WS3208D

Over Voltage and Over Current Protection IC

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Descriptions

The WS3208D is an Over-Voltage-Protection (OVP) and Over-Current-Protection (OCP) device. The device will switch off internal MOSFET to disconnect VIN to VOUT to protect load when any of input voltage, input current over the threshold. The over temperature protection (OTP) function monitors chip temperature to protect the device.

The WS3208D is available in DFN2x2-6L package. Standard products are Pb-free and Halogen-free.

DFN2x2-6L

VIN	1		6	VOUT
VIN	2		5	VOUT
GND	3	GND	4	NC

Pin configuration (Top view)
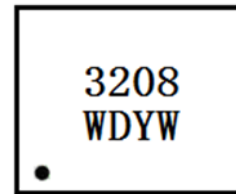
3208
WDYW

3208	**= Device code**
WD	**= Company code**
YW	**= Year Week**
	Marking

Features

- High voltage technology
- Maximum input voltage : 28V
- Output power ON time : 1.5ms (Typ.)
- OVP threshold : 5.7V (Typ.)
- OVP response time : 1us (Typ.)
- OCP threshold : 2A (Min.)
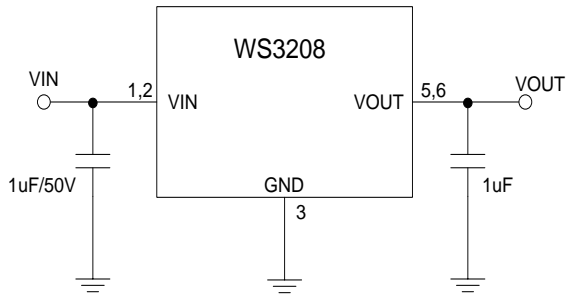- Output discharge
- Package :DFN2x2-6L

Applications

- GPS
- PMP
- MID
- PAD
- Digital cameras
- Digital Videos

Order information

Device	Package	Shipping
WS3208D56-8/TR	DFN2x2-6L	3000/Reel&Tape

Typical applications

Pin descriptions

Pin No.	Symbol	Descriptions
3	GND	Power ground
1,2	VIN	Input pin, connect to AC adaptor or VBUS. A 1uF low ESR ceramic capacitor or larger must be connected as close as to this pin. It is recommended to use 50V capacitor or according to application.
5,6	VOUT	Output pin, Connect to load.

## Block diagram

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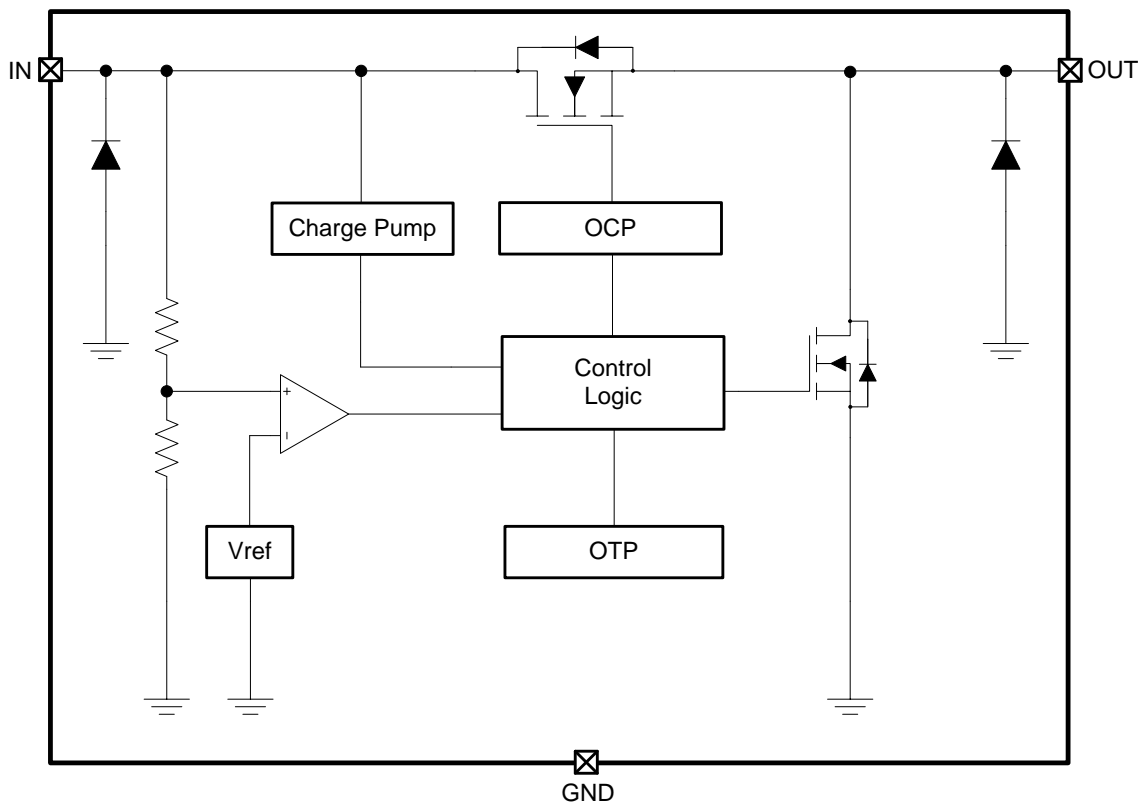
Absolute maximum ratings

