

WS4622C

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

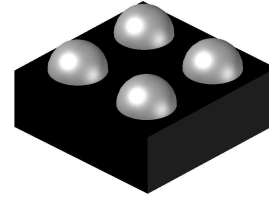
[Http://www.sh-willsemi.com](http://www.sh-willsemi.com)

Descriptions

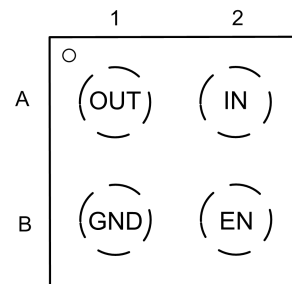
The WS4622C is a single channel load switch with ultra-low on resistance MOSFET. It is designed for load switching applications with ultra-low quiescent current (250nA) and ultra-low standby current (90nA). The device is controlled by external logic pin, allowing optimization of battery life, and portable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



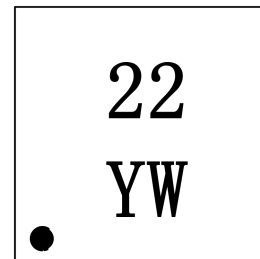
CSP-4L



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

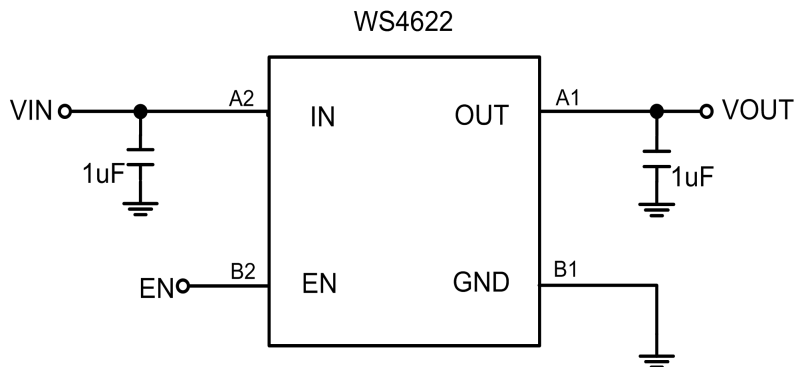
Marking

Applications

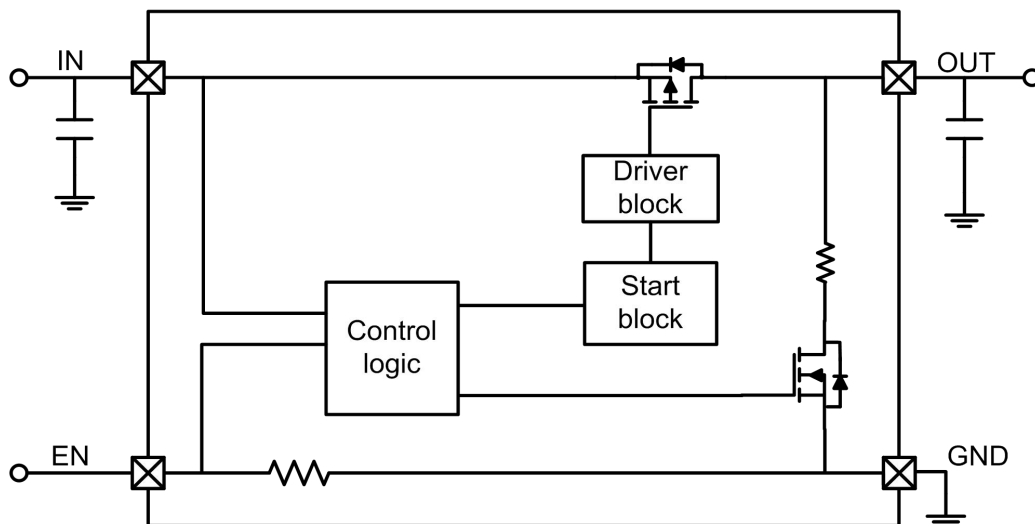
- MP3/MP4 Players
- Cellphones, radiophone, digital cameras
- Bluetooth, wireless handsets
- Others portable electronics device

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 _{IN} Range	-0.3~6.5	V	
V _{EN} Range	-0.3~6.5	V	
V _{OUT} 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

