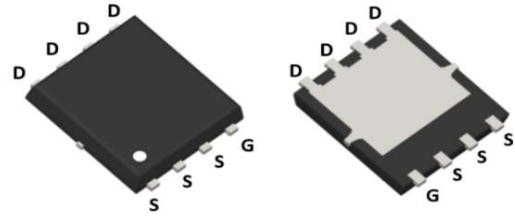


WNM03301D

Single N-Channel, 30V, 36A, Power MOSFET

<http://www.omnivision-group.com>

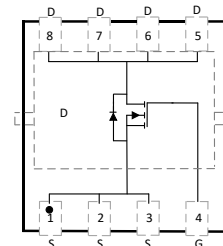
V_{DS} (V)	Max. $R_{DS(on)}$ (m Ω)
30	5.4 @ $V_{GS}=10V$
	9.1 @ $V_{GS}=4.5V$



Description

The WNM03301D is N-Channel enhancement MOS Field Effect Transistor. Uses advanced Split Gate Trench and design to provide excellent $R_{DS(ON)}$ with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WNM03301D is Pb-free.

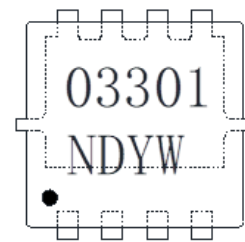
PDFN3.3X3.3-8L



Internal schematic diagram

Features

- Split Gate Trench Technology
- Supper high density cell design
- Excellent ON resistance
- Package PDFN3.3X3.3-8L



03301 = Device Code

ND = Special Code

Y = Year

W = Week(A~z)

Marking

Applications

- DC/DC converters
- CPU, GPU, Charger Switching MOS
- Power supply converters circuit

Order information

Device	Package	Shipping
WNM03301D-8/TR	PDFN3333-8L	5000/Tape&Reel

Absolute Maximum ratings

Parameter	Symbol	Maximum	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ^e	$T_C=25^{\circ}\text{C}$	36	A
	$T_C=100^{\circ}\text{C}$	34	A
Pulsed Drain Current ^c	I_{DM}	144	A
Continuous Drain Current	$T_A=25^{\circ}\text{C}$	22	A
	$T_A=70^{\circ}\text{C}$	18	
Avalanche Energy $L=0.3\text{mH}$	E_{AS}	36	mJ
Power Dissipation ^b	$T_C=25^{\circ}\text{C}$	23	W
	$T_C=100^{\circ}\text{C}$	9	
Power Dissipation ^a	$T_A=25^{\circ}\text{C}$	3.9	W
	$T_A=70^{\circ}\text{C}$	2.5	
Operating Junction Temperature	T_J	-55 to 150	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 to 150	$^{\circ}\text{C}$

Thermal resistance ratings

Single Operation					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance ^a	t ≤ 10 s	R _{θJA}	24.7	32.1	°C/W
	Steady State		50.4	63.0	
Junction-to-Case Thermal Resistance	Steady State	R _{θJC}	4.4	5.4	

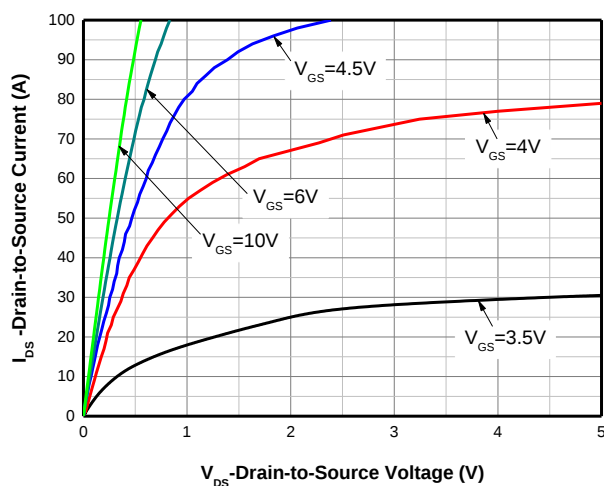
Note:

