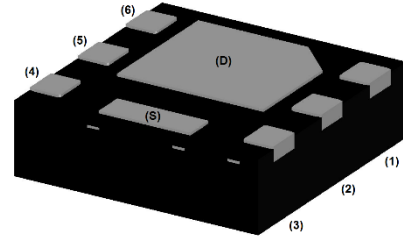


# WNM3017A

**Single N-Channel, 30V, 7.6A, Power MOSFET**

[Http://www.sh-willsemi.com](http://www.sh-willsemi.com)

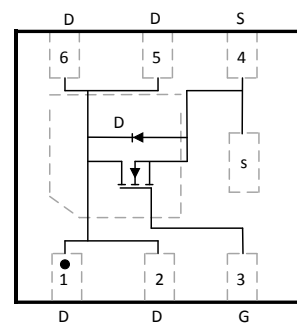
V <sub>DS</sub> (V)	Typical R <sub>DS(on)</sub> (mΩ)
30	14 @ V <sub>GS</sub> =10 V
	20 @ V <sub>GS</sub> =4.5 V



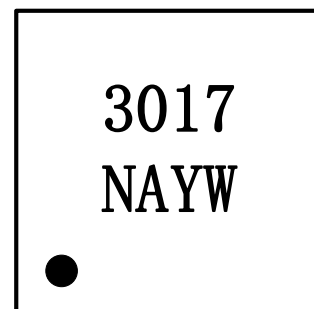
## Description

The WNM3017A is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent R<sub>DS(ON)</sub> with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WNM3017A is Pb-free.

**DFN2X2-6L**



**Pin configuration (Top view)**



3017 = Device Code  
 NA = Special Code  
 Y = Year  
 W = Week(A~z)

**Marking**

## Features

- Trench Technology
- Supper high density cell design
- Excellent ON resistance
- Extremely Low Threshold Voltage
- Small package DFN2x2-6L

## Applications

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

## Order information

Device	Package	Shipping
WNM3017A-6/TR	DFN2x2-6L	3000/Tape&Reel

### Absolute Maximum ratings

Parameter	Symbol	Maximum	Unit	
Drain-Source Voltage	$V_{DS}$	30	V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$		
Continuous Drain Current <sup>d</sup>	$I_D$	$T_A=25^\circ\text{C}$	7.6	A
		$T_A=70^\circ\text{C}$	6.1	
Pulsed Drain Current <sup>c</sup>	$I_{DM}$	46	A	
Power Dissipation <sup>a</sup>	$P_D$	$T_A=25^\circ\text{C}$	1.7	W
		$T_A=70^\circ\text{C}$	1.1	
Operating Junction Temperature	$T_J$	-55 to 150	$^\circ\text{C}$	
Storage Temperature Range	$T_{STG}$	-55 to 150	$^\circ\text{C}$	

