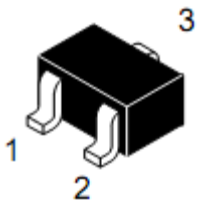
WPM1483

Single P-Channel, -12V, -5A, Power MOSFET

Http//:www.sh-willsemi.com

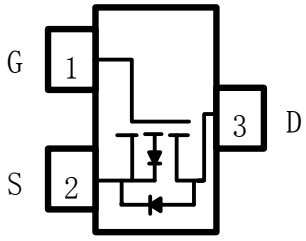
V_{DS} (V)	Typical Rds(on) (Ω)
-12	0.031@ V_{GS}= – 4.5V
	0.040@ V_{GS}= – 2.5V
	0.056@ V_{GS}= – 1.8V



SOT-23

Descriptions

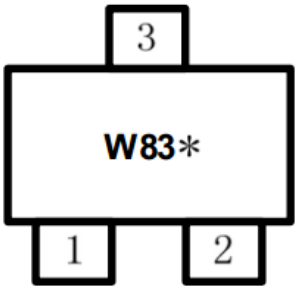
The WPM1483 is P-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS\ (ON)}$ with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WPM1483 is Pb-free and Halogen-free.



Pin configuration (Top view)

Features

- Trench Technology
- Supper high density cell design
- Excellent ON resistance for higher DC current
- Extremely Low Threshold Voltage
- Small package SOT-23



W=Willsemi
83= Device Code
***= Month (A~Z)**
Marking

Applications

- Driver for Relay, Solenoid, Motor, LED etc.
- DC-DC converter circuit
- Power Switch
- Load Switch
- Charging

Order information

Device	Package	Shipping
WPM1483-3/TR	SOT-23	3000/Reel&Tape

Absolute Maximum ratings

Parameter		Symbol	Maximum	Unit
Drain-Source Voltage		V_{DS}	-12	V
Gate-Source Voltage		V_{GS}	±8	
Continuous Drain Current	T_A=25°C	I_D	-5	A
	T_A=70°C		-4	
Pulsed Drain Current [c]		I_{DM}	-20	
Maximum Power Dissipation [b]	T_A=25°C	P_D	1.2	W
	T_A=70°C		0.8	
Operating Junction Temperature		T_J	-55 to 150	°C
Storage Temperature Range		T_{STG}	-55 to 150	°C

Thermal resistance ratings

Single Operation					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance [a]	t ≤ 10 s	$R_{\theta JA}$	77	104	°C/W
	Steady State		103	130	
Junction-to-Lead Thermal Resistance	Steady State	$R_{\theta JL}$	51	65	

Note:

a. The value of $R_{\theta JA}$ is measured with the device mounted on 1-inch^2 (6.45cm^2) with 2oz.(0.071mm thick) Copper pad on a 1.5*1.5 inch^2, 0.06-inch thick FR4 PCB, in a still air environment with T_A =25°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 Junction-to-Ambient thermal resistance $R_{\theta JA}$ t≤10s value and the $T_{J(MAX)}$=150°C.

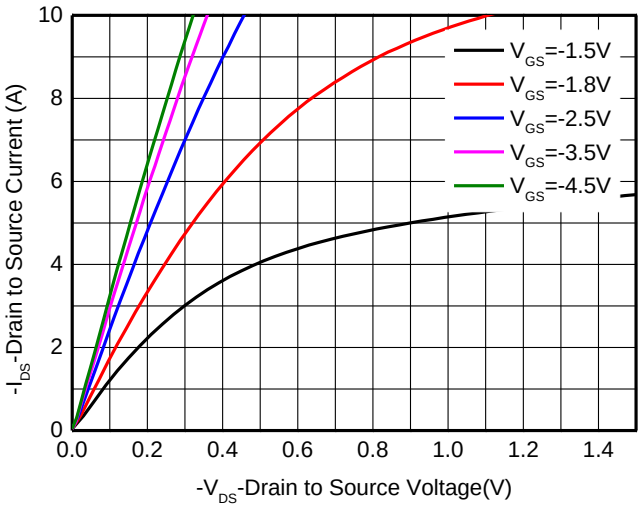
c. Repetitive rating, ~10us pulse width, duty cycle ~1%, keep initial T_J =25°C, the maximum allowed junction temperature of 150°C.

d. The static characteristics are obtained using ~380us pulses, duty cycle ~1%.