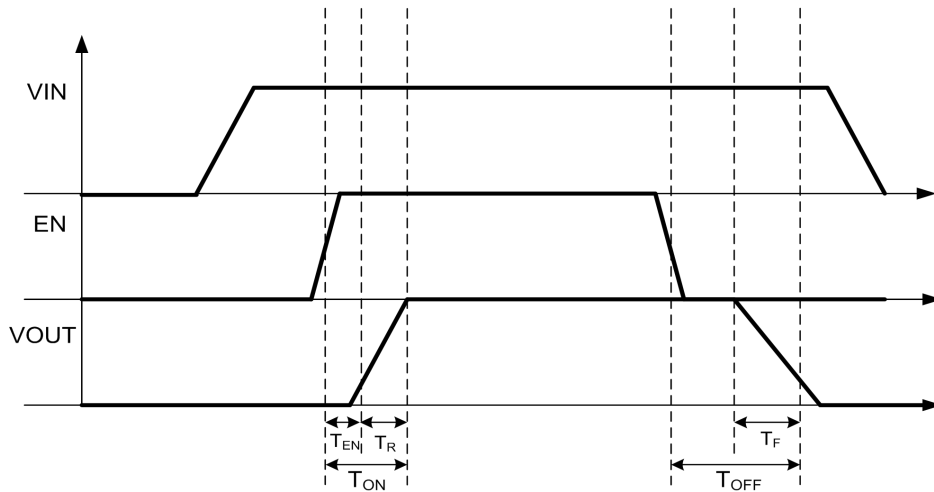
Recommend Operating Ratings

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 _{θJA} (CSP-4L)	100	°C/W

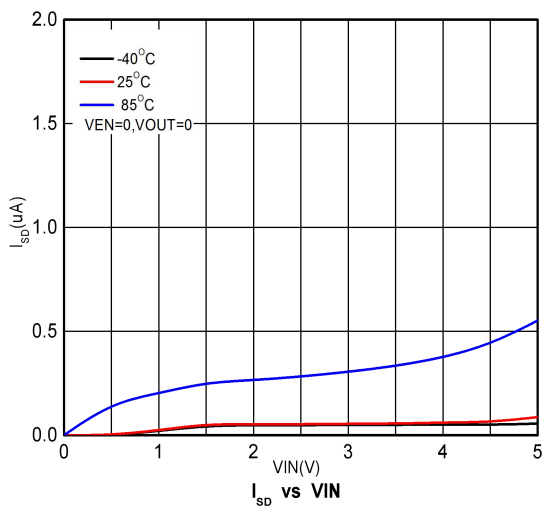
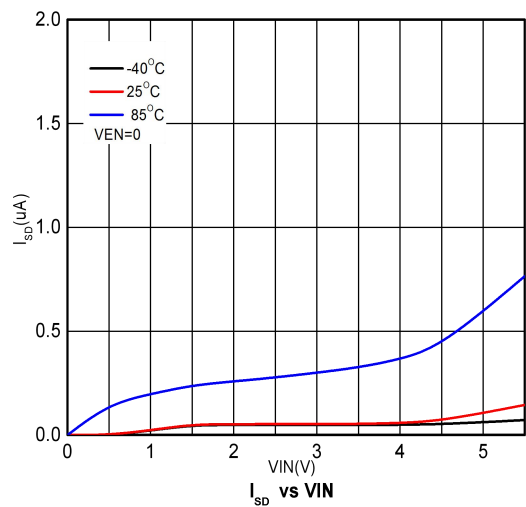
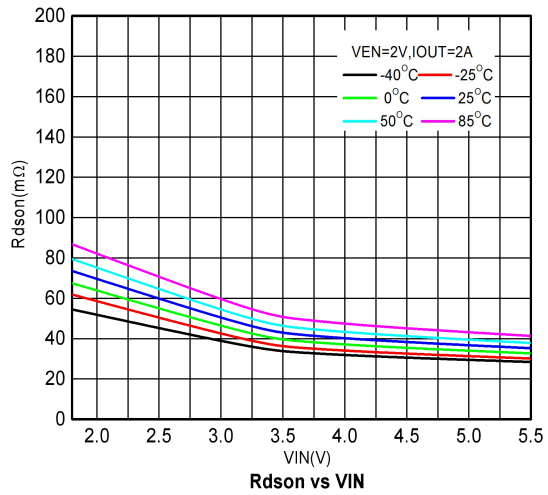
