

Features

- Typical Ron: 140mΩ@1.0A
- VIN Operating Range: 2.5 to 36V
- Internal Overvoltage Lockout: 6.1V
- Internal Overcurrent Lockout: 2.5A
- OVP Response time: < 500ns
- Output Discharge
- Startup Debounce Time: 8ms
- Output Power on time: 8ms
- Internal OTSD Protection
- SOT-23 Package

Applications

- GPS
- MID
- SLR Digital Cameras
- Industrial Handheld and Enterprise Equipment

Description

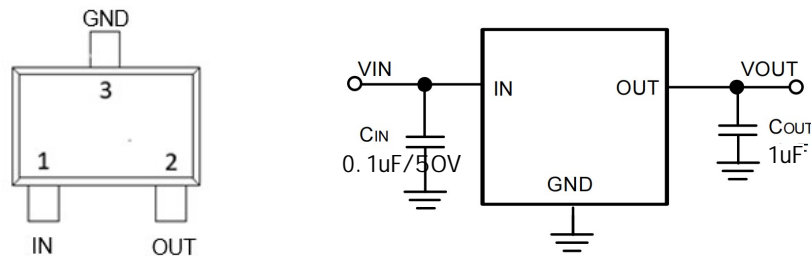
XR1436S can disconnect the systems from its output pin (OUT) in case wrong input operating conditions are detected. The system is positive overvoltage protected up to 36V.

The internal over voltage thresholds (OVLO) is 6.1V and internal over current thresholds (OCP) is 2.5A.

XR1436S also has internal over temperature protect (OTP) function and it can monitor chip temperature to protect the device.

The device is packaged in advanced full-Green Packaging (SOT-23).

Package & Simplified Schematic



Device Information

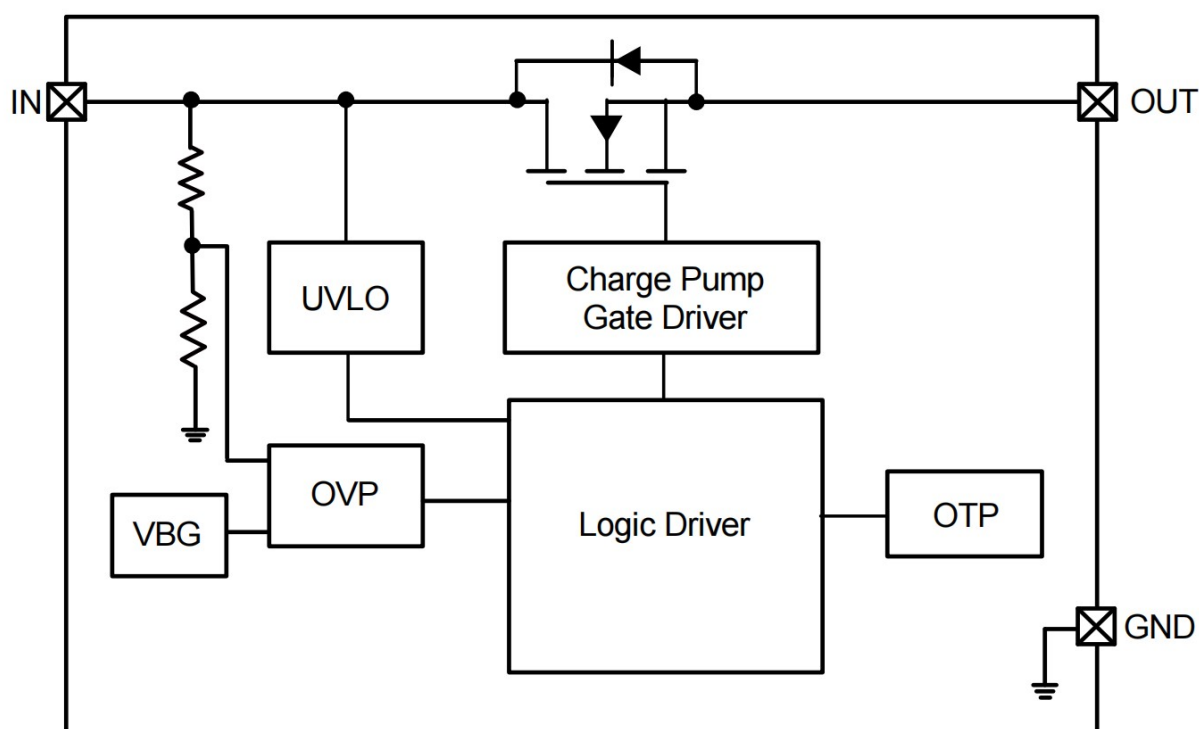
Part No.	Package	Quality	Operation Temp.
XR1436S	SOT-23	3000	-40~85°C

Pin Descriptions

Pin NO.	Symbol	DESCRIPTION
1	Vin	Input pin, connect to AC adaptor or VBUS. 0.1uF low ESR ceramic capacitor must be connected as close as to this pin. It is recommended to use 50V capacitor or according to application.
2	Vout	Output pin, Connect to load.
3	GND	Power ground

(1) Directions: I = input, O = output, OZ = tri-state output, OD = open-drain output, IO = input/output

Function Block Diagram



Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$)

