WS4632C

28mΩ, 100nA Quiescent current, 100nA standby current, Slew Rate Control Driver and Ultra Small Package Load Switch

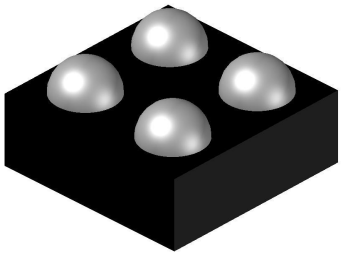
Http://www.ovt.com

Descriptions

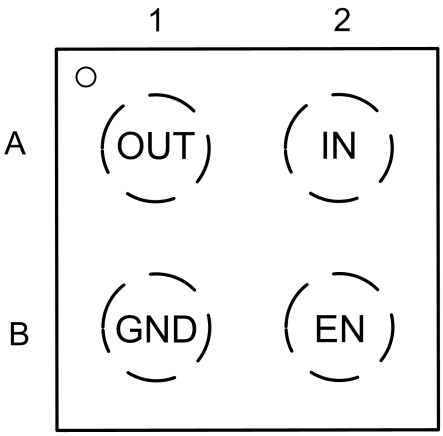
The WS4632C is a single channel load switch with ultra-low on resistance MOSFET. It is designed for load switching applications with ultra-low quiescent current (100nA) and ultra-low standby current (100nA).The device is controlled by external logic pin, allowing optimization of battery life, and portable device autonomy.

The WS4632C contains a P-channel MOSFET that can operate over an input voltage range of 1.1V to 5.5V and can support a maximum continuous current of 2A.

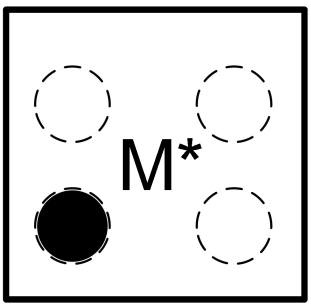
The WS4632C are available in a small 0.79 x 0.79 mm CSP-4L package. Standard products are Pb-free and Halogen-free.



CSP-4L



Pin Configuration (Top View)



Marking (Top View)

M=WS4632C

***:=Month Code**

Features

- Input Voltage Range :1.1V~5.5V
- Main switch Ron : 28mΩ@V_{IN}=5.5V
- Maximum Output current : 2A.
- Quiescent current : 100nA @ Typ
- Standby current : 100nA @ Typ
- Recommend capacitor :C_{IN}=1μF
  :C_{OUT}=0.1μF
- Active High EN Pin
- CSP-4L 0.79 x 0.79 mm

Applications

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

Order information

Device	Marking	Package	Shipping
WS4632C-4/TR	M*	CSP-4L	3000/Reel&Tape

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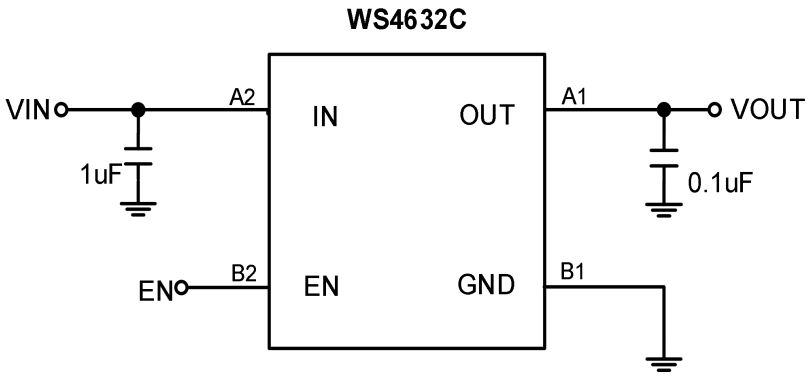
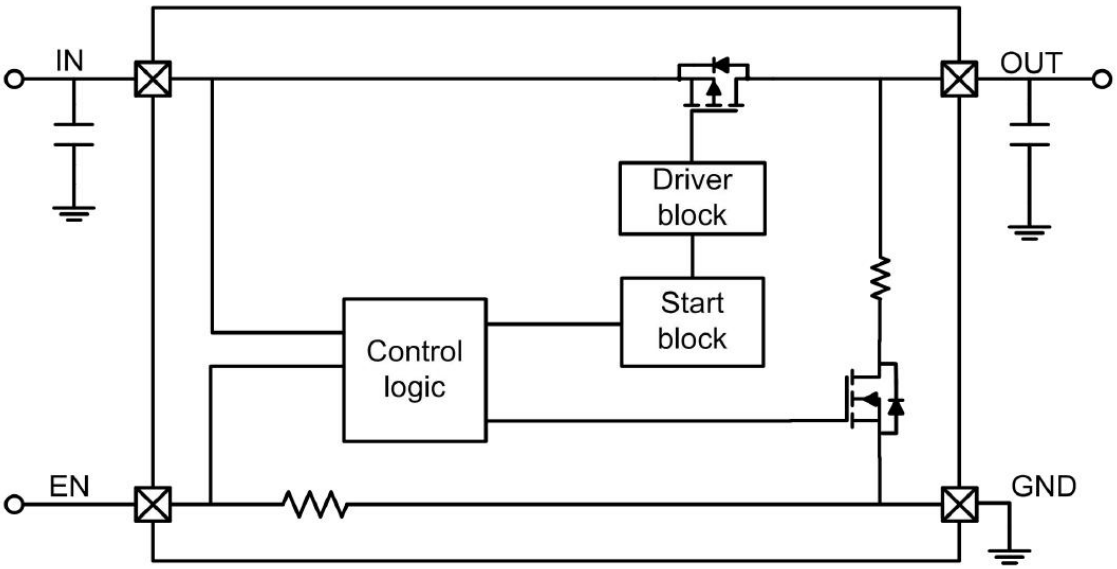
Typical Application