| Parameter	Symbol	Value	Unit
Input voltage (IN pin)	V_{IN}	-0.3 ~ 28	V
Output voltage (OUT pin)	V_{OUT}	-0.3 ~ 6.5	V
Junction temperature	T_J	150	^{o}C
Lead temperature(10s)	T_L	260	^{o}C
Storage temperature	Tstg	-55 ~ 150	^{o}C
ESD Ratings	HBM	±4000	V
	MM	±400	V

## Recommend operating conditions (Ta=25°C, unless otherwise noted)

Parameter	Symbol	Value	Unit
Input voltage	V_{IN}	3 ~ 28	V
Output current	I_{OUT}	≤1.5	A
Ambient operating temperature	Topr	-40 ~ 85	^{o}C

## Electronics Characteristics (Ta=25°C, Vin=5V, Cin=Cout=1uF, unless otherwise noted)

| Parameter	Symbol	Test conditions	Min.	Typ.	Max.	Unit
DC characteristics and Power-ON-Reset						
Input quiescent current	I_Q	I_{OUT} =0A		280	380	uA
IN-to-OUT ON resistance	R_{ON}	I_{OUT} =0.7A		190	250	mΩ
Output discharge resistance	$R_{DISCHARGE}$			500		Ω
Under voltage lock out threshold	UVLO	V_{IN} increasing from 0~3V	2.3		2.9	V
Under voltage lock out hysteresis	$V_{HYS-UVLO}$	V_{IN} decreasing from 3~0V	200	250	300	mV
Output power-on time	T_{ON}	From Vin > UVLO to Vout = 90%×Voutset	0.9	1.5	2.5	ms
Output power-on delay time	T1	From Vin > UVLO to Vout = 10%×Voutset		1.3		ms
Output rise time	Tr	From Vout = 10%×Voutset to Vout = 90%×Voutset		0.2		ms
Input Over-Voltage-Protection (OVP)						
OVP threshold	V_{OVP}	V_{IN} increasing from 5~7V	5.5	5.7	5.9	V
OVP hysteresis	$V_{HYS-OVP}$	V_{IN} decreasing from 7~5V	200	300	400	mV
OVP active time	T_{OVP}	From Vin > V_{OVP} to Vout began to decline		1		us
OVP recovery time	$T_{ON(OVP)}$	From Vin < V_{OVP}-$V_{HYS-OVP}$ to Vout = 90%×Voutset	0.9	1.5	2.5	ms
Input Over-Current-Protection (OCP)						
OCP threshold	I_{OCP}		2.0			A
Over-Temperature-Protection (OTP)						
OTP threshold				165		°C
OTP hysteresis				40		°C

