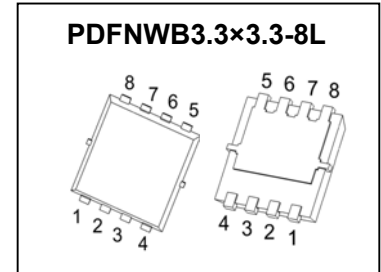




PDFNWB3.3×3.3-8L Plastic-Encapsulate MOSFET

CJAB6R0SN04AL N-Channel Power MOSFET

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
40V	4.1mΩ@10V	90A



DESCRIPTION

The N-Channel enhancement mode power field effect transistors is using SGT technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

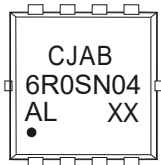
FEATURES

- Low $R_{DS(ON)}$
- Logic Level Driving
- Excellent Gate Charge x $R_{DS(ON)}$ Product (FOM)

APPLICATIONS

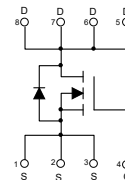
- High Frequency Switching and Synchronous Rectification
- DC-Motor Driver

MARKING



CJAB6R0SN04AL = Part No.
 Solid dot = Pin1 indicator.
 XX = Code.

EQUIVALENT CIRCUIT



ABSOLUTE MAXIMUM RATINGS ($T_a=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D ①	90	A
Pulsed Drain Current	I_{DM} ②	360	A
Single Pulsed Avalanche Energy	E_{AS} ③	65	mJ
Maximum Power Dissipation	P_D ①	74	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55~+150	°C

Thermal Characteristics

Parameter	Symbol	Typ	Max	Unit
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$ ⑥	50	75	°C/W
Thermal Resistance from Junction to Case	$R_{\theta JC}$ ①	1.1	1.7	°C/W

MOSFET ELECTRICAL CHARACTERISTICS

$T_a=25\text{ }^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit	
Off characteristics							
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	40	-	-	V	
Zero gate voltage drain current	I_{DSS}	$V_{GS}=0V, V_{DS}=40V$	$T_J=25\text{ }^\circ\text{C}$	-	-	1.0	μA
			$T_J=125\text{ }^\circ\text{C}$	-	-	100	
Gate-body leakage current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 100	nA	
On characteristics^④							
Gate-threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.5	2.1	2.5	V	
Static drain-source on-state resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$	-	4.1	5.5	m Ω	
		$V_{GS}=6V, I_D=15A$	-	5.2	7		
		$V_{GS}=4.5V, I_D=10A$	-	7.3	10		
Dynamic Characteristics^{④⑤}							
Input capacitance	C_{iss}	$V_{DS}=20V, V_{GS}=0V, f=1MHz$	-	1483	-	pF	
Output capacitance	C_{oss}		-	360	-		
Reverse transfer capacitance	C_{rss}		-	16	-		
Gate resistance	R_g	$f=1MHz$	-	2.1	-	Ω	
Switching Characteristics^⑤							
Total gate charge	Q_g	$V_{DS}=20V, V_{GS}=4.5V, I_D=20A$	-	10.4	-	nC	
Total gate charge	Q_g	$V_{DS}=20V, V_{GS}=10V, I_D=20A$	-	21.7	-	nC	
Gate-source charge	Q_{gs}		-	4.7	-		
Gate-drain charge	Q_{gd}		-	4.1	-		
Turn-on delay time	$t_{d(on)}$	$V_{DS}=20V, V_{GS}=10V, I_D=20A, R_G=10\Omega$	-	7.7	-	ns	
Turn-on rise time	t_r		-	4.3	-		
Turn-off delay time	$t_{d(off)}$		-	23.9	-		
Turn-off fall time	t_f		-	8.6	-		
Drain- Source Diode Characteristics^⑤							
Drain-source diode forward voltage	$V_{SD}^{①}$	$V_{GS}=0V, I_S=20A$	-	-	0.9	V	
Continuous drain-source diode forward current	$I_S^{①}$		-	-	90	A	
Pulsed drain-source diode forward current	$I_{SM}^{②}$		-	-	360	A	
Reverse recovery time	t_{rr}	$di_s/dt = 500A/\mu s,$	-	13	-	ns	
Reverse recovery charge	Q_{rr}	$I_S = 20A, V_{DD} = 20V$	-	29	-	nC	

Notes: 1. $T_C=25\text{ }^\circ\text{C}$ Limited only by maximum temperature allowed.