- a FR-4 board (38mm X 38mm X t1.6mm, 70um Copper) partially covered with copper (645mm² area). The power dissipation P_{DSM} is based on Junction-to-Ambient thermal resistance $R_{\theta JA}$ $t \leq 10\text{s}$ value and the $T_{J(MAX)}=150^{\circ}\text{C}$. The value is only for reference, any application depends on the user's specific board design.
- b The power dissipation P_D is based on $T_{J(MAX)}=150^{\circ}\text{C}$, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heat sinking is used.
- c Repetitive rating, ~10us pulse width, duty cycle ~1%, keep initial $T_J = 25^{\circ}\text{C}$, the maximum allowed junction temperature of 150°C .
- d The static characteristics are obtained using ~380us pulses, duty cycle ~1%.
- e The maximum current rating by source bonding technology.

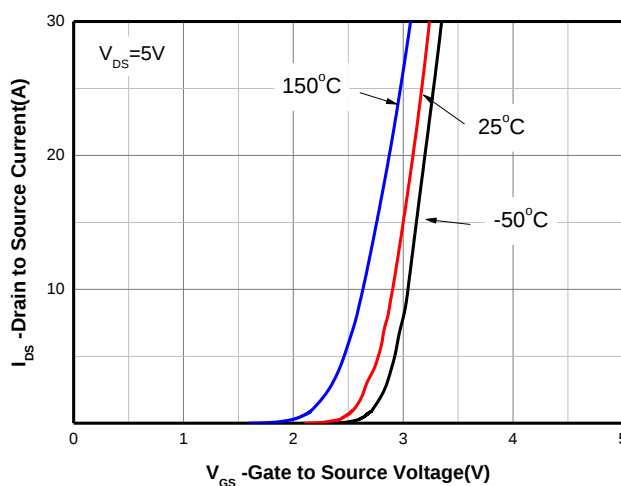
Electronics Characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0 V, I _D = 250uA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} = 0V			1	uA
Gate-to-source Leakage Current	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _D = 250uA	1.3	1.8	2.5	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} =10V, I _D = 18A		4.3	5.4	mΩ
		V _{GS} = 4.5V, I _D =18A		6.7	9.1	
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} = 0 V, f = 1.0MHz, V _{DS} = 15 V		991		pF
Output Capacitance	C _{OSS}			443		
Reverse Transfer Capacitance	C _{RSS}			21		
Total Gate Charge	Q _{G(TOT)}	V _{GS} = 10V, V _{DD} = 15 V, I _D =18 A		16.7		nC
Total Gate Charge	Q _{G(TOT)}	V _{GS} = 4.5V, V _{DD} = 15V, I _D =18 A		7.8		
Gate-to-Source Charge	Q _{GS}	V _{GS} = 10V, V _{DD} = 15 V, I _D =18 A		3.7		
Gate-to-Drain Charge	Q _{GD}			1.4		
Gate Resistance	R _g	f=1MHz		2.1		Ω
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V _{GS} = 10V, V _{DD} = 15 V, I _D =18A, R _G =3Ω		5.0		ns
Rise Time	tr			44.9		
Turn-Off Delay Time	td(OFF)			12.9		
Fall Time	tf			2.6		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = 1A		0.72	1.2	V
Reverse Recovery Time	trr	I _F =18A,		16.3		nS
Reverse Recovery Charge	Qrr	di/dt=100A/us		5.3		nC

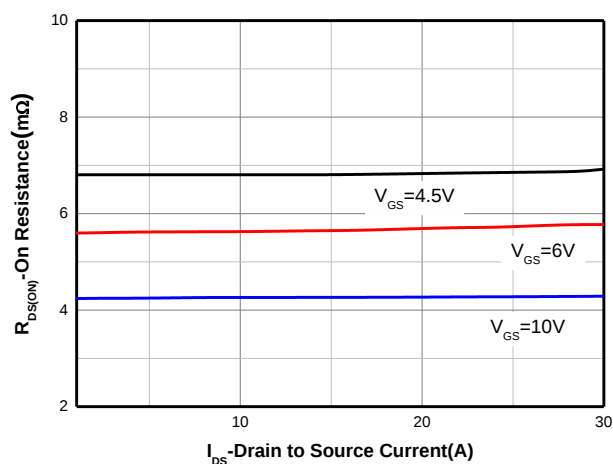
Typical Characteristics (Ta=25°C, unless otherwise noted)



