DESCRIPTION

The A4771F is a USB interface output protection chip suitable for 5V 2/2.5A applications. The A4771F integrates over-current protection, short-circuit protection, over-temperature protection, and under-voltage protection. When the output is over-current, short-circuit or started with a large capacitive load, the current output can be limited to protect the front-end power supply. Additionally, a fault flag output can be used to indicate fault conditions to the local USB controller。

The A4771F is available in SOT-25 Package.

FEATURES

- No substrate diode to prevent reverse current when the chip is turned off
- Under-Voltage Lockout (Power-On Reset)
- FLG Fault Alarm
  2uS fast response protection when output is short-circuit to suppress peak current
- Built-in Soft Start and Fast Shutdown
- Built-in Thermal Protection
- Overcurrent protection with foldback

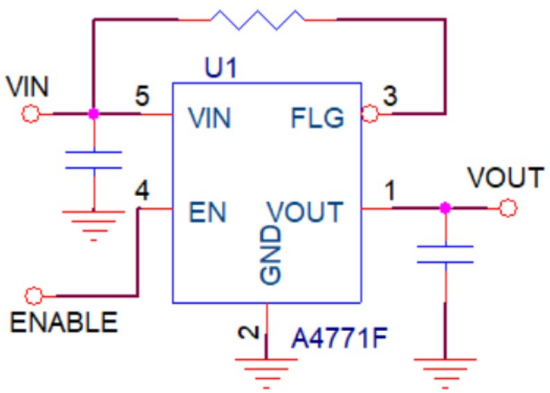
APPLICATION

- USB bus/self-powered hub
- USB peripherals
- Laptops, Tablets
- Battery charger

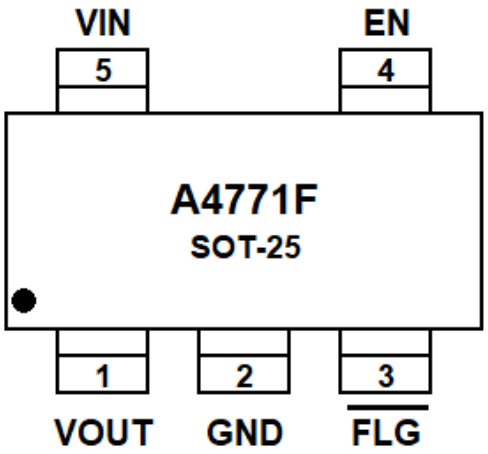
ORDERING INFORMATION

Package Type	Part Number	
SOT-25 SPQ: 3,000pcs/Reel	E5	A4771FE5R-X
		A4771FE5VR-X
Note	X: Output Current Limit A = 2.3A B = 2.75A V: Halogen free Package R: Tape & Reel Y: Ammo	
AiT provides all RoHS products		

TYPICAL APPLICATION



PIN DESCRIPTION



SOT-25, E5

Top View

Pin # SOT-25	Symbol	Function
1	VOUT	Output Voltage Pin, Connected to USB Port VBUS
2	GND	Ground
3	$\overline{\text{FLG}}$	Fault Flag Output Pin, Pull Low When Overcurrent and Overtemperature
4	EN	Enable Input Pin, Active High
5	VIN	Input Voltage Pin

ABSOLUTE MAXIMUM RATINGS

V_{IN}, Input Voltage	-0.3V ~ +6V
V_{EN}, EN Pin Voltage Range	-0.3V ~ +6V
Other Pins Voltage Ranges	-0.3V ~ V_{CC} +0.3V
Lead Temperature (Soldering, 10 sec.)	300°C
T_{stg}, Storage Temperature	-65°C ~ +150°C
Tj, Junction Temperature	125°C

Stresses above may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Conditions
Input Voltage	V_{IN}	2.5 V ~ 5.5 V
EN Pin Voltage Range	V_{EN}	0 V ~ 5.5 V
Junction Temperature	Tj	-40°C ~ + 125°C