2. $P_W \leq 10\mu s$, Duty cycle $\leq 1\%$.

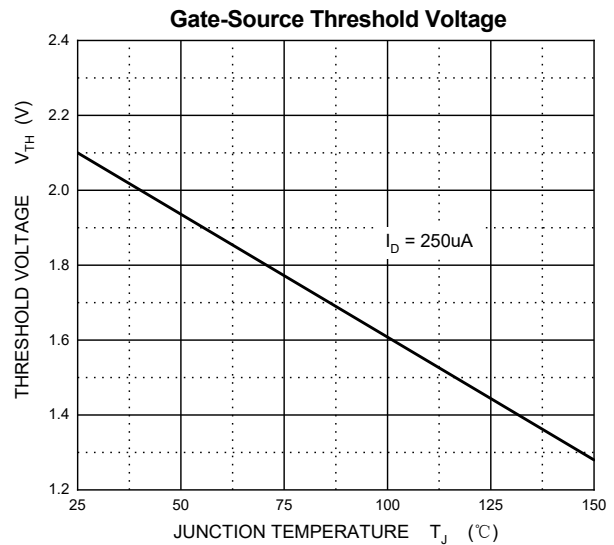
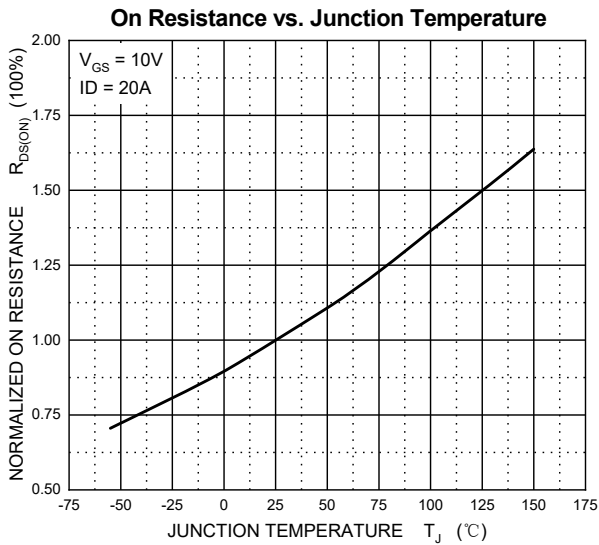
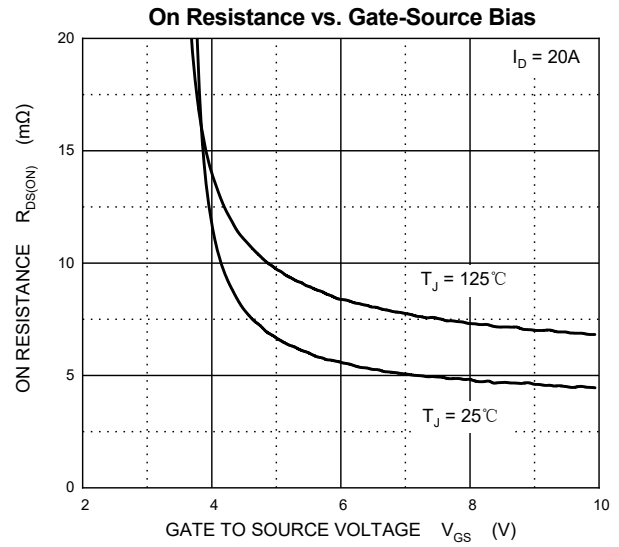
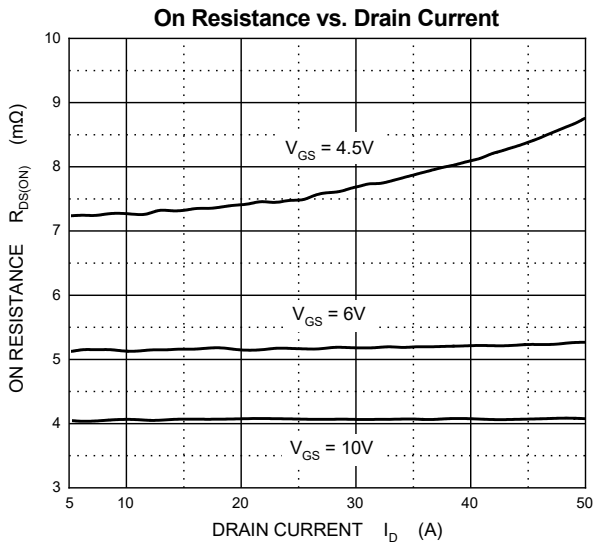