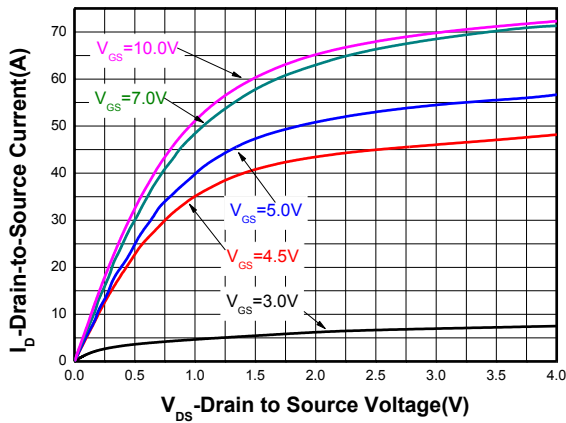
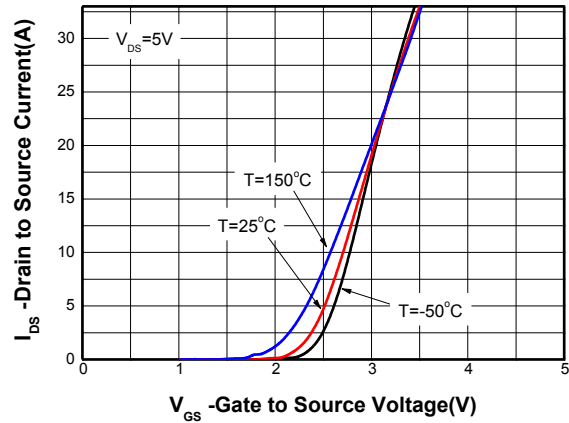
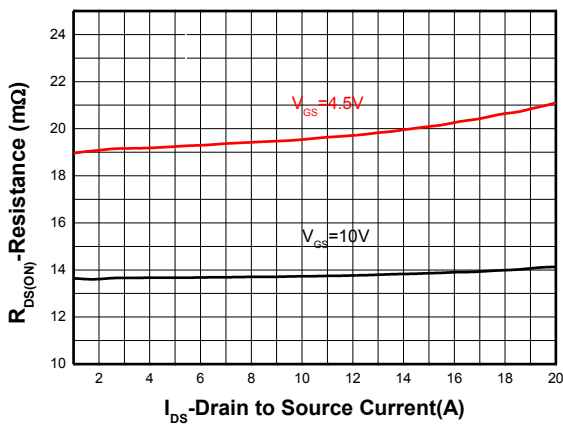
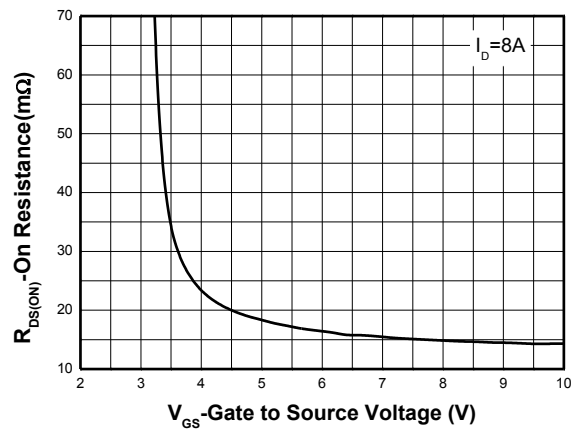
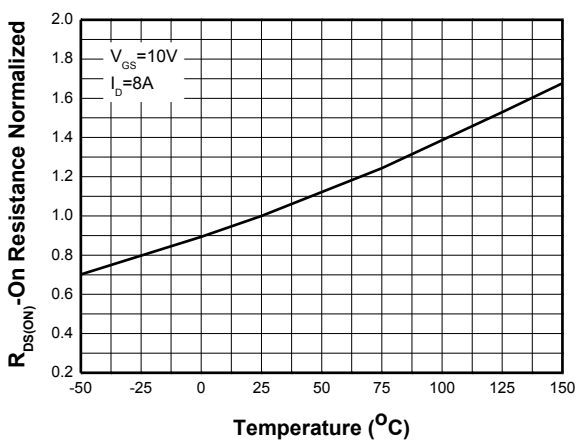
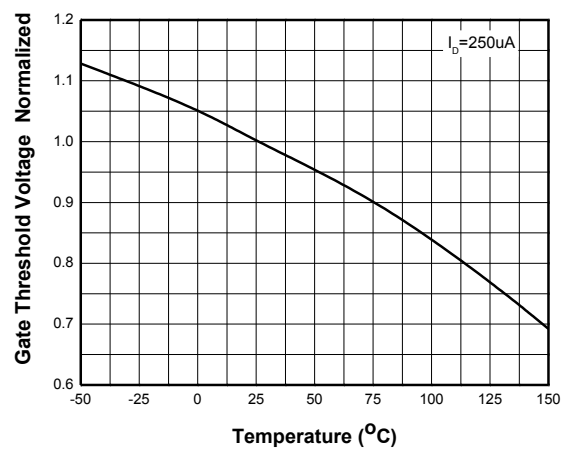
### Thermal resistance ratings