ELECTRICAL CHARACTERISTICS

V_{IN}=5V, C_{IN}=10uF, C_{OUT}=0.1uF, T_J=25℃, unless otherwise specified

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input Voltage VIN Range	V_{IN}	-	2.5	-	5.5	V
VIN POR Threshold	$V_{IN}POR$	-	-	2.2	2.7	V
Quiescent Current	I_Q	I_{OUT} =0mA	-	60	80	uA
Shutdown Current	I_{SD}	EN=5V	-	0.1	1	uA
$R_{DS}ON$	R_{DSON}	I_{OUT} = 500mA	-	58	78	mΩ
Reverse Leakage Current	I_{REV}	V_{IN} =0V, V_{OUT}=5V	-	0.1	2	uA
Soft Start Time	T_{SS}		-	1.5	2.5	uA
Enable High Level	V_{ENH}		1.2	-	-	mS
Shutdown Low Level	V_{SD}		-	-	0.5	V
EN input Current	I_{EN}	V_{IN} =V_{CC}=V_{EN}=5V, I_{OUT} =0A, V_{OUT} =VREF	-	0.1	1	uA
FLG Output Resistor	R_{FLG}	I_{SINK}=10mA	-	20	80	Ω
FLG Off Current	I_{FLG_OFF}	V_{FLG}=5V	-	0.1	1	uA
FLG Delay Time	t_{DELAY}		8	15	22	mS
VOUT Discharge Resistor	R_{DIS}		-	100	-	Ω
Over Current Threshold	I_{OCP-24}		2.30	3.7	-	A
	I_{OCP-30}		2.75	4.4	-	A
VOUT Short Circuit Current	I_{SC}		-	2.2	-	A
Thermal Shutdown Temperature	T_{SD}		-	160	-	℃
Thermal Shutdown Hysteresis	T_{SDHY}		-	30	-	℃

TYPICAL CHARACTERISTICS

V_{IN}=5V, C_{IN}=10uF, C_{OUT}=0.1uF, T_J=25℃, unless otherwise specified

Fig 1. V_{IN} Power ON (No Load)

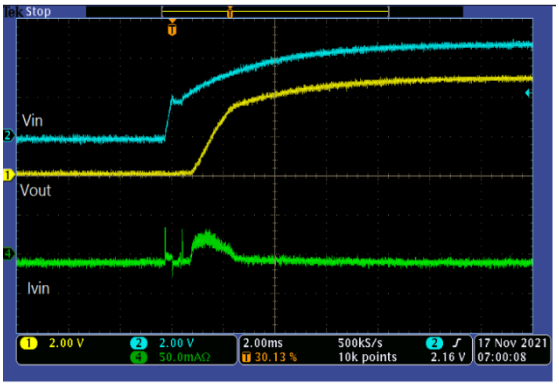


Fig 2. IN Power ON (1.5A)

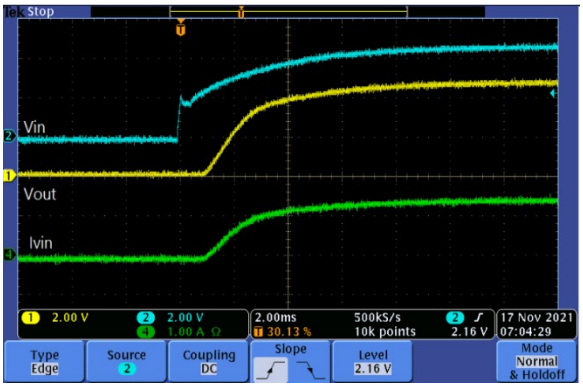


Fig 3. EN Power ON (No load)

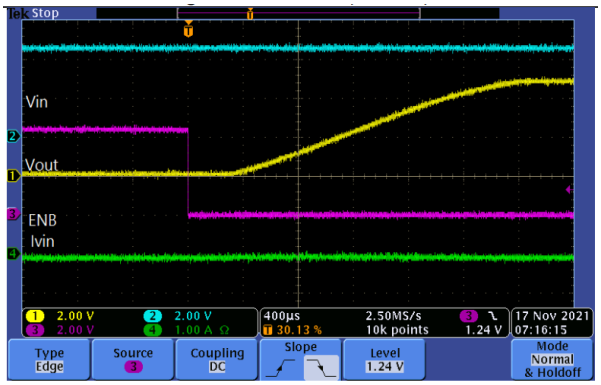


Fig 4. EN Power ON (1.5A)