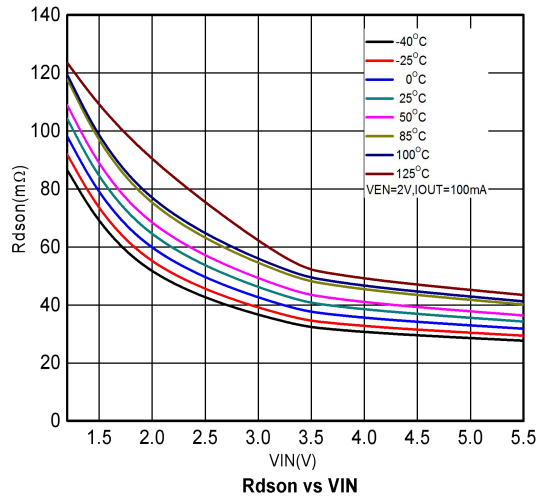
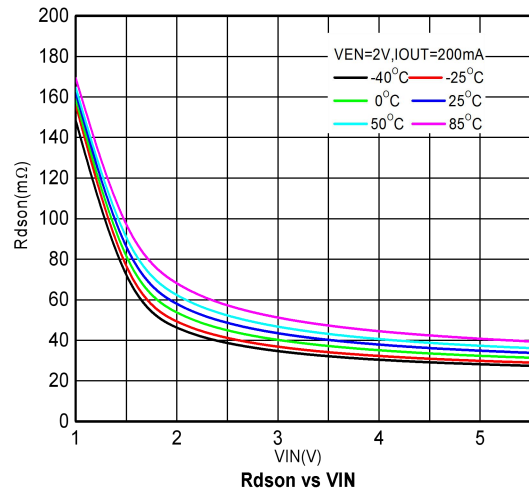
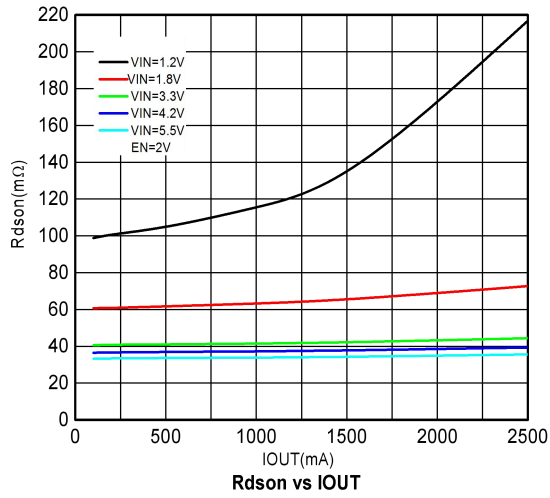
Electronics Characteristics

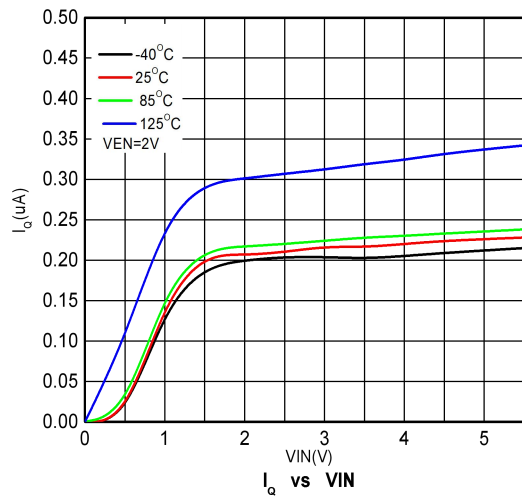
(Ta=25°C, VIN=5V, CIN=COUT=1 μ F, unless otherwise noted)