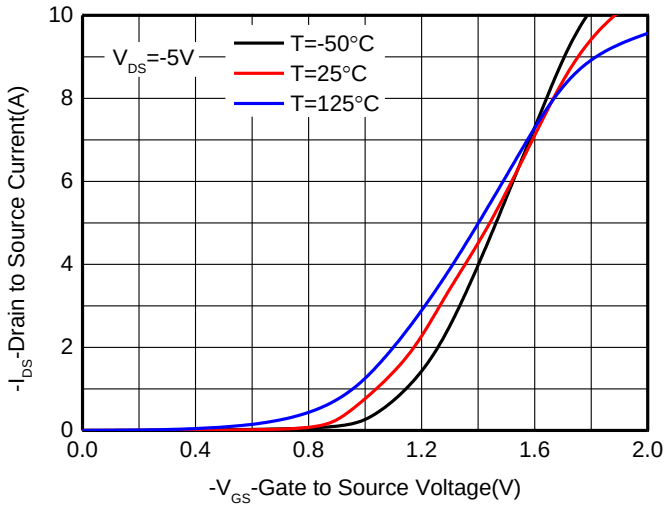
Electronics Characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0 V, I_D = -250uA	-12			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -10V, V_{GS} = 0V			-1	uA
Gate-to-source Leakage Current	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±8V			±1	uA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_D = -250uA	-0.45	-0.55	-0.85	V
Drain-to-source On-resistance [b, c]	$R_{DS(on)}$	V_{GS} = -4.5V, I_D = -5.0A		31	37	mΩ
		V_{GS} = -2.5V, I_D = -3.0A		40	55	
		V_{GS} = -1.8V, I_D = -2.0A		56	88	
Forward Trans conductance	g_{fs}	V_{DS} = -5.0V, I_D = -2.0A		8.5		S
CAPACITANCES, CHARGES						
Input Capacitance	C_{ISS}	V_{GS} = 0 V, f = 1.0 MHz, V_{DS} = -10 V		1152		pF
Output Capacitance	C_{OSS}			253		
Reverse Transfer Capacitance	C_{RSS}			236		
Total Gate Charge	$Q_{G(TOT)}$	V_{GS} = -4.5 V, V_{DD} = -10 V, I_D = -5.0A		14.6		nC
Threshold Gate Charge	$Q_{G(TH)}$			1.35		
Gate-to-Source Charge	Q_{GS}			2.3		
Gate-to-Drain Charge	Q_{GD}			5.7		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V_{GS} = -4.5 V, V_{DD} = -10 V, R_L=3 Ω, R_G=6 Ω		26		ns
Rise Time	tr			23		
Turn-Off Delay Time	td(OFF)			68		
Fall Time	tf			45		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = -1.0A		-0.8	-1.5	V

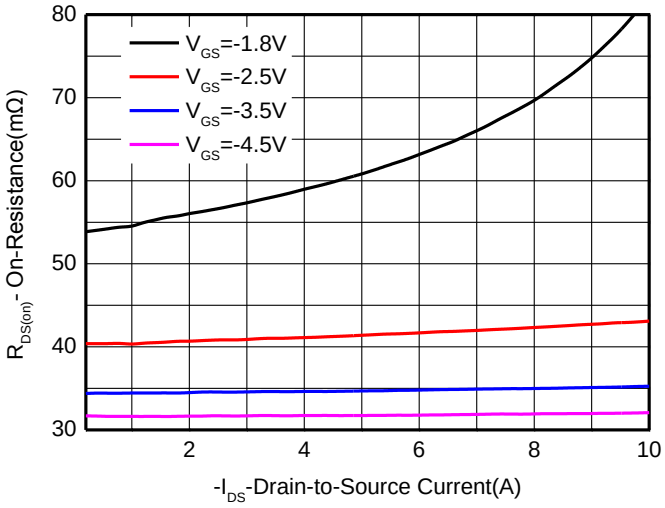
Typical Characteristics (Ta=25°C, unless otherwise noted)



