

● 1. General Description

WP1430 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 overvoltage thresholds (OVLO) is 6.1V and internal overcurrent thresholds (OCP) is 2.5A, WP1430 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 (SOT23-6L).

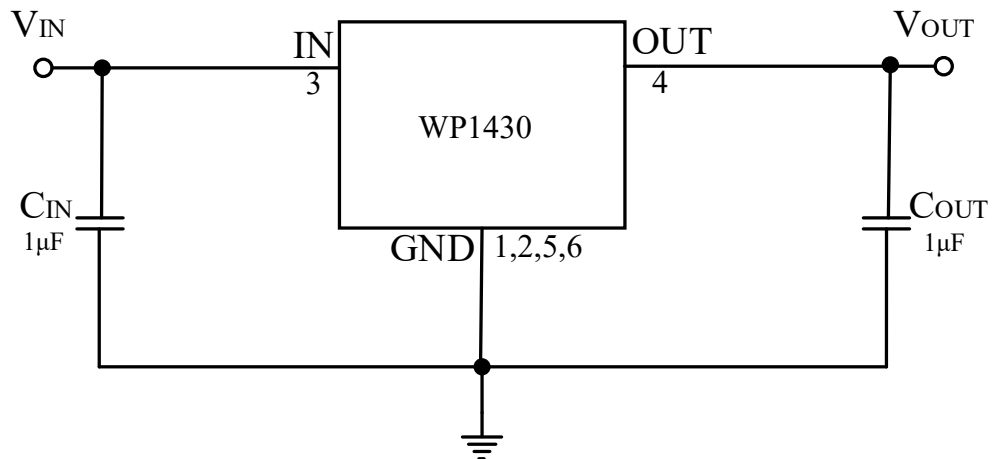
● 2. Features

- Typical $R_{DS(ON)}$: 110m Ω N-Channel MOSFET@5V/1A
- V_{IN} Operating Range: 3V to 36V
- Internal Overvoltage Lockout: 6.1V(Typ.)
- Internal Overcurrent Lockout: 2.5A(MIN)
- Overvoltage-Protection Response Time: <100ns
- Startup Debounce Time: 16ms (Typ.)
- Typical Output Power on Time: 16.3ms (Typ.)
- Internal Thermal-Shutdown Protection
- ESD Protected: Human Body Model: \pm 2KV JESD22-A114 (All Pins)
- SOT23-6L Package

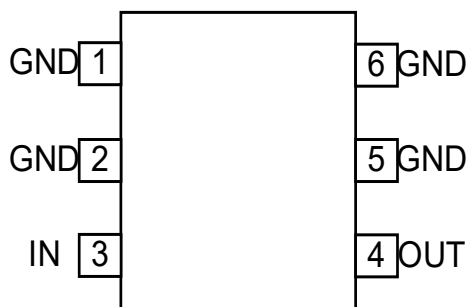
● 3. Applications

- Smartphones, Tablet PC
- HDD, Storage and Solid State Memory Devices
- Portable Media Devices, Laptop & MID
- SLR Digital Cameras
- GPS and Navigation Equipment
- Industrial Handheld and Enterprise Equipment

● 4. Typical Application



● 5. Pin Configuration



SOT23-6L

● 6. Pin Description

PIN NAME	PIN NUMBER	I/O	PIN FUNCTION
GND	1,2,5,6	—	Ground. Connect GND pins together for proper operation.
IN	3	I	Voltage Input.
OUT	4	O	Voltage Output.

● 7. Absolute Maximum Ratings

PARAMETER	RATING	UNIT
IN Voltage	-0.3 to 36	V
OUT Voltage	-0.3 to 28	V
Maximum Continuous Current	2.5(MAX)	A
Maximum Peak Current	4	A
Power Dissipation at TA= +70°C	500	mW
Operating Temperature	-40 to 85	°C
Storage Temperature	-65 to 150	°C
Soldering Temperature (Reflow)	260	°C
Junction Temperature	150	°C

Note: Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. These are stress ratings only, which do not imply functional operation of the device at these or any other conditions beyond those indicated under Recommended Operating Conditions. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