Pin Description

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

Block Diagram



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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～V_{IN}+0.3	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
	CDM	2000	V

Recommend Operating Ratings

Parameter	Value	Unit
Operating Power voltage	1.1～5.5	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	0.1	uF
Power Dissipation Rating(25 °C, CSP-4L)	0.4	W
Power Dissipation Rating(85 °C, CSP-4L)	0.16	W
Thermal Resistance, $R_{\theta JA}$ (CSP-4L)*1	180	°C/W

*1:Surface mounted on FR-4 Board using 2 oz, 1 square inch Cu area, PCB board size 1.5*1.5 square inches.

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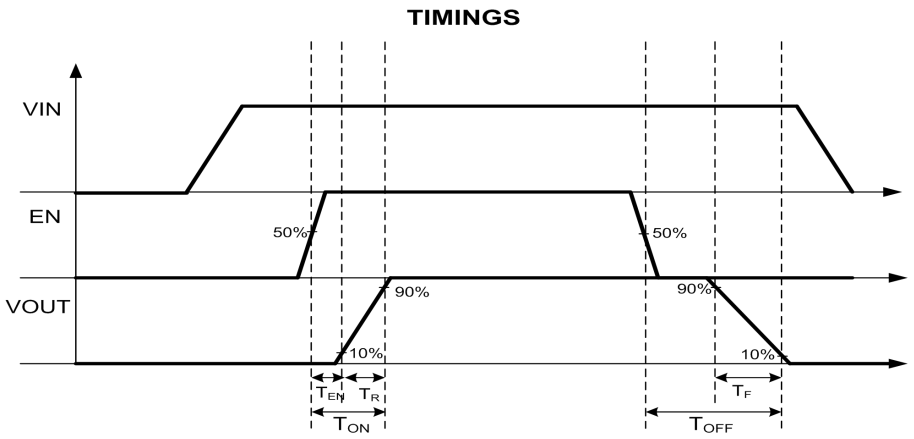
Electronics Characteristics

(Ta=25°C, V_{IN}=5 V, C_{IN} =1μF ,C_{OUT}=0.1μF, unless otherwise noted)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Input Voltage	V_{IN}		1.1		5.5	V
Static drain-source on-state resistance	R_{DSON}	V_{IN} =5.5V,I_{OUT} =500mA		28	42	mΩ
		V_{IN} =5.0V,I_{OUT} =500mA		29	44	
		V_{IN} =4.2V,I_{OUT} =500mA		31	48	
		V_{IN} =3.3V,I_{OUT} =500mA		36	50	
		V_{IN} =1.8V,I_{OUT} =500mA		60	79	
		V_{IN} =1.2V,I_{OUT} =200mA		107	144	
		V_{IN} =1.1V,I_{OUT} =200mA		131	190	
EN logic high voltage	V_{ENH}		0.9			V
EN logic low voltage	V_{ENL}				0.4	
EN pull down resistor	R_{PD}			8.5		MΩ
Discharge on resistance	R_{SD}			100		Ω
Standby current	I_{STD}	V_{IN} =5.5V,EN=Low, No load		100	1000	nA
Quiescent current	I_Q	V_{IN} =5.5V,EN=High, No load		100	200	nA
ON time	T_{ON}	V_{IN} =3.3V,RL=500ohm		230		μs
Output rise time	T_R	V_{IN} =3.3V,RL=500ohm		136		μs
OFF time	T_{OFF}	V_{IN} =3.3V,RL=500ohm		27		μs
Output fall time	T_F	V_{IN} =3.3V,RL=500ohm		25		μs