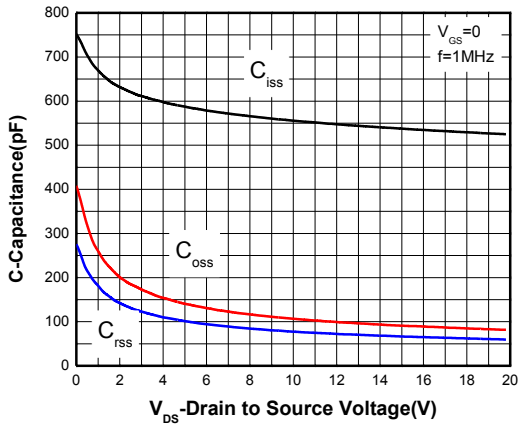
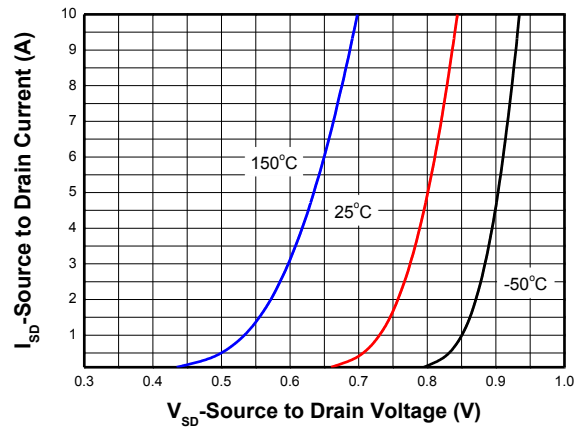
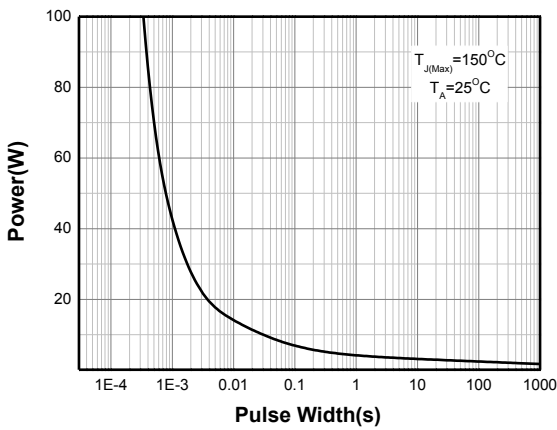
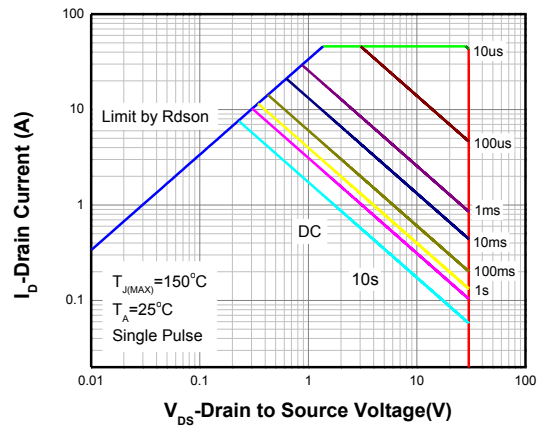
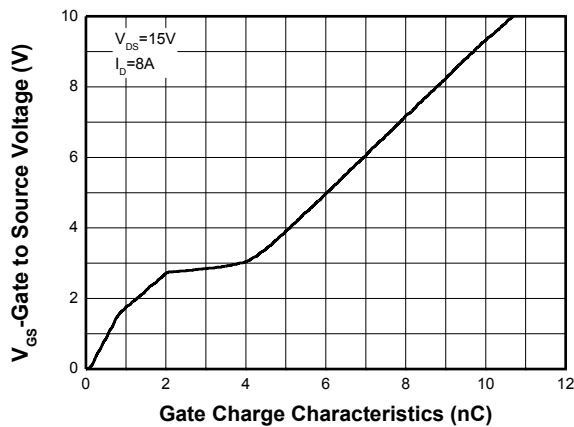
Single Operation					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance <sup>a</sup>	$t \leq 10 \text{ s}$	$R_{\theta JA}$	30	38	$^\circ\text{C/W}$
	Steady State		58	72	
Junction-to-Ambient Thermal Resistance <sup>b</sup>	$t \leq 10 \text{ s}$	$R_{\theta JA}$	91	113	
	Steady State		145	181	

