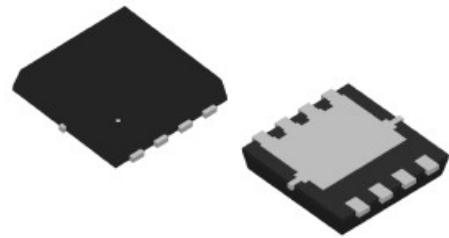


WNM3038

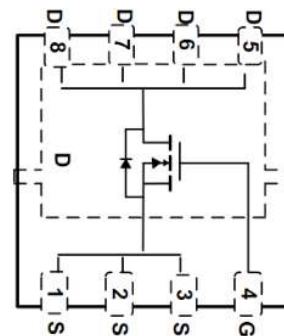
SingleN-Channel, 30V, 22A, Power MOSFET

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

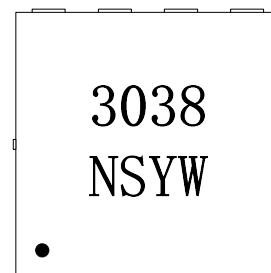
V _{DS} (V)	Typical R _{DS(on)} (mΩ)
30	6.0 @ V _{GS} =10V
	8.5 @ V _{GS} =4.5V



PDFN3333-8L



Pin configuration (Top view)



3038 =Device Code
NS =Special Code
Y = Year
W = Week(A~z)

Marking

Description

The WNM3038 is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology 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 WNM3038 is Pb-free.

Features

- Trench Technology
- Super high density cell design
- Excellent ON resistance
- Extremely Low Threshold Voltage
- Small package PDFN3333-8L

Applications

- DC/DC converters
- Power supply converters circuit
- Load/Power Switching for portable device

Order information

Device	Package	Shipping
WNM3038-8/TR	PDFN3333-8L	2500/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 ^d	I_D	$T_C=25^{\circ}C$	22	A
		$T_C=70^{\circ}C$	22	A
Pulsed Drain Current ^c	I_{DM}	80	A	
Continuous Drain Current	I_{DSM}	$T_A=25^{\circ}C$	16	A
		$T_A=70^{\circ}C$	13	
Avalanche Energy $L=0.3mH$	E_{AS}	38	mJ	
Power Dissipation ^b	P_D	$T_C=25^{\circ}C$	15.4	W
		$T_C=70^{\circ}C$	9.9	
Power Dissipation ^a	P_{DSM}	$T_A=25^{\circ}C$	3.7	W
		$T_A=70^{\circ}C$	2.4	
Operating Junction Temperature	T_J	-55 to 150	$^{\circ}C$	
Storage Temperature Range	T_{STG}	-55 to 150	$^{\circ}C$	

Thermal resistance ratings

Single Operation					
Parameter	Symbol	Typical	Maximum	Unit	
Junction-to-Ambient Thermal Resistance ^a	$R_{\theta JA}$	$t \leq 10\ s$	27	34	$^{\circ}C/W$
		Steady State	54	67	
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	6.5	8.1		

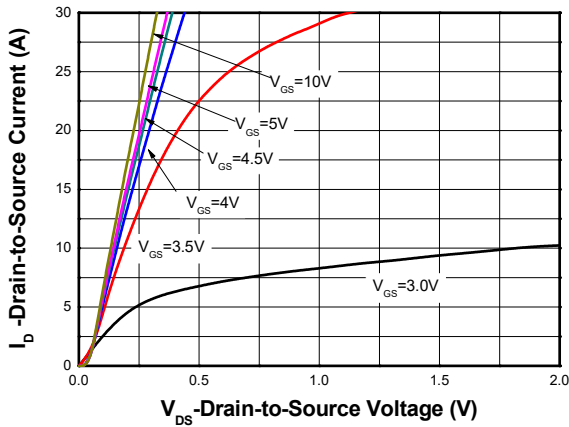
Note:

- a The value of $R_{\theta JA}$ is measured with the device mounted on 1-inch² (6.45cm²) with 2oz.(0.071mm thick) Copper pad on a 1.5*1.5 inch², 0.06-inch thick FR4 PCB, in a still air environment with $T_A = 25^{\circ}C$. The power dissipation P_{DSM} is based on $R_{\theta JA} t \leq 10s$ value and the $T_{J(MAX)}=150^{\circ}C$. The value in any given application is determined by the user's specific board design.
- b The power dissipation P_D is based on $T_{J(MAX)}=150^{\circ}C$, 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 $T_J = 25^{\circ}C$, the maximum allowed junction temperature of 150 $^{\circ}C$.
- d The maximum current rating by source bonding technology.
- e The static characteristics are obtained using ~380us pulses, duty cycle ~1%.