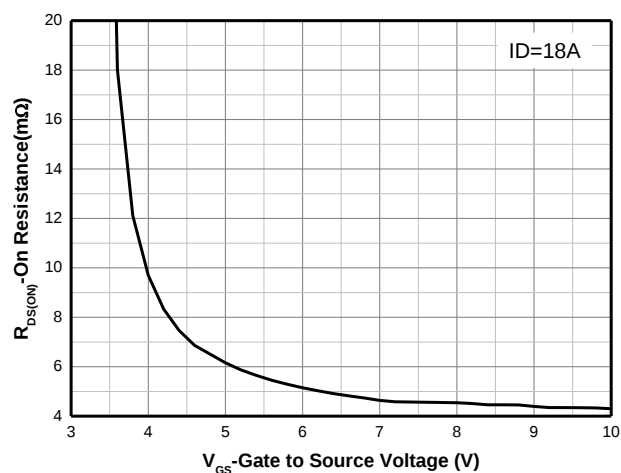
Output Characteristics ^d



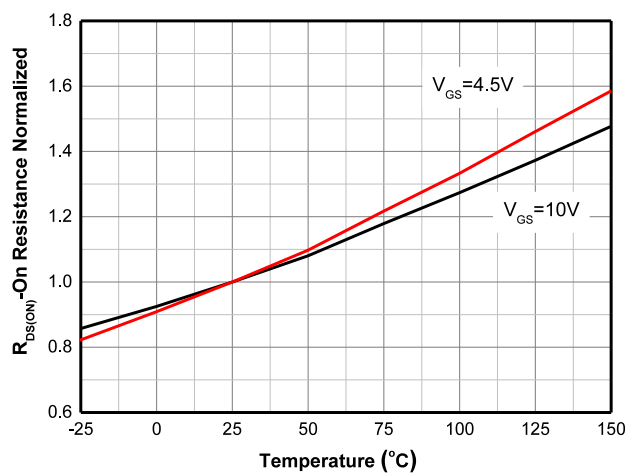
Transfer Characteristics ^d



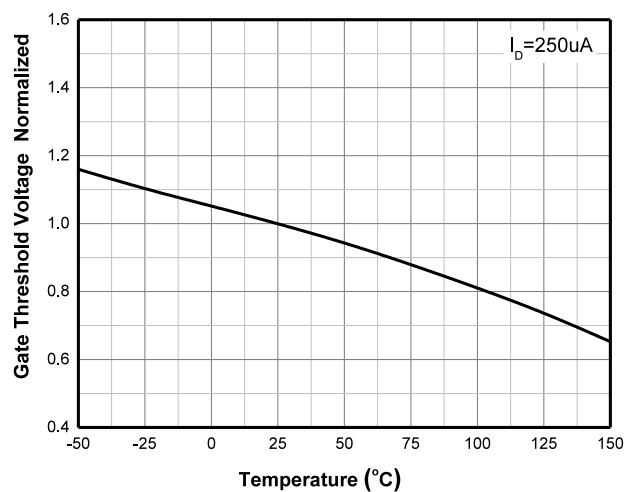
On-Resistance vs. Drain Current ^d



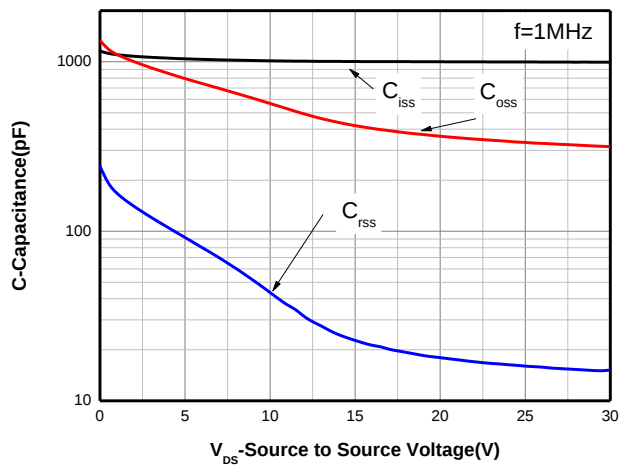
On-Resistance vs. Gate-to-Source Voltage ^d



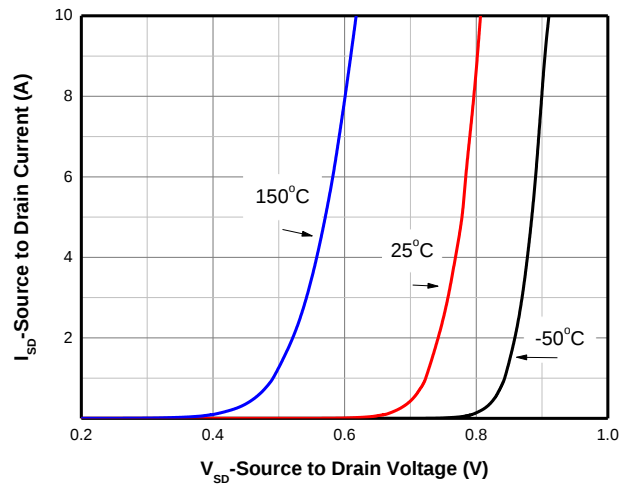
On-Resistance vs. Junction Temperature ^d



