Dual Channel Prioritized PowerPath Controller

FEATURES

- **Selects Highest Priority Supply from Two Inputs**
- **Blocks Reverse and Cross Conduction Currents**
- **Wide Operating Voltage Range: 2.5V to 40V**
- **–42V Protection Against Reverse Connection**
- **60V Tolerant V1, V2 Inputs**
- **Adjustable Input Validation Time**
- Fast Switchover Minimizes Output Voltage Droop
- Low 26µA Operating Current
- ±1.5% Input Overvoltage/Undervoltage Protection
- Adjustable Overvoltage/Undervoltage Hysteresis
- Cascadable for Additional Input Supplies
- 20-Lead 4mm × 4mm QFN Package

APPLICATIONS

- Industrial Handheld Instruments
- High Availability Systems
- Battery Backup Systems
- Servers and Computer Peripherals

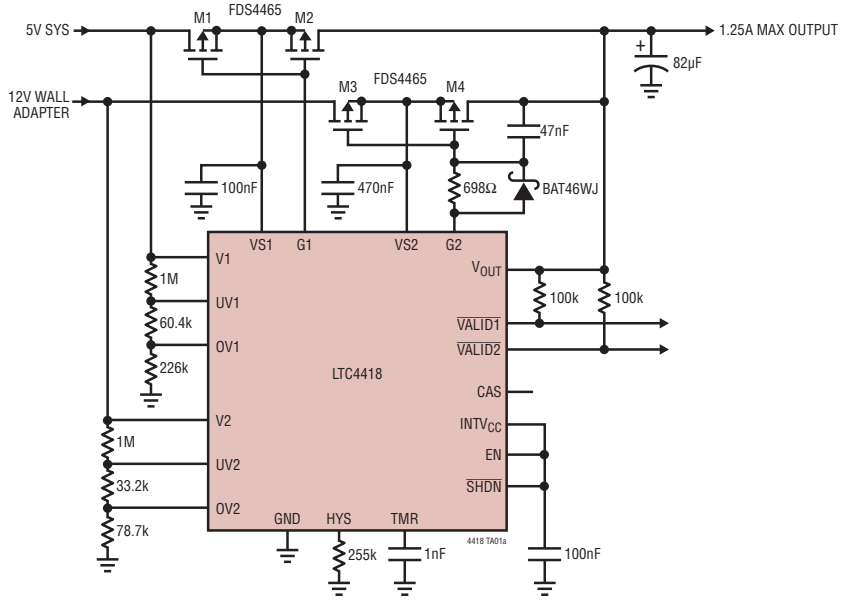
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DESCRIPTION

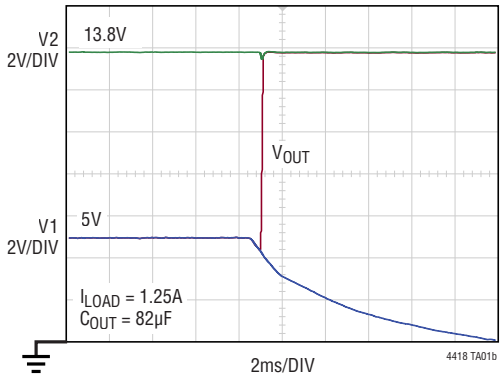
The LTC®4418 connects one of two valid power supplies to a common output based on priority and validity. Priority is defined by pin assignment, with V1 assigned the higher priority and V2 the lower priority. A power supply is defined as valid when its voltage has been within its overvoltage (OV) and undervoltage (UV) window continuously for at least the configured validation time. If the highest priority valid input falls out of the OV/UV window, the channel is immediately disconnected and the other valid input is connected to the common output. Multiple LTC4418s, as well as triple channel LTC4417s, can be cascaded to provide switchover between more than two inputs.

The LTC4418 incorporates fast non-overlap switching circuitry to prevent both reverse and cross conduction while minimizing output droop. The gate driver includes a 6V clamp to protect external MOSFETs. A controlled soft-start feature minimizes start-up inrush current. Open drain $\overline{\text{VALID}}$ outputs indicate the input supplies have been within their OV/UV window for the duration of the validation time. The validation time can be disabled or adjusted using an external capacitor.

