

# WS4622C

**2A, 38 mΩ, 250nA Quiescent current and 90nA Standby current Load Switch**

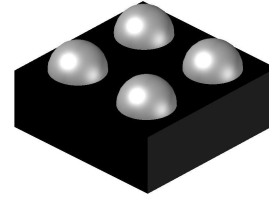
[Http://www.ovt.com](http://www.ovt.com)

## Descriptions

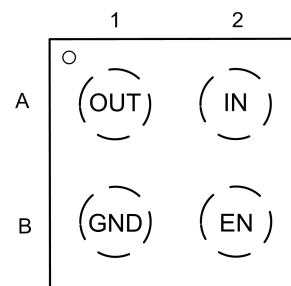
The WS4622C is a single channel load switch with ultra-low on resistance MOSFET. It is designed for load switching applications with ultra-low quiescent current (250nA) and ultra-low standby current (90nA). The device is controlled by external logic pin, allowing optimization of battery life, and portable device autonomy.

The WS4622C contains a P-channel MOSFET that can operate over an input voltage range of 1.2V to 5.5V and can support a maximum continuous current of 2A. Output discharge path is designed to reduce voltage on the output rail quickly.

The WS4622C are available in a small 1 x 1mm CSP-4L Package. Standard products are Pb-free and Halogen-free.



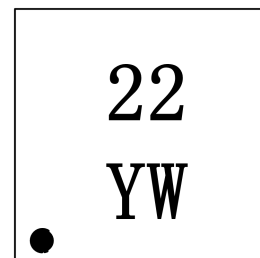
**CSP-4L**



**Pin Configuration (Top View)**

## Features

- Input Voltage Range : 1.2V~5.5V
- Main switch Ron : 38mΩ @ 4.2V
- Maximum Output current : 2A.
- Quiescent current : 250nA @ Typ
- Standby current : 90nA @ Typ
- Recommend capacitor : 1μF
- Active High EN Pin
- Output Auto-discharge
- CSP-4L 1 x 1 mm



**CSP-4L**

**22 : Device code**

**Y : Year code**

**W : Week code**

**Marking**

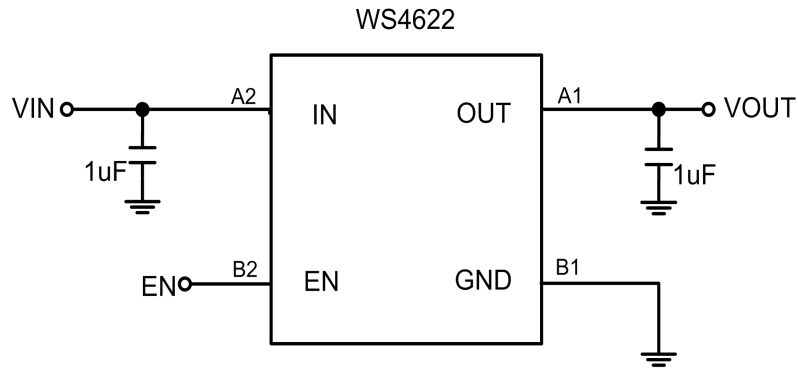
## Applications

- MP3/MP4 Players
- Cellphones, radiophone, digital cameras
- Bluetooth, wireless handsets
- Others portable electronics device