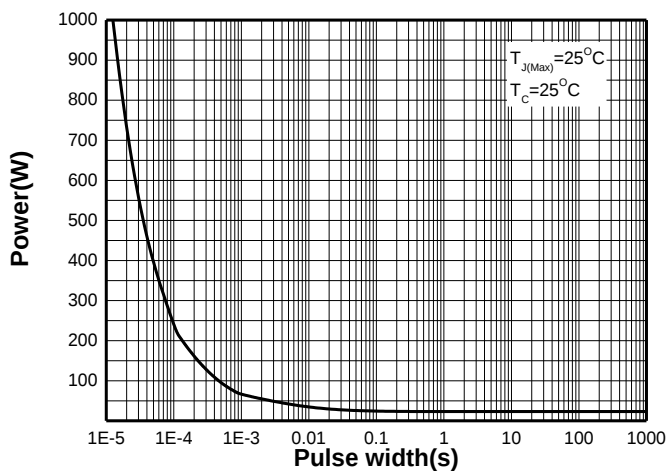
Threshold Voltage vs. Temperature



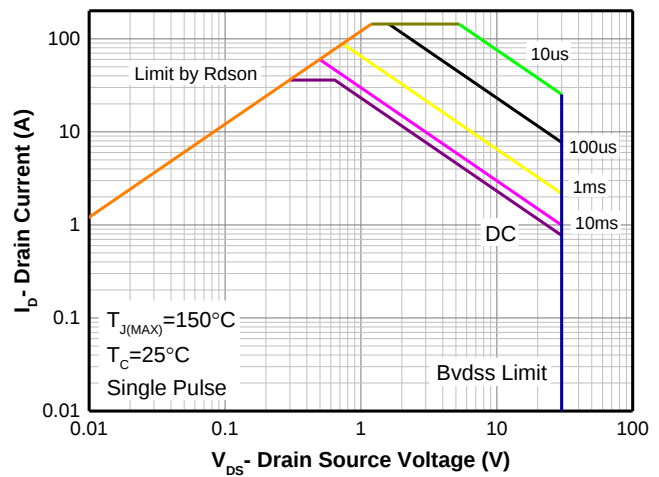
Capacitance



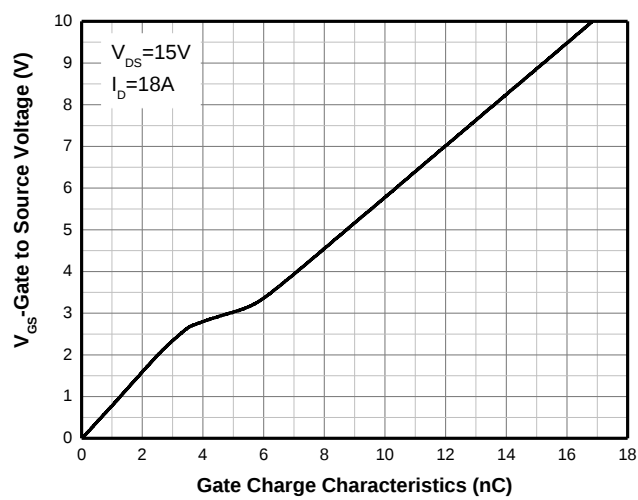