TYPICAL APPLICATION



Priority Switching from V1 to V2



ABSOLUTE MAXIMUM RATINGS

(Notes 1, 2)

Supply Voltages
- V1, V2 ..... –42V to 60V
- V_{OUT} ..... –0.3V to 42V
- VS1, VS2 ..... –0.3V to 60V

Voltage from V1, V2 to V_{OUT} ..... –84V to 60V

Voltage from VS1, VS2 to G1, G2 ..... –0.3V to 7.5V

Input Voltages
- EN, $\overline{SHDN}$ ..... –0.3V to 60V
- OV1, OV2, UV1, UV2, TMR ..... –0.3V to 6V
- HYS ..... –0.3V to 1V
- $INTV_{CC}$ ..... –0.3V to 6.2V

Output Voltages
- $\overline{VALID1}$, $\overline{VALID2}$ ..... –0.3V to 60V
- CAS ..... –0.3V to 6V

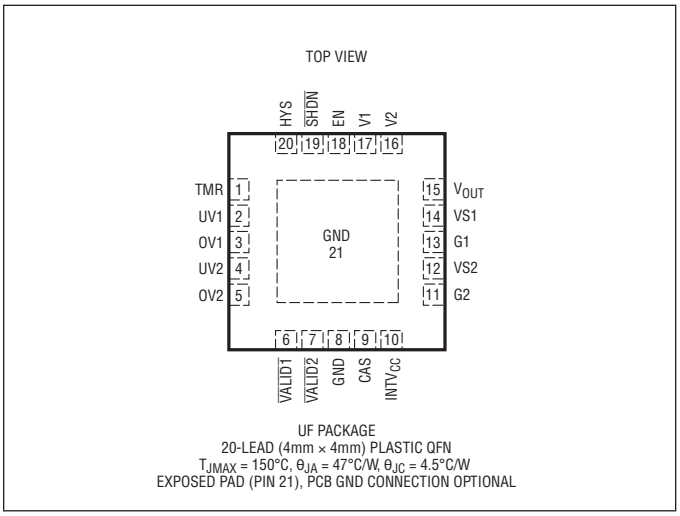
Input Currents
- OV1, OV2, UV1, UV2, HYS, TMR, $INTV_{CC}$, EN, $\overline{SHDN}$ ..... –3mA

Output Currents
- $\overline{VALID1}$, $\overline{VALID2}$, CAS ..... –2mA/+5mA

Operating Ambient Temperature Range
- LTC4418C ..... 0°C to 70°C
- LTC4418I ..... –40°C to 85°C

Storage Temperature Range ..... –65°C to 150°C

PIN CONFIGURATION



UF PACKAGE
20-LEAD (4mm × 4mm) PLASTIC QFN
T_{JMAX} = 150°C, θ_{JA} = 47°C/W, θ_{JC} = 4.5°C/W
EXPOSED PAD (PIN 21), PCB GND CONNECTION OPTIONAL

ORDER INFORMATION

http://www.linear.com/product/LTC4418#orderinfo

LEAD FREE FINISH	TAPE AND REEL	PART MARKING*	PACKAGE DESCRIPTION	TEMPERATURE RANGE
LTC4418CUF#PBF	LTC4418CUF#TRPBF	4418	20-Lead (4mm × 4mm) Plastic QFN	0°C to 70°C
LTC4418IUF#PBF	LTC4418IUF#TRPBF	4418	20-Lead (4mm × 4mm) Plastic QFN	–40°C to 85°C

Consult ADI Marketing for parts specified with wider operating temperature ranges. *The temperature grade is identified by a label on the shipping container.

For more information on lead free part marking, go to: http://www.linear.com/leadfree/

For more information on tape and reel specifications, go to: http://www.linear.com/tapeandreel/. Some packages are available in 500 unit reels through designated sales channels with #TRMPBF suffix.