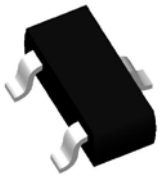
WNM3400

Single N-Channel, 30V, 5.2A, Power MOSFET

Http://www.sh-willsemi.com

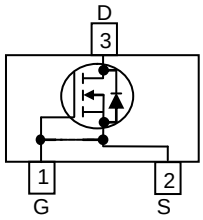
V_{DS} (V)	Typical $R_{DS(on)}$ (mΩ)
30	24 @ V_{GS}= 10.0V
	25 @ V_{GS}= 4.5V
	27 @ V_{GS}= 3.1V
	29 @ V_{GS}= 2.5V



SOT-23

Descriptions

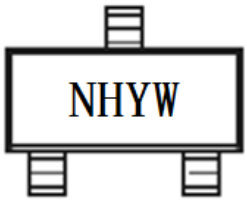
The WNM3400 is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WNM3400 is Pb-free



Pin configuration (Top view)

Features

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



NH = Device 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
WNM3400-3/TR	SOT-23	3000/Tape&Reel

Absolute Maximum ratings

Parameter		Symbol	Maximum	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±10	
Continuous Drain Current	T_A=25°C	I_D	5.2	A
	T_A=70°C		4.6	
Pulsed Drain Current [c]		I_{DM}	30	
Maximum Power Dissipation [b]	T_A=25°C	P_D	1.67	W
	T_A=70°C		1.07	
Operating Junction Temperature		T_J	-55 to 150	°C
Storage Temperature Range		T_{STG}	-55 to 150	°C

Thermal resistance ratings

Parameter		Symbol	Typical	Maximum	Unit
Junction-to-Ambient Thermal Resistance [a]	t ≤ 10 s	$R_{\theta JA}$	60	75	°C/W
	Steady State		88	114	
Junction-to-Lead Thermal Resistance	Steady State	$R_{\theta JL}$	39	49	

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.

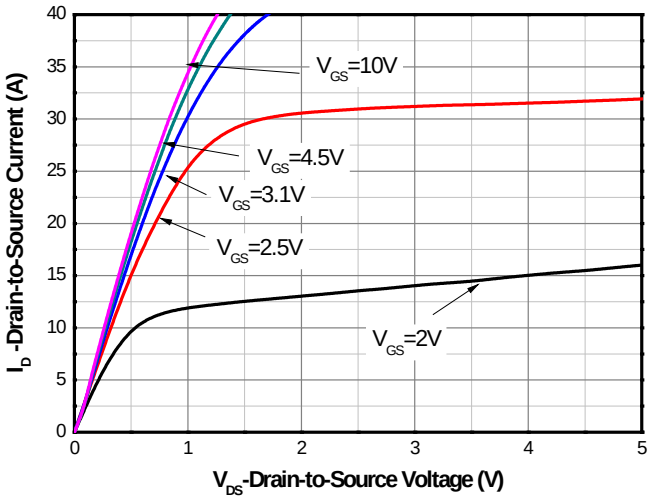
c. Repetitive rating, ~10us pulse width, duty cycle ~1%, keep initial T_J =25°C, the maximum allowed junction temperature of 150°C.