Body Diode Forward Voltage ^d



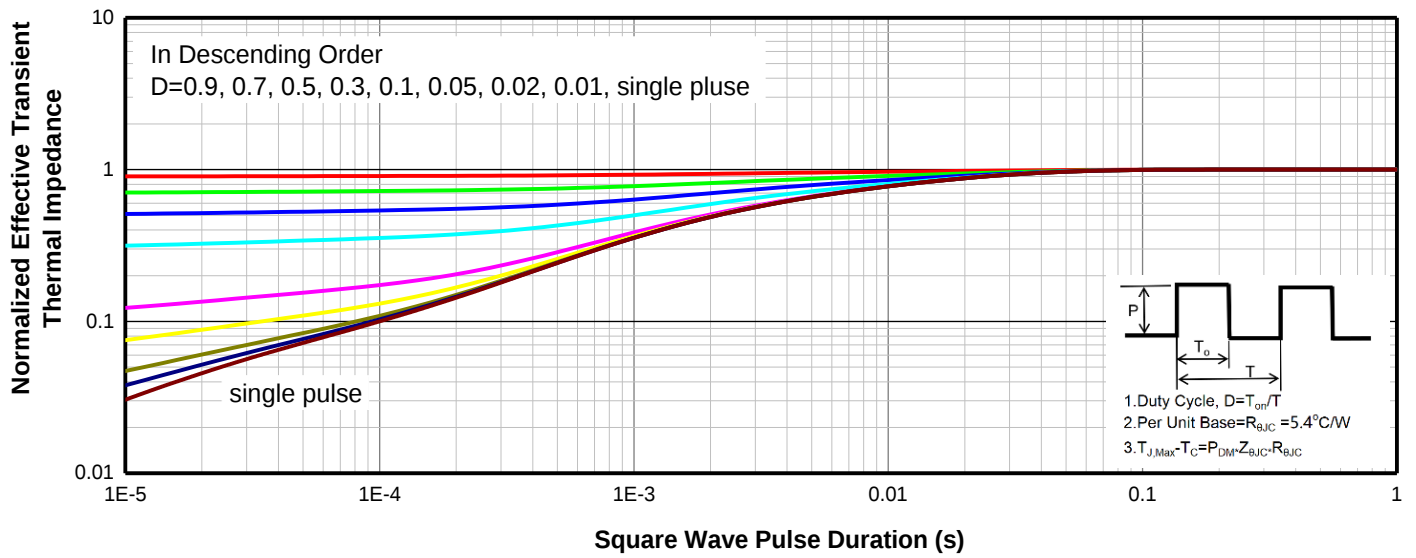
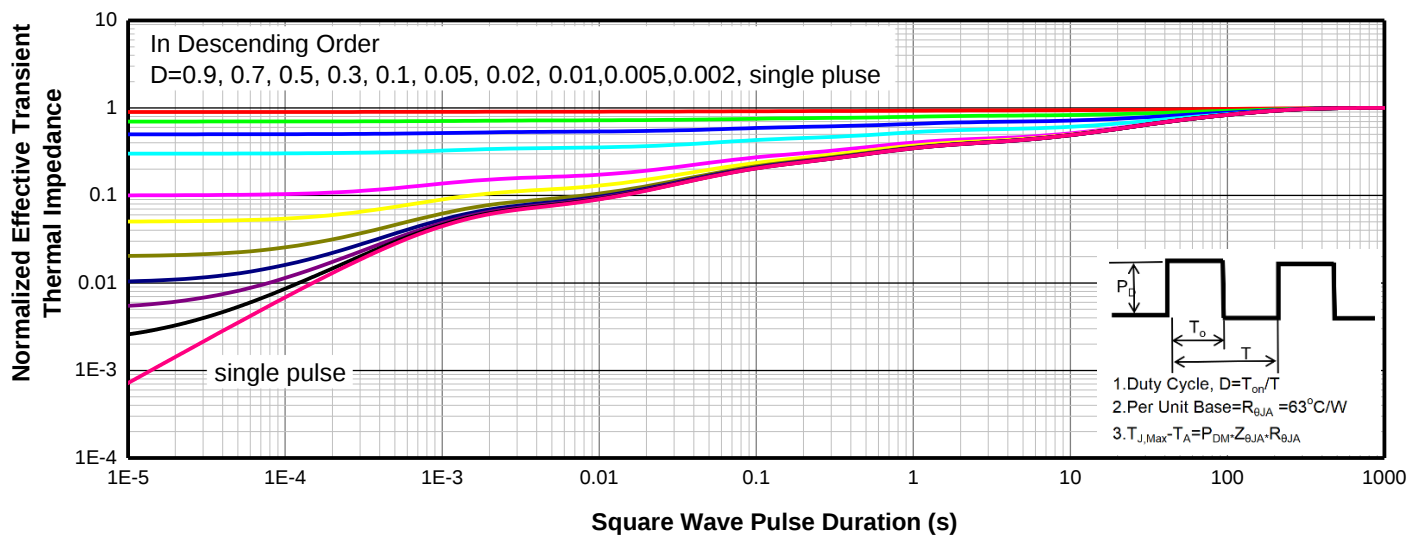
Single Pulse power



