WS4623C

3A, 19 mΩ, 300nA Quiescent current and 100nA Standby current Load Switch

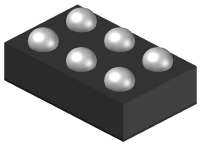
https://omnivision-group.com

Descriptions

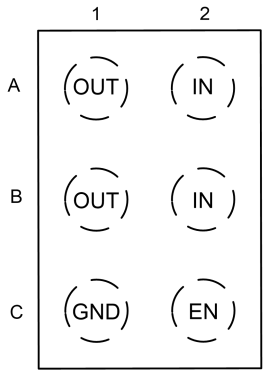
The WS4623C is a single channel load switch with ultra-low on resistance MOSFET. It is designed for load switching applications with ultra-low quiescent current (300nA) and ultra-low standby current (100nA).The device is controlled by external logic pin, allowing optimization of battery life, and portable device autonomy.

The WS4623C 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 3A.

The WS4623C are available in a small 1 x 1.5mm CSP-6L Package. Standard products are Pb-free and Halogen-free.



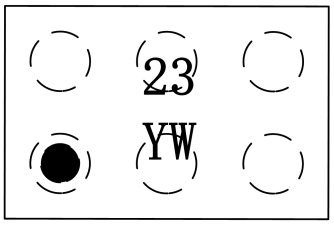
CSP-6L



Pin Configuration (Top View)

Features

- Input Voltage Range :1.2V~5.5V
- Main switch Ron : 19mΩ @ 4.5V
- Maximum Output current : 3A.
- Quiescent current : 300nA @ Typ
- Standby current : 100nA @ Typ
- Recommend capacitor : 1μF
- Active High EN Pin
- CSP-6L 1 x 1.5 mm