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

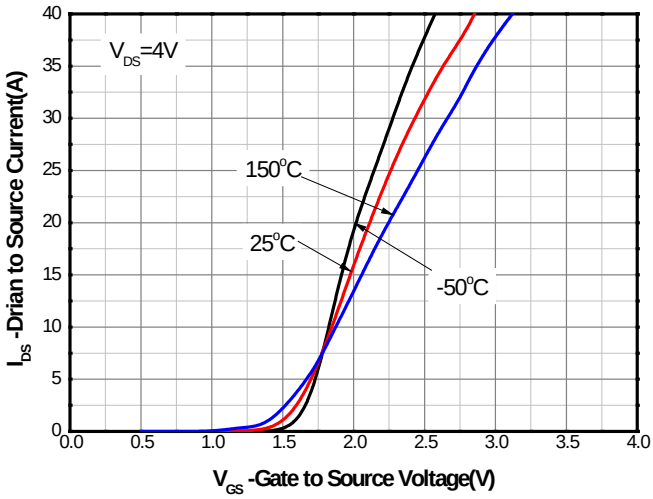
Electronics Characteristics (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0 V, I_D = 250uA	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} = ±10V			±100	nA
ON CHARACTERISTICS						
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} = V_{DS}, I_D = 250uA	0.7	1.0	1.5	V
Drain-to-source On-resistance[d]	$R_{DS(on)}$	V_{GS} = 10V, I_D = 6.0A		24	30	mΩ
		V_{GS} = 4.5V, I_D = 5.0A		25	31	
		V_{GS} = 3.1V, I_D = 3.5A		27	36	
		V_{GS} = 2.5V, I_D = 2.0A		29	44	
CHARGES, CAPACITANCES AND GATE RESISTANCE						
Input Capacitance	C_{ISS}	V_{GS} = 0 V, f = 1.0MHz, V_{DS} = 15 V		837		pF
Output Capacitance	C_{OSS}			75		
Reverse Transfer Capacitance	C_{RSS}			51		
Total Gate Charge	$Q_{G(TOT)}$	V_{GS} = 4.5 V, V_{DS} = 15 V, I_D = 6.0 A		9.1		nC
Threshold Gate Charge	$Q_{G(TH)}$			1.1		
Gate-to-Source Charge	Q_{GS}			1.8		
Gate-to-Drain Charge	Q_{GD}			2.2		
SWITCHING CHARACTERISTICS						
Turn-On Delay Time	td(ON)	V_{GS} = 10 V, V_{DS} = 15 V, R_L=2.5Ω , R_G=3Ω		9.2		ns
Rise Time	tr			4.2		
Turn-Off Delay Time	td(OFF)			48.8		
Fall Time	tf			6.4		
BODY DIODE CHARACTERISTICS						
Forward Voltage	V_{SD}	V_{GS} = 0 V, I_S = 1.0A		0.7	1.2	V

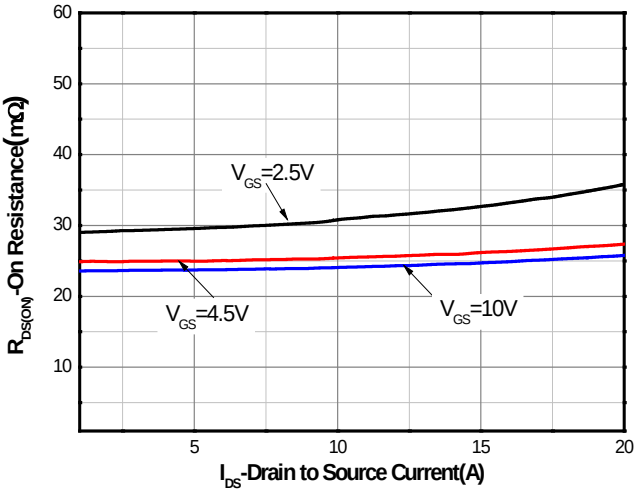
Typical Characteristics (Ta=25°C, unless otherwise noted)



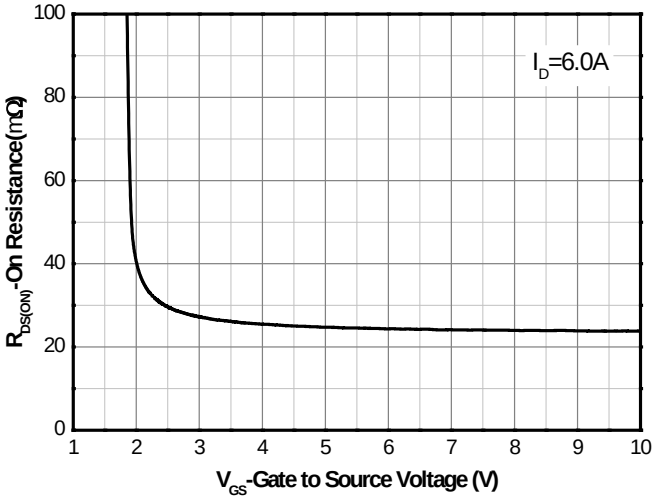
Output Characteristics [d]