Safe Operating Area

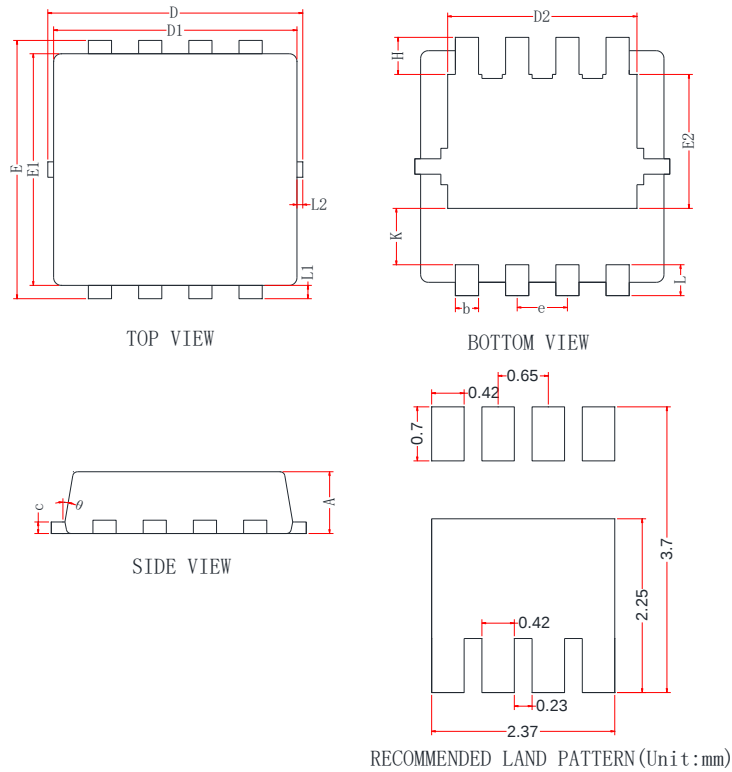


Gate Charge Characteristics


Transient Thermal Response (Junction-to-Case)