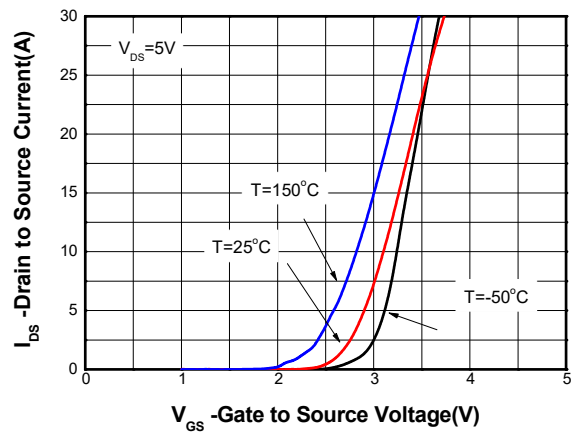
Electronics Characteristics (Ta=25°C, unless otherwise noted)

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} = 24V, 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	1.2	1.8	2.5	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 10A		6.0	8.0	mΩ
		V _{GS} = 4.5V, I _D = 8A		8.5	12.5	
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} = 0 V, f = 1.0MHz, V _{DS} = 15 V		1300		pF
Output Capacitance	C _{OSS}			193		
Reverse Transfer Capacitance	C _{RSS}			152		
Total Gate Charge	Q _{G(TOT)}	V _{GS} = 10 V, V _{DS} = 15 V, I _D = 10 A		28		nC
Threshold Gate Charge	Q _{G(TH)}			2.3		
Gate-to-Source Charge	Q _{GS}			6.5		
Gate-to-Drain Charge	Q _{GD}			5		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V _{GS} = 10 V, V _{DS} = 15 V, R _L = 1 Ω, R _G = 3Ω		4.0		ns
Rise Time	tr			17.2		
Turn-Off Delay Time	td(OFF)			16.4		
Fall Time	tf			8		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = 1A		0.7	1.2	V

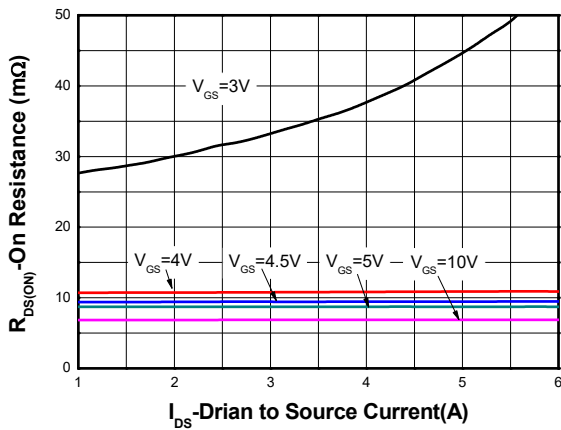
Typical Characteristics (Ta=25°C, unless otherwise noted)



