iW628 Product Summary

Adaptive Voltage Position Monitor

1.0 Features

- Fast voltage undershoot detection
- “Normally-OFF” with <100µA cut-off current during normal operation
- Wide operating voltage range from 2.5V to 15V at DRV pin
- Built-in opto-coupler LED driver with minimum driving current of 2mA
- Wide operating temperature range from -40°C to 150°C

2.0 Description

The iW628 is an adaptive voltage position monitor to detect voltage undershoot. It can be used in Dialog’s primary-side control systems to achieve ultra-low no-load power consumption and fast dynamic load response. The iW628 operates at “normally-OFF” mode with negligible power consumption during power supply normal steady state operation, while monitoring dynamic load change through a user-configurable voltage position sense pin. The iW628 eliminates loop compensation components at the secondary side and it has a built-in opto-coupler LED driver to minimize the bill of material cost.

Dialog’s innovative proprietary technology ensures that power supplies designed with the iW628 and Dialog’s primary-side controller can achieve less than 10mW no-load power consumption in typical 5V2A AC/DC charger/adapter designs and less than 20mW for 12V2A designs while maintaining fast dynamic load response.

3.0 Applications

- Precision voltage reference
- AC/DC chargers/adapters

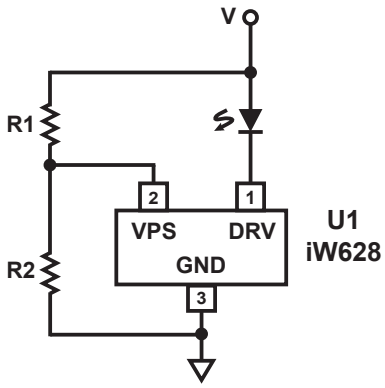


Figure 3.1: iW628 Typical Application Circuit (LED is on when V_{VPS} < internal V_{REF})

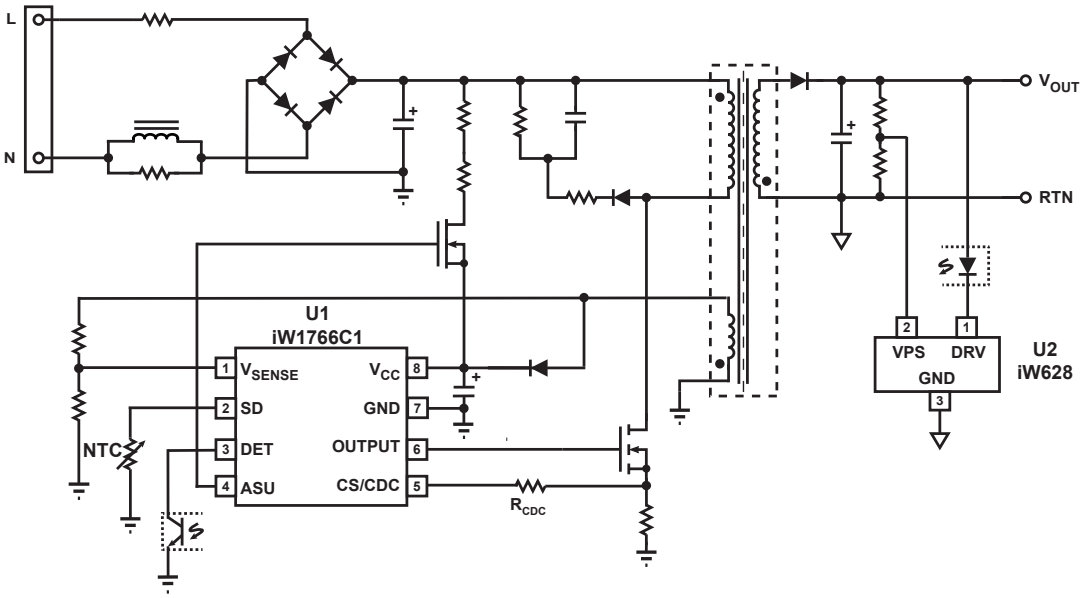


Figure 3.2: iW628 Typical Application Circuit (Using iW1766C1 as Primary-Side Controller)
(Achieving < 10mW No-Load Power Consumption in 5V2A Adapter Designs with Fast Dynamic Load Response)