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

TIMINGS


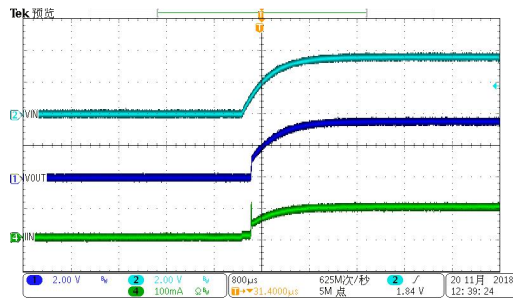
Enable, rise and fall time

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


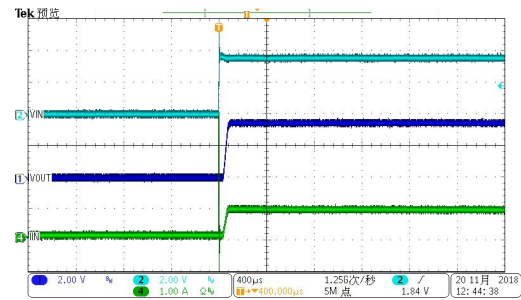


Turn On & Turn Off
(1) Start from VIN.

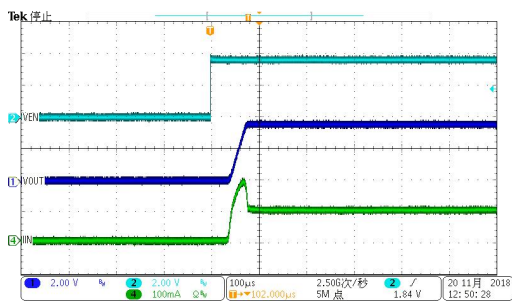
VIN=VEN=3.6V,IOUT=100mA



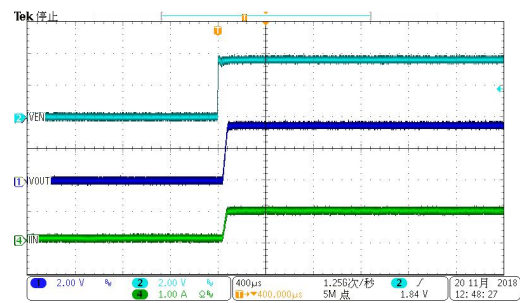
VIN=VEN=3.6V,IOUT=1A


(2) Start from EN

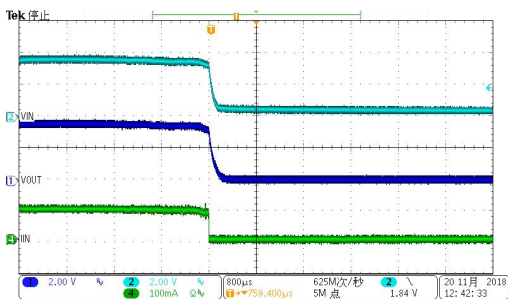
VIN=VEN=3.6V,IOUT=100mA



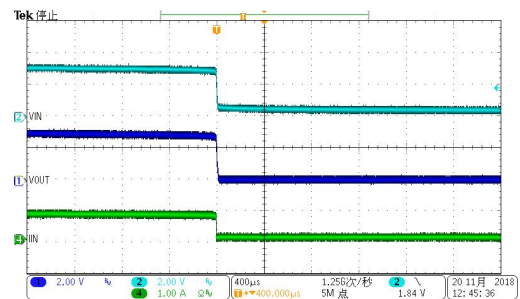
VIN=VEN=3.6V,IOUT=1A


(3) Shutdown from VIN

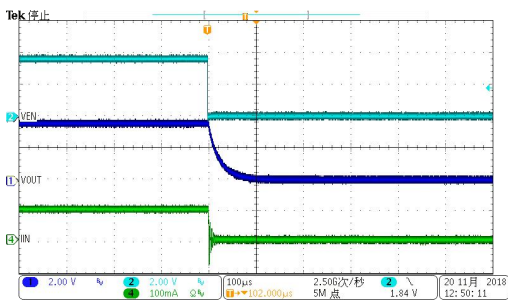