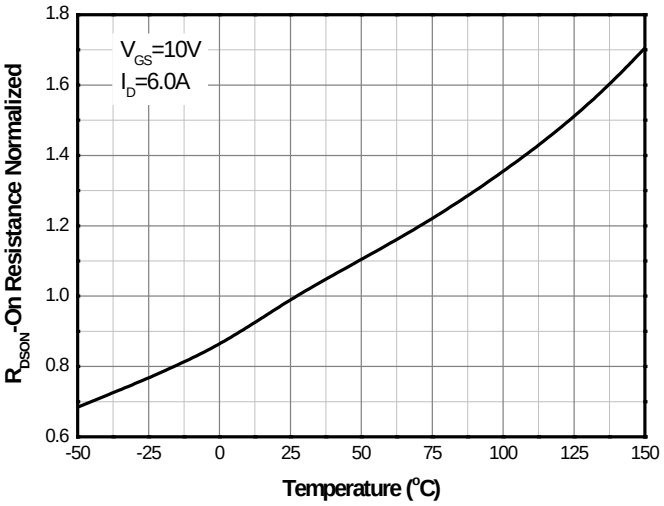
Transfer Characteristics [d]



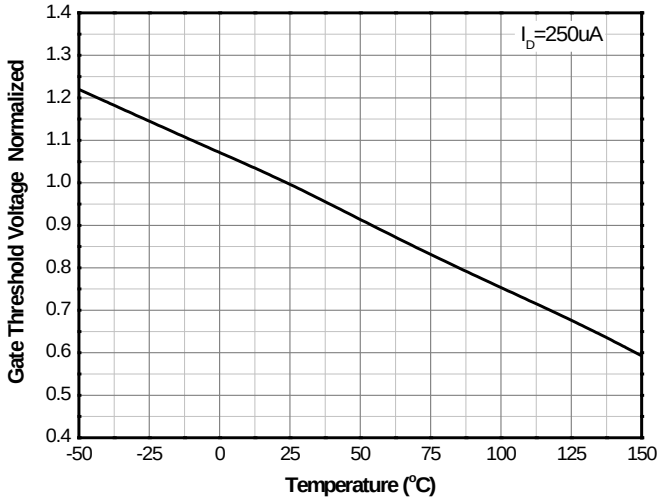
On-Resistance vs. Drain Current [d]



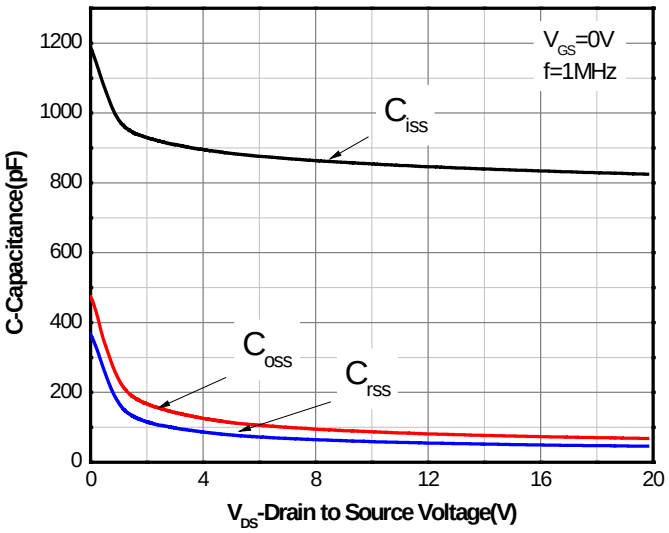
On-Resistance vs. Gate-to-Source Voltage [d]