TIMING DIAGRAMS
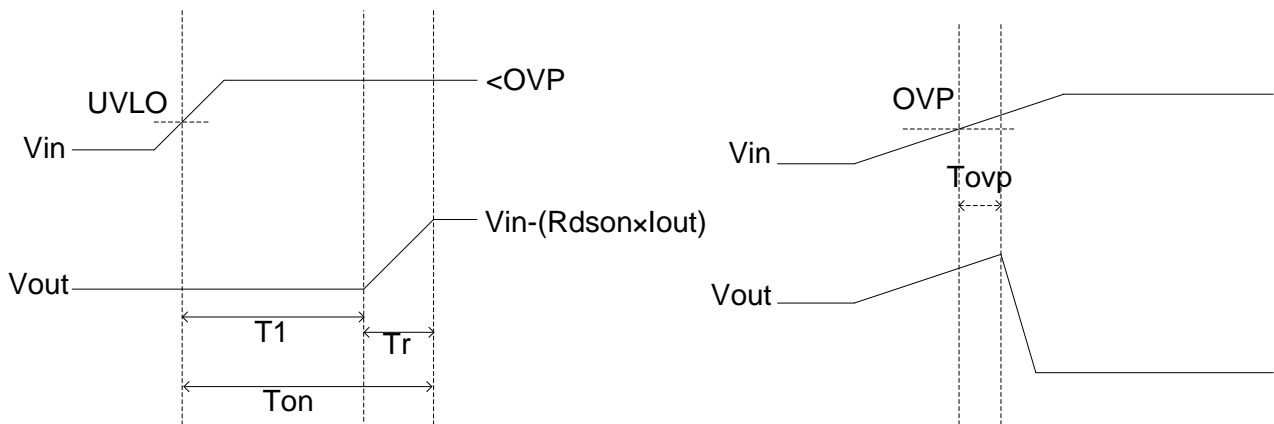
Typical Characteristics (Ta=25°C, Vin=5V, Cin=Cout=1uF, unless otherwise noted)
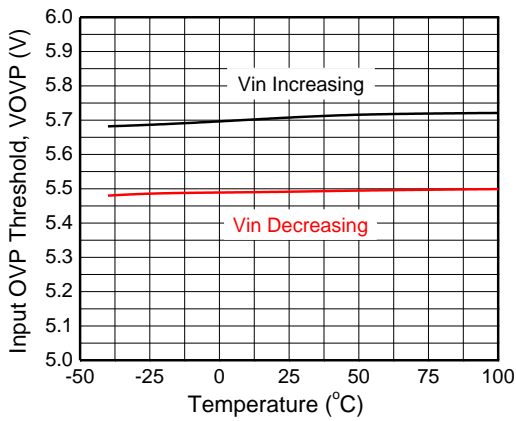
OVP threshold vs. Temperature
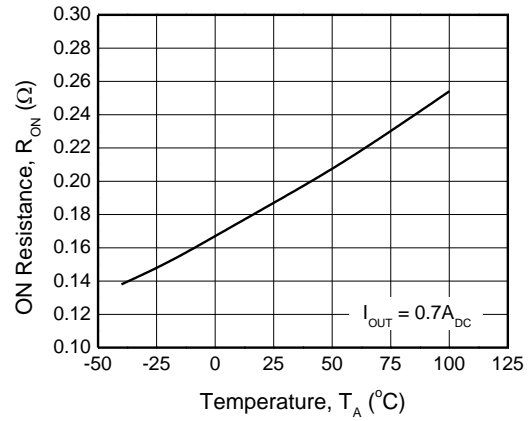