## Order information

Device	Marking	Package	Shipping
WS4622C-4/TR	22YW	CSP-4L	3000/Reel&Tape

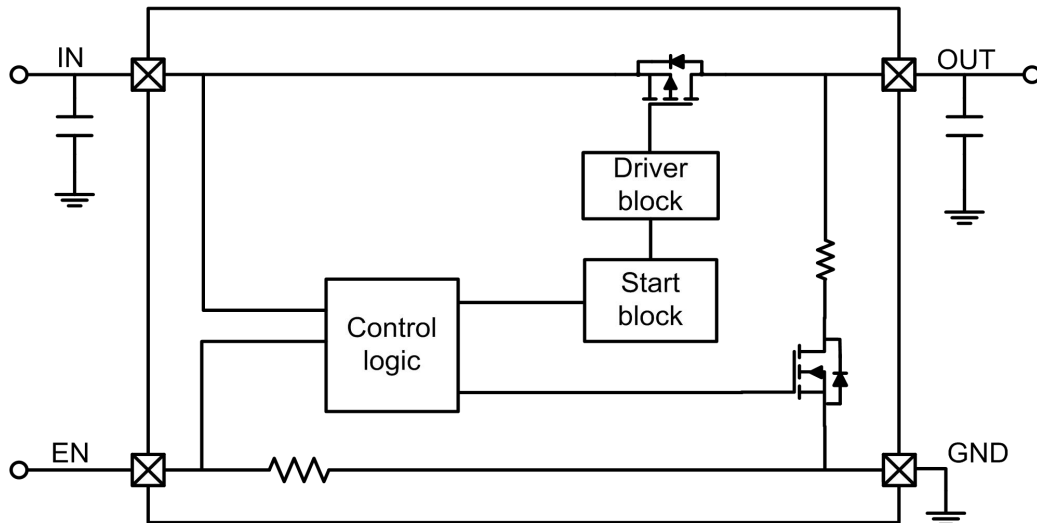
Typical Application



Pin Description

PIN	Symbol	Description
A1	OUT	Output pin
A2	IN	Input pin
B1	GND	Ground
B2	EN	Enable (Active high)

Block Diagram



### Absolute Maximum Ratings

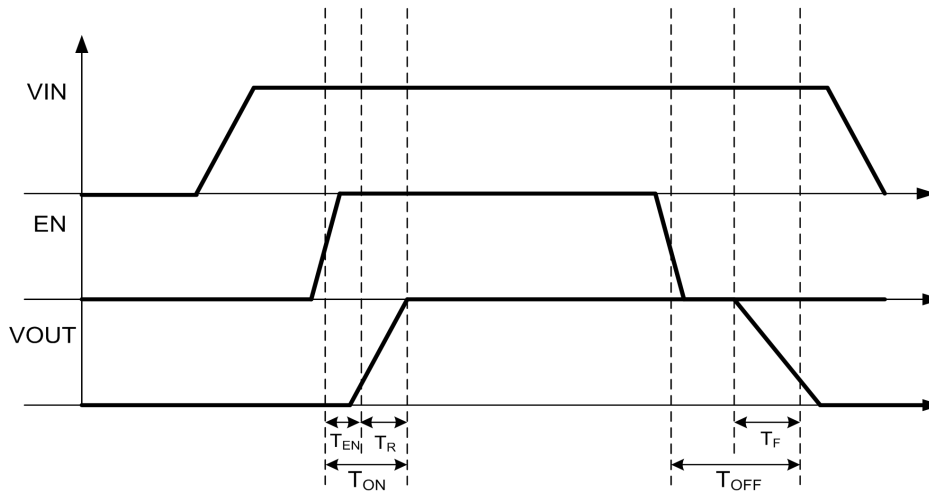
Parameter	Value	Unit	
V <sub>IN</sub> Range	-0.3~6.5	V	
V <sub>EN</sub> Range	-0.3~6.5	V	
V <sub>OUT</sub> Range	-0.3~6.5	V	
Storage Temperature Range	-40 ~ 150	°C	
Junction Temperature Range	-40 ~ 125	°C	
Lead Temperature	260	°C	
Moisture Sensitivity	Level-1		
ESD Ratings	HBM	8000	V
	MM	400	V

### Recommend Operating Ratings

Parameter	Value	Unit
Operating Power voltage	1.2~5.5	V
Enable Voltage	0~5.5	V
Maximum DC current	2	A
Operating ambient temperature	-40~85	°C
Operating Junction temperature	-40~125	°C
Decoupling input capacitor	1	uF
Decoupling output capacitor	1	uF
Power Dissipation Rating(25 °C,WLCSP package)	0.5	W
Power Dissipation Rating(85 °C,WLCSP package)	0.2	W
Thermal Resistance, R <sub>θJA</sub> (CSP-4L)	100	°C/W