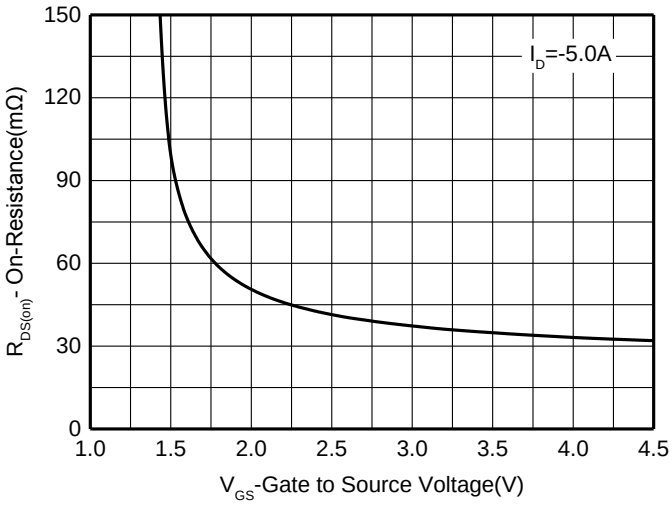
Output characteristics



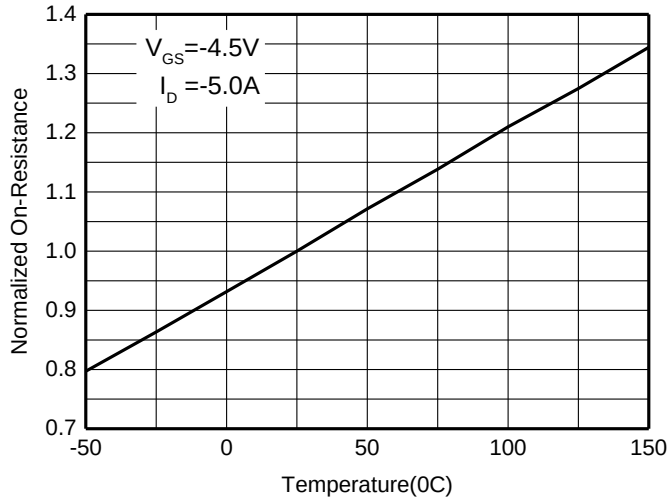
Transfer characteristics



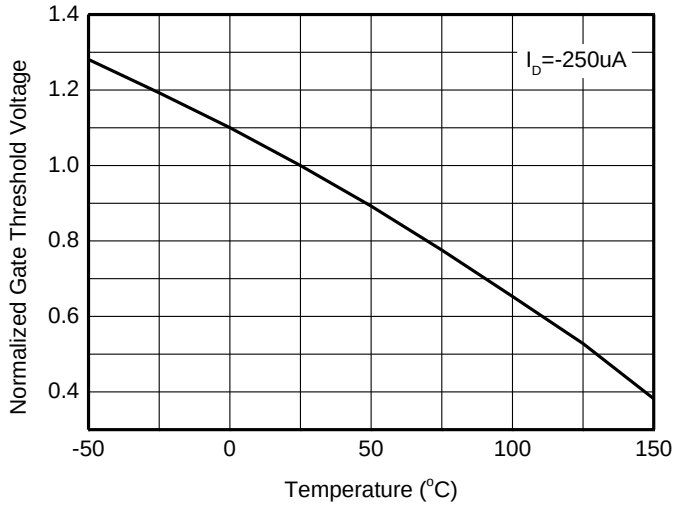
On-Resistance vs. Drain current



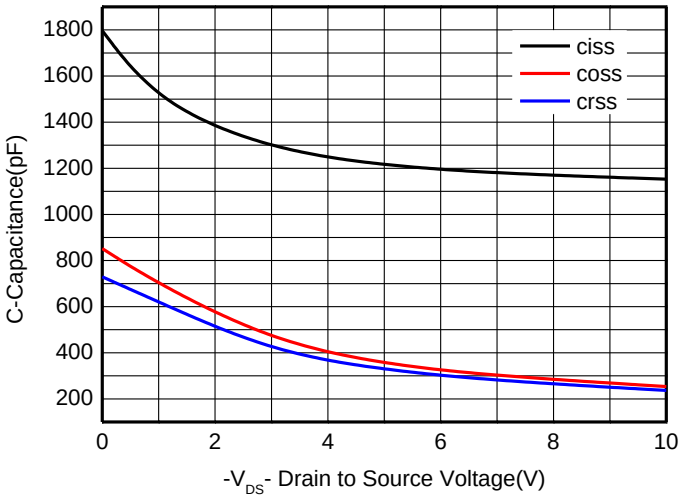
On-Resistance vs. Gate-to-Source voltage



