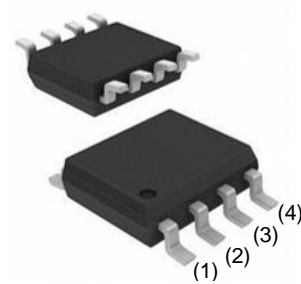
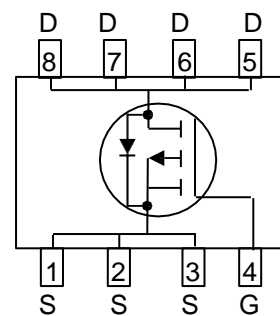
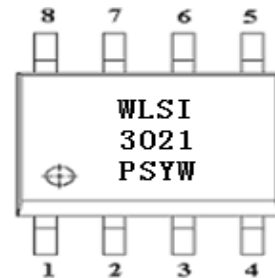


WPM3021

Single P-Channel, -30V, -13A, Power MOSFET

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

V _{DS} (V)	Typical R _{DS(on)} (mΩ)
-30	11 @ V _{GS} =-10V
	15 @ V _{GS} =-5V


SOP-8L

Pin configuration (Top view)


PE = Device Code

Y = Year

W = Week(A~z)

Marking
Order information
Descriptions

The WPM3021 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 WPM3021 is Pb-free.

Features

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

Applications

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

Device	Package	Shipping
WPM3021-8/TR	SOP-8L	4000/Tape&Reel

Absolute Maximum ratings

Parameter	Symbol	Maximum	Unit	
Drain-Source Voltage	V_{DS}	-30	V	
Gate-Source Voltage	V_{GS}	± 25		
Continuous Drain Current	I_D	$T_A=25^\circ\text{C}$	-13	A
		$T_A=70^\circ\text{C}$	-10	
Pulsed Drain Current ^c	I_{DM}	-72		
Maximum Power Dissipation ^b	P_D	$T_A=25^\circ\text{C}$	3.8	W
		$T_A=70^\circ\text{C}$	2.4	
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