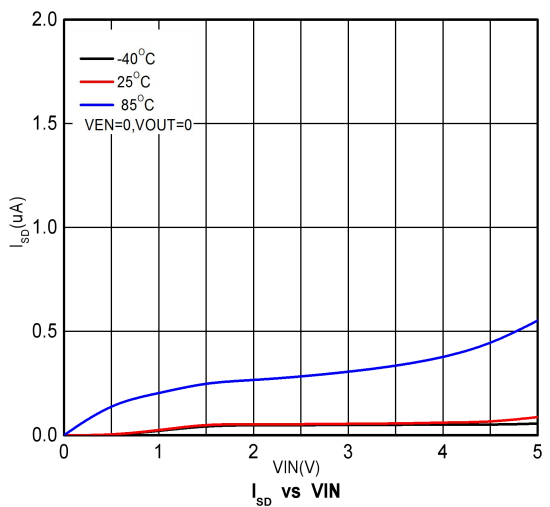
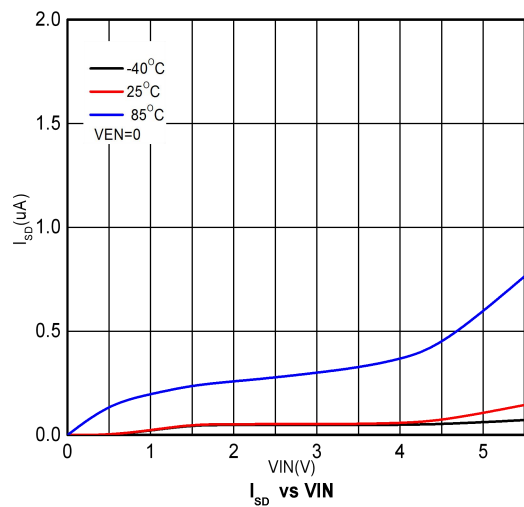
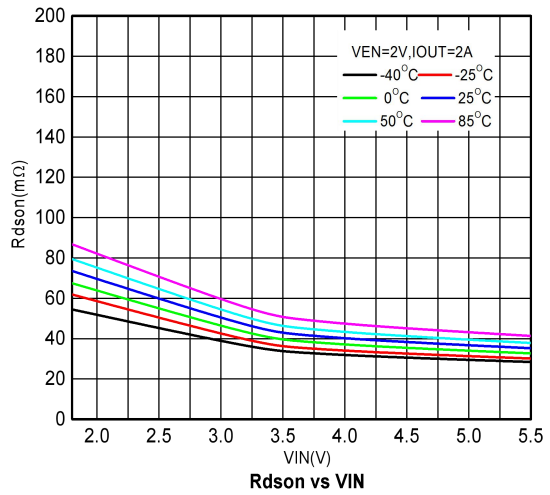
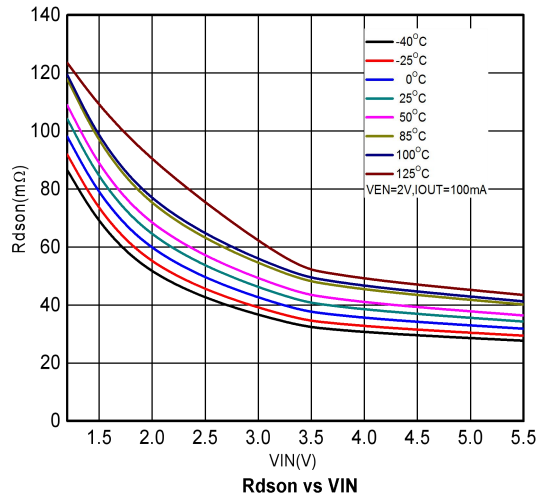
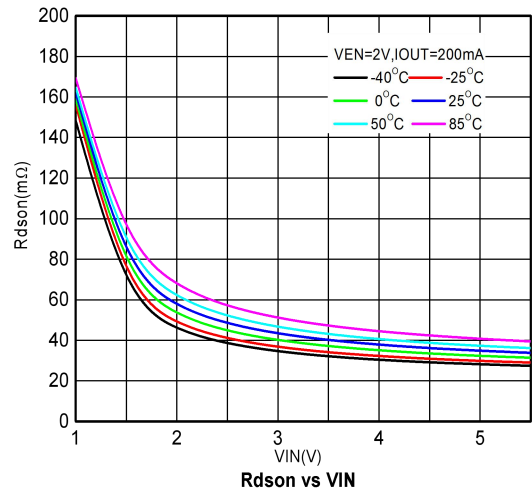
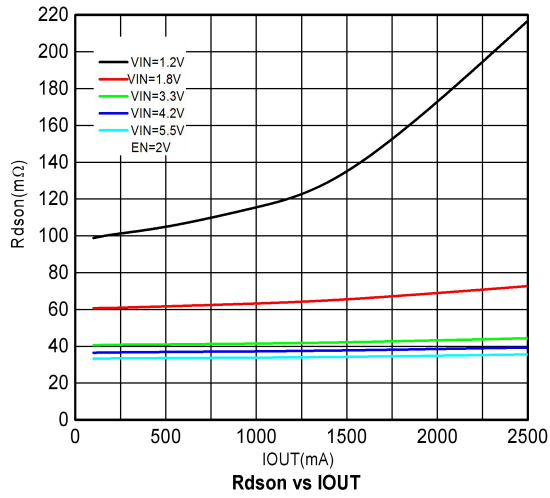
**Electronics Characteristics**
**(Ta=25°C, VIN=5V, CIN=COUT=1 μ F, unless otherwise noted)**