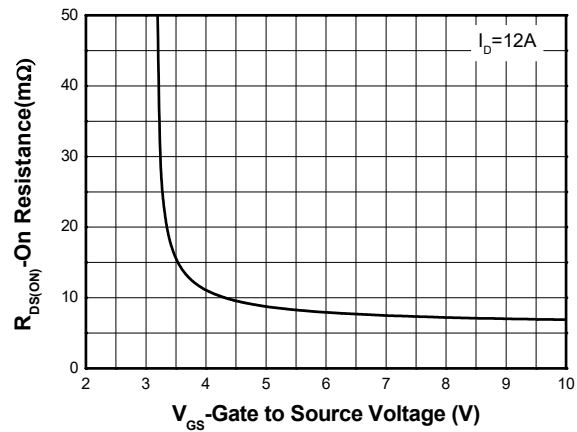
Output Characteristics ^e



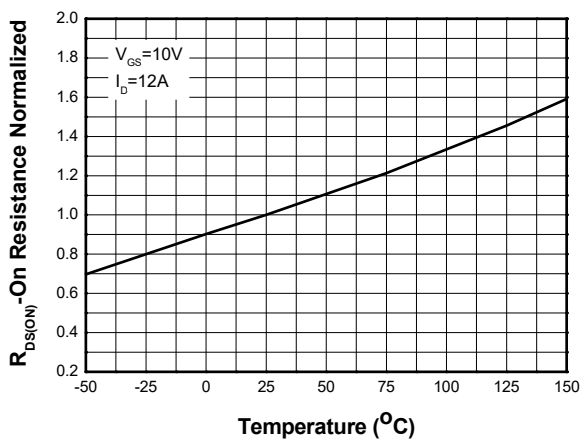
Transfer Characteristics ^e



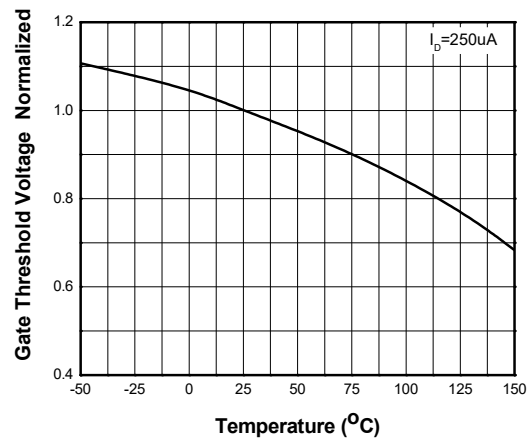
On-Resistance vs. Drain Current ^e



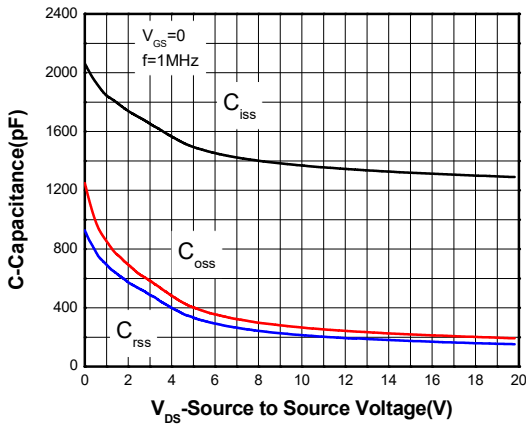
On-Resistance vs. Gate-to-Source Voltage ^e



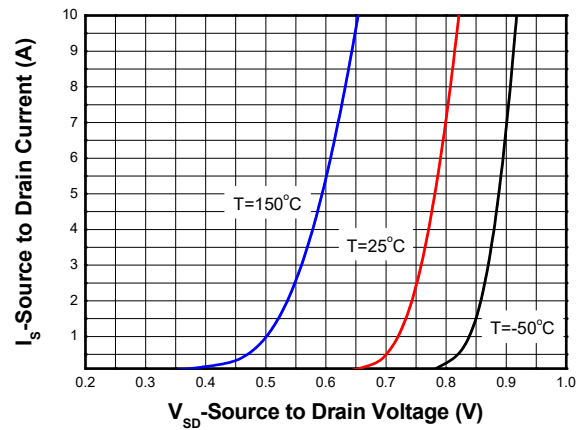
On-Resistance vs. Junction Temperature ^e