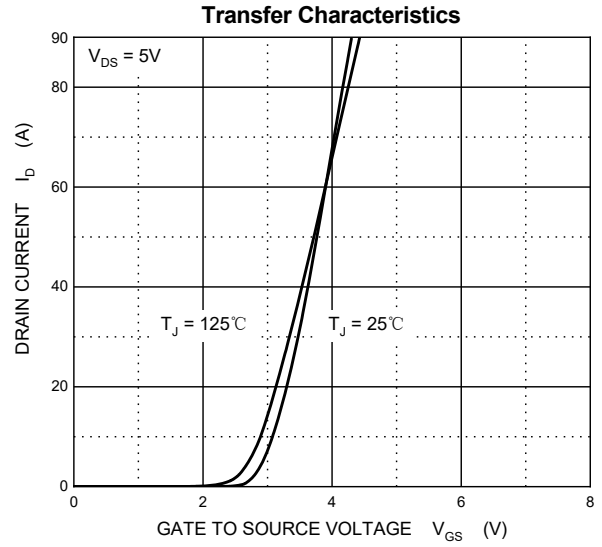
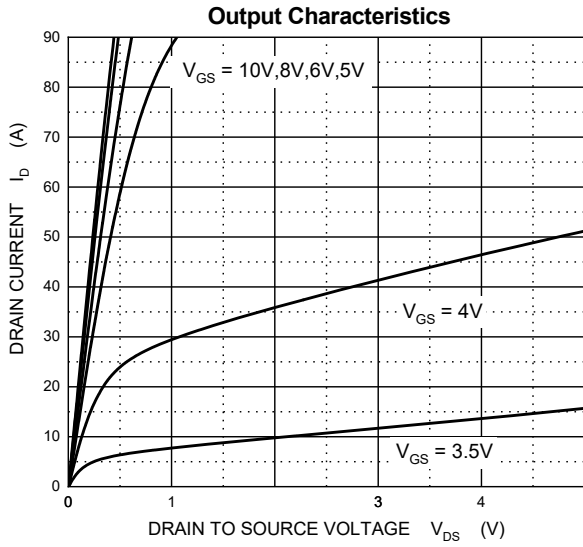
3. EAS condition: $V_{DD}=20V, V_{GS}=10V, L=0.5mH, R_g=25\Omega$ Starting $T_J = 25\text{ }^\circ\text{C}$.

