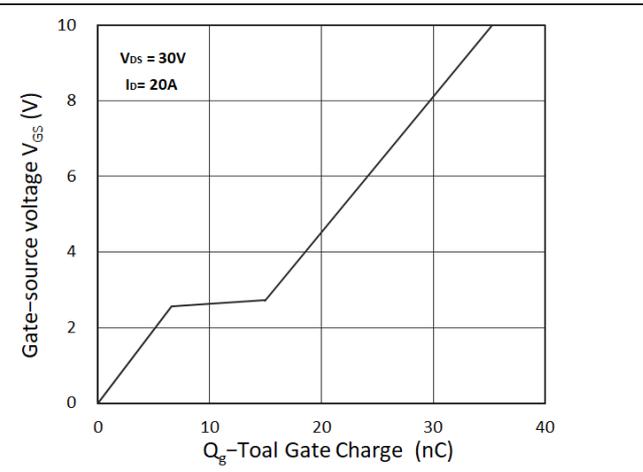


Figure 8. Gate Charge Characteristics

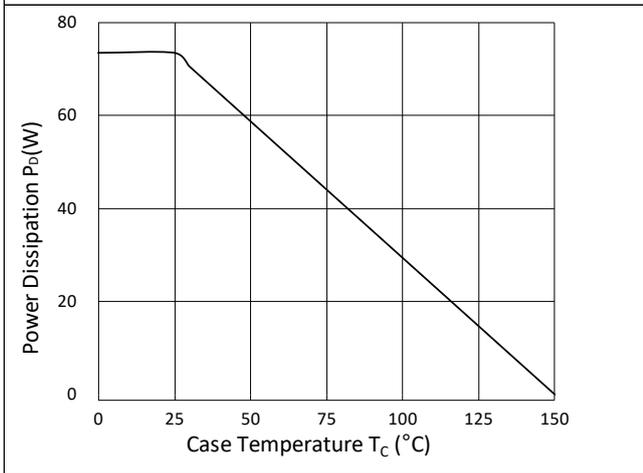


Figure 9. Power Dissipation

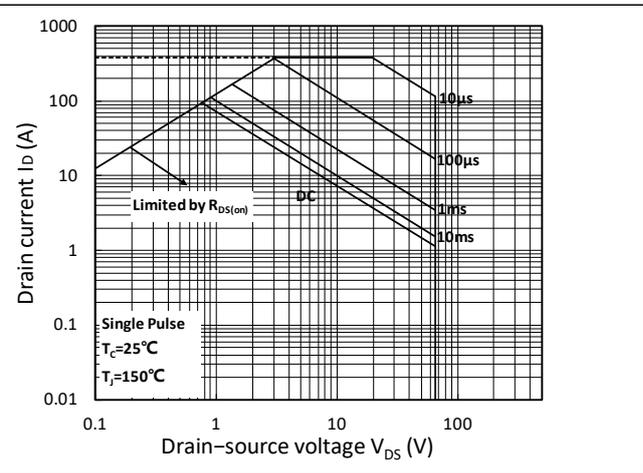


Figure 10. Safe Operating Area

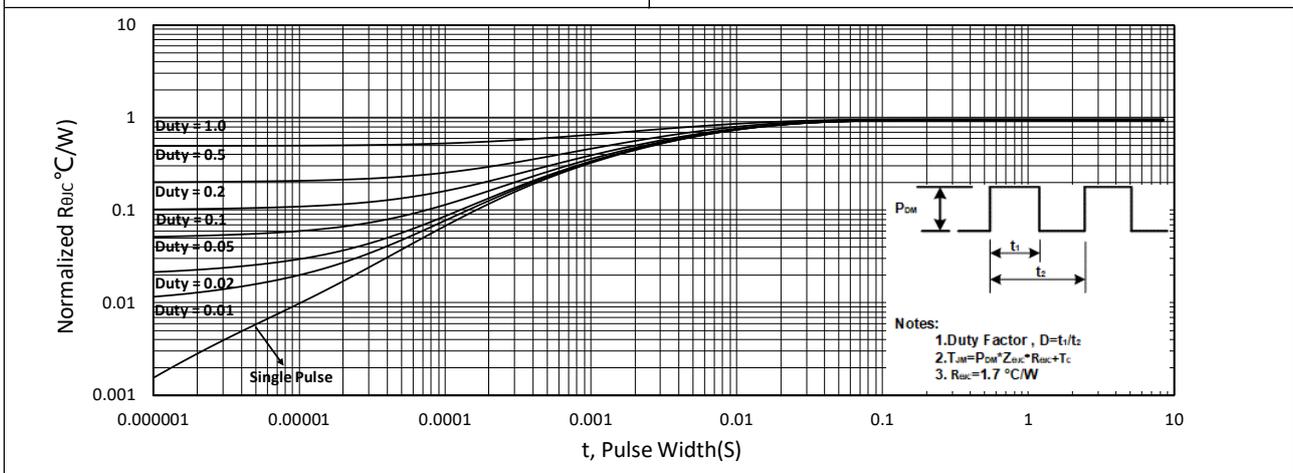


Figure 11. Normalized Maximum Transient Thermal Impedance