IN-to-OUT ON resistance vs. Temperature
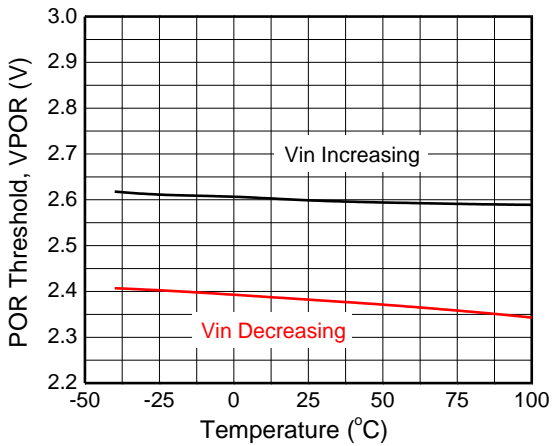
UVLO threshold vs. Temperature
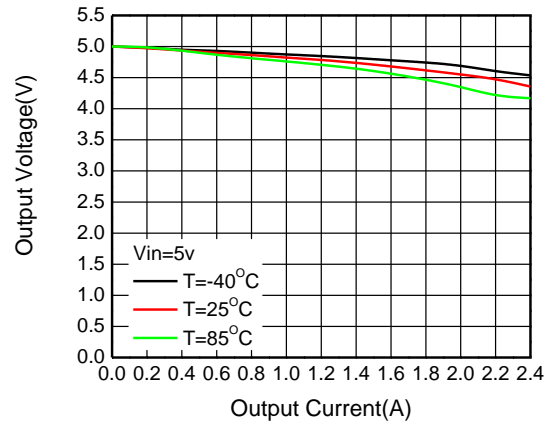
Output voltage vs. Output current
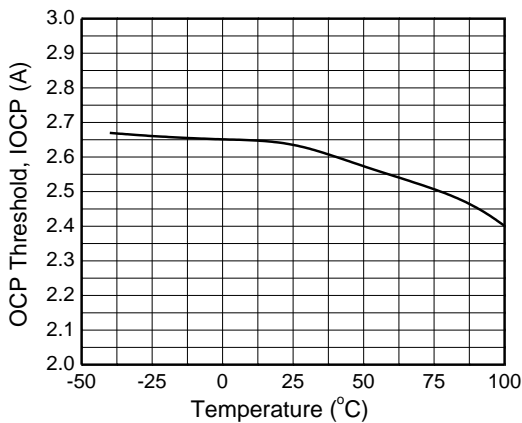
OCP threshold vs. Temperature
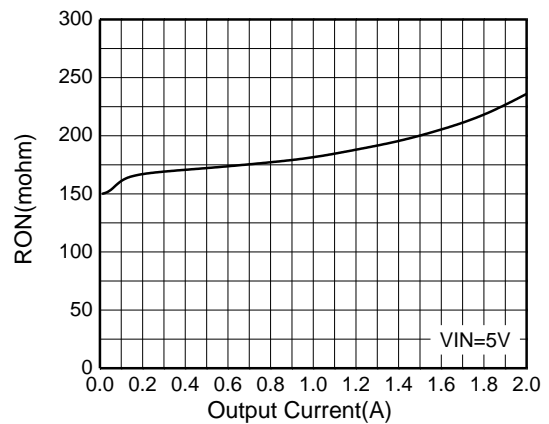