Parameter		Min.	Max.	Unit
Input voltage (IN pin)	V _{IN}	-0.3	36	V
Output voltage (OUT pin)	V _{OUT}	-0.3	7.0	V
Power dissipation	P _D		0.5	W
Thermal resistance	θ_{JA}	260		$^{\circ}\text{C}/\text{W}$
ESD(HBM)		2.0		kV
Operation temp.	T _J	-40	150	$^{\circ}\text{C}$
Storage temp.	T _{stg}	-65	150	$^{\circ}\text{C}$

Recommended operating conditions ($T_A=25^{\circ}\text{C}$)

Parameter		Min.	Max.	Unit
Input voltage (IN pin)	V _{IN}	3.0	28.0	V
Output voltage (OUT pin)	V _{OUT}	0	5.5	V
Output Contiguous Current	I _{OUT}	0	1.5*	A

Notes: * Using 25mm² FR4 Signal layer PCB (1 oz) under VM=5.0V test.

Electrical Characteristics (V_{IN}=5V, T_A=25 °C, R_{LOAD}=20)

over operating free-air temperature range (unless otherwise noted)

Parameter		Test Condition	Min.	Typ.	Max.	Unit
DC characteristics and Power-ON-Reset						
VIN operating voltage	V _{IN}		2.5		36	V
VIN operating supply current	I _{VIN_ON}	V _{IN} =5V		160	250	uA
VIN-to-VOUT ON resistance	R _{ON}	V _{IN} =5V, I _{OUT} =0.1A		130		mΩ
		V _{IN} =5V, I _{OUT} =1.0A		140		mΩ
Output discharge resistance	R _{DIS}			500		Ω
VIN undervoltage lockout	V _{UVLO_R}	VIN rising		2.20		V
	V _{UVLO_F}	VIN falling		1.90		V
Output power on time	T _{ON}	VIN = 0 -> 5V to output ON		8		ms
Input Over-Voltage Protection (OVP)						
VIN OVLO Protection	V _{OVLO_R}		5.8	6.1	6.4	V
Input low level voltage	V _{OVLO_HYS}			150		mV
OVP active time	T _{OVP}	VIN = 5 -> 10V			500	ns
OVP recovery time	T _{ON_OVP}	VIN = 10 -> 5V to output ON		8		ms
Input Over-Current-Protection (OCP)						
OCP threshold	I _{OCP}		2.0			A
Over-Temperature-Protection (OTP)						
OTP threshold	T _{OTP}			165		°C
OTP threshold hysteresis	T _{OTP_HYS}			40		°C

Functional Description

The OVP switch with overvoltage protection feature a low 140m Ω (typical) on-resistance (RON) internal FET and protect low-voltage systems against voltage faults up to 36VDC. If the input voltage (VIN) exceeds 6.1V, or input current exceeds 2.5A, the internal FET is quickly turned off to prevent damage to the protected downstream components.

The internal FET turns off when the junction temperature exceeds +165°C (TYP.). The device exits thermal shutdown after the junction temperature cools by 40°C (TYP.).

Input Capacitor

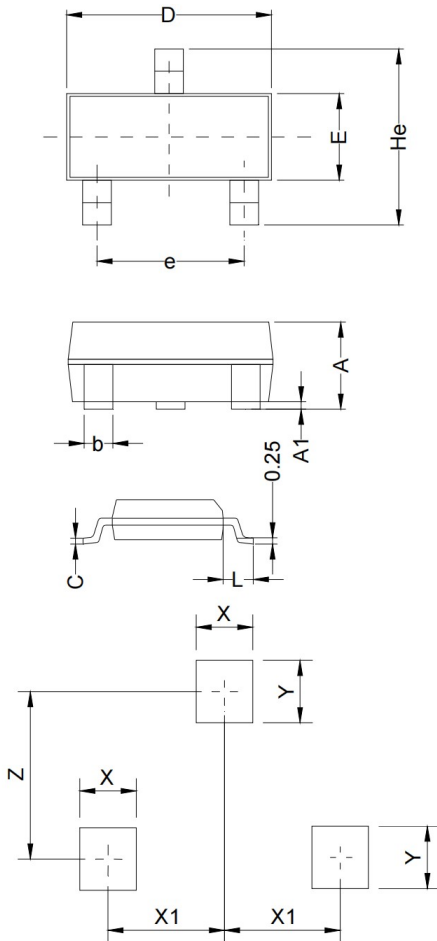
To limit the voltage drop on the input supply caused by transient inrush current when the switch turns on into a discharged load capacitor or short-circuit, a capacitor 0.1 μ F / 50 V must be placed between the VIN and GND pins.

Output Capacitor

1 μ F or larger capacitor should be placed between the OUT and GND pins.

Package

SOT-23



Symbol	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.90	1.063	1.15	0.035	0.042	0.045
A1	0.00	0.075	0.14	0.000	0.003	0.006
b	0.30	0.40	0.50	0.012	0.016	0.020
C	0.07	0.10	0.15	0.003	0.004	0.006
D	2.80	2.90	3.04	0.110	0.114	0.118
e	1.80	1.90	2.00	0.071	0.075	0.079
E	1.20	1.30	1.40	0.047	0.051	0.055
L	0.55REF			0.022REF		
He	2.10	2.40	2.64	0.089	0.094	0.100
X	0.80			0.031		
X1	0.95			0.037		
Y	0.80			0.031		
Z	2.02			0.080		