● 8. ESD Ratings — JEDEC Specification

PARAMETER	RATING	UNIT
Electrostatic Discharge	Human-Body Model (HBM), Per JESD22-A114(All pins)	±2000 V

● 9. Electrical Characteristics

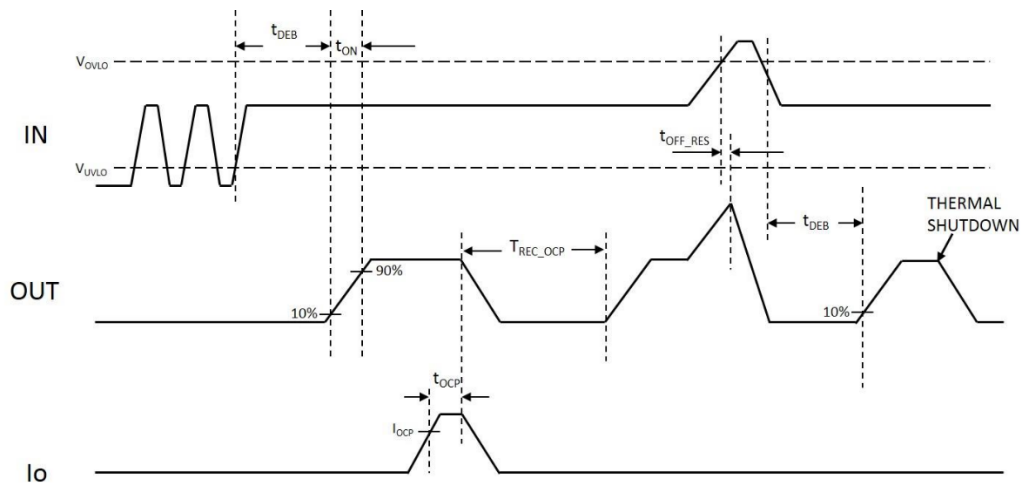
(Over operating free-air temperature range, unless otherwise noted)

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP.	MAX	UNIT
Basic Operation						
V_{IN}	Input Voltage		3		36	V
I_{IN}	V_{IN} Quiescent Current	$V_{IN}=5V$, OUT Floating		110		μA
R_{ON}	On-Resistance of Switch IN-OUT	$V_{IN}=5V$, $I_{OUT}=1A$		110		m Ω
V_{OVLO}	OVP Trip Level	V_{IN} Rising	5.8	6.1	6.4	V
$V_{OVLO-HYS}$	Hysteresis of OVP Trip Level	V_{IN} Falling		0.15		V
V_{UVLO_R}	Under Voltage Lockout Threshold	V_{IN} Rising		2.5		V
Over Temperature Protection (OTP)						
T_{SD}	Thermal Shutdown	$V_{IN}=5V$		155		$^{\circ}C$
ΔT_{SD}	Thermal Shutdown Hysteresis	$V_{IN}=5V$		20		$^{\circ}C$
Dynamic Characteristics						
t_{DEB}	Debounce Time	Time from $2.5V < V_{IN} < V_{OVLO}$ to $V_{OUT} = 10\%$ of V_{IN}		16		ms
t_{ON}	Switch Turn-on Time	$R_L=100\Omega$, $C_L=22\mu F$, V_{OUT} from $10\%V_{IN}$ to $90\%V_{IN}$		0.3		ms
t_{ON_ALL}	Output Power-on Time	Time from $2.5V < V_{IN} < V_{OVLO}$ to $V_{OUT}=90\%$ of V_{IN}		16.3		ms
$t_{OFF_RES}^1$	Switch Turn-off Response Time	$V_{IN} > V_{OVLO}$ to V_{OUT} Stop Rising		50		ns
Over Current Protection (OCP)						
I_{OCP}	Overcurrent protection		2.5	3.1		A
I_{SHORT}				120		mA

SYMBOL	PARAMETER	TEST CONDITIONS	MIN	TYP.	MAX	UNIT
t_{OCP}	OCP debounce time			30		ms
T_{REC_OCP}	OCP recovery time			1		s

