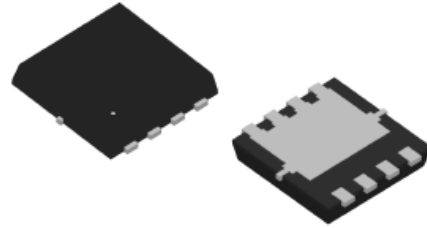
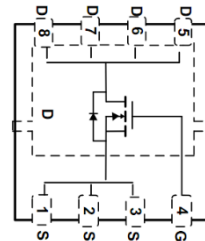


WNM3040
Single N-Channel, 30V, 19A, Power MOSFET
[Http://www.sh-willsemi.com](http://www.sh-willsemi.com)

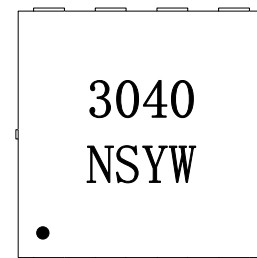
V_{DS} (V)	Typical $R_{DS(on)}$ (m Ω)
30	12.0 @ $V_{GS}=10V$
	17.5 @ $V_{GS}=4.5V$


Descriptions

The WNM3040 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 WNM3040 is Pb-free.

PDFN3333-8L

Pin configuration (Top view)
Features

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



3040 =Device Code
 NS = Special Code
 Y = Year
 W = Week(A~z)

Marking
Applications

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

Order information

Device	Package	Shipping
WNM3040-8/TR	PDFN3333-8L	3000/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	$T_C=25^\circ\text{C}$	19	A
		$T_C=100^\circ\text{C}$	15	A
Pulsed Drain Current ^c	I_{DM}	67	A	
Continuous Drain Current	I_{DSM}	$T_A=25^\circ\text{C}$	13	A
		$T_A=70^\circ\text{C}$	10	
Avalanche Energy $L=0.3\text{mH}$	E_{AS}	12	mJ	
Power Dissipation ^b	P_D	$T_C=25^\circ\text{C}$	14	W
		$T_C=100^\circ\text{C}$	6	
Power Dissipation ^a	P_{DSM}	$T_A=25^\circ\text{C}$	4.0	W
		$T_A=70^\circ\text{C}$	2.6	
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