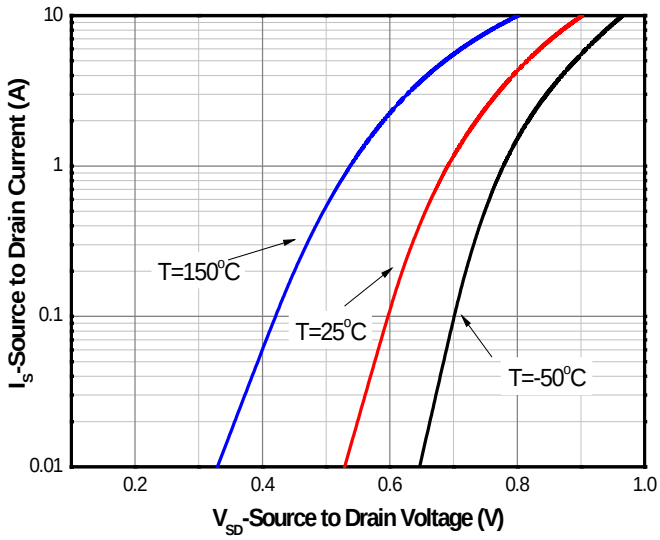
On-Resistance vs. Junction Temperature [d]



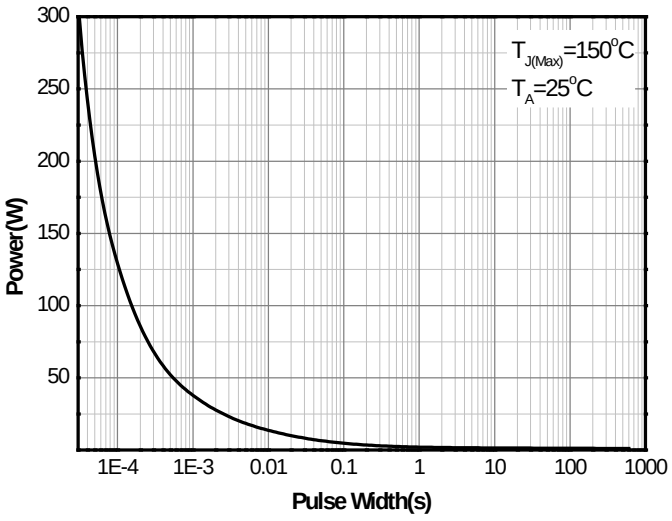
Threshold Voltage vs. Temperature



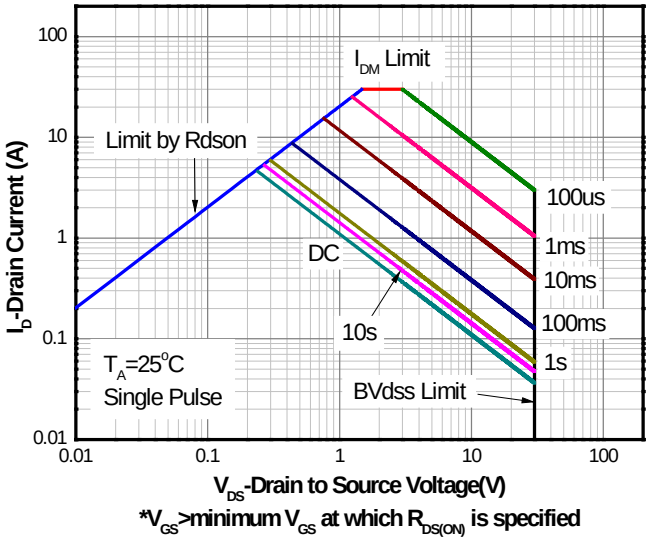
Capacitance



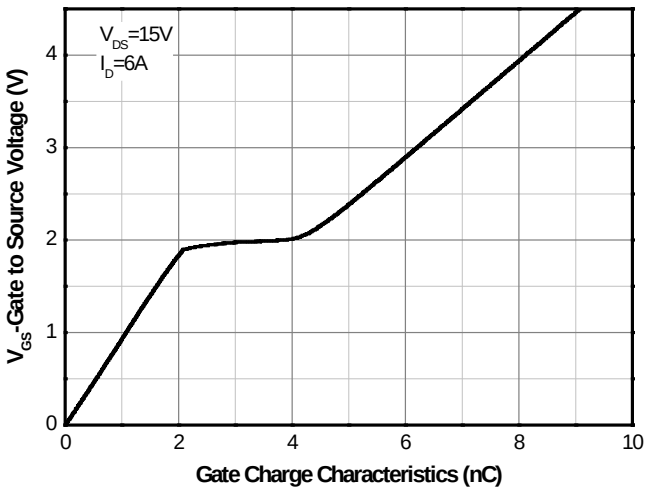