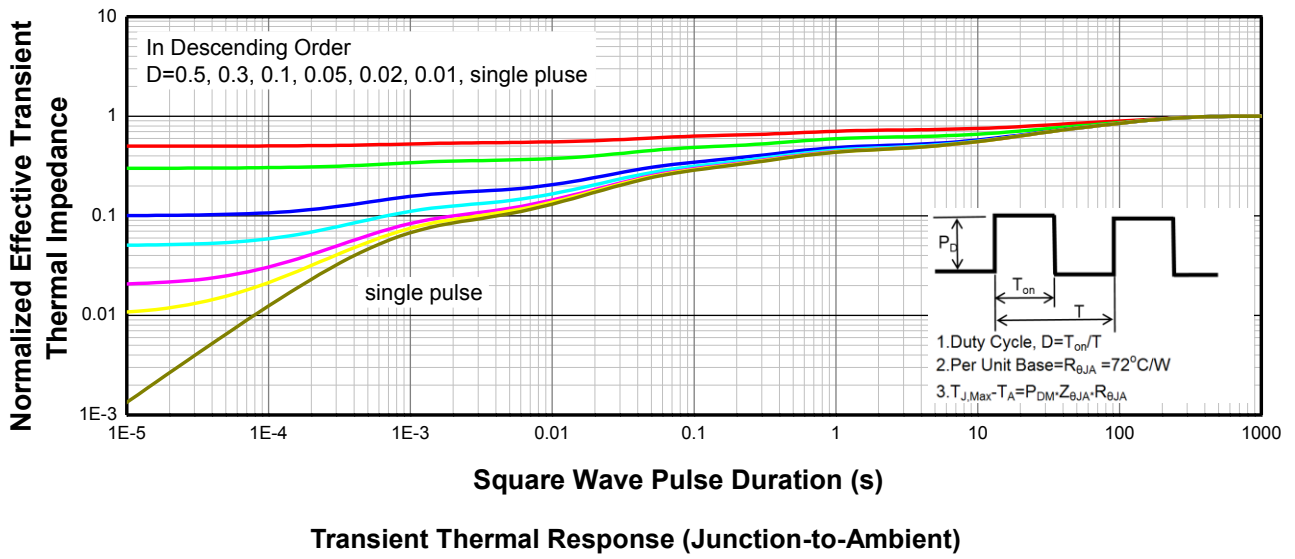
- a The value of  $R_{\theta JA}$  is measured with the device mounted on 1-inch<sup>2</sup> (6.45cm<sup>2</sup>) with 2oz.(0.071mm thick) Copper pad on a 1.5\*1.5 inch<sup>2</sup>, 0.06-inch thick FR4 PCB, in a still air environment with  $T_A = 25^\circ\text{C}$ . The power dissipation  $P_D$  is based on  $R_{\theta JA}$  value and the  $T_{J(MAX)}=150^\circ\text{C}$ . The value in any given application is determined by the user's specific board design, and the maximum temperature of  $150^\circ\text{C}$  may be used if the PCB allows it to.
- b The value of  $R_{\theta JA}$  is measured with the device mounted on FR-4 minimum pad board, in a still air environment with  $T_A = 25^\circ\text{C}$ . The power dissipation  $P_D$  is based on  $R_{\theta JA}$  value and the  $T_{J(MAX)}=150^\circ\text{C}$ . The value in any given application is determined by the user's specific board design, and the maximum temperature of  $150^\circ\text{C}$  may be used if the PCB allows it to.
- c Repetitive rating, ~10us pulse width, duty cycle ~1%, keep initial  $T_J = 25^\circ\text{C}$ , the maximum allowed junction temperature of  $150^\circ\text{C}$ .
- d The maximum current rating by source bonding technology
- e The static characteristics are obtained using ~380us pulses, duty cycle ~1%..