Transient Thermal Response (Junction-to-Ambient)

PACKAGE OUTLINE DIMENSIONS

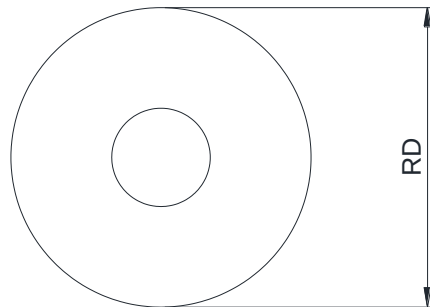
PDFN3333-8L



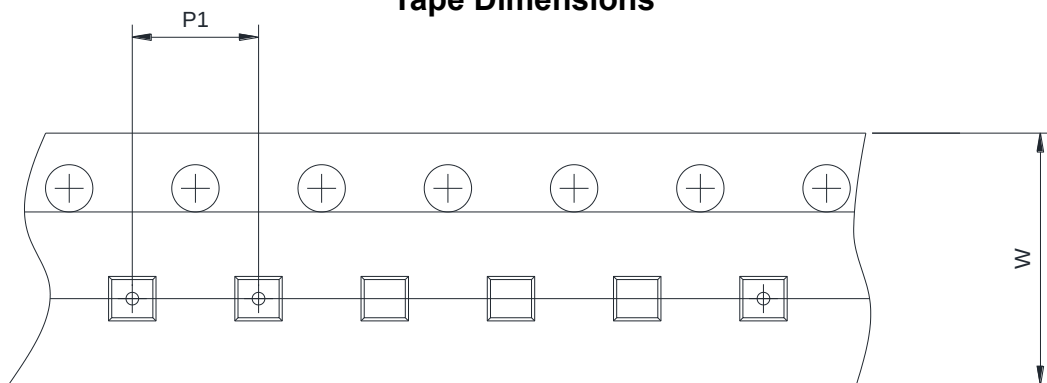
Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.70	0.80	0.90
b	0.25	0.30	0.35
c	0.14	0.15	0.20
D	3.10	3.30	3.50
D1	3.05	3.15	3.25
D2	2.35	2.45	2.55
e	0.55	0.65	0.75
E	3.10	3.30	3.50
E1	2.90	3.00	3.10
E2	1.64	1.74	1.84
H	0.32	0.42	0.52
K	0.59	0.69	0.79
L	0.25	0.40	0.55
L1	0.10	0.15	0.20
L2	-	-	0.15
θ	8°	10°	12°

TAPE AND REEL INFORMATION

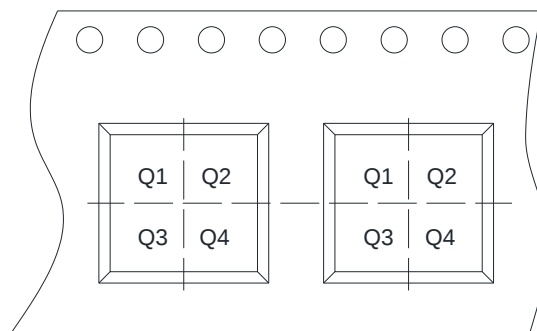
Reel Dimensions



Tape Dimensions



Quadrant Assignments For PIN1 Orientation In Tape




User Direction of Feed

RD	Reel Dimension	☐ 7inch	☒ 13inch	
W	Overall width of the carrier tape	☐ 8mm	☒ 12mm	☐ 16mm
P1	Pitch between successive cavity centers	☐ 2mm	☐ 4mm	☒ 8mm
Pin1	Pin1 Quadrant	☒ Q1	☐ Q2	☐ Q3 ☐ Q4