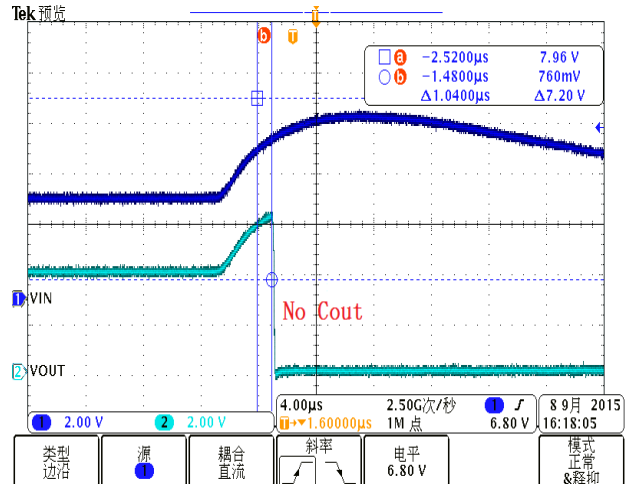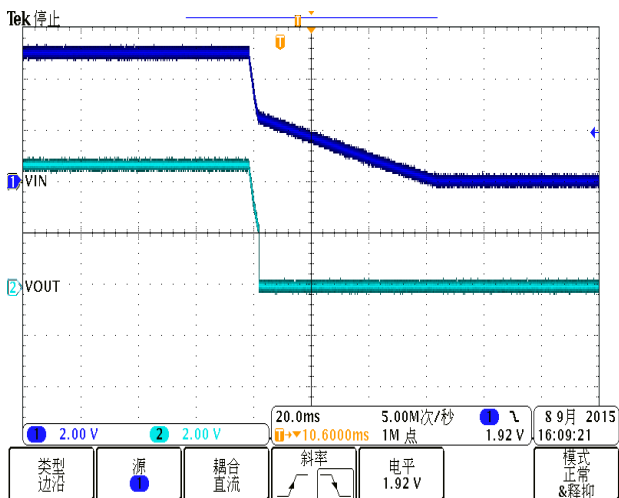**ON resistance vs. Output current**
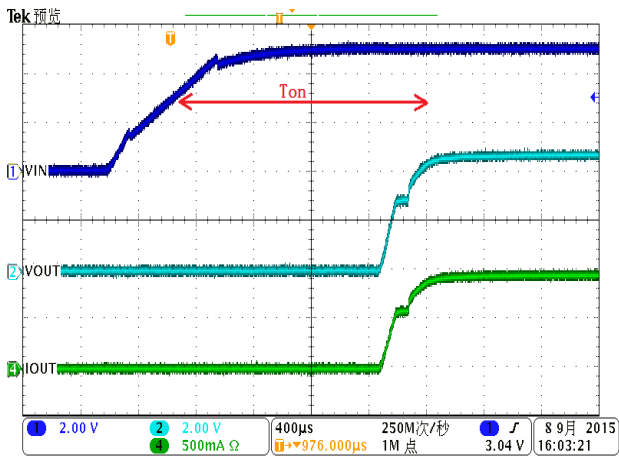
Normally Power ON
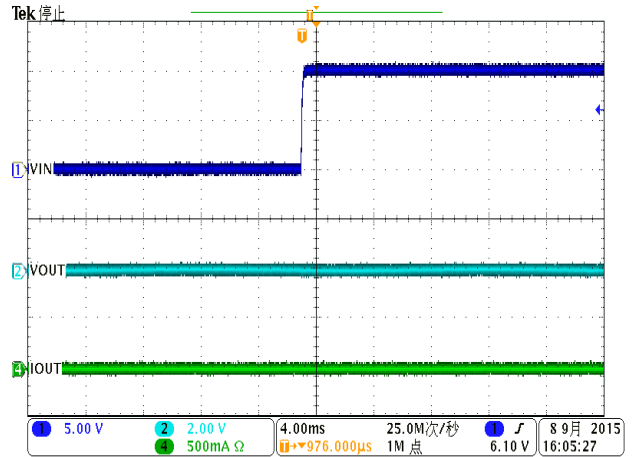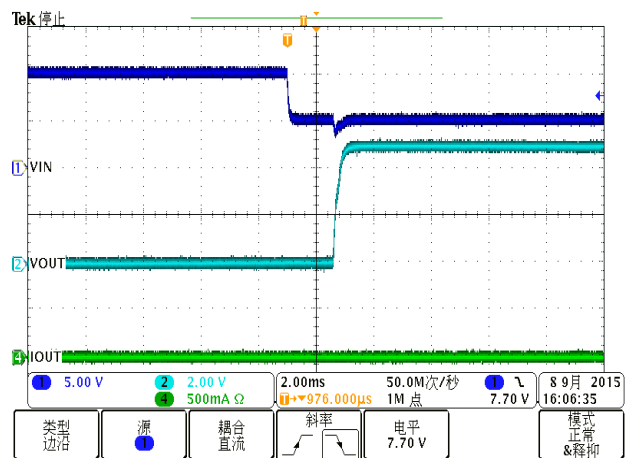