### Test Circuit

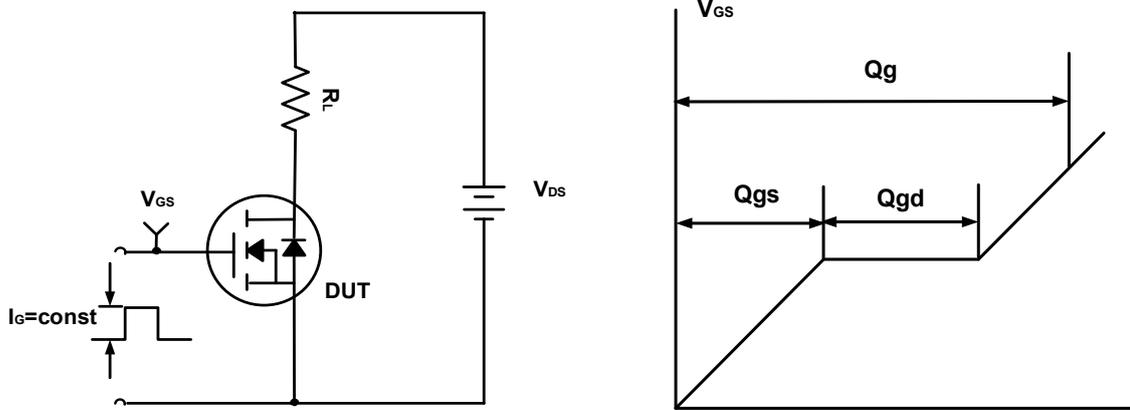


Figure A. Gate Charge Test Circuit & Waveforms

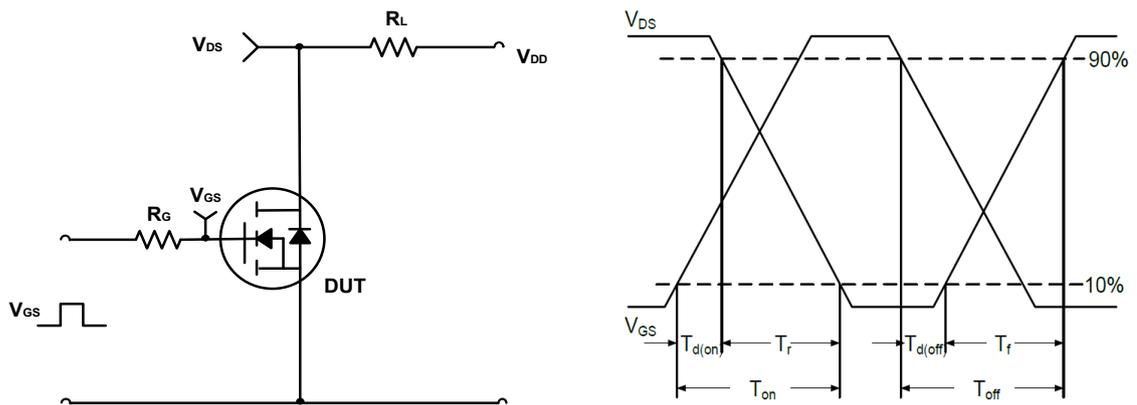


Figure B. Switching Test Circuit & Waveforms

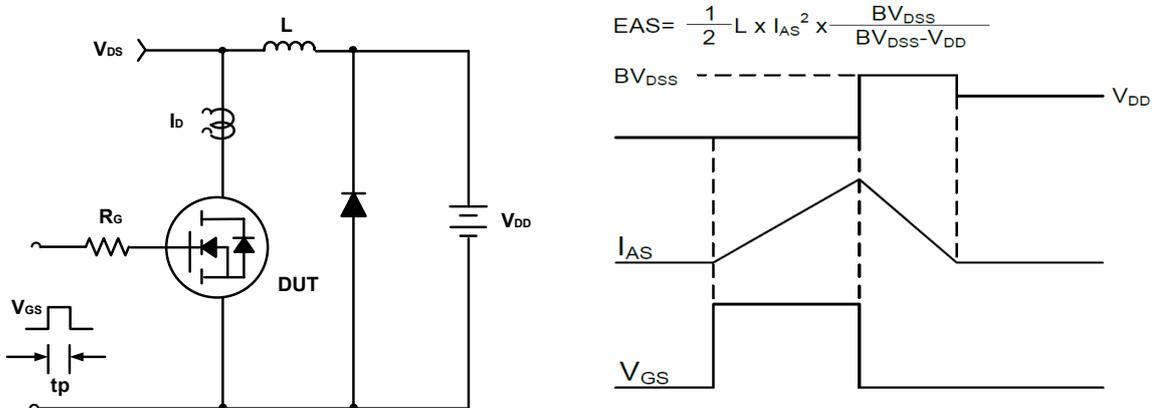
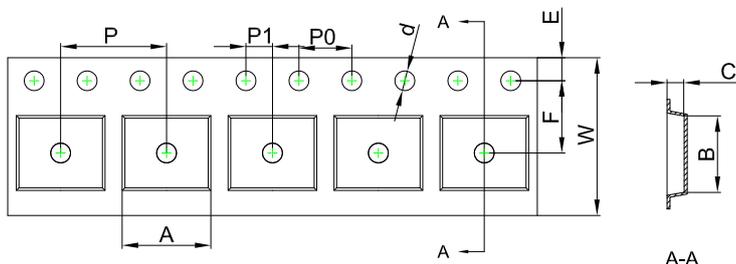