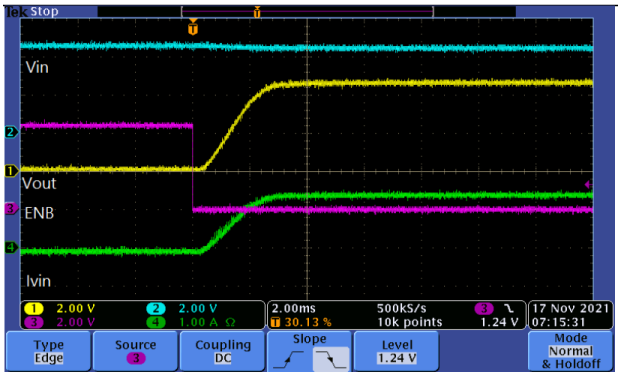


Fig 5. V_{OUT} Short to GND

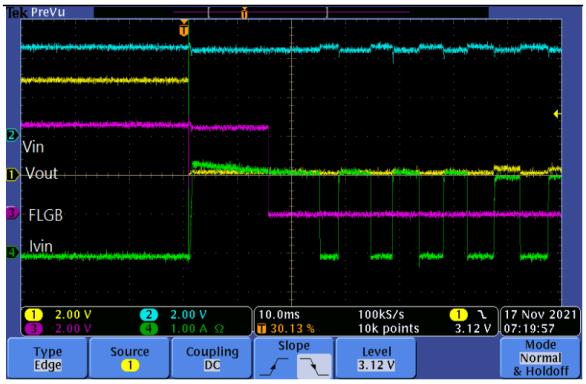


Fig 6. V_{OUT} Short to GND Start Up

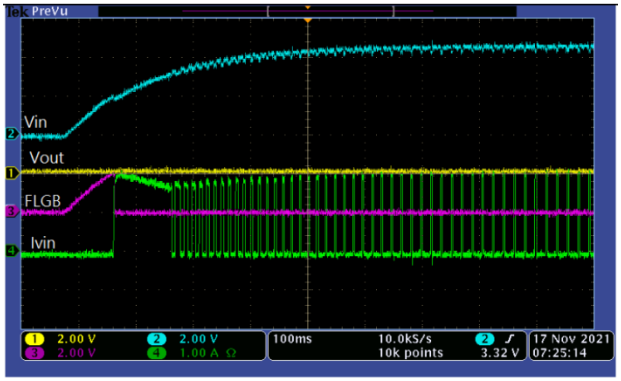


Fig 7. Ron vs V_{IN}

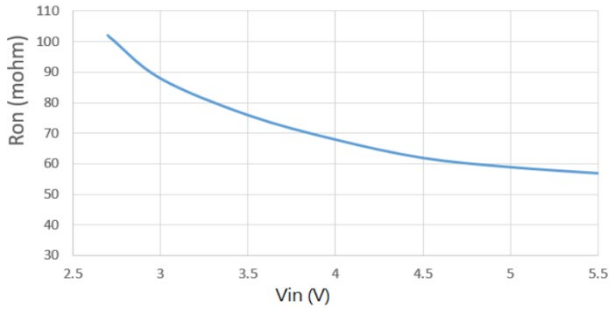
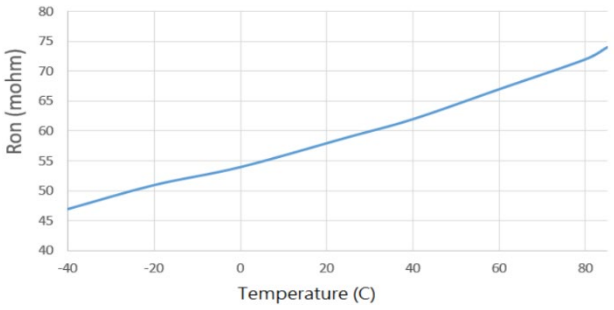
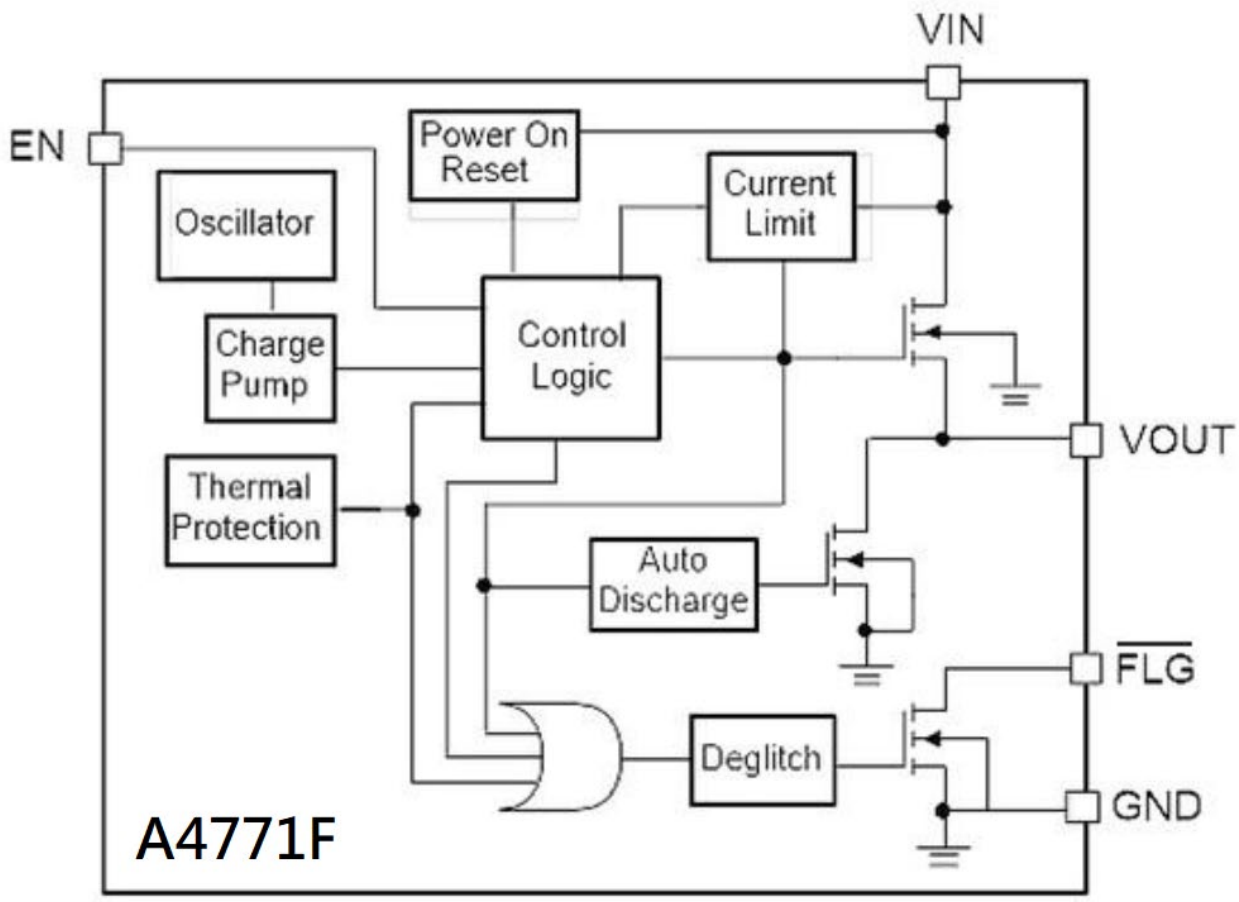