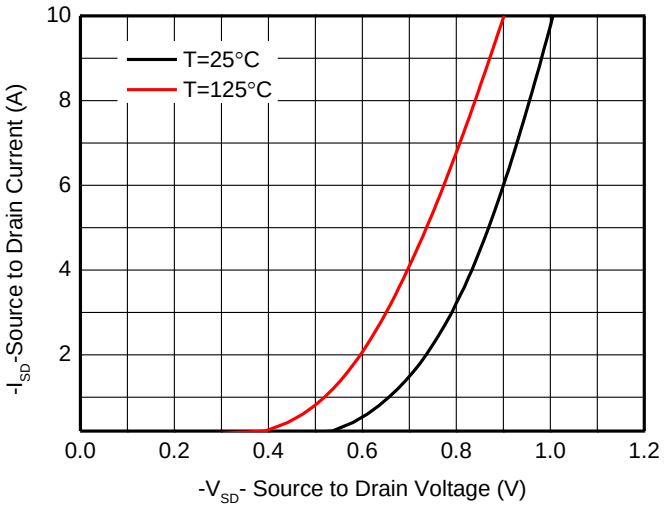
On-Resistance vs. Junction temperature



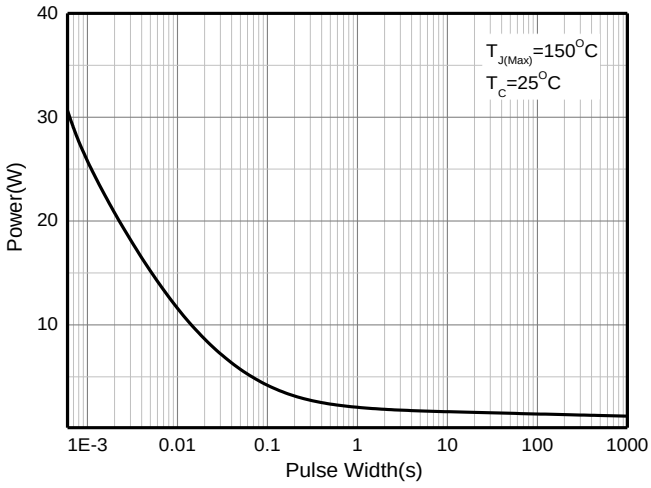
Threshold voltage vs. Temperature



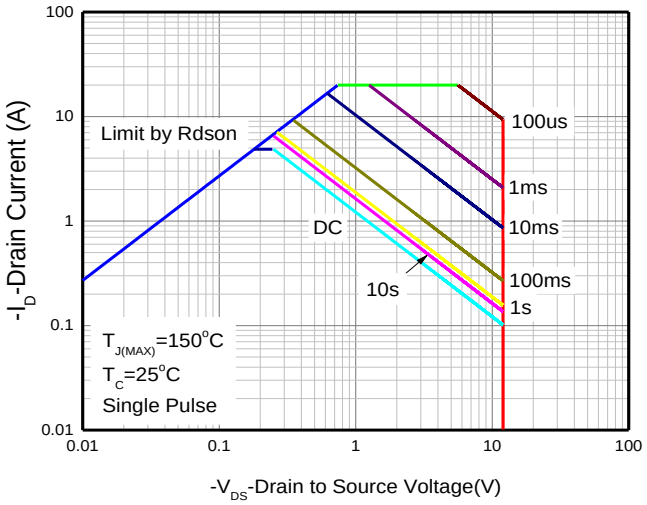
Capacitance



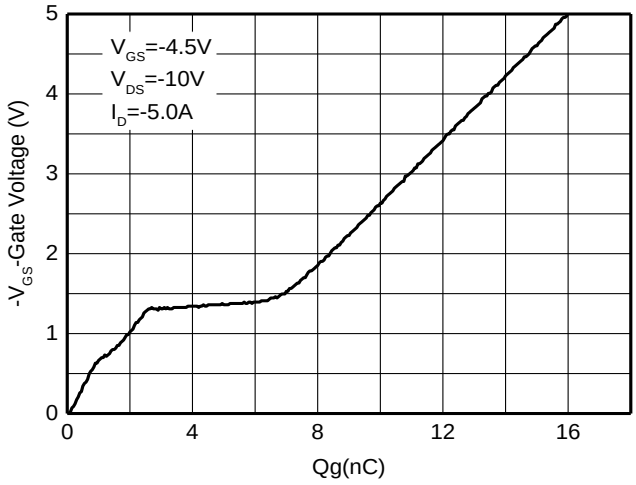