Enable, rise and fall

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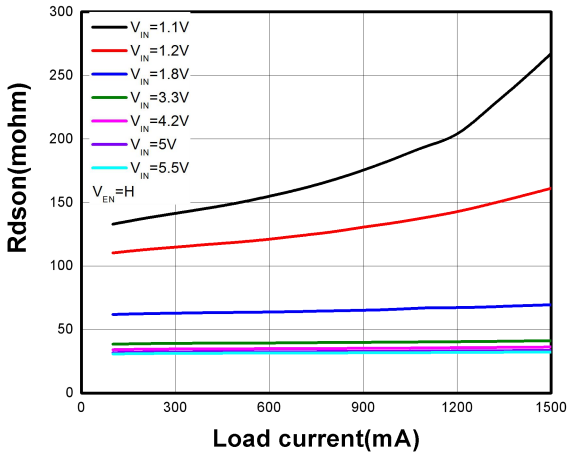
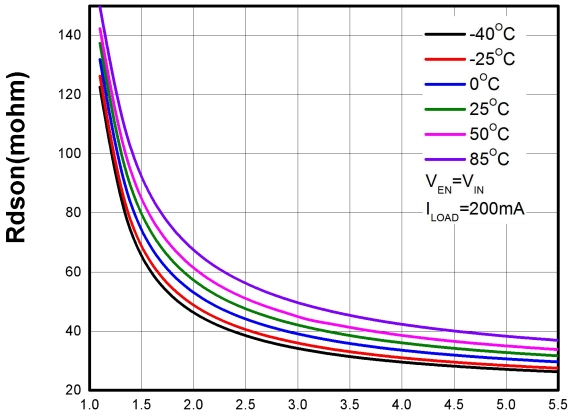
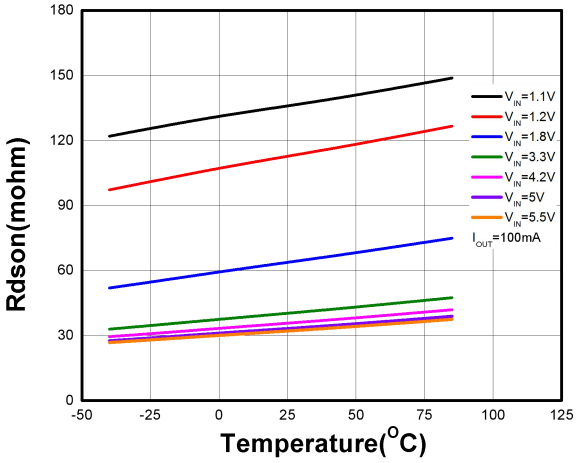
Typical characteristics (Ta=25°C, V_{IN}=5V , I_{OUT}=500mA, C_{IN}=1μF, C_{OUT}=0.1μF, unless otherwise noted)