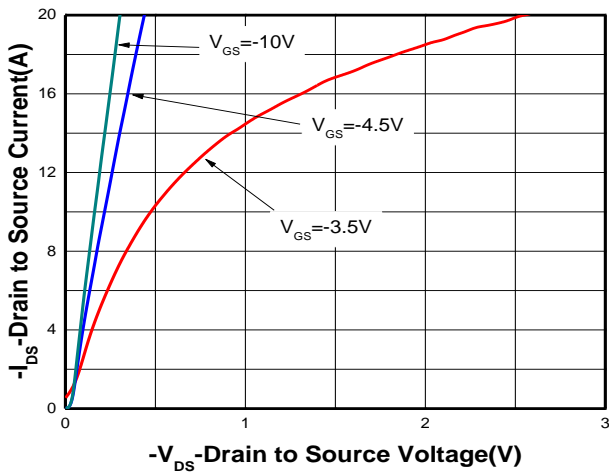
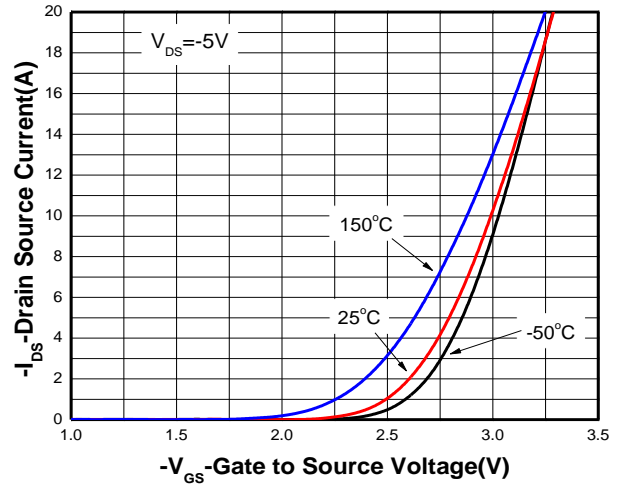
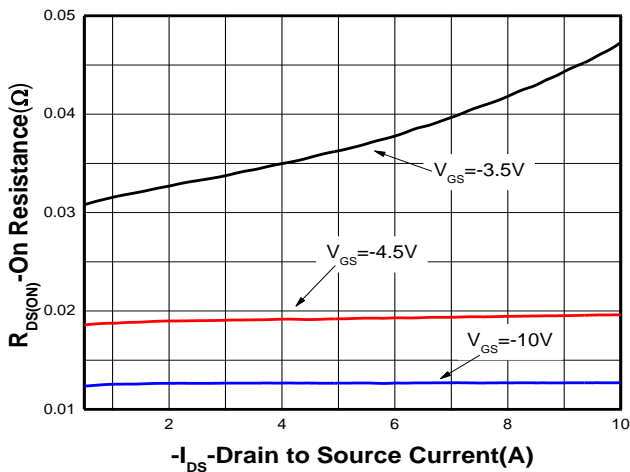
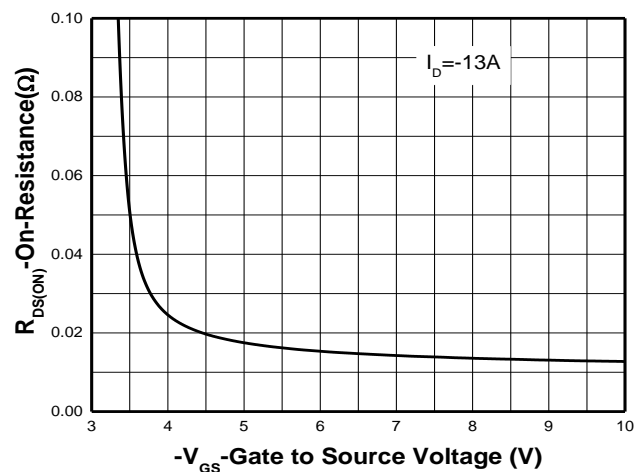
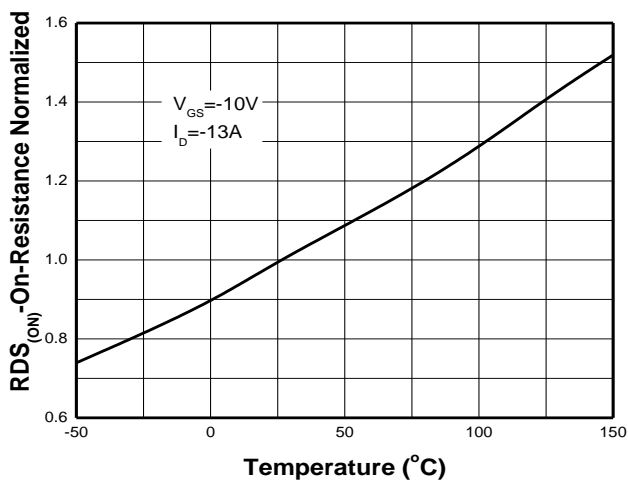
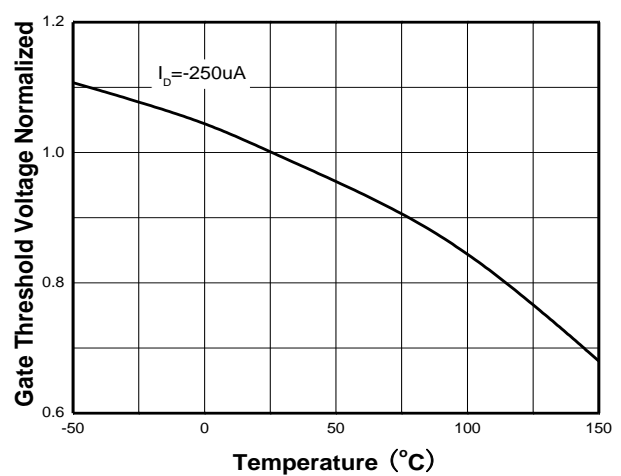
Single Operation					
Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance ^a	$t \leq 10\text{ s}$	$R_{\theta JA}$	25	33	$^\circ\text{C/W}$
	Steady State		50	63	
Junction-to-Lead Thermal Resistance	Steady State	$R_{\theta JL}$	10	13	