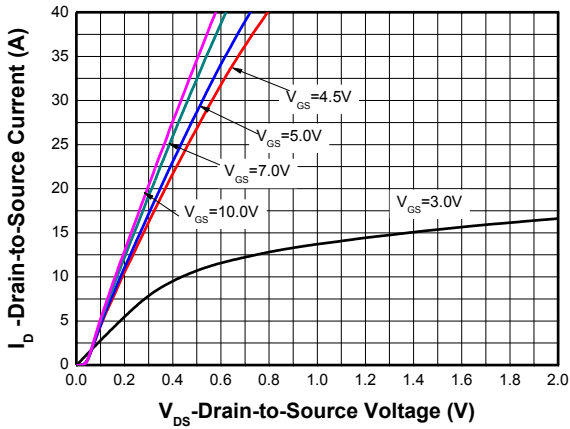
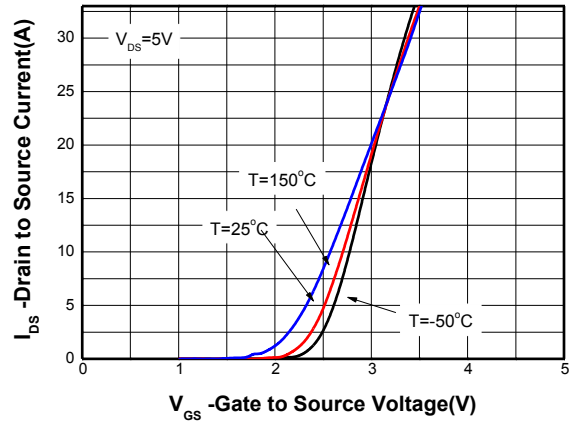
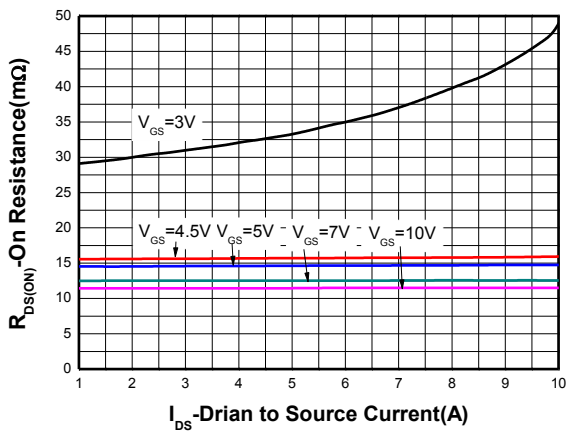
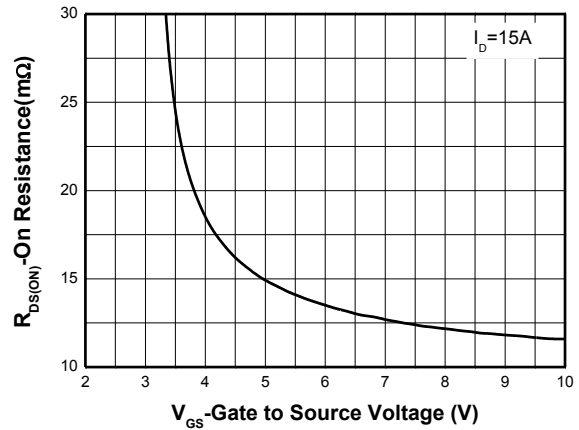
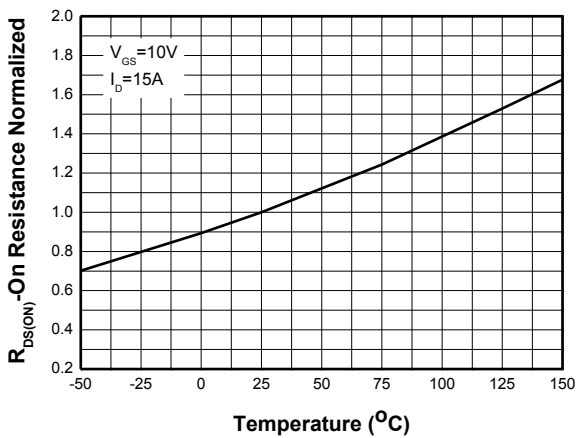
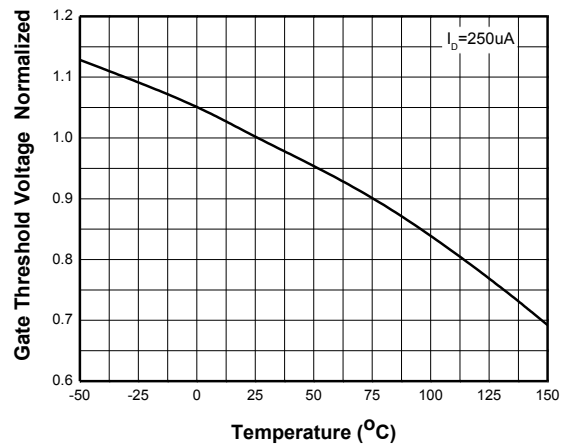
Single Operation					
Parameter	Symbol	Typical	Maximum	Unit	
Junction-to-Ambient Thermal Resistance ^a	$R_{\theta JA}$	$t \leq 10\text{ s}$	25	31	$^\circ\text{C/W}$
		Steady State	51	64	
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	7.2	9		