CSP-6L
23 : Device Code
Y : Year code
W : Week code

Marking

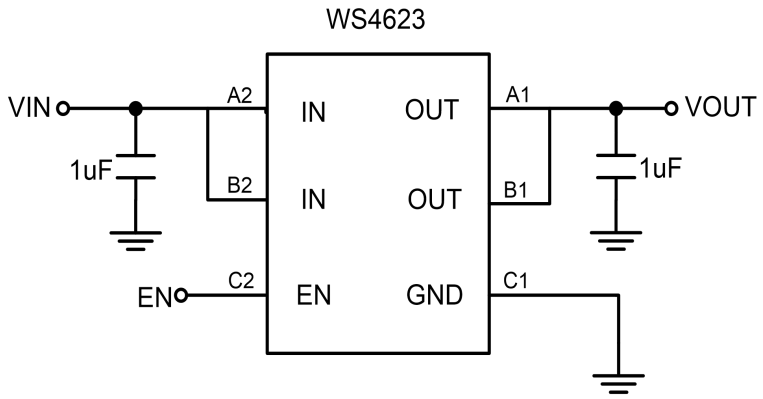
Applications

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

Order information

Device	Marking	Package	Shipping
WS4623C-6/TR	23YW	CSP-6L	3000/Reel&Tape

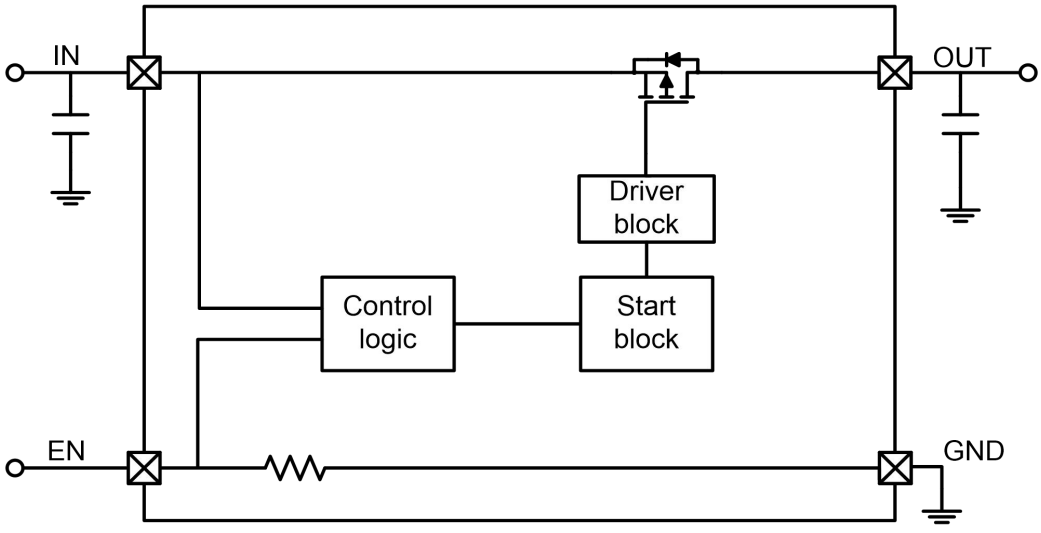
Typical Application



Pin Description

PIN	Symbol	Description
A1, B1	OUT	Output pin
A2, B2	IN	Input pin
C1	GND	Ground
C2	EN	Enable (Active high)

Block Diagram



Absolute Maximum Ratings

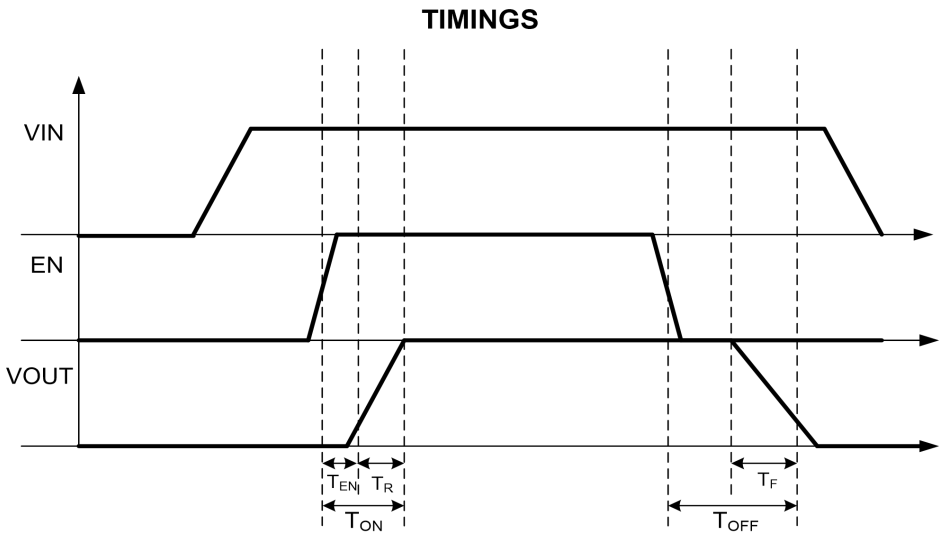
Parameter		Value	Unit
V_{IN} Range		-0.3～6.5	V
V_{EN} Range		-0.3～6.5	V
V_{OUT} Range		-0.3～6.5	V
Storage Temperature Range		-40 ~ 150	°C
Junction Temperature Range		-40 ~ 125	°C
Lead Temperature		260	°C
Moisture Sensitivity		Level-1	
ESD Ratings	HBM	8000	V
	MM	400	V

Recommend Operating Ratings

Parameter	Value	Unit
Operating Power voltage	1.2～5.5	V
Enable Voltage	0~5.5	V
Maximum DC current	3	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)	0.66	W
Power Dissipation Rating(85 °C,WLCSP package)	0.26	W
Thermal Resistance, $R_{\theta JA}$ (CSP-6L)	100	°C/W