Figure C. Unclamped Inductive Switching Circuit & Waveforms

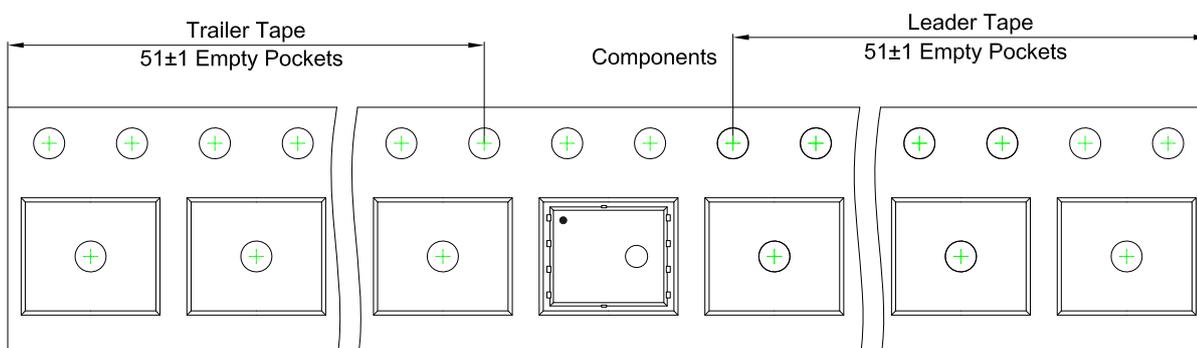
## PDFN5×6 Tape and Reel

### PDFN5×6 Embossed Carrier Tape

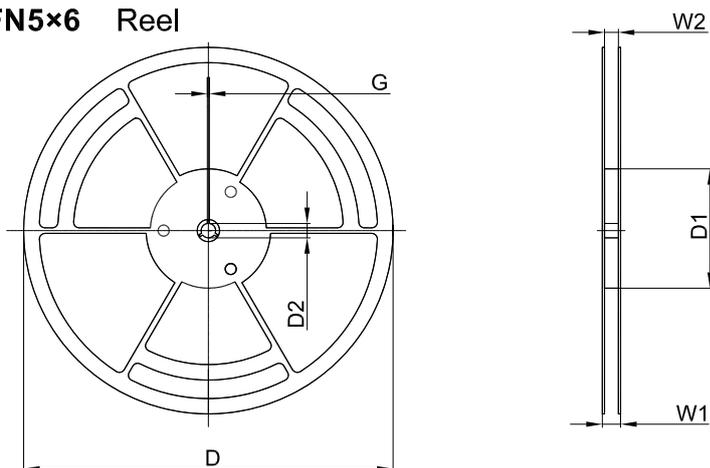


Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
PDFN5×6	6.30	5.30	1.10	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

### PDFN5×6 Tape Leader and Trailer

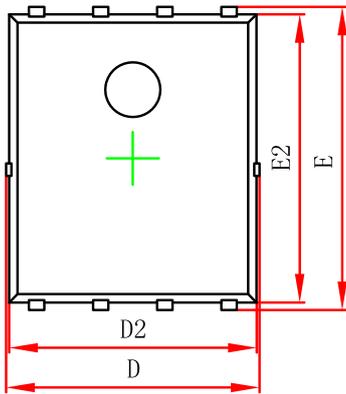


### PDFN5×6 Reel

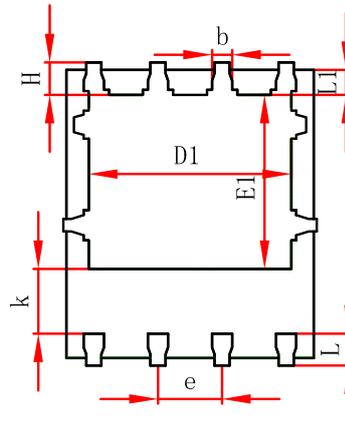


Dimensions are in millimeter						
Reel Option	D	D1	D2	G	W1	W2
13" Dia	Ø330.00	100.00	13.00	1.90	17.60	12.40

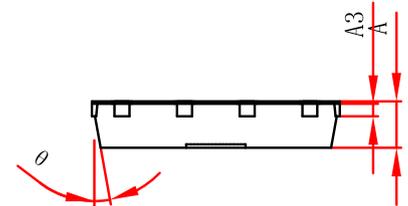
REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)
5,000 pcs	13 inch	5,000 pcs	340×336×29	50,000 pcs	353×346×365



Top View  
[顶视图]



Bottom View  
[背视图]



Side View  
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°	12°	10°	12°

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