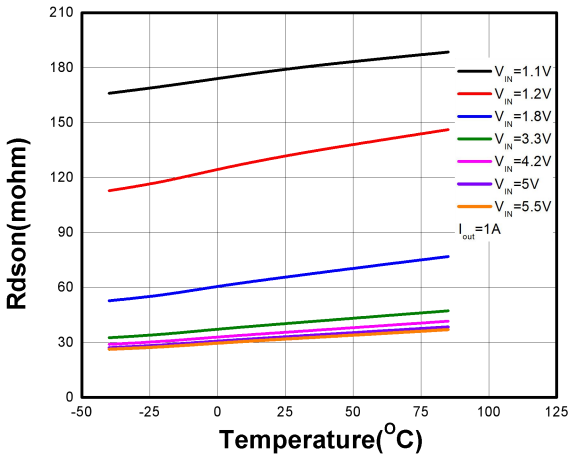
R_{ON} vs. Load current



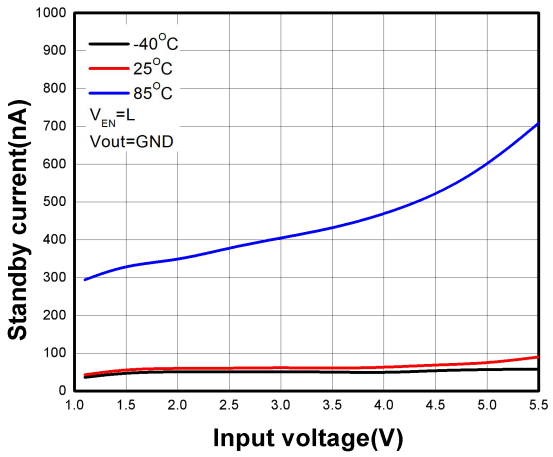
R_{ON} vs. V_{IN}



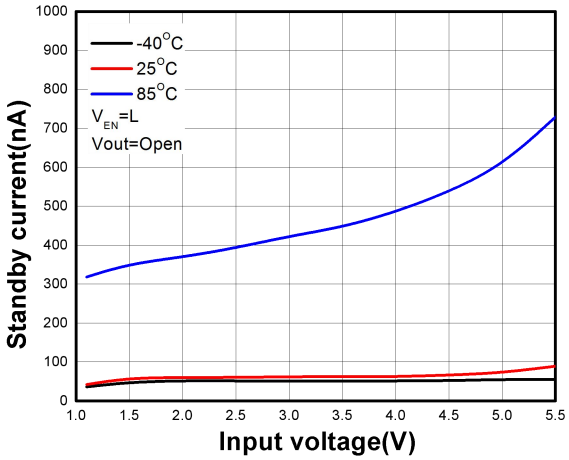
R_{ON} vs. Temperature



R_{ON} vs. Temperature



Standby current vs. V_{IN}



Standby current vs. V_{IN}

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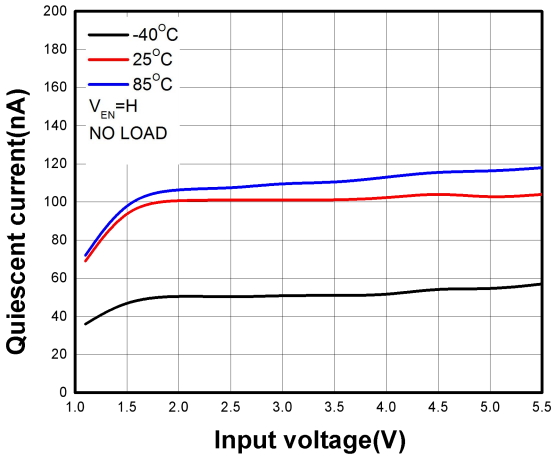

Quiescent current vs. V_{IN}

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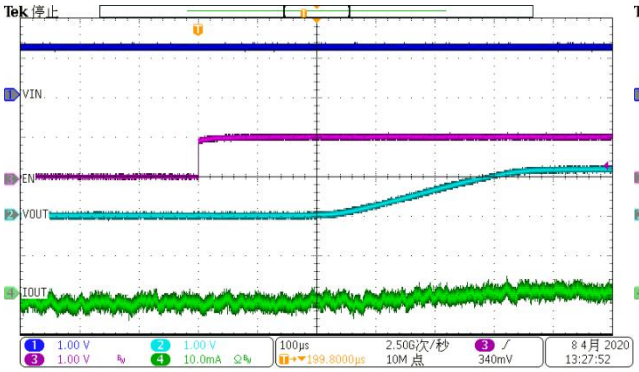
Turn on transient

Cin=1uF,Cout=0.1uF, R_{LOAD}=500Ω,VIN=1.2V



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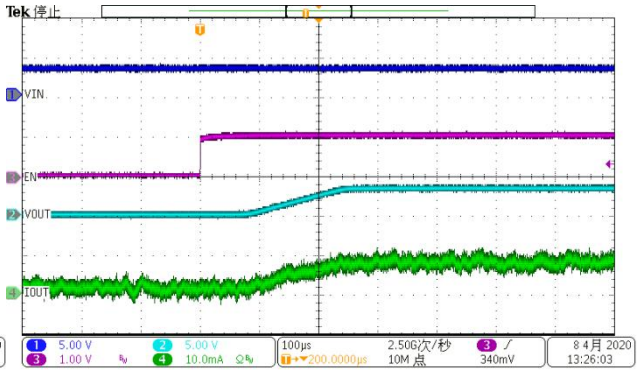

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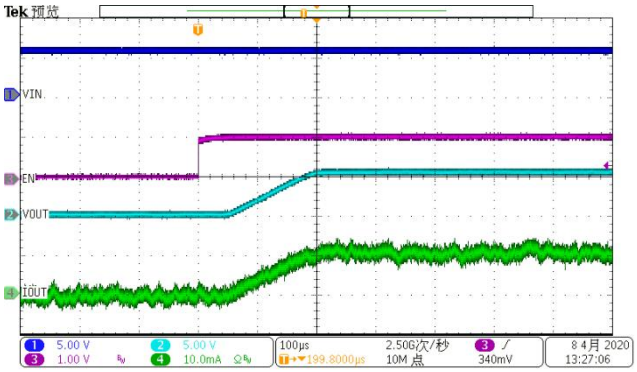