4. Pulse Test : Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.

5. Guaranteed by design, not subject to production.

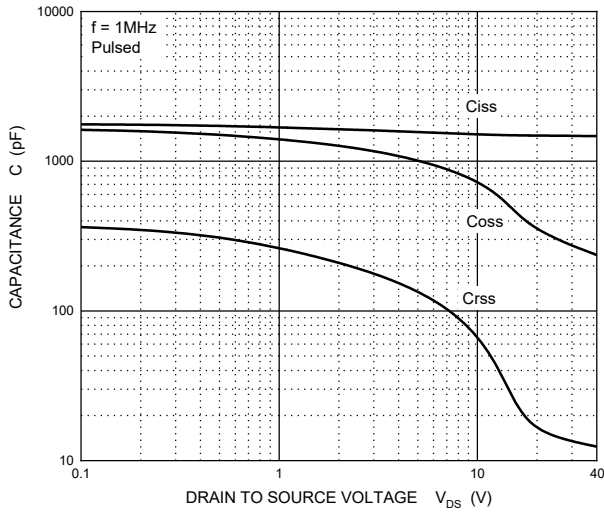
6. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with $T_a=25\text{ }^\circ\text{C}$.

Typical Characteristics

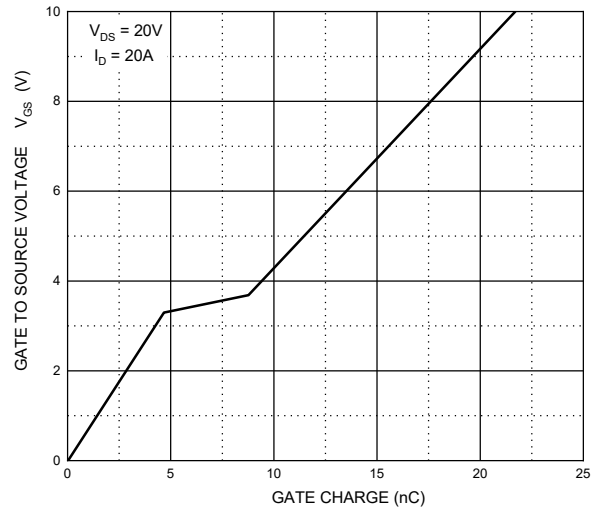


Typical Characteristics

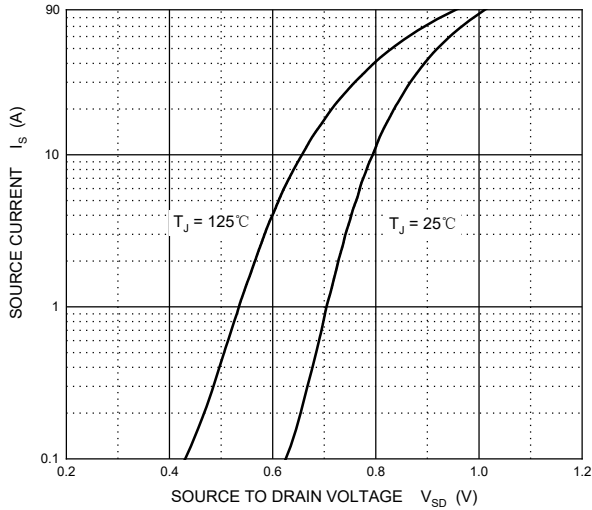
Typical Capacitances



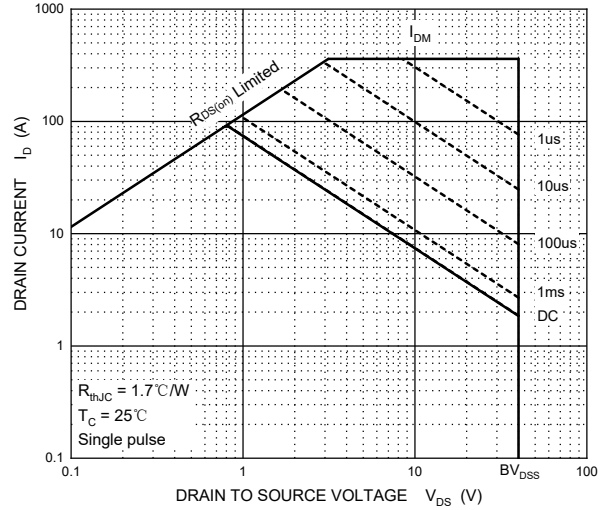
Gate Charge



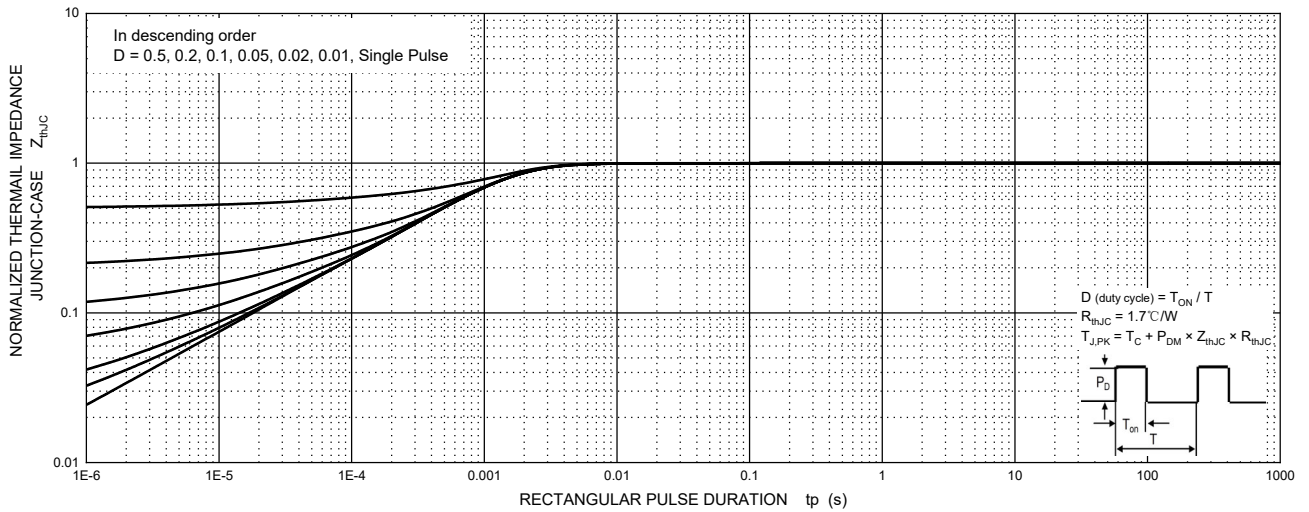
Source-Drain Diode Forward Characteristics



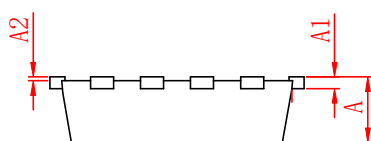
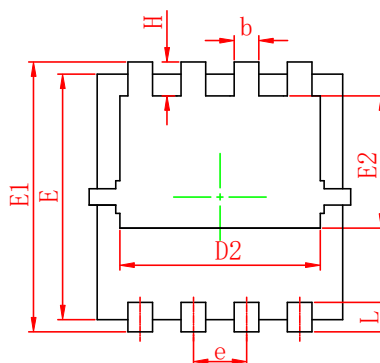
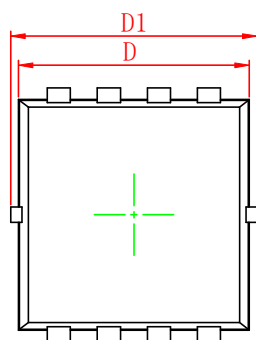