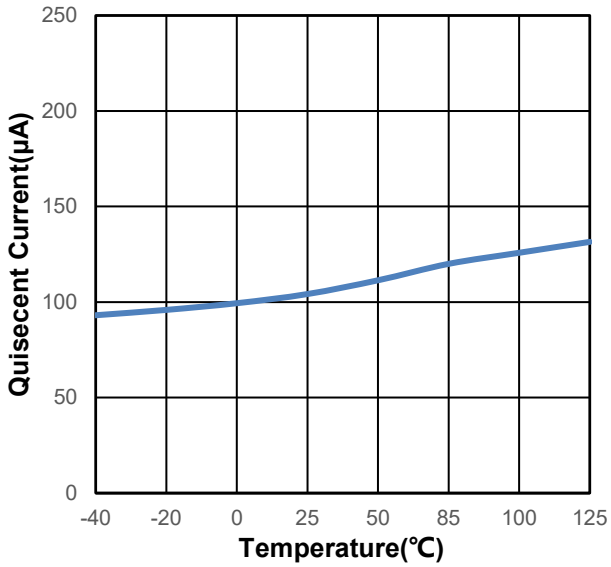
Note 1: Guaranteed by characterization testing and design.

● **10. Timing Diagram**

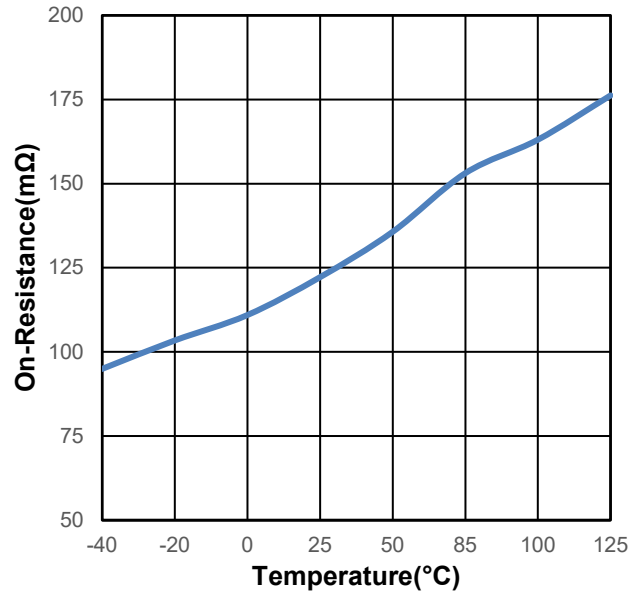


• 11. Typical Performance Characteristics

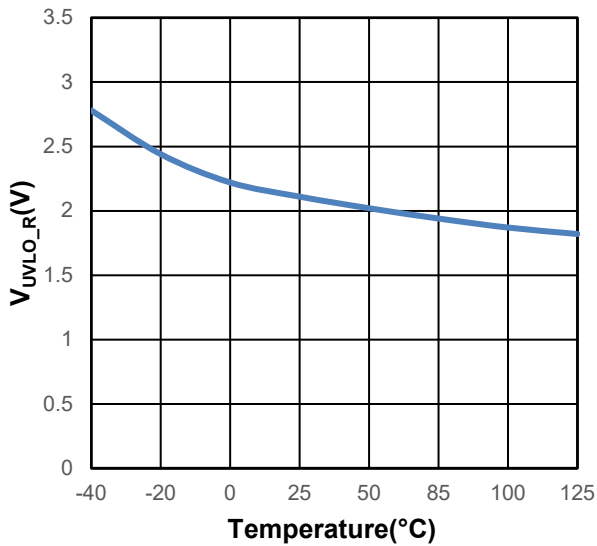
($V_{IN} = 5V$, $T_A = 25^\circ C$, $C_1 = 1\mu F$, $C_2 = 1\mu F$, unless otherwise noted)