4.0 Pinout Description

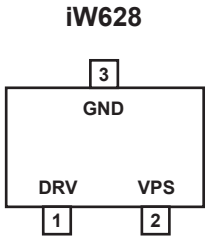


Figure 4.1: 3 Lead SOT-23 Package

Pin #	Name	Type	Pin Description
1	DRV	Power Input and Analog Output	IC power supply and external circuit drive. Provides the IC supply voltage and drives external circuit, such as the opto-coupler LED.
2	VPS	Analog Input	Voltage position sense. Power supply output voltage information to be compared with internal reference voltage.
3	GND	Ground	Ground.

5.0 Absolute Maximum Ratings

Absolute maximum ratings are the parameter values or ranges which can cause permanent damage if exceeded.

Parameter	Symbol	Value	Units
DRV pin voltage (pin 1)	V_{DRV}	30	V
VPS input voltage (pin 2)	V_{VPS}	-0.3 to 7	V
Continuous DC supply current at DRV pin (V_{DRV}= 16V)	I_{DRV}	25	mA
Maximum junction temperature	T_{JMAX}	150	°C
Operating junction temperature	T_{JOPT}	-40 to 150	°C
ESD rating per JEDEC JESD22-A114		2,000	V

6.0 Electrical Characteristics

V_{CC} = 12V, -40°C ≤ T_A ≤ 85°C, unless otherwise specified

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
VPS pin internal reference voltage threshold (falling edge)	$V_{VPS\_TH(F)}$	V_{DRV}=5V, 25°C	1.238	1.250	1.262	V
VPS pin internal reference voltage threshold (rising edge)	$V_{VPS\_TH(R)}$	V_{DRV}=5V, 25°C	1.250	1.275	1.312	V
Operating voltage	V_{DRV}		2.5		15	V
VPS pin input current	I_{VPS}				1	µA
ON–state DRV pin sink current	$I_{DRV(ON)}$	V_{DRV}=3.5V, 25°C	2			mA
OFF–state DRV pin current	$I_{DRV(OFF)}$				100	µA

7.0 Typical Performance Characteristics

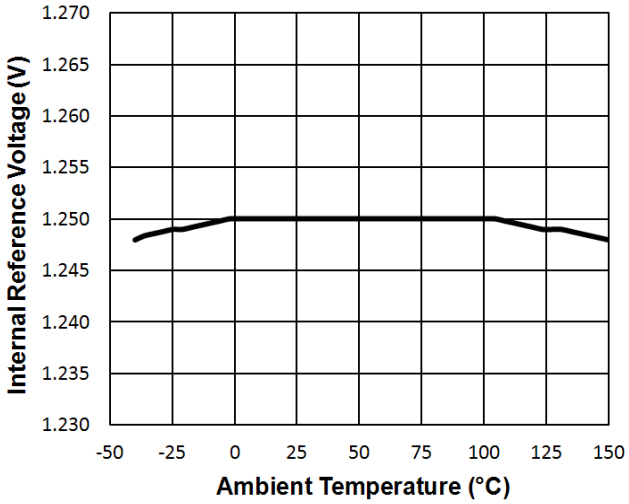


Figure 7.1 : Typical VPS Pin Internal Reference Voltage Threshold (Falling Edge) vs. Temperature