Maximum Safe Operating Area



Transient Thermal Impedance, Junction-Case



PDFNWB3.3×3.3-8L PACKAGE OUTLINE DIMENSIONS

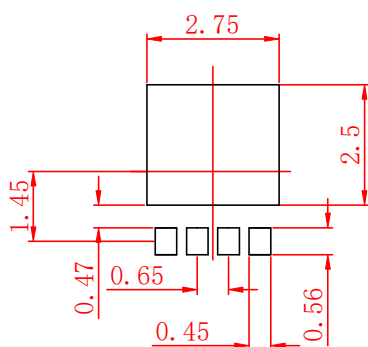


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.65	0.90	0.026	0.035
A1	0.15 REF.		0.006 REF.	
A2	0-0.05		0-0.002	
D	2.90	3.20	0.114	0.126
D1	3.00	3.40	0.118	0.134
D2	2.30	2.60	0.091	0.102
E	2.90	3.20	0.114	0.126
E1	3.00	3.40	0.118	0.134
E2	1.40	1.70	0.055	0.067
b	0.20	0.40	0.008	0.016
e	0.65 BSC.		0.026 BSC.	
L	0.20	0.50	0.008	0.020
H	0.32	0.52	0.012	0.020

Notes:

- 1 Dimensions exclusive of mold gate burrs.
- 2 Dimensions exclusive of mold flash and cutting burrs.