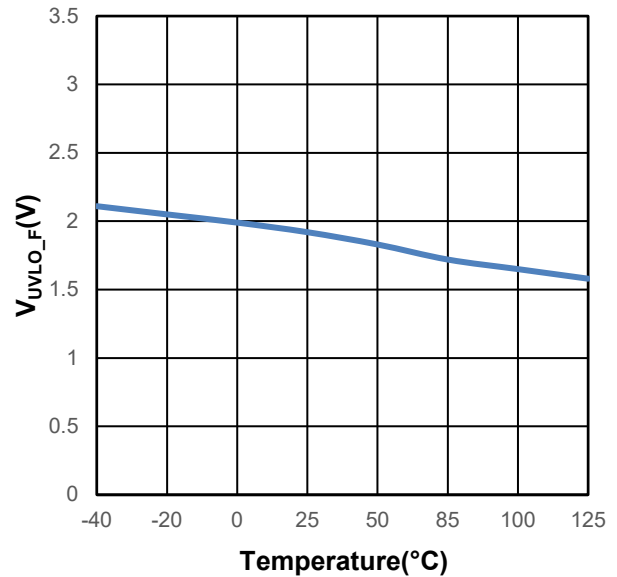
Quiescent Current vs. Ambient Temperature



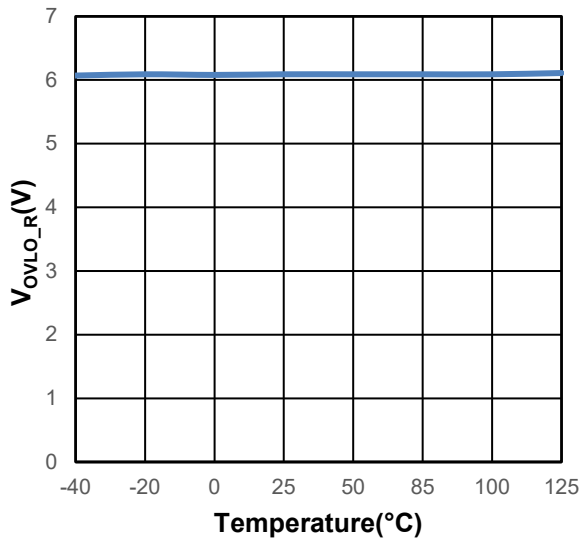
On-Resistance vs. Ambient Temperature



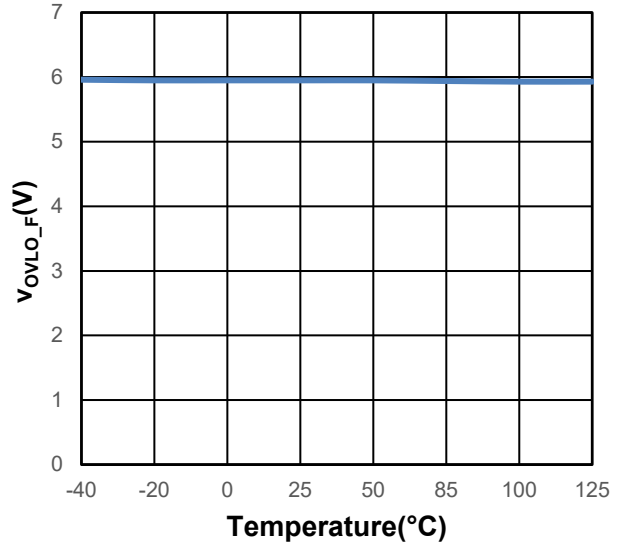
V_{UVLO_R} vs. Ambient Temperature



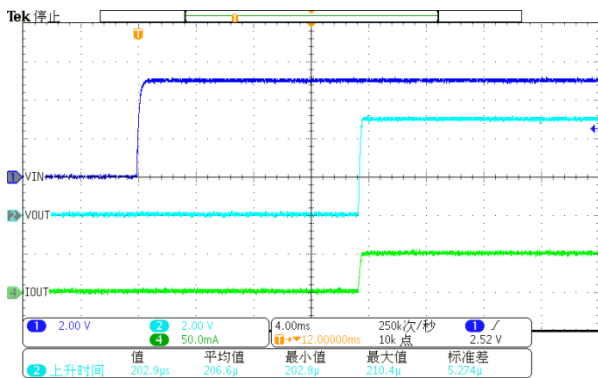
V_{UVLO_F} vs. Ambient Temperature



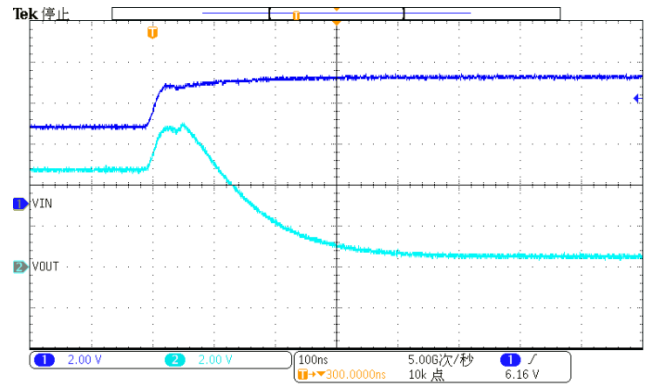
V_{OVLO_R} vs. Ambient Temperature



V_{OVLO_F} vs. Ambient Temperature