Body diode forward voltage



Single pulse power

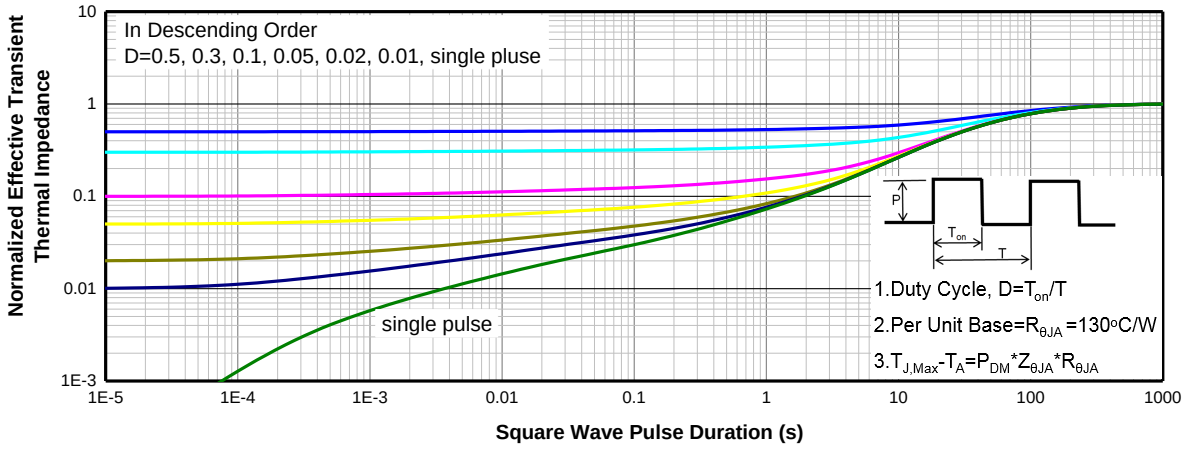


Safe operating power



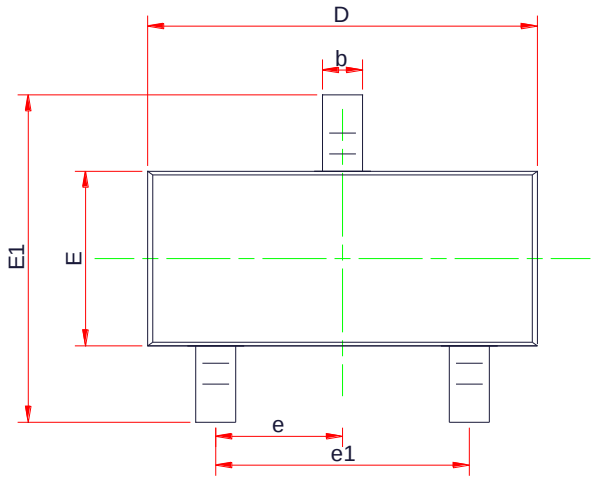
Gate charge Characteristics

Transient thermal response (Junction-to-Ambient)