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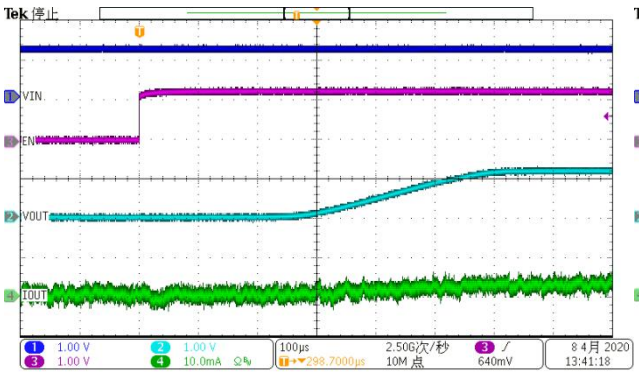

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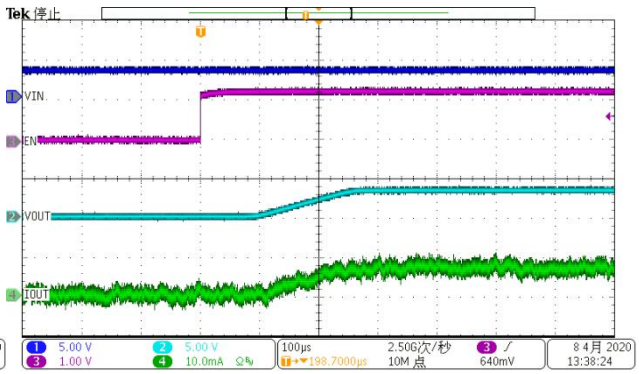

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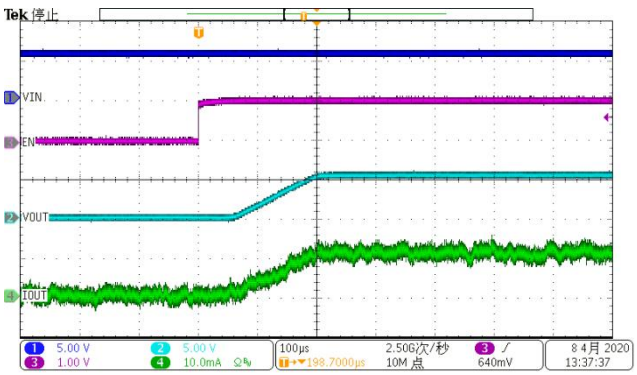

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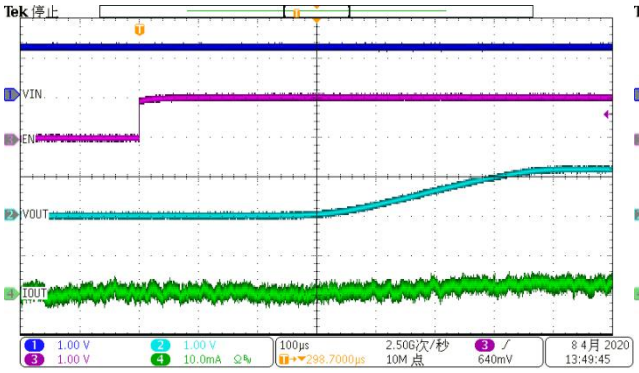

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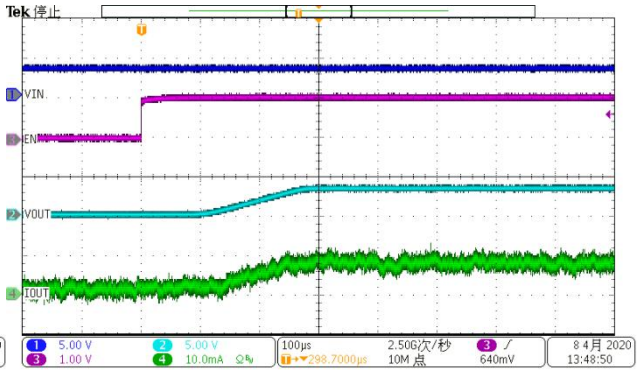

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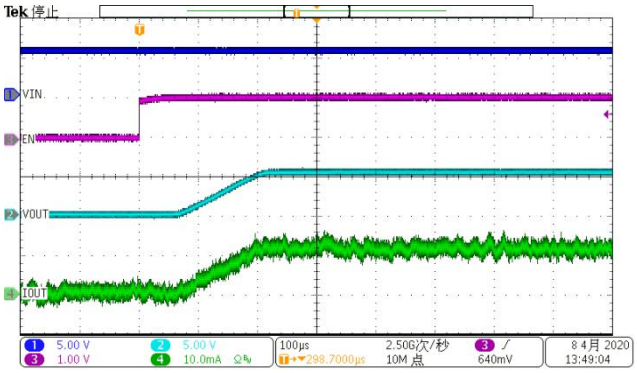