t_{DEB} & t_{ON} & t_{ON_AL}



t_{OFF_RES}

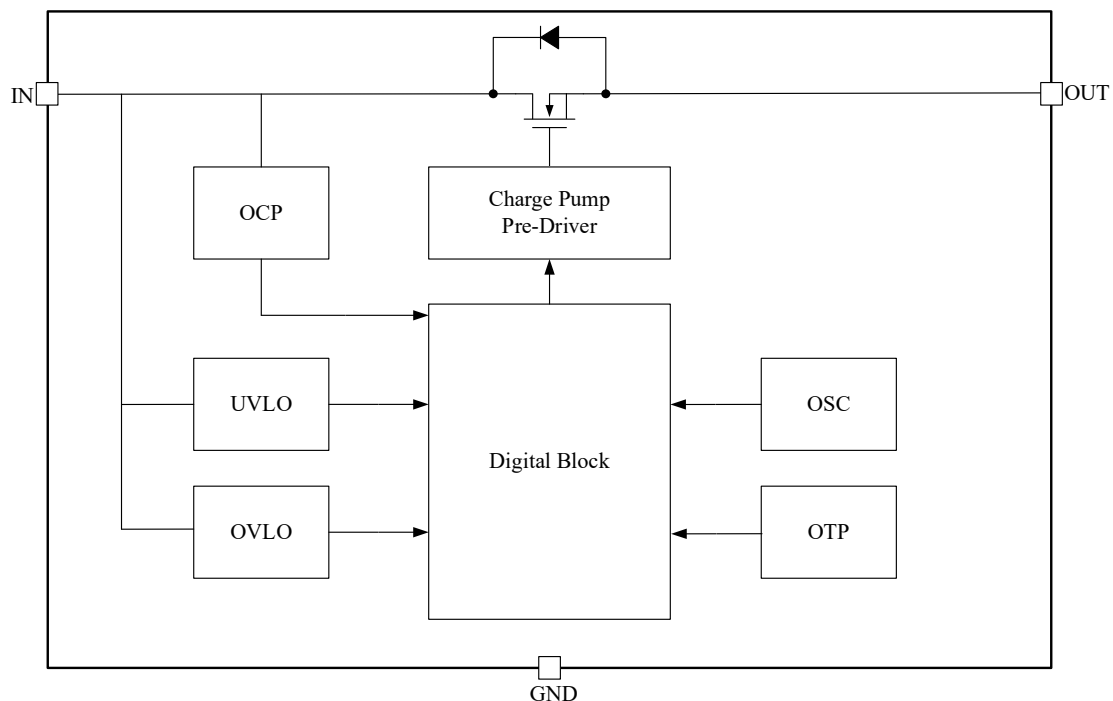
● 12. Function Description

● 12.1 Overview

The WP1430 with overvoltage protection features a low 110mΩ (Typ.) $R_{DS(ON)}$ of internal FET and protects low-voltage systems against voltage faults up to 36V_{DC}. If the V_{IN} exceeds 6.1V, or input current exceeds 2.5A, the internal FET is quickly turned off to prevent the downstream components from damage.

