

FIDES-F1 VALLEY FILL CONTROLLER

Active capacitor for high voltage DC ripple smooth IC

FIDES-F1 PRELIMINARY BRIEF DATA

The AC-DC rectify smooth capacitor substitute for aluminum electrolytic capacitor under 100uF/450V with over load protection. Very wide operating temperature (-40°C ~ +125°C) over 100Kh durability. The FIDES-F1 IC are advance valley fill smooth solid capacitor for home appliance machines, LED lighting, medical, military equipment. Over current protection supports to safe over load failure and anti-burning equipment attractive features. Increase PF to 0.85 without PFC. Low cost, design flexibility, and easy design-in, these parts are targeted to more sophisticated applications and offer several enhanced technology and features, including continuous AC input voltage coverage from 40-380V wide ranges and control load up to any KWatts for electric vehicle or IoT and LED SMPS. The employed overload protection technology is immediately shutdown automatic load recover power safe environments. These features simply substitute for ordinary aluminum electrolytic capacitor in SMPS.

FEATURES

- Low power 5V 200uA
- Automatic optimized valley fill of load derivation supports.
- Adjustable overload protection support.
- Power Factor improve to 0.85 with out PFC
- IoT demand management supports
- IEC 61000-4-2(ESD) EN-550022
- Operating temperature -55°C- to +125°C
- All purpose AC-DC rectifier valley fills smooth

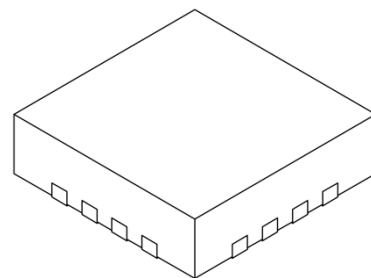


Fig 1. FIDES-F1 QFN16
3x3x0.9mm

Absolute Maximum Ratings

Item	Symbol	Parameter	min	typ	max	unit	Condition
Supply voltage	VDD			5	5.5	DC	VDD Max +5.5V
TA range	°C	Operating Ambient Temperature Range	-40°C		+125°C	°C	Extended Temperature
High Level input I _I	IoH			950	1400	μA	4.5V ≤ VDD ≤ 5.5V
Output High Voltage	VOH	Out Terminal	0.7	-	-	v	IOH = 3.5 mA, VDD = 5V
Drive current	I_DRV	Out Terminal	40	50	60	mA	
TH	θJA	Thermal Resistance Junction to Ambient		55.3		°C/W	16-pin QFN 3X3X0.9mm package
CS Threshold	VCSTH	Load Terminal	0	0.8	5	V	STDN Gate On threshold V
Power consumption	mW		20		30	mW	Status indicate LED ON
Storage temperature			-65		+150	°C	

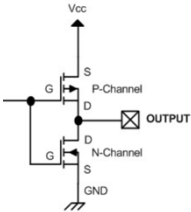
Notes:

Unless otherwise specified, VDD=5V and Ta=25°C

- Stresses beyond those listed under Absolute maximum rating may cause permanent damage to the device
- All voltage values, except differential voltages, are given with respect to GND pin.

Terminal descriptions

IO: I=input, O=output, B=Bidirectional, - = no connection

Pin #	Pin Name	Description	Circuit (shows Input or output port)	Voltage
1	STDN	Overload protection output	Normal H 4.5V ≤ VDD ≤ 5.5V	DC +5.5V
2	CS	Load current sense	Load current sence	
3	CSSET	Valley fill out monitor	Internal ADC are 10bit. Using VBAIS 3V ref to external R divider. Ex. 1.5V=511x0.3=153watts	
4	CH1	AC common input from 80~380V		
5	CH2	Open drain output of on/off status.		4.5~5.5V 50mA max Normal off
6		3V reference DC output		
7	OVIN	Valley fill out monitor.	(Analog Switch)	0~5V 100uA max Normal on

RFFev.: DOC2017DB1-E-F01

This document was written by JEONG YM. All rights reserved.

No part of this publication may be reproduced, or transmitted in any form by any means, electronic, mechanical, photocopying, recording or otherwise, Without prior permission of JEONG YEONMOON.

info@standbyzero.org

<https://www.standbyzero.com/>

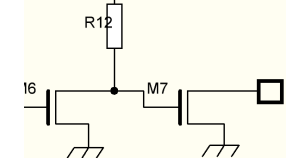
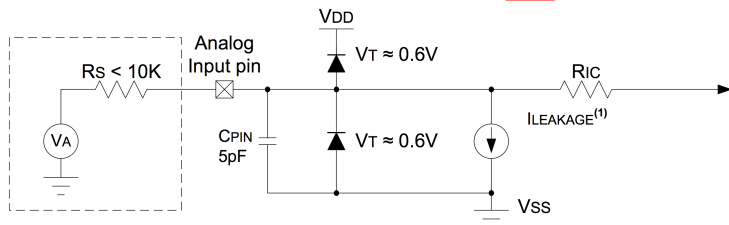
				
8	-COMP	Valley fill start pulse comparator V input	0.2~5V	See Fig2
9	+COMP	Valley fill start pulse comparator V reference V input	0.2~5V	See Fig2
10	STDN SET			
11	FAC		NC	
12	FAC			
13	GND			
14			NC	
15				
16	VDD			

Fig2. ANALOG INPUT



Legend: CPIN = Input Capacitance
 ILEAKAGE = Leakage Current at the pin due to various junctions
 RIC = Interconnect Resistance
 RS = Source Impedance
 VA = Analog Voltage
 VT = Threshold Voltage

Electrical Characteristics (Test condition: VIN=AC220V/60Hz, Ta=25, unless otherwise specified.)

ESD Ratings: Human Body Model, 3B 8000 V
 Machine Model, C 400 V

Recommended Peak Pulse voltage Operating Conditions