Turn off transient

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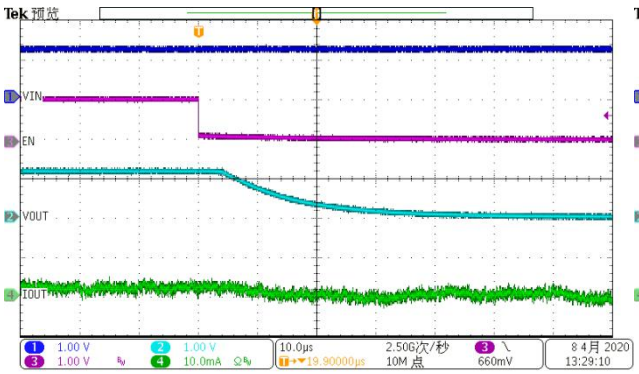

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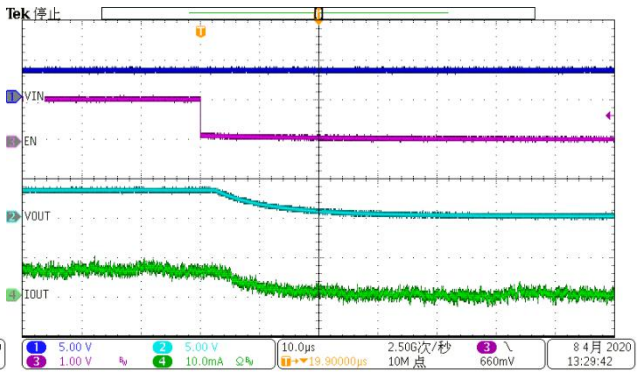

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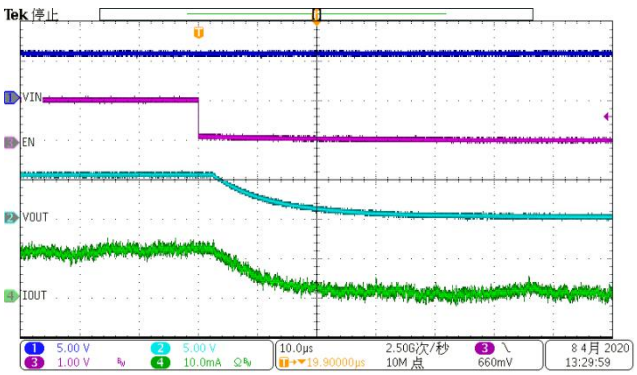

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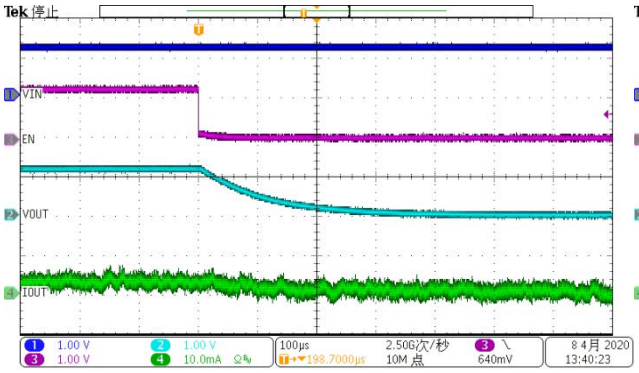
Cin=1uF,Cout=1uF, R_{LOAD}=500Ω,VIN=1.2V



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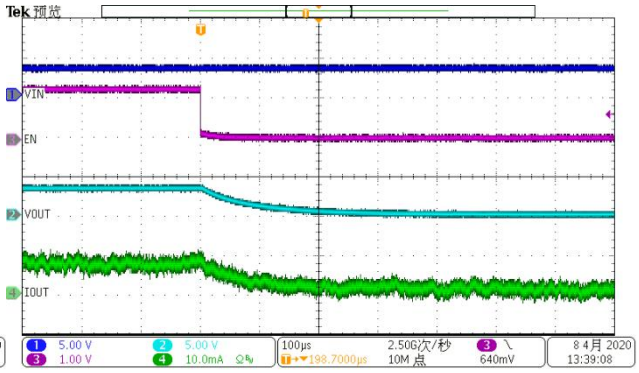