Body Diode Forward Voltage [d]



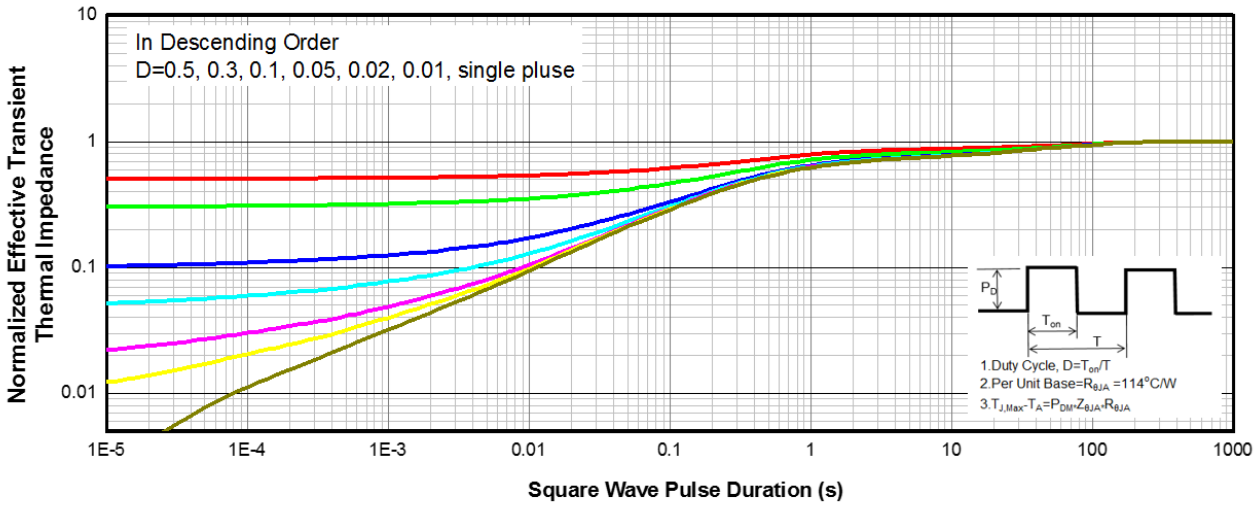
Single Pulse power



Safe Operating Power



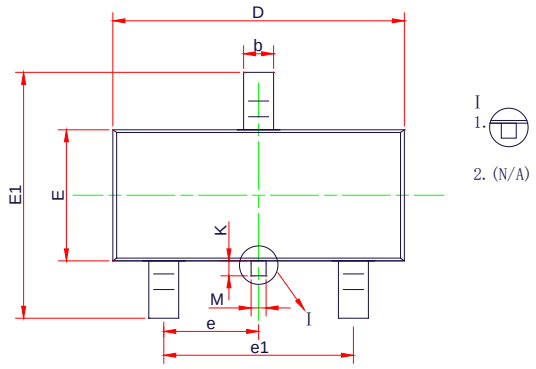
Gate Charge Characteristics



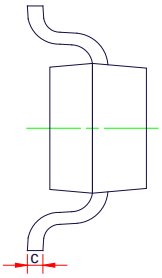
Transient thermal response (Junction-to-Ambient)