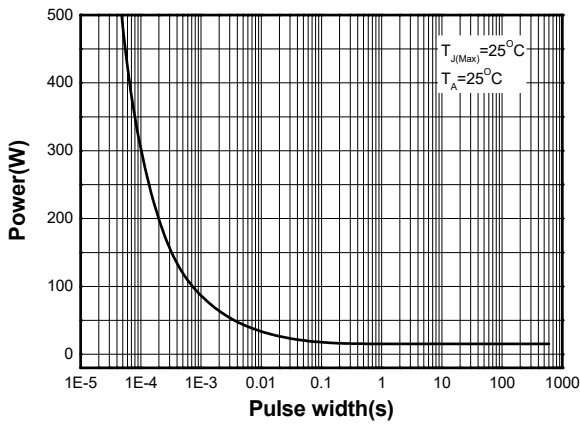
Threshold voltage vs. Temperature



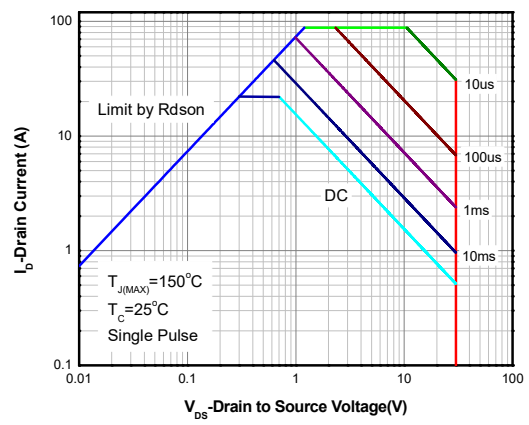
Capacitance



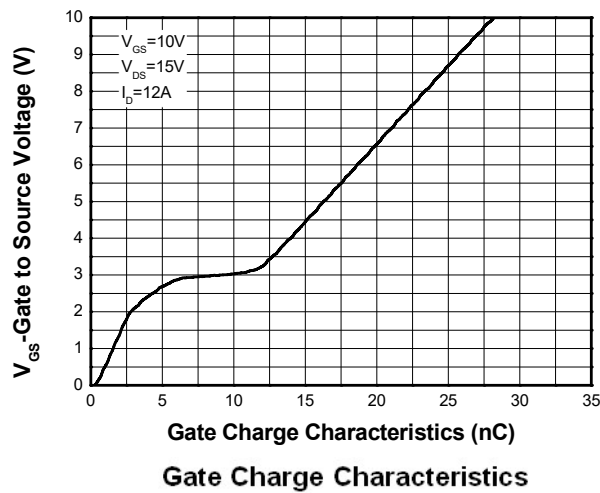
Body Diode Forward Voltage^e



Single pulse power

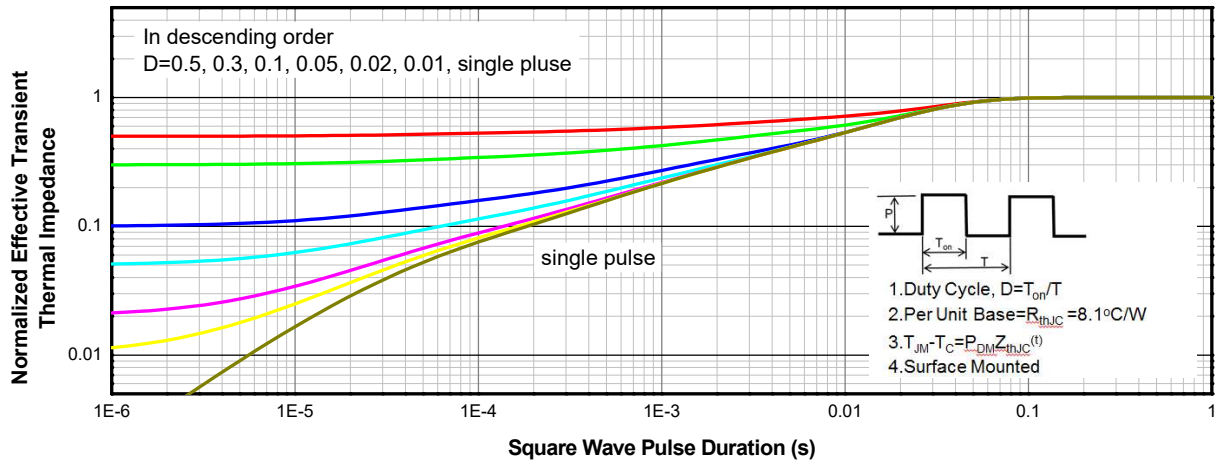