Fig 8. Ron vs Temperature

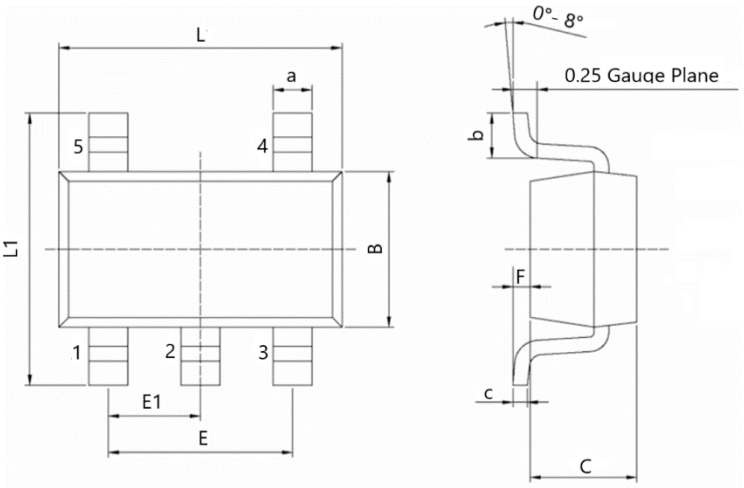


BLOCK DIAGRAM



PACKAGE INFORMATION

Dimension in SOT-25 (Unit: mm)



Symbol	Min.	Max.
a	0.35	0.50
B	1.50	1.70
b	0.35	0.55
C	0.90	1.30
c	0.10	0.20
E	1.80	2.00
E1	0.85	1.05
F	0	0.15
L	2.82	3.02
L1	2.60	3.00

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