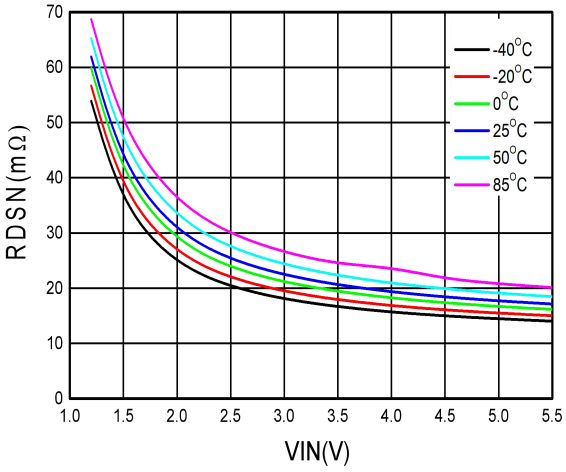
Electronics Characteristics (Ta=25°C, V_{IN}=5V, C_{IN}=C_{OUT}=1μF, unless otherwise noted)

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} =500mA	8	18	23	mΩ
		V_{IN} =4.5,I_{OUT} =500mA	9	19	26	
		V_{IN} =3.3,I_{OUT} =500mA	10	21	28	
		V_{IN} =1.5,I_{OUT} =500mA	12	42	56	
		V_{IN} =1.2,I_{OUT} =500mA	12	62	200	
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}	V_{IN} =4.2,EN=Low, No load		100	200	nA
Quiescent current	I_Q	V_{IN} =4.2,EN=High,No load		300	500	nA
Enable time	T_{EN}	RL=5ohm		210		μs
Output rise time	T_R	RL=5ohm		360		μs
ON time(T_{EN}+T_R)	T_{ON}	RL=5ohm		570		μs
Output fall time	T_F	RL=5ohm		16		μs

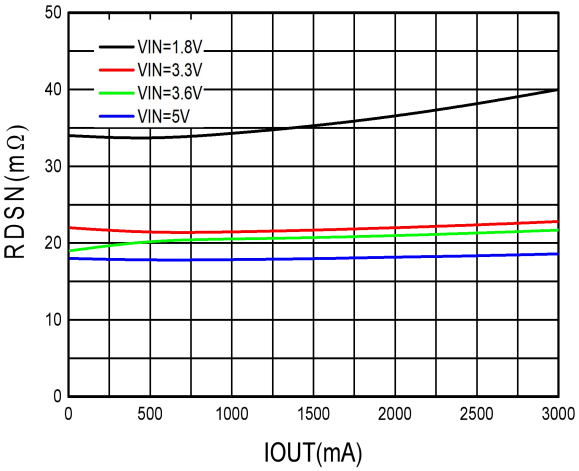


Enable, rise and fall time

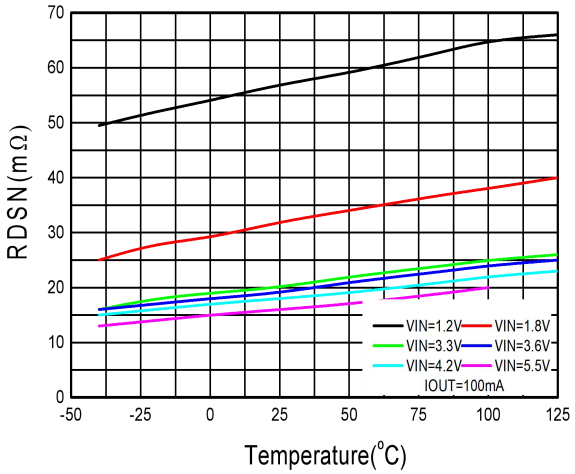
Typical characteristics (Ta=25°C, V_{IN}=5V, I_{OUT}=500mA, C_{IN}=C_{OUT}=1μF, unless otherwise noted)