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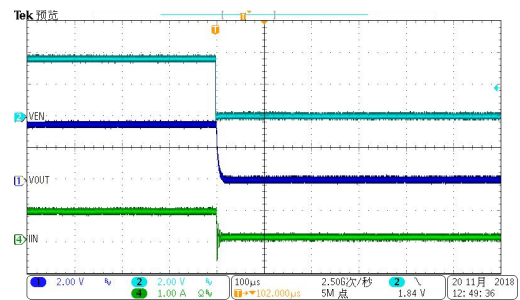
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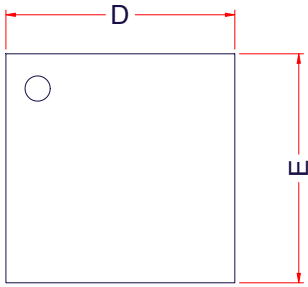
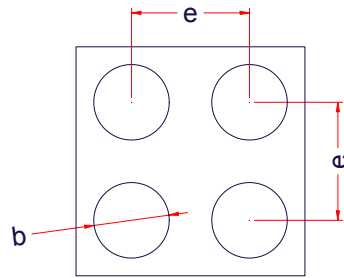
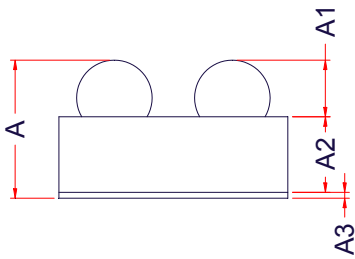
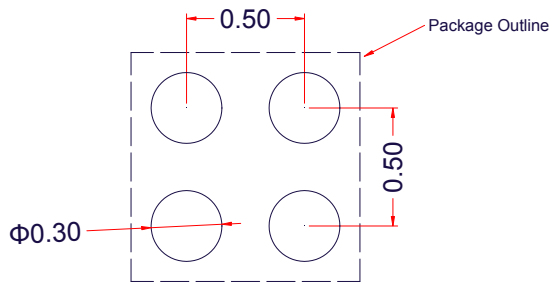

(4) Shutdown from EN

VIN=VEN=3.6V,IOUT=100mA

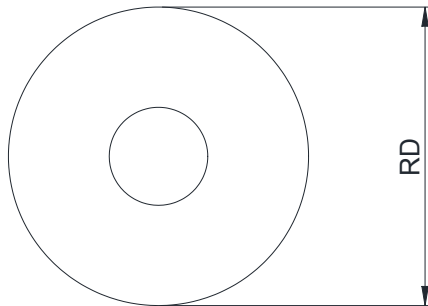
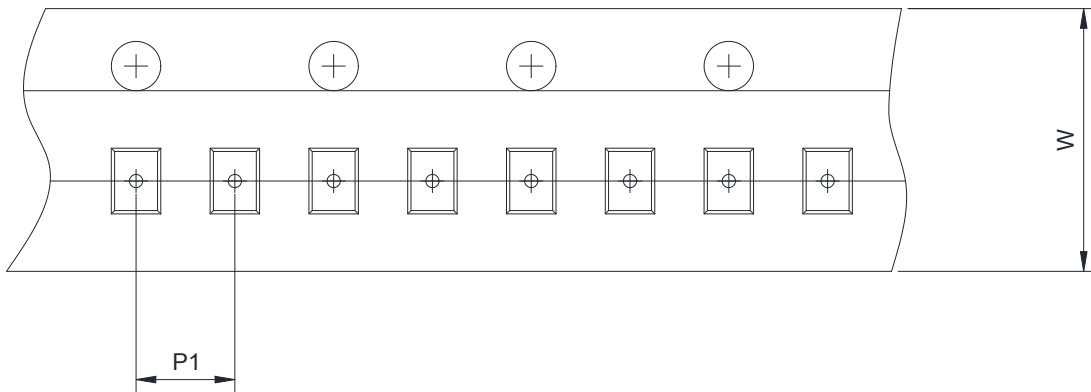
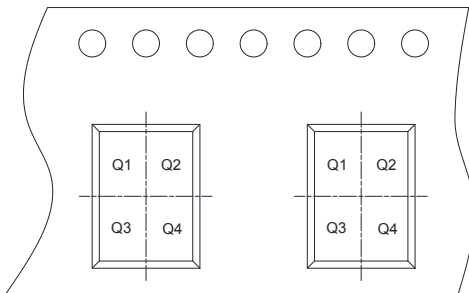


VIN=VEN=3.6V,IOUT=1A



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



 User Direction of Feed

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

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