PDFNWB3.3×3.3-8L Suggested Pad Layout



Notes:

- 1 Controlling dimension: in millimeters.
- 2 General tolerance: $\pm 0.05\text{mm}$.
- 2 The pad layout is for reference purpose only.

NOTICE

JSCJ reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. JSCJ does not assume any liability arising out of the application or use of any product described herein.

PDFNWB3.3×3.3-8L Tape and Reel

PDFNWB3.3×3.3-8L Embossed Carrier Tape



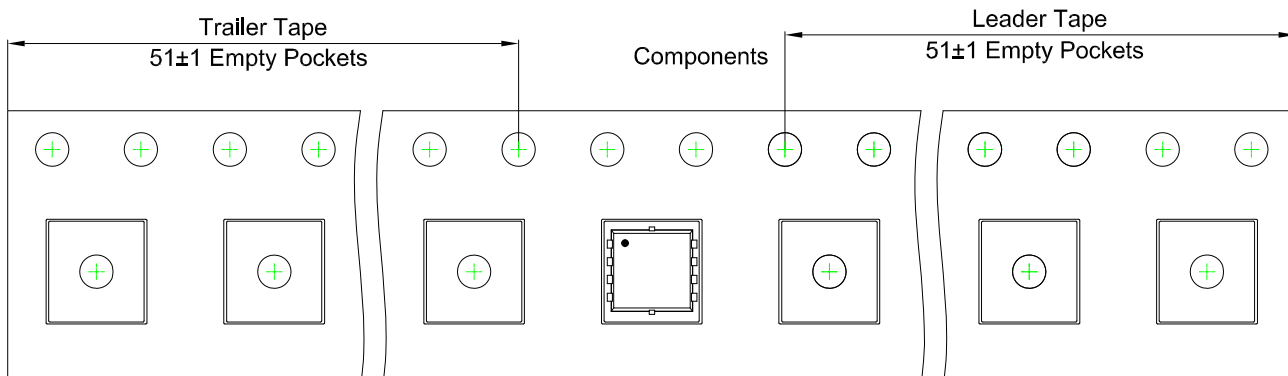
Packaging Description:

PDFNWB3.3×3.3-8L parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 5,000 units per 13" or 33.0 cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

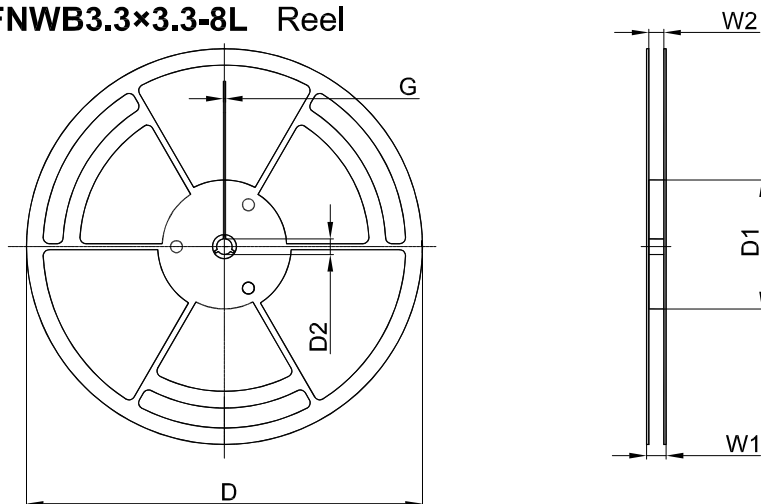
Dimensions are in millimeter

Pkg type	A	B	C	d	E	F	P0	P	P1	W
PDFNWB3.3×3.3-8L	3.55	3.55	1.10	Ø1.50	1.75	5.50	4.00	8.00	2.00	12.00

PDFNWB3.3×3.3-8L Tape Leader and Trailer



PDFNWB3.3×3.3-8L Reel



Dimensions are in millimeter

Reel Option	D	D1	D2	G	W1	W2
13" Dia	φ330.00	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	10,000 pcs	360×360×65	50,000 pcs	378×358×382