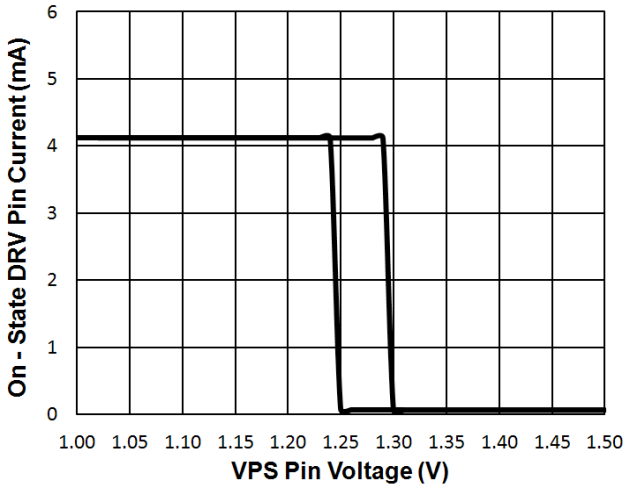
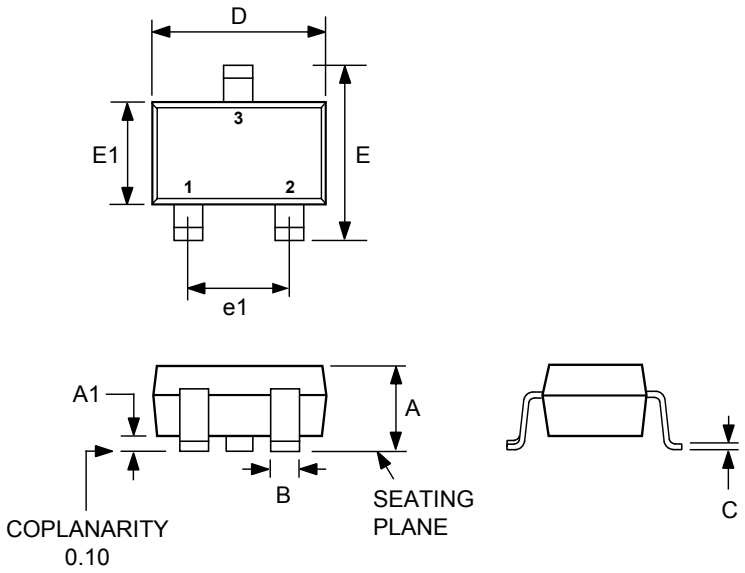


Figure 7.2 : On-State DRV Pin Sink Current (V_{DRV}=3.5V) vs. VPS Pin Voltage

8.0 Physical Dimensions

3-Lead SOT-23 Package



Symbol	Inches		Millimeters	
	MIN	MAX	MIN	MAX
A	0.035	0.044	0.89	1.11
A1	0.001	0.004	0.01	0.10
B	0.015	0.020	0.37	0.50
C	0.003	0.007	0.09	0.18
D	0.110	0.120	2.80	3.04
E	0.083	0.104	2.10	2.64
E1	0.047	0.081	1.20	1.40
e1	0.070	0.020	1.78	2.04

Compliant to JEDEC Standard TO236

Controlling dimensions are in millimeters

This package is RoHS compliant, and conform to Halide free limits.

Soldering Temperature Resistance:
[a] Package is IPC/JEDEC Std 020D Moisture Sensitivity Level 1
[b] Package exceeds JEDEC Std No. 22-A111 for Solder Immersion resistance; packages can withstand 10 s immersion @ < 260 °C

Dimension D does not include mold flash, protrusions or gate burrs. Mold flash, protrusions or gate burrs shall not exceed 0.25 mm per end. Dimension E1 does not include interlead flash or protrusion. Interlead flash or protrusion shall not exceed 0.25 mm per side.

The package top may be smaller than the package bottom. Dimension D and E1 are determined at the outermost extremes of the plastic body exclusive of mold flash, tie bar burrs, gate burrs and interlead flash, but including any mismatch between the top and bottom of the plastic body.

9.0 Ordering Information

Part Number	Options	Package	Description
iW628-00	N/A	SOT23-3L	Tape & Reel[1]

Note 1: Tape & Reel packing quantity is 2,500/reel. Minimum ordering quantity is 2,500.

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