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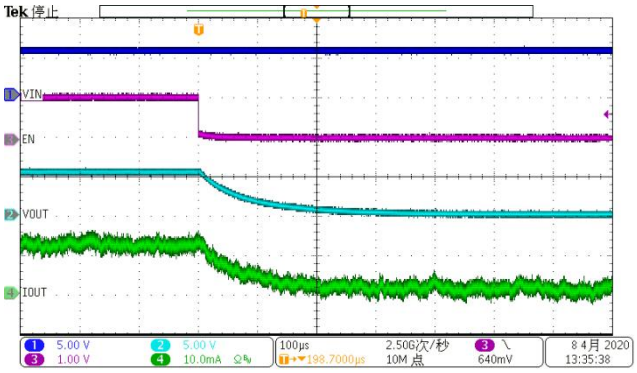

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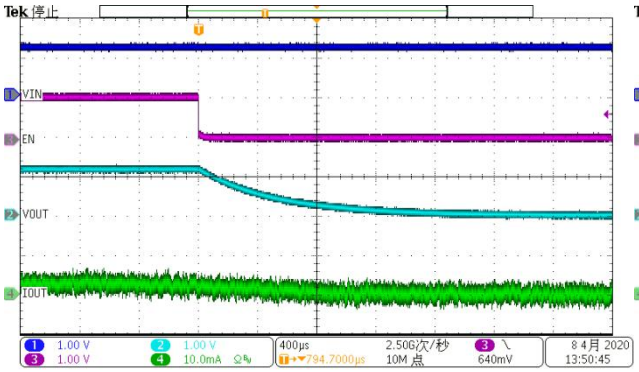

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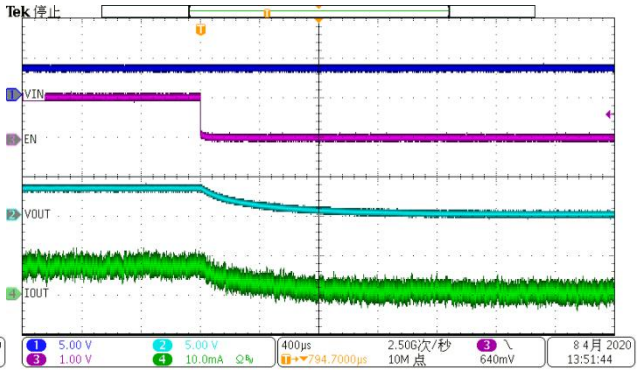

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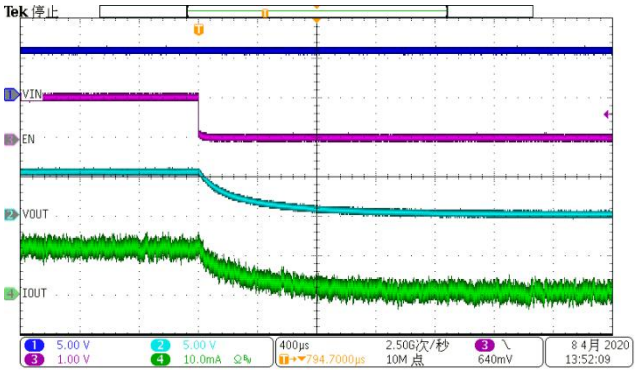