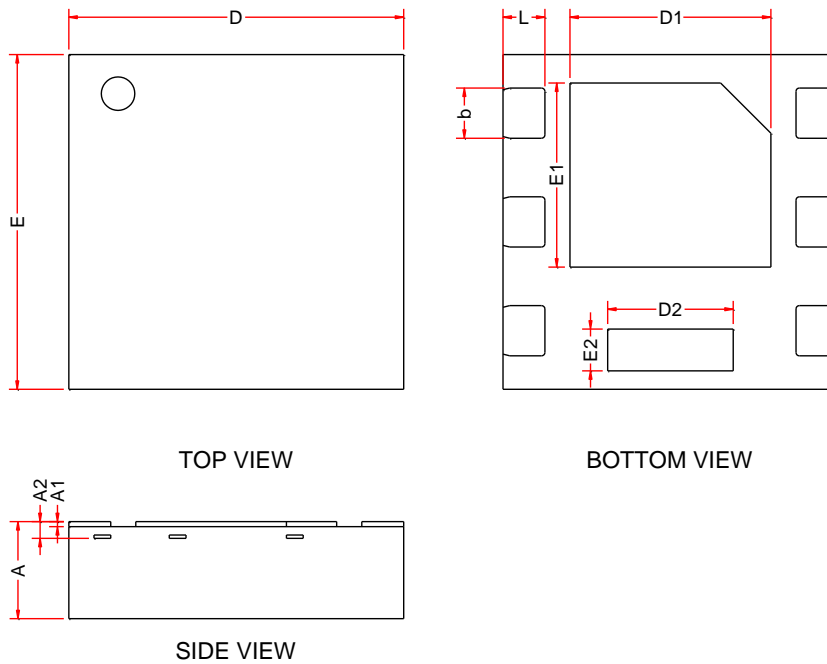
**Electronics Characteristics (Ta=25°C, unless otherwise noted)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>						
Drain-to-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> = 0 V, I <sub>D</sub> = 250uA	30			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =24V, V <sub>GS</sub> = 0V			1	uA
Gate-to-source Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> = 0 V, V <sub>GS</sub> = ±20V			±100	nA
<b>ON CHARACTERISTICS</b>						
Gate Threshold Voltage	V <sub>GS(TH)</sub>	V <sub>GS</sub> = V <sub>DS</sub> , I <sub>D</sub> = 250uA	1.2	1.7	2.5	V
Drain-to-source On-resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =8A		14	17.5	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =6A		20	29	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> = 5 V, I <sub>D</sub> = 8A		16		S
<b>CHARGES, CAPACITANCES AND GATE RESISTANCE</b>						
Input Capacitance	C <sub>ISS</sub>	V <sub>GS</sub> = 0 V,		540		pF
Output Capacitance	C <sub>OSS</sub>	f = 1.0MHz,		95		
Reverse Transfer Capacitance	C <sub>RSS</sub>	V <sub>DS</sub> = 15 V		68		
Gate resistance	R <sub>g</sub>	f = 1MHz		2.5		Ω
Total Gate Charge	Q <sub>G(TOT)</sub>	V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 15V, I <sub>D</sub> =8 A		10.6		nC
Threshold Gate Charge	Q <sub>G(TH)</sub>			1.0		
Gate-to-Source Charge	Q <sub>GS</sub>			1.9		
Gate-to-Drain Charge	Q <sub>GD</sub>			2.1		
<b>SWITCHING CHARACTERISTICS</b>						
Turn-On Delay Time	td(ON)	V <sub>GS</sub> = 10 V,		7		ns
Rise Time	tr	V <sub>DS</sub> = 15 V,		63		
Turn-Off Delay Time	td(OFF)	I <sub>D</sub> =8 A ,		15		
Fall Time	tf	R <sub>G</sub> =3 Ω		32		
<b>BODY DIODE CHARACTERISTICS</b>						
Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0 V, I <sub>S</sub> = 1A		0.7	1.1	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 10A,		7.2		ns
Reverse Recovery Charge	Q <sub>rr</sub>	di/dt = 100A/us		3.0		nC