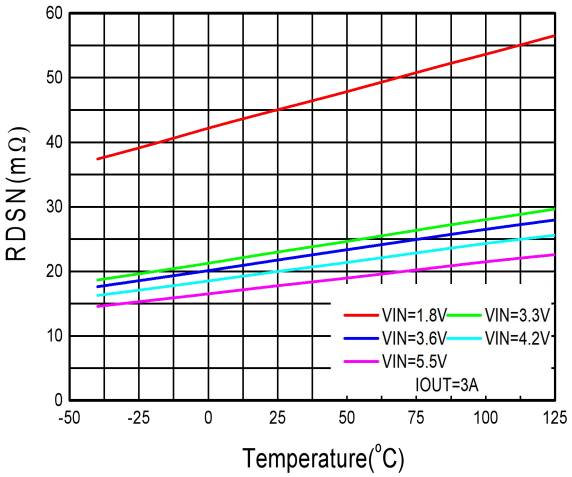
Rdson vs. VIN



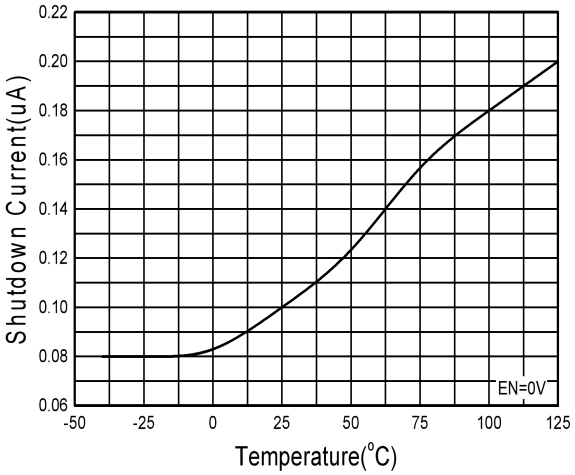
Rdson vs. IOUT



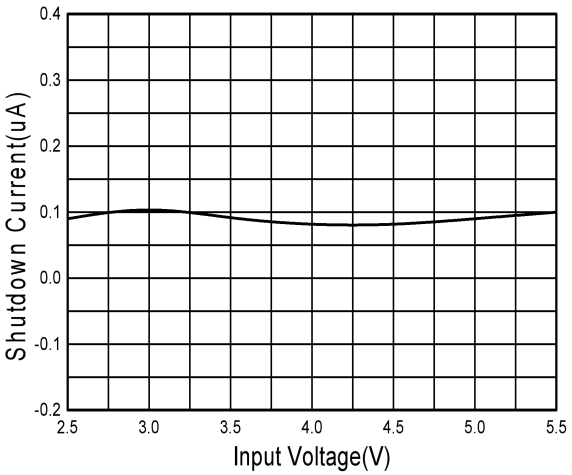
Rdson vs Temperature



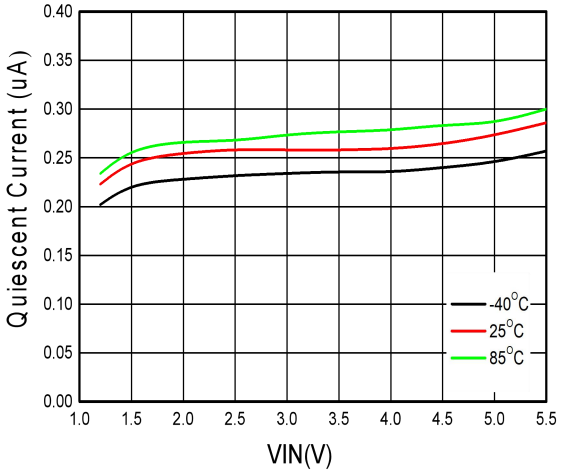
Rdson vs. Temperature



Shutdown Current vs. Temperature



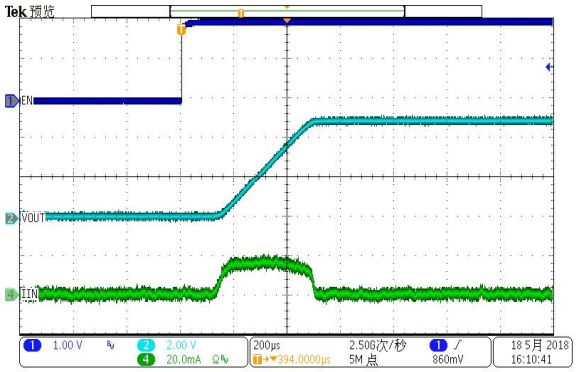
Shutdown Current vs. Input Voltage



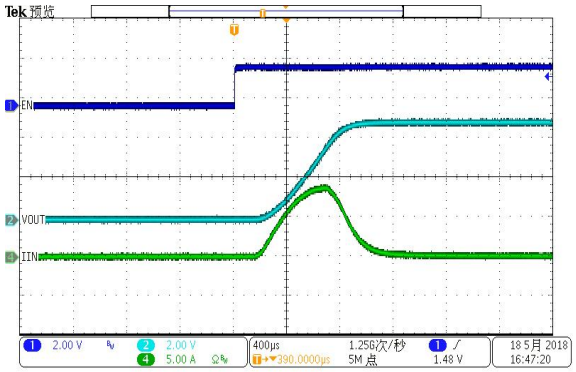
Quiescent Current vs VIN

Turn on transient