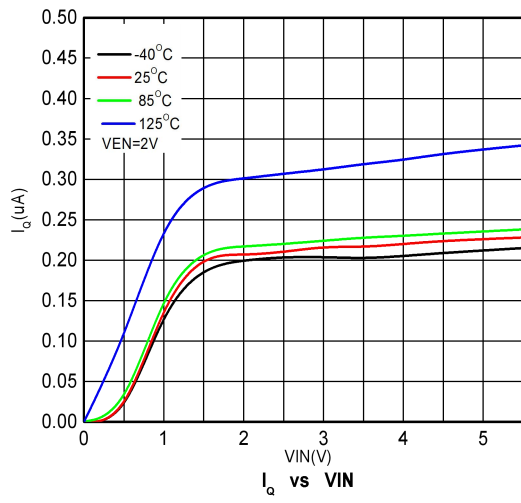
Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Input Voltage	V <sub>IN</sub>		1.2		5.5	V
Static drain-source on-state resistance	R <sub>DSON</sub>	V <sub>IN</sub> =5.5, I <sub>OUT</sub> =200mA		34	42	mΩ
		V <sub>IN</sub> =4.2, I <sub>OUT</sub> =200mA		38	47	
		V <sub>IN</sub> =3.3, I <sub>OUT</sub> =200mA		42	52	
		V <sub>IN</sub> =1.8, I <sub>OUT</sub> =200mA		62	88	
		V <sub>IN</sub> =1.2, I <sub>OUT</sub> =200mA		104	250	
Output discharge path	R <sub>DIS</sub>	EN=Low, V <sub>IN</sub> =3.3V		65	120	Ω
EN logic high voltage	V <sub>ENH</sub>		0.9			V
EN logic low voltage	V <sub>ENL</sub>				0.5	V
EN pull down resistor	R <sub>PD</sub>			4		MΩ
Standby current	I <sub>STD</sub>	EN=Low, No load		90	500	nA
Quiescent current	I <sub>Q</sub>	EN=High, No load		250	500	nA
Enable time	T <sub>EN</sub>	V <sub>IN</sub> =3.6, RL=25ohm		40		μs
Output rise time	T <sub>R</sub>	V <sub>IN</sub> =3.6, RL=25ohm		30		μs
ON time(T <sub>EN</sub> +T <sub>R</sub> )	T <sub>ON</sub>	V <sub>IN</sub> =3.6, RL=25ohm		70		μs
Output fall time	T <sub>F</sub>	V <sub>IN</sub> =3.6, RL=25ohm		42		μs

**TIMINGS**


Enable, rise and fall time

Typical characteristics (Ta=25°C, VIN=5V, IOUT=200mA, CIN=COUT=1 μ F, unless otherwise noted)

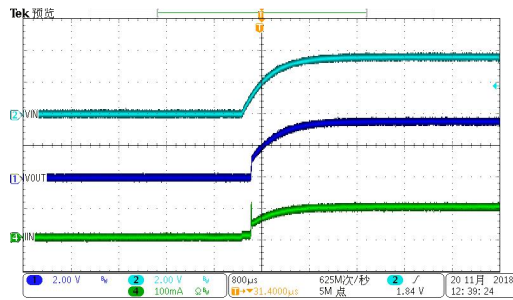




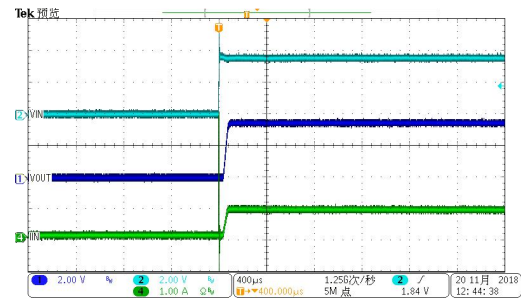
Turn On & Turn Off

(1) Start from VIN.