Safe operating power

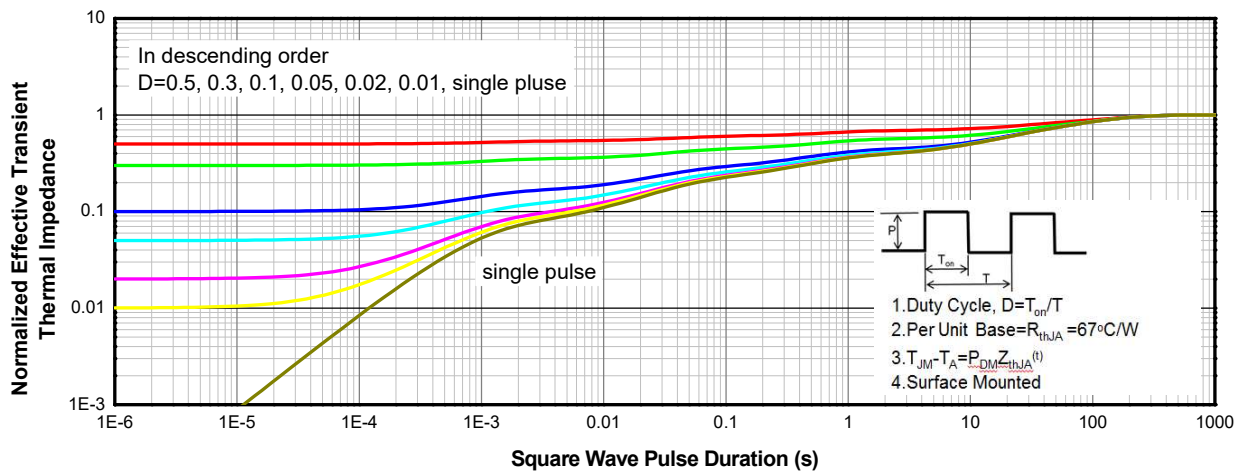


Gate Charge Characteristics

Transient Thermal Response (Junction-to-Case)

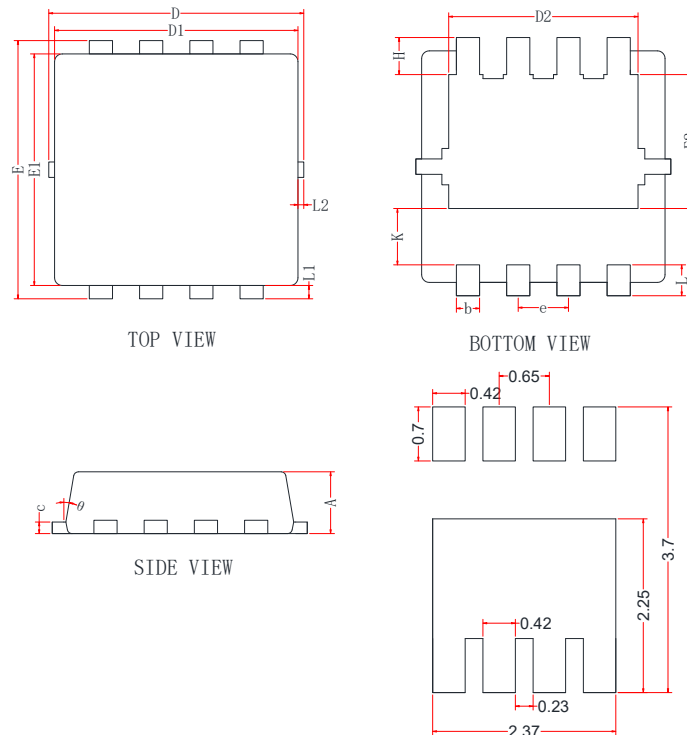


Transient Thermal Response (Junction-to-Ambient)