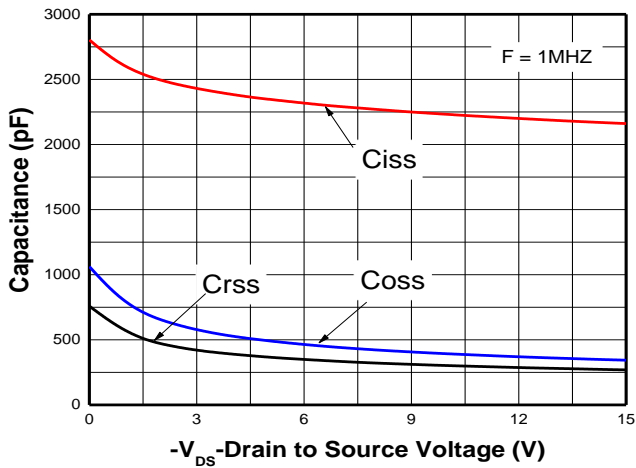
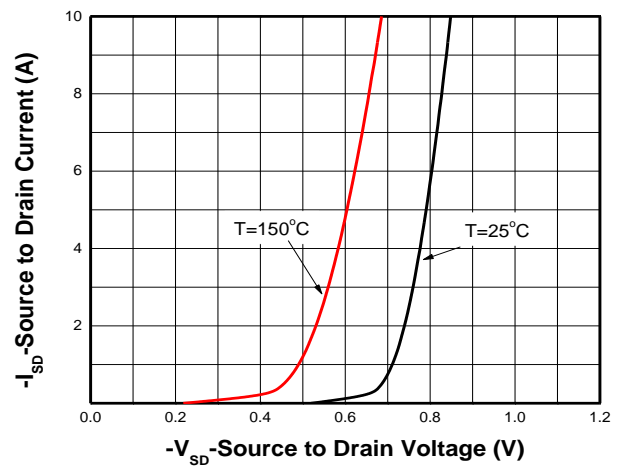
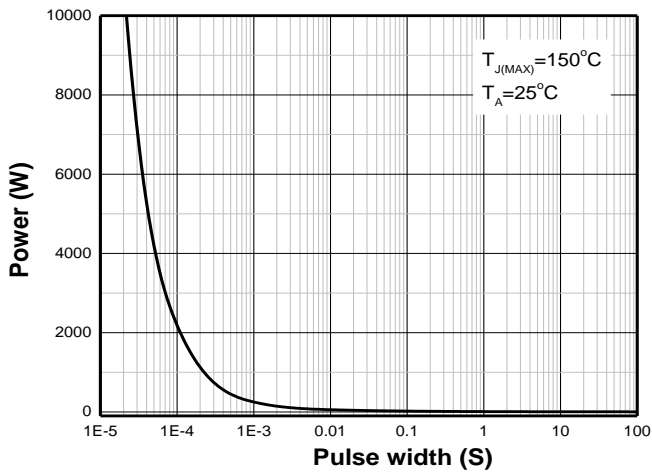
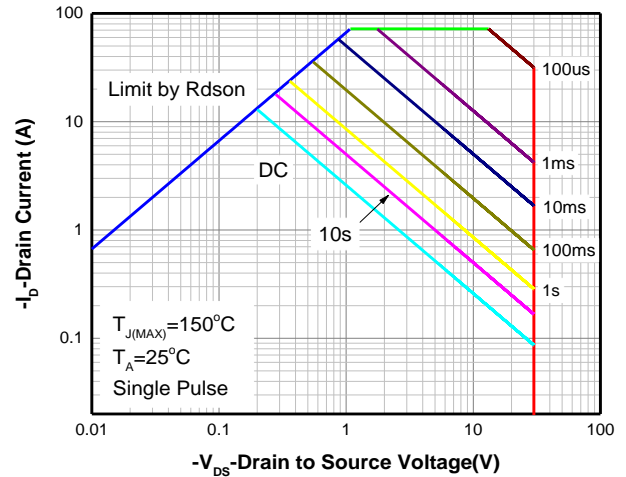
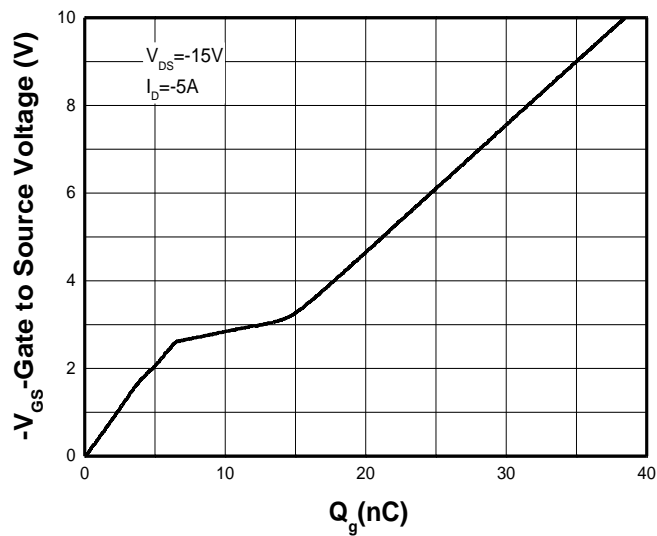
Note:

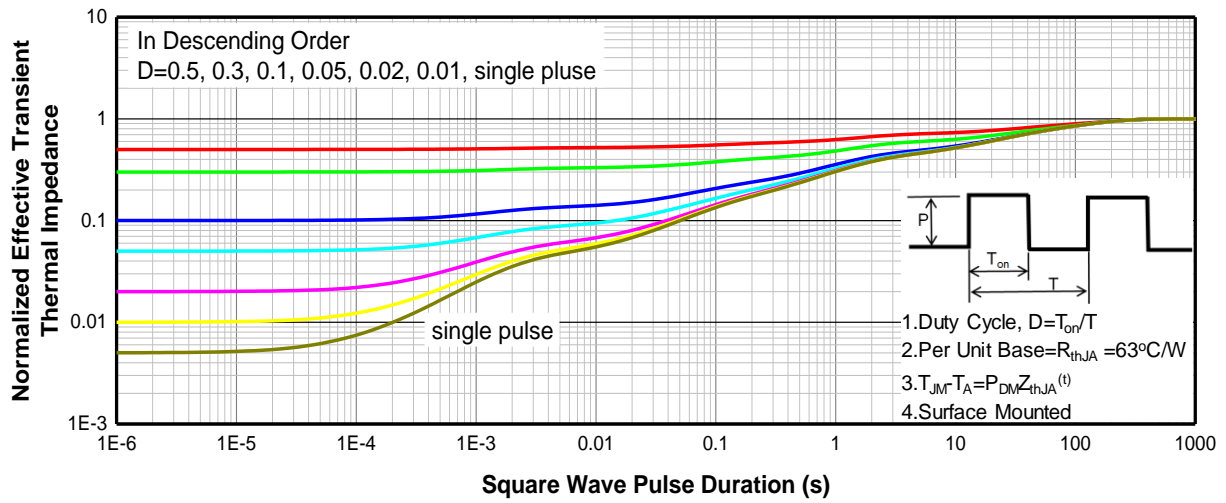
- The value of $R_{\theta JA}$ is measured with the device mounted on 1-inch² (6.45cm²) with 2oz.(0.071mm thick) Copper pad on a 1.5*1.5 inch², 0.06-inch thick FR4 PCB, in a still air environment with $T_A = 25^\circ\text{C}$. The value in any given application is determined by the user's specific board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

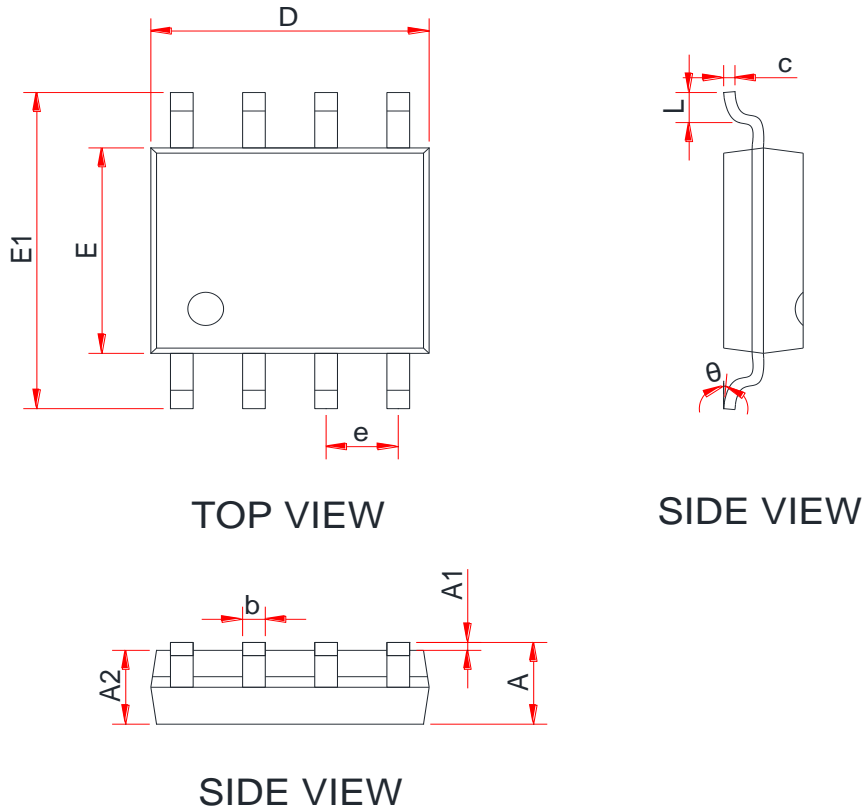
Electronics Characteristics (Ta=25°C, unless otherwise noted)