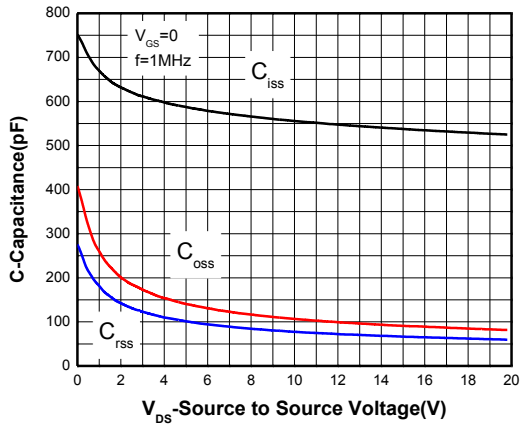
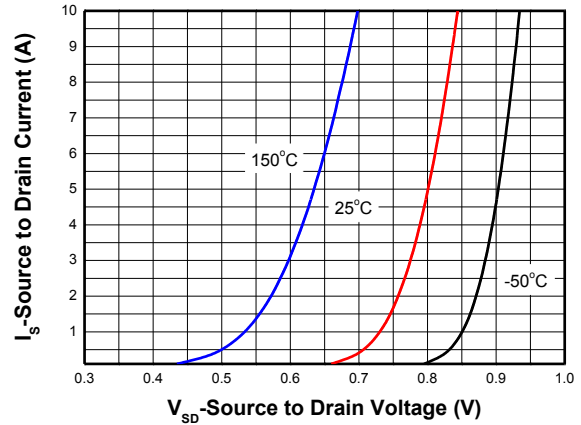
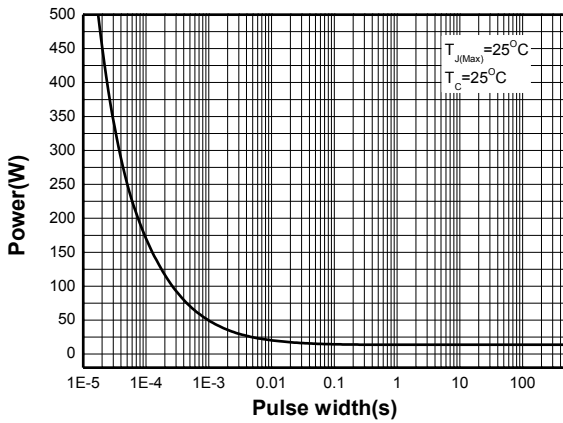
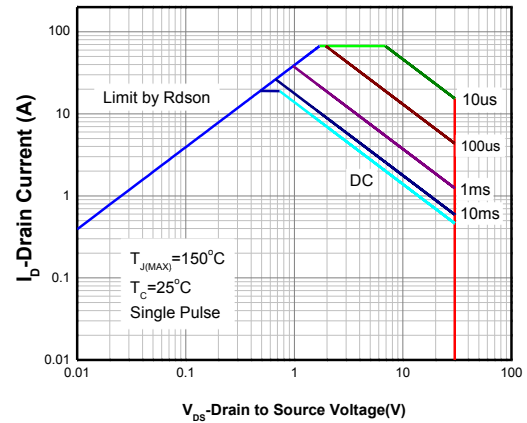
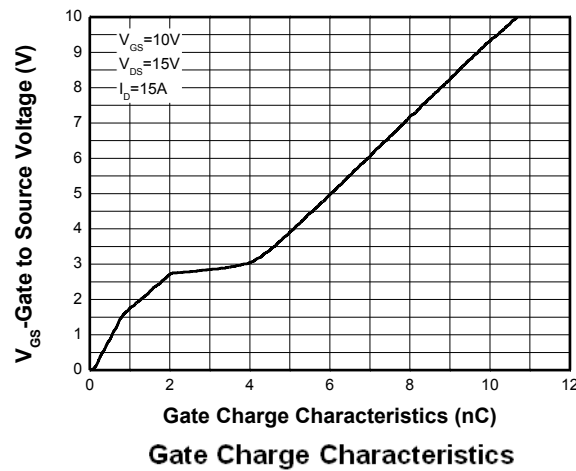
Note:

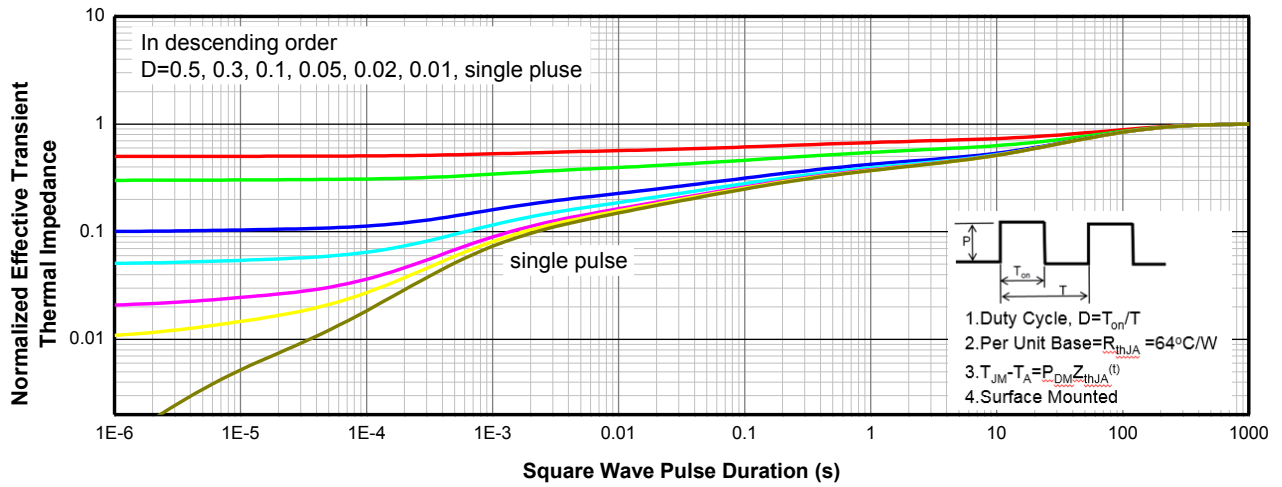
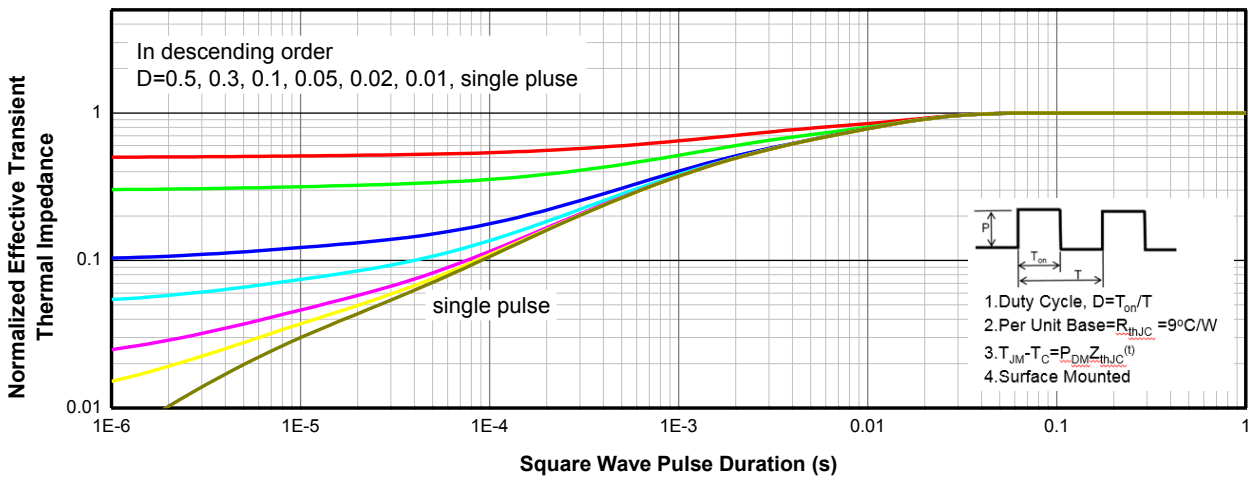
- a The value of $R_{\theta JA}$ is measured with the device mounted on 1-inch² (6.45cm²) with 2oz.(0.071mm thick) Copper pad on a 1.5*1.5 inch², 0.06-inch thick FR4 PCB, in a still air environment with $T_A = 25^\circ\text{C}$. The power dissipation P_{DSM} is based on $R_{\theta JA} t \leq 10\text{s}$ 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.
- b The power dissipation P_D is based on $T_{J(MAX)}=150^\circ\text{C}$, 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 $T_J = 25^\circ\text{C}$, the maximum allowed junction temperature of 150°C .
- d The maximum current rating by source bonding technology.
- e The static characteristics are obtained using ~380us pulses, duty cycle ~1%.

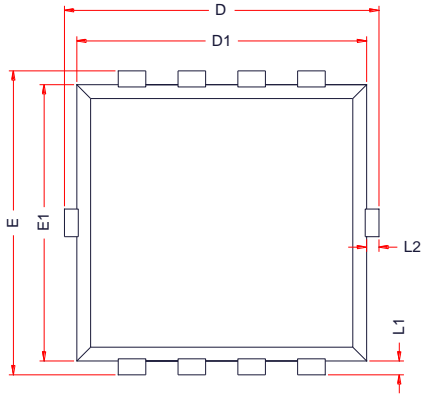
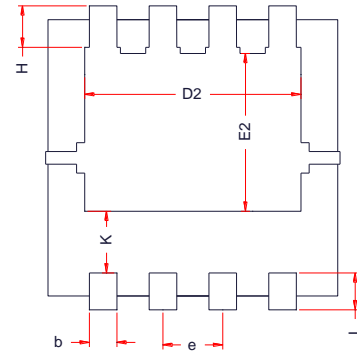
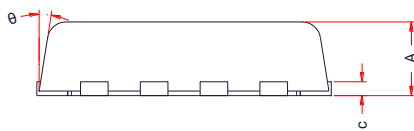
Electronics Characteristics (Ta=25°C, unless otherwise noted)