Power ON with Input Overvoltage
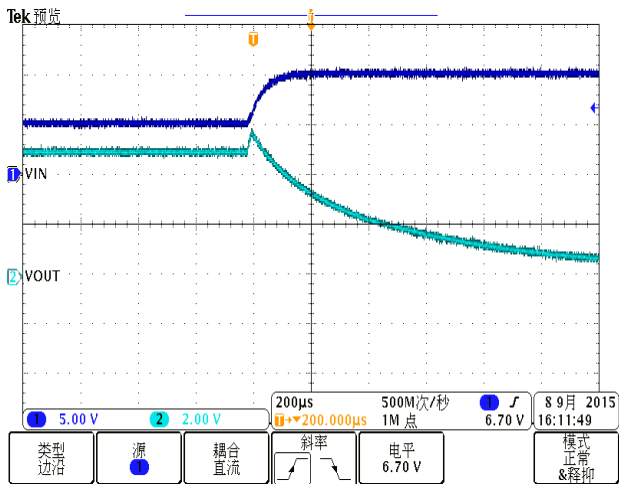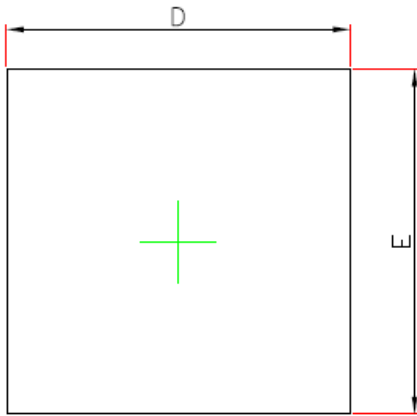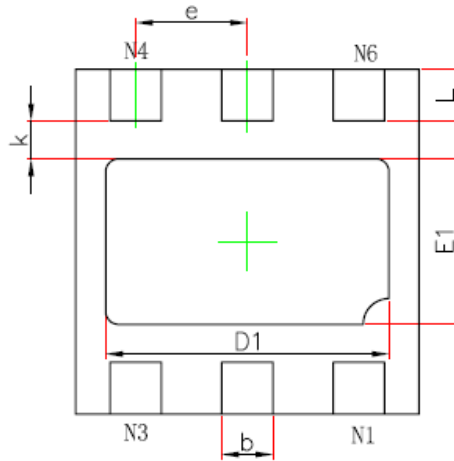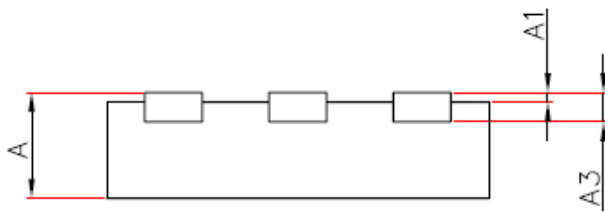

OVP Active Time

OVP Active Time

Normally Power OFF

OVP Recovery Time

Package outline dimensions

TOP VIEW

BOTTOM VIEW

SIDE VIEW

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.500	0.600	0.020	0.024
A1	0.000	0.050	0.000	0.002
A3	0.700	0.800		
A3	0.152REF.		0.006REF.	
D	1.924	2.076	0.076	0.082
E	1.924	2.076	0.075	0.083
D1	1.550	1.750	0.061	0.069
E1	0.860	1.060	0.034	0.042
k	0.200MIN.		0.008MIN.	
b	0.250	0.350	0.007	0.012
e	0.650TYP.		0.026TYP.	
L	0.224	0.376	0.009	0.015

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