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} = ±25V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _D = -250uA	-1.0	-1.8	-3.0	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} = -10V, I _D = -13A		11	15	mΩ
		V _{GS} = -5V, I _D = -7A		15	20	
Forward Transconductance	g _{FS}	V _{DS} = -5 V, I _D = -8A		7	16	S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} = 0 V, f = 1.0MHz, V _{DS} = -15 V		2106		pF
Output Capacitance	C _{OSS}			353		
Reverse Transfer Capacitance	C _{RSS}			274		
Total Gate Charge	Q _{G(TOT)}	V _{GS} = -10 V, V _{DS} = -15 V, I _D = -13 A		38		nC
Threshold Gate Charge	Q _{G(TH)}			4		
Gate-to-Source Charge	Q _{GS}			7.7		
Gate-to-Drain Charge	Q _{GD}			6.5		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	t _{d(ON)}	V _{GS} = -10 V, V _{DS} = -15 V, I _D = -5A, R _G = 6Ω		18		ns
Rise Time	t _r			24		
Turn-Off Delay Time	t _{d(OFF)}			114		
Fall Time	t _f			47		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = -1A	-0.5	-0.8	-1.2	V

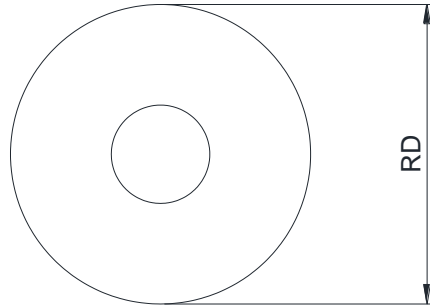
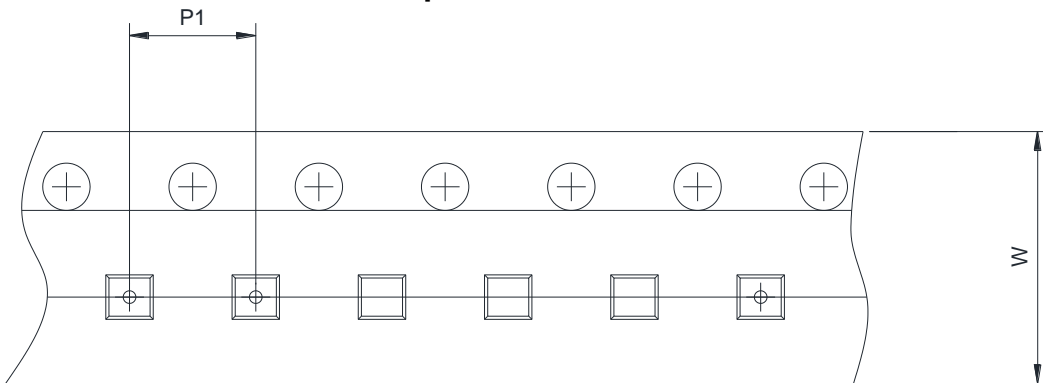
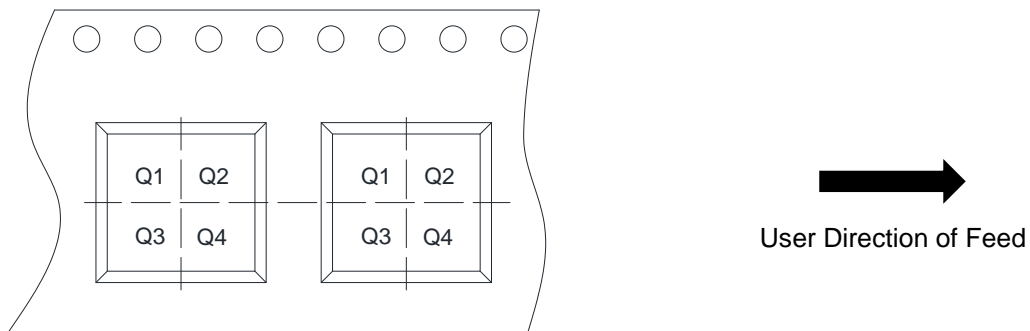
Typical Characteristics (Ta=25°C, unless otherwise noted)

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
SOP-8L


Symbol	Dimensions In Millimeters (mm)		
	Min.	Typ.	Max.
A	1.35	1.55	1.75
A1	0.05	0.15	0.25
A2	1.25	1.40	1.65
b	0.33	-	0.51
c	0.15	-	0.26
D	4.70	4.90	5.10
E	3.70	3.90	4.10
E1	5.80	6.00	6.20
e	1.27BSC		
L	0.40	-	1.27
θ	0°	-	8°

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		
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

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