VIN=VEN=3.6V,IOUT=100mA

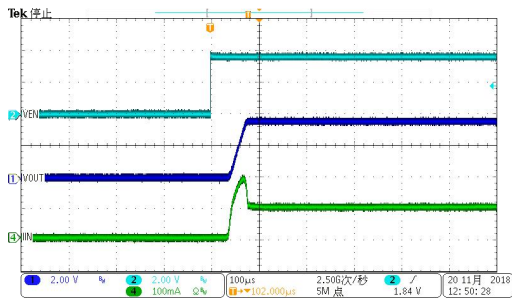


VIN=VEN=3.6V,IOUT=1A

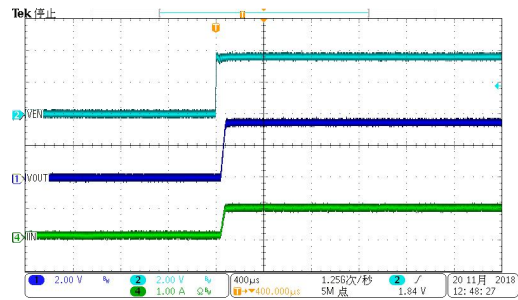


(2) Start from EN

VIN=VEN=3.6V,IOUT=100mA

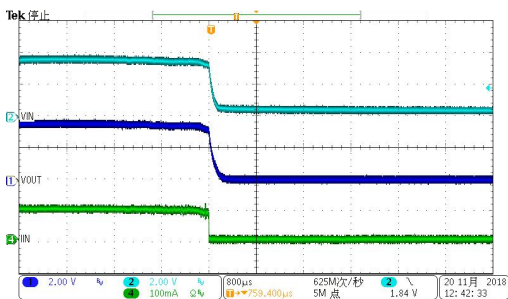


VIN=VEN=3.6V,IOUT=1A

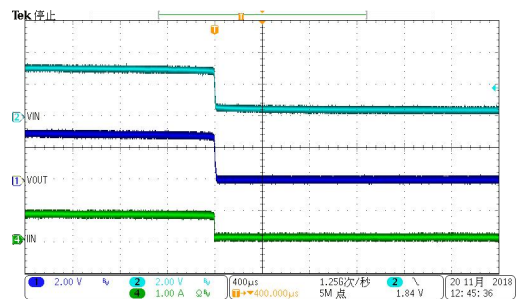


(3) Shutdown from VIN

VIN=VEN=3.6V,IOUT=100mA

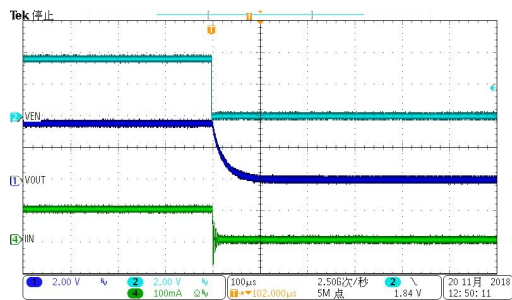


VIN=VEN=3.6V,IOUT=1A

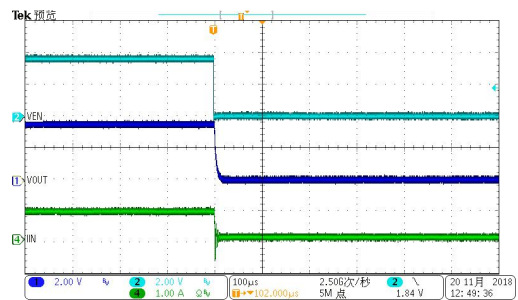


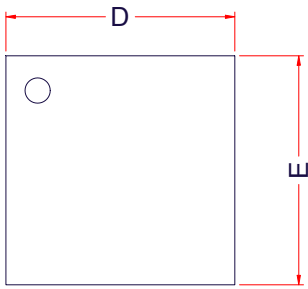
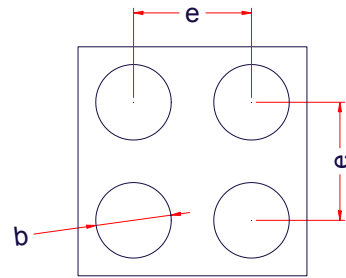
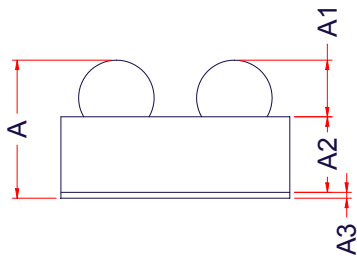
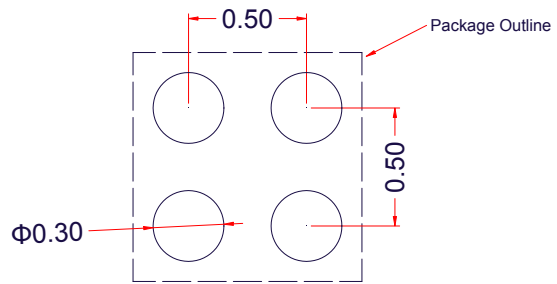