The internal FET turns off when the junction temperature exceeds +155°C (Typ.). The device exits thermal shutdown after the junction is cooled down by 20°C (Typ.).

● 12.2 Block Diagram



● 12.3 Feature Description

● 12.3.1 Under Voltage Lock Out (UVLO)

The under-voltage lockout (UVLO) circuits disable the WP1430 until the input voltage reaches the UVLO turn-on threshold.

● 12.3.2 Over Temperature Protection (OTP)

The WP1430 monitors its own internal temperature to prevent thermal failures. The device turns off the internal FET when the junction temperature reaches 155°C. The device will resume after the junction is cooled down by 20°C.

- **12.3.3 Input Over Voltage Protection (OVP)**

If the input voltage exceeds the WP1430 rising trip level, the switch will be turned off in about 50ns. The switch will remain off until V_{IN} falls below the WP1430 falling trip level.

- **13. Application and Implementation**

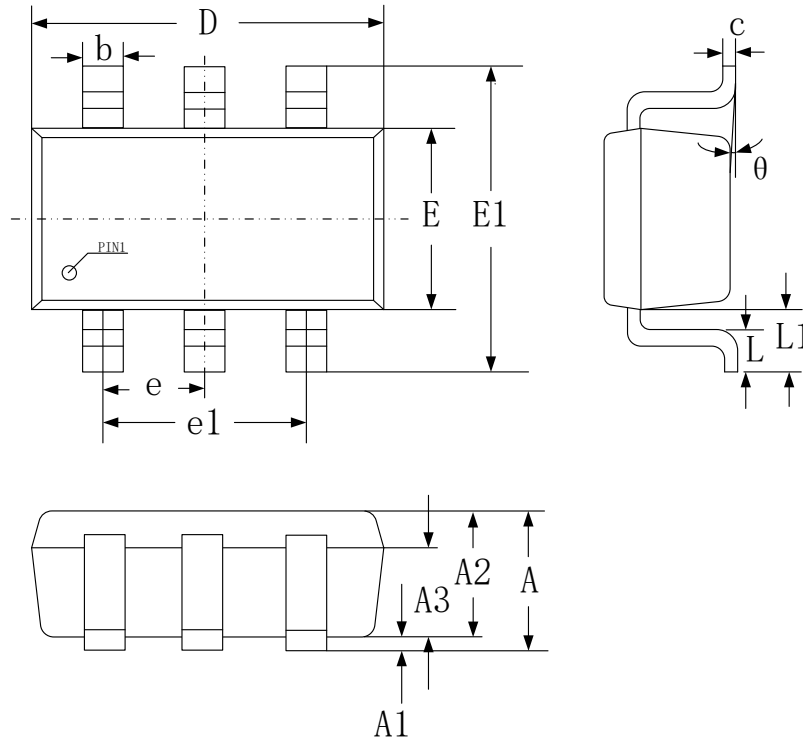
- **13.1 Selection of Input Capacitor**

To limit the voltage drops on the input supply caused by transient inrush current, a capacitor 1 μ F or larger must be placed between the IN and GND pins.

- **13.2 Selection of Output Capacitor**

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

● 14. Package Information



SOT23-6L

SYMBOL	DIMENSIONS IN MILLIMETERS		
	MIN	NOM	MAX
A	-	-	1.25
A1	0.00	-	0.15
A2	1.00	1.10	1.20
A3	0.575	0.65	0.725
b	0.325	-	0.5
c	0.1	-	0.2
D	2.82	2.92	3.02
E	1.50	1.60	1.70
E1	2.60	2.80	3.00
e	0.925	0.95	0.975
e1	1.90 BSC		
L1	0.59 REF		
L	0.35	0.45	0.60
θ	0°		8°

● 15. Ordering Information

PART NUMBER	PACKAGE	PACKING QUANTITY	MARKING*
WP1430	SOT23-6L	3k/Reel	WP1430 XXXXX

Contact Information

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For additional information, please contact your local Sales Representative.

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Specifications are subject to change without notice.

The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.

Users should verify actual device performance in their specific applications.

单击下面可查看定价，库存，交付和生命周期等信息

[>>WAY-ON\(维安\)](#)