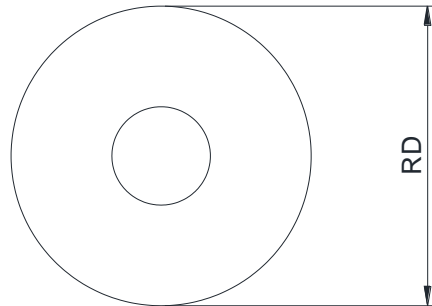
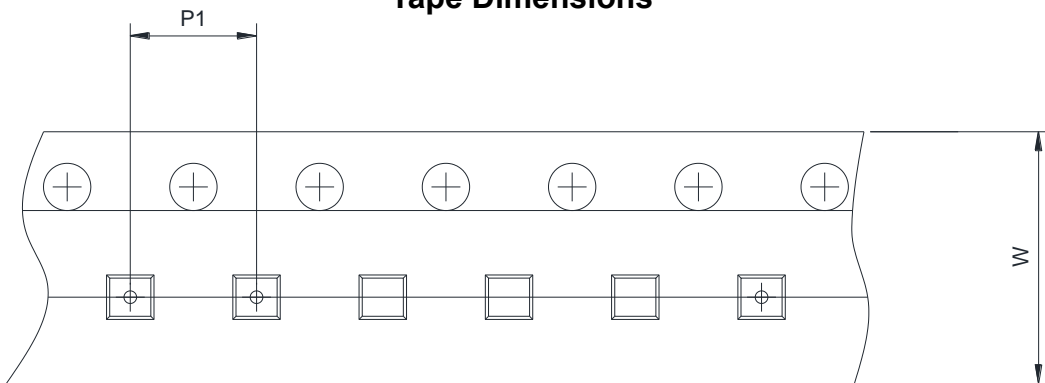
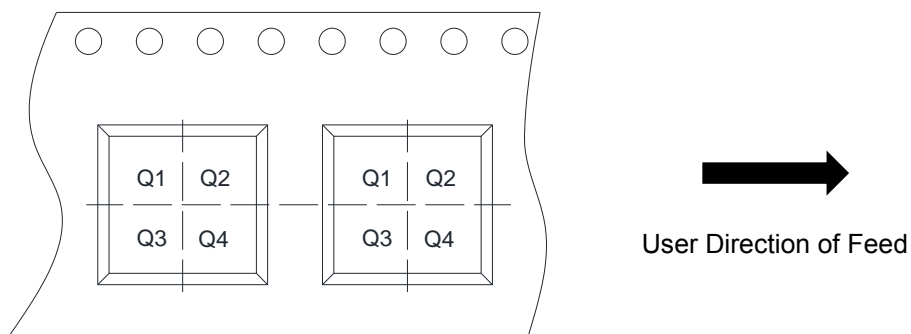
**Typical Characteristics (Ta=25°C, unless otherwise noted)**

**Output Characteristics <sup>e</sup>**

**Transfer Characteristics <sup>e</sup>**

**On-Resistance vs. Drain Current <sup>e</sup>**

**On-Resistance vs. Gate-to-Source Voltage <sup>e</sup>**

**On-Resistance vs. Junction Temperature <sup>e</sup>**

**Threshold Voltage vs. Temperature**


**Capacitance**

**Body Diode Forward Voltage <sup>e</sup>**

**Single Pulse power**

**Safe Operating Power**

**Gate Charge Characteristics**



**PACKAGE OUTLINE DIMENSIONS**
**DFN2x2-6L**


Symbol	Dimensions in Millimeters		
	Min.	Nom	Max.
A	0.55	0.60	0.65
A1	0.00	0.02	0.05
A2	0.10REF		
b	0.25	0.30	0.35
D	1.90	2.00	2.10
D1	1.10	1.20	1.30
D2	0.65	0.75	0.85
E	1.90	2.00	2.10
E1	1.00	1.10	1.20
E2	0.15	0.25	0.35
e	0.65BSC		
L	0.20	0.25	0.30

**TAPE AND REEL INFORMATION**
**Reel Dimensions**

**Tape Dimensions**

**Quadrant Assignments For PIN1 Orientation In Tape**


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