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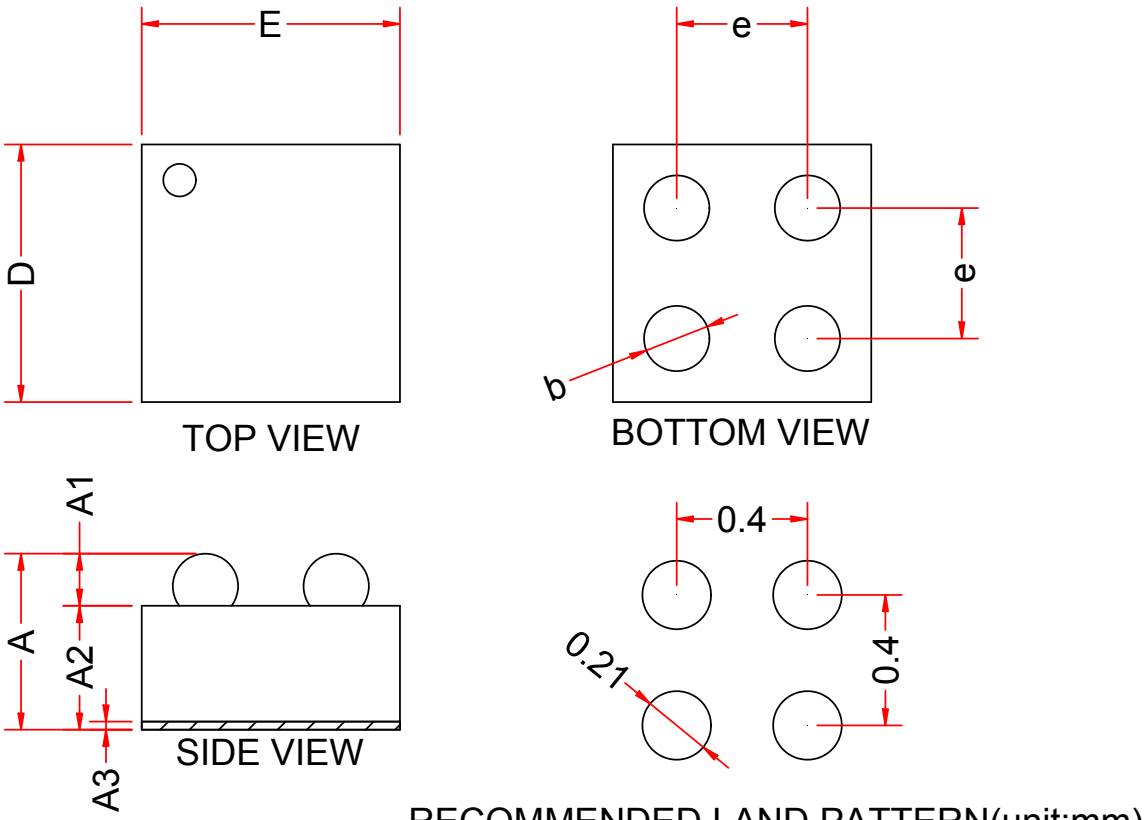
PACKAGE OUTLINE DIMENSIONS

CSP-4L



Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.50	0.55	0.60
A1	0.14	0.17	0.19
A2	0.36	0.38	0.41
A3	0.025REF		
D	0.76	0.79	0.82
E	0.76	0.79	0.82
e	0.40 BSC		
b	0.18	0.20	0.23

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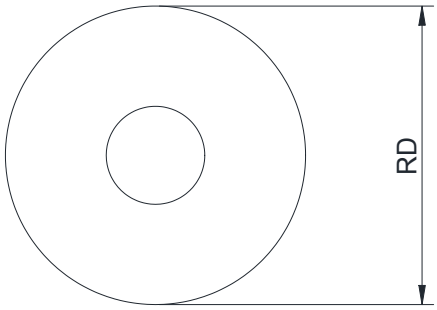
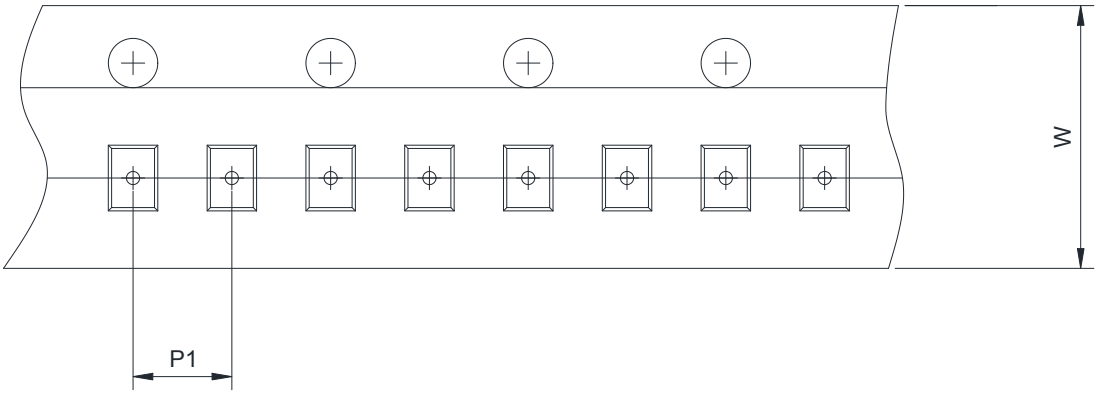
TAPE AND REEL INFORMATION

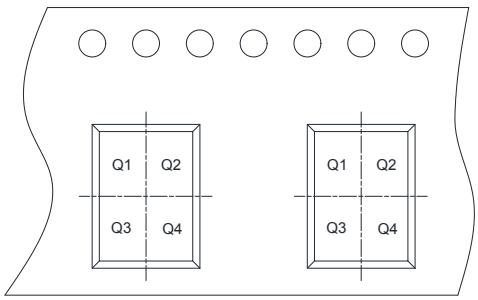
Reel Dimensions



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

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