PACKAGE OUTLINE DIMENSIONS

PDFN3333-8L

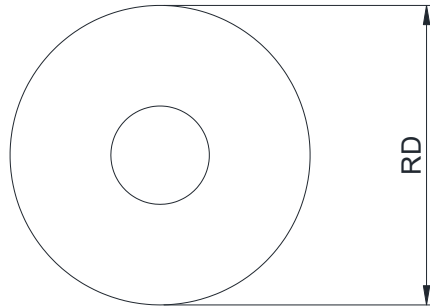


RECOMMENDED LAND PATTERN (Unit:mm)

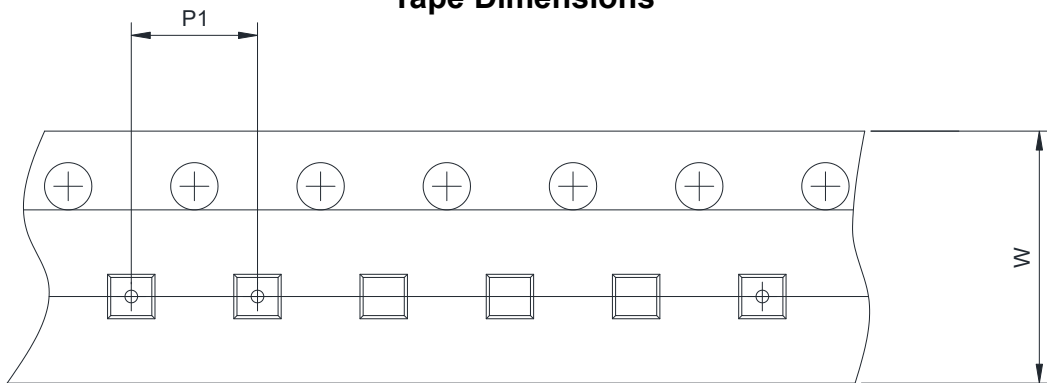
Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.70	0.80	0.90
b	0.25	0.30	0.35
c	0.14	0.15	0.20
D	3.10	3.30	3.50
D1	3.05	3.15	3.25
D2	2.35	2.45	2.55
e	0.55	0.65	0.75
E	3.10	3.30	3.50
E1	2.90	3.00	3.10
E2	1.64	1.74	1.84
H	0.32	0.42	0.52
K	0.59	0.69	0.79
L	0.25	0.40	0.55
L1	0.10	0.15	0.20
L2	-	-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

TAPE AND REEL INFORMATION

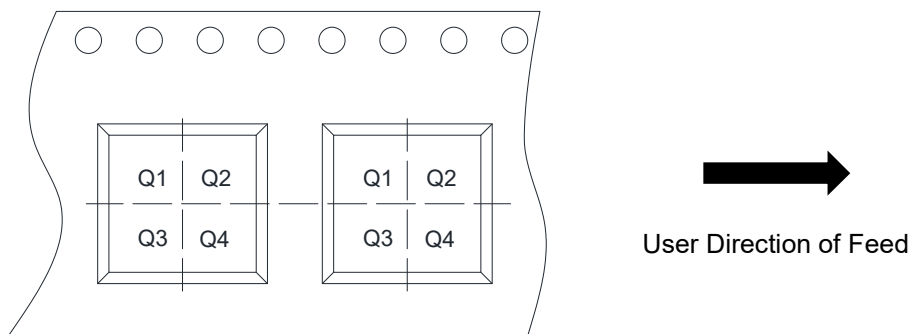
Reel Dimensions



Tape Dimensions



Quadrant Assignments For PIN1 Orientation In Tape



RD	Reel Dimension	<input type="checkbox"/> 7inch	<input checked="" type="checkbox"/> 13inch
W	Overall width of the carrier tape	<input type="checkbox"/> 8mm	<input checked="" type="checkbox"/> 12mm <input type="checkbox"/> 16mm
P1	Pitch between successive cavity centers	<input type="checkbox"/> 2mm	<input type="checkbox"/> 4mm <input checked="" type="checkbox"/> 8mm
Pin1	Pin1 Quadrant	<input checked="" type="checkbox"/> Q1	<input type="checkbox"/> Q2 <input type="checkbox"/> Q3 <input type="checkbox"/> Q4