Package outline dimensions

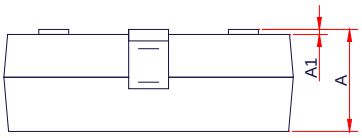
SOT-23



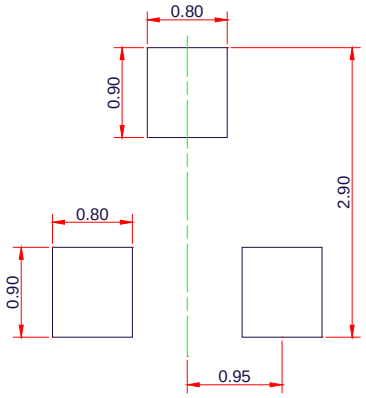
TOP VIEW



SIDE VIEW



SIDE VIEW

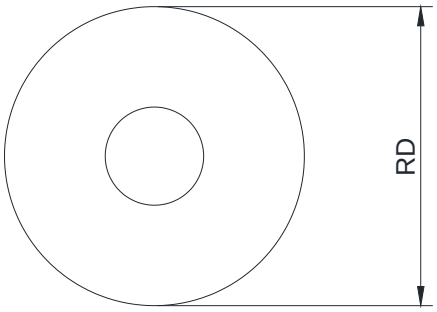


RECOMMENDED LAND PATTERN(unit:mm)

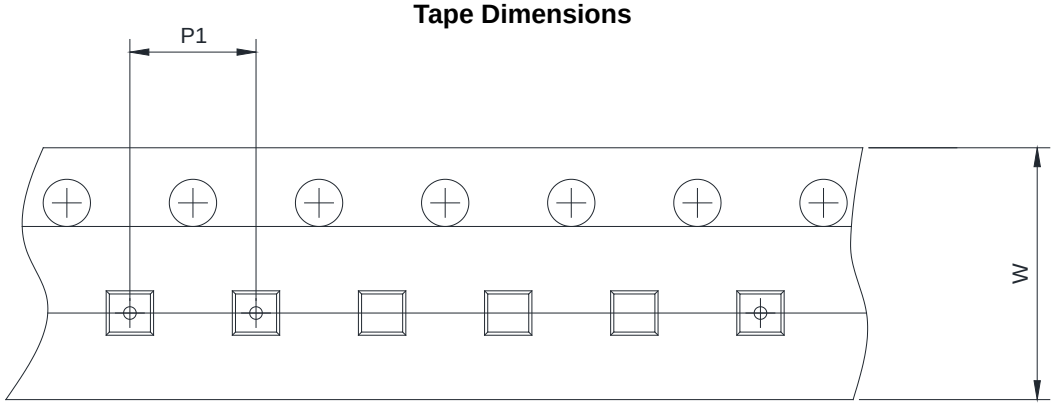
Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.89	1.10	1.30
A1	0.00	-	0.10
b	0.30	0.43	0.55
c	0.05	-	0.21
D	2.70	2.90	3.10
E	1.15	1.33	1.50
E1	2.10	2.40	2.70
e	0.95 Typ.		
e1	1.70	1.90	2.10
M	0.10	0.15	0.25
K	0.00	-	0.25

TAPE AND REEL INFORMATION

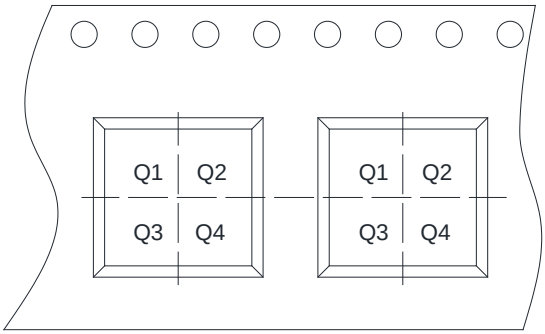
Reel Dimensions



Tape Dimensions



Quadrant Assignments For PIN1 Orientation In Tape



User Direction of Feed

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