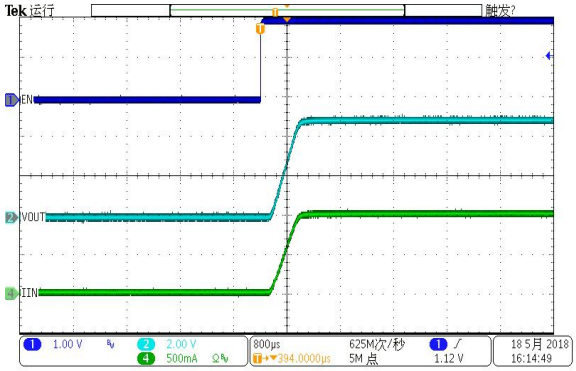
Cin=Cout=1uF, no Load



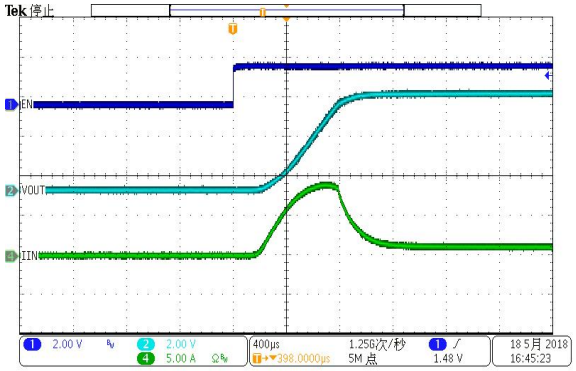
Cin=1uF,,Cout=1000uF, no Load



Cin=Cout=1uF, RL=5ohm

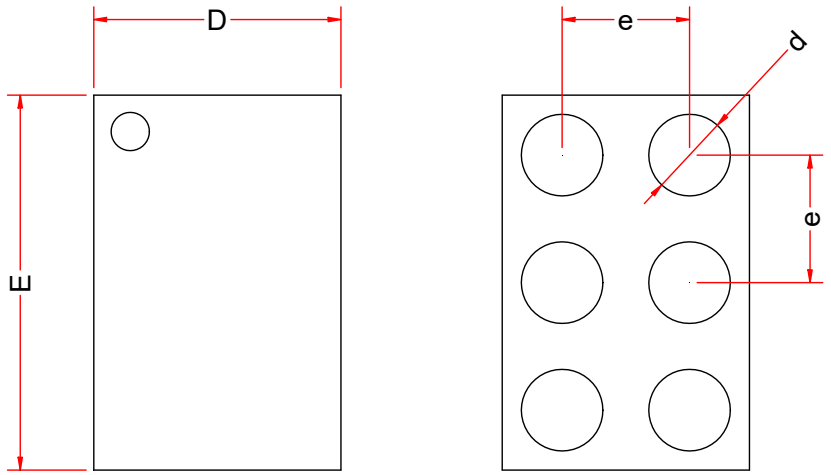


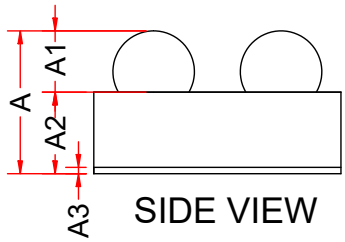
Cin=1uF,,Cout=1000uF, RL=5ohm

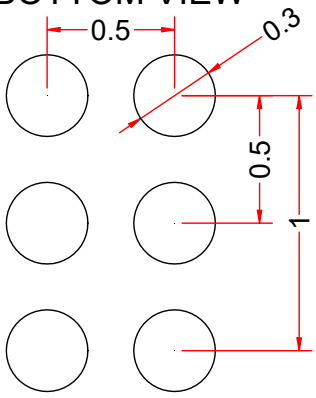


PACKAGE OUTLINE DIMENSIONS

CSP-6L





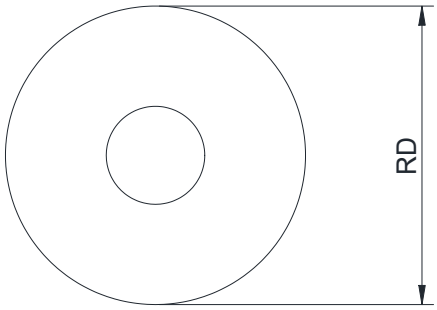


RECOMMENDED LAND PATTERN(Unit:mm)

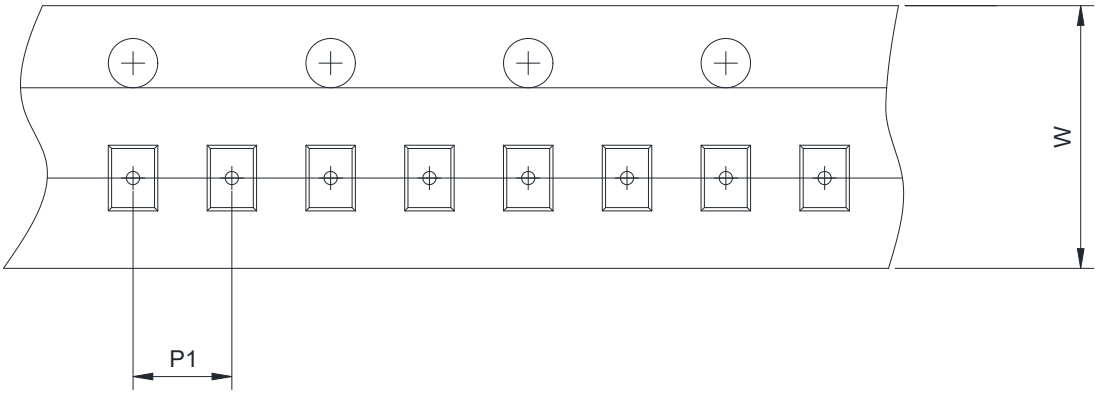
Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.55	0.58	0.62
A1	0.22	0.24	0.26
A2	0.33	0.34	0.36
A3		0.025	
D	0.94	0.97	1.00
E	1.44	1.47	1.50
e		0.50BSC	
d	0.30	0.32	0.34

TAPE AND REEL INFORMATION

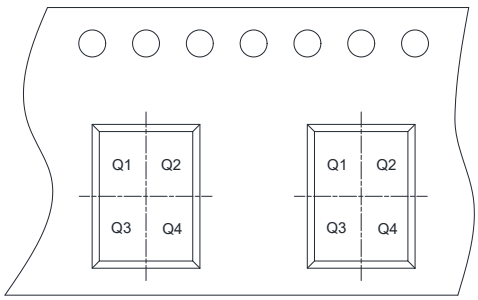
Reel Dimensions



Tape Dimensions



Quadrant Assignments For PIN1 Orientation In Tape



User Direction of Feed

RD	Reel Dimension	☑ 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