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	1.7	2.5	V
Drain-to-source On-resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 10A		12.0	15.0	mΩ
		V _{GS} = 4.5V, I _D = 8A		17.5	24.5	
Forward Transconductance	g _{FS}	V _{DS} = 5V, I _D = 15A		9		S
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C _{ISS}	V _{GS} = 0 V, f = 1.0MHz, V _{DS} = 15 V		540		Pf
Output Capacitance	C _{OSS}			95		
Reverse Transfer Capacitance	C _{RSS}			68		
Gate Resistance	R _g	F=1MHZ		1.4		Ω
Total Gate Charge	Q _{G(TOT)}	V _{GS} = 10 V, V _{DS} = 15 V, I _D = 15 A		10.6		nC
Threshold Gate Charge	Q _{G(TH)}			1		
Gate-to-Source Charge	Q _{GS}			1.9		
Gate-to-Drain Charge	Q _{GD}			2.1		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V _{GS} = 10 V, V _{DS} = 15 V, R _L =1 Ω , R _G =3Ω		4		ns
Rise Time	tr			17		
Turn-Off Delay Time	td(OFF)			18		
Fall Time	tf			9		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = 1A		0.7	1.2	V

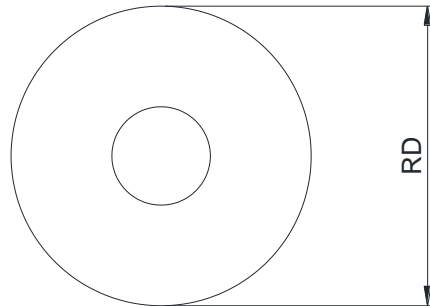
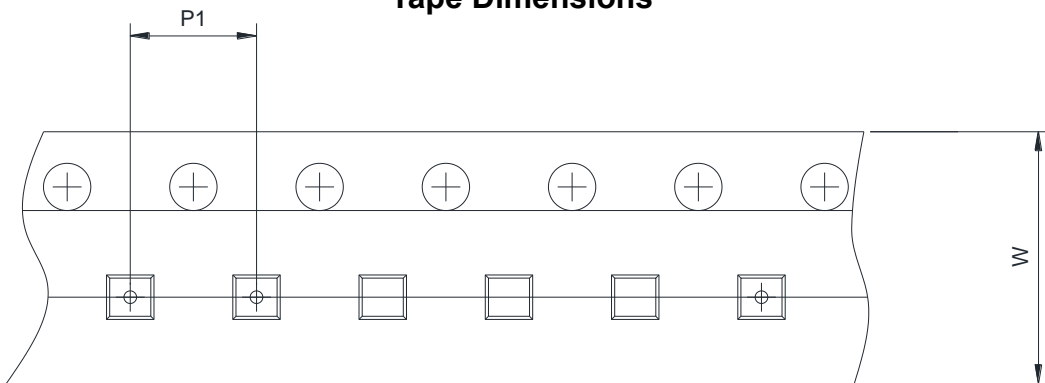
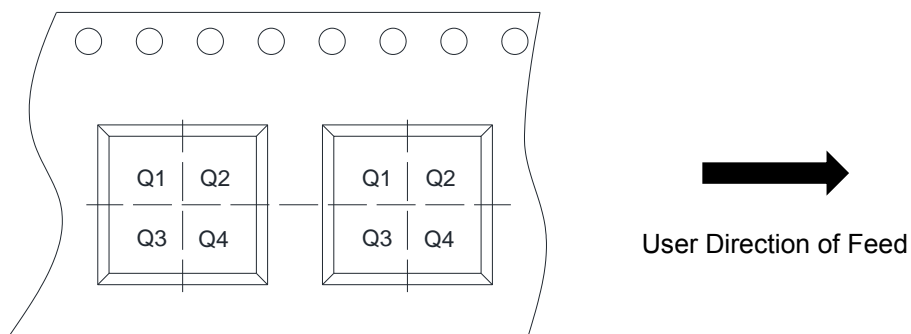
Typical Characteristics (Ta=25°C, unless otherwise noted)

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


Transient thermal response (Junction-to-Ambient)

Transient thermal response (Junction-to-Case)


PACKAGE OUTLINE DIMENSIONS
PDFN3333-8L

TOP VIEW

BOTTOM VIEW

SIDE VIEW

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