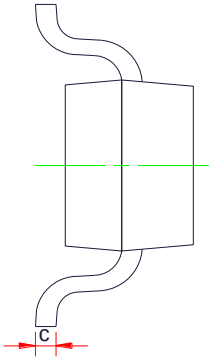


Package Outline Dimensions

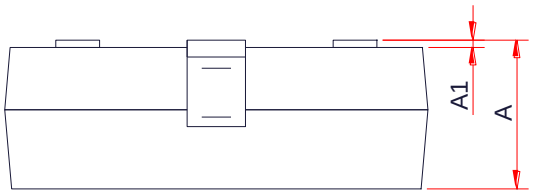
SOT-23



TOP VIEW



SIDE VIEW

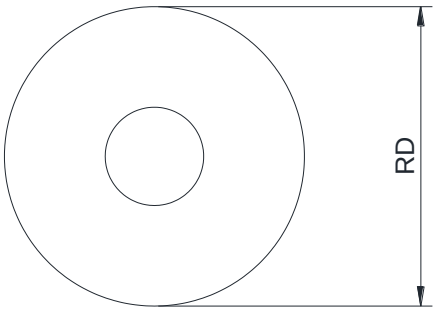


SIDE VIEW

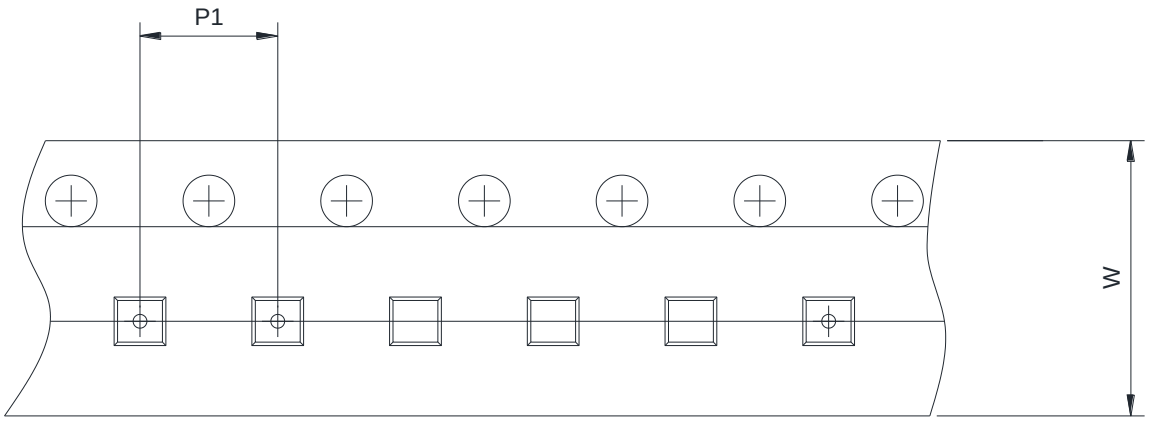
Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.89	1.10	1.30
A1	0.00	-	0.10
b	0.30	0.43	0.55
c	0.05	-	0.20
D	2.70	2.90	3.10
E	1.15	1.33	1.50
E1	2.10	2.40	2.70
e	0.95 Typ.		
e1	1.70	1.90	2.10

TAPE AND REEL INFORMATION

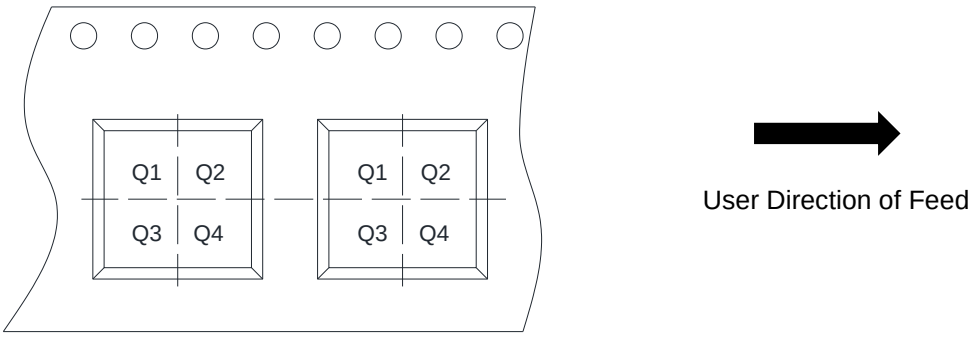
Reel Dimensions



Tape Dimensions



Quadrant Assignments For PIN1 Orientation In Tape



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