(4) Shutdown from EN

VIN=VEN=3.6V,IOUT=100mA



VIN=VEN=3.6V,IOUT=1A



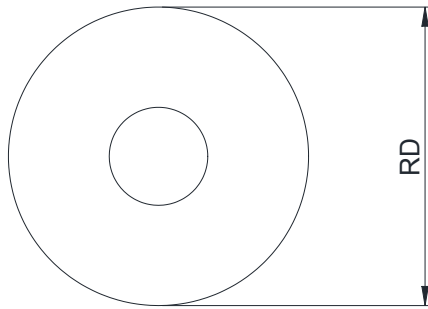
**PACKAGE OUTLINE DIMENSIONS**
**CSP-4L**

**TOP VIEW**

**BOTTOM VIEW**

**SIDE VIEW**

**RECOMMENDED LAND PATTERN (unit: mm)**

Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.55	0.58	0.62
A1	0.22	0.24	0.26
A2	0.30	0.32	0.34
A3	0.03 Ref.		
D	0.94	0.97	1.00
E	0.94	0.97	1.00
e	0.50BSC		
b	0.30	0.32	0.34

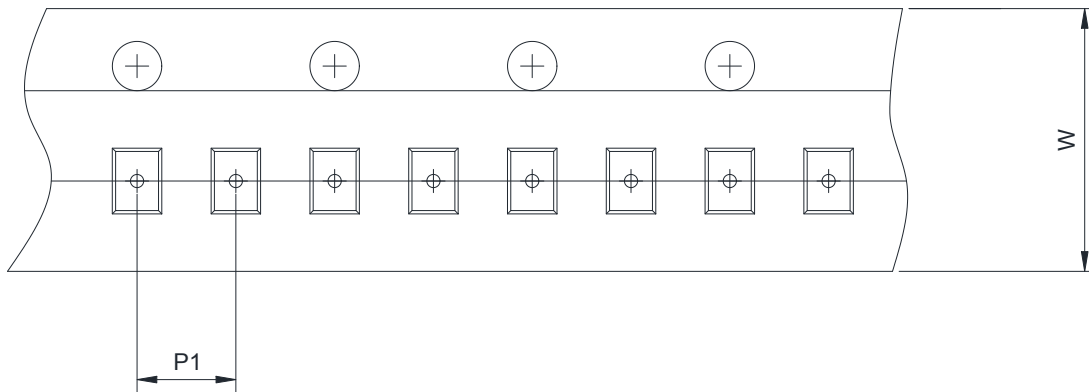


**TAPE AND REEL INFORMATION**

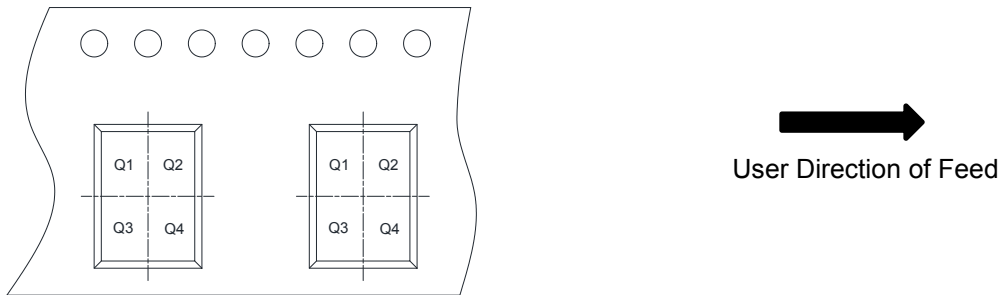
**Reel Dimensions**



**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