



## DESCRIPTION

The A4770 is an integrated 100mΩ power switch for self-powered and bus-powered Universal Series Bus (USB) applications. A built-in charge pump is used to drive the N-channel NMOSFET that is free of parasitic body diode to eliminate any reversed current flow across the switch when it is powered off. Its low quiescent supply current (23μA) and small package (SOT-25) is particularly suitable in battery-powered portable equipment.

Several protection functions include soft start to limit inrush current during plug-in, current limiting at 1.1A to meet USB power requirement, and thermal shutdown to protect damage under over current conditions.

The A4770 is available in SOT-25 package.

## ORDERING INFORMATION

Package Type	Part Number	
SOT-25	E5	A4770E5R
		A4770E5VR
Note	V: Halogen free Package R: Tape & Reel SPQ: 3,000 pcs /Reel	
AiT provides all RoHS products Suffix " V " means Halogen free Package		

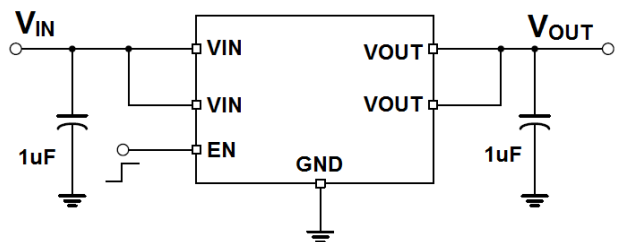
## FEATURES

- 100mΩ (Typ.) High-Side NMOSFET (SOT-25)
- 1.1A Current Limit
- Small SOT-25 Package Minimizes Board Space
- Soft Start
- Thermal Protection
- Low 23μA Supply Current
- Wide Input Voltage Range: 2.2V ~ 6V
- Available in SOT-25 Package

## APPLICATION

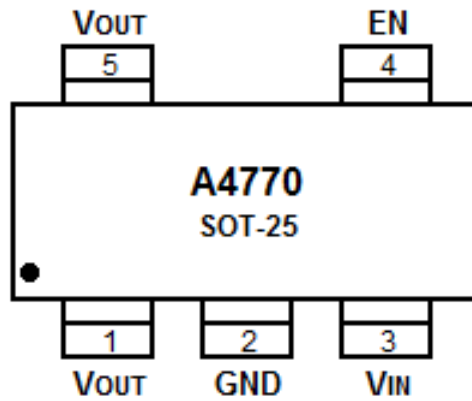
- Battery-Powered Equipment
- Motherboard USB Power Switch
- USB Device Power Switch
- Hot-Plug Power Supplies
- Battery-Charger Circuits

## TYPICAL APPLICATION





## PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1, 5	V <sub>OUT</sub>	Output Voltage
2	GND	Ground
3	V <sub>IN</sub>	Power Input
4	EN	Chip Enable



## ABSOLUTE MAXIMUM RATINGS

V <sub>DD</sub> , Input Voltage		7.0V
V <sub>EN</sub> , EN to GND Voltage		-0.3V~7.0V
P <sub>D</sub> , Power Dissipation, T <sub>A</sub> = 25°C	SOT-25	0.25W
θ <sub>JA</sub> , Thermal Resistance	SOT-25	250°C/W
Lead Temperature (Soldering, 10 sec.)		260°C
T <sub>STG</sub> , Storage Temperature Range		-65°C ~ 150°C
Operating Ambient Temperature		-20°C ~ 100°C
ESD Susceptibility	HBM	6000V
	MM	600V

Stress beyond above listed "Absolute Maximum Ratings" may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

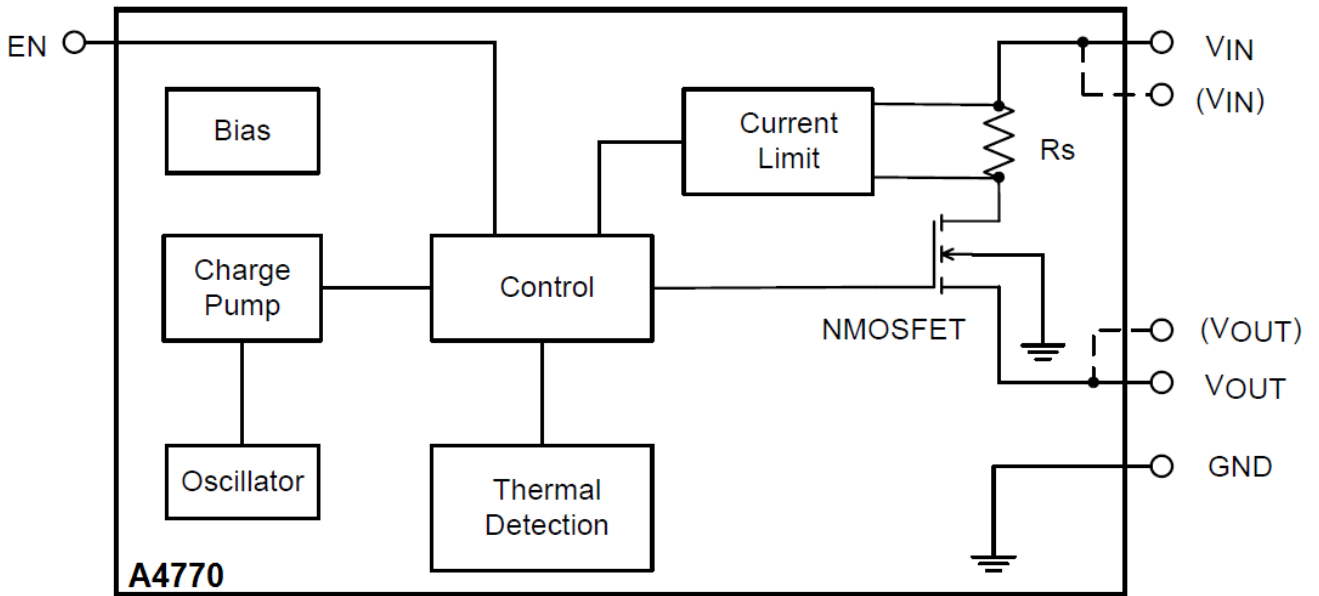
## ELECTRICAL CHARACTERISTICS

V<sub>IN</sub> = 5V, C<sub>IN</sub> = C<sub>OUT</sub> = 1μF, unless otherwise noted. Typical values are at T<sub>A</sub> = + 25°C.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	V <sub>IN</sub>		2.2	-	6	V
NMOS Output On-Resistance	R <sub>DS(ON)</sub>	I <sub>L</sub> = 500mA	-	100	110	mΩ
Quiescent Current	I <sub>Q</sub>	V <sub>IN</sub> = 3V	-	19	40	μA
		V <sub>IN</sub> = 5V	-	23	45	
Turn-On Time	t <sub>R</sub>	R <sub>L</sub> = 10Ω, 90% Settling	-	400	-	μs
Current Limit Setting	I <sub>LIMIT</sub>	R <sub>L</sub> = 2Ω	1.1	1.3	1.5	A
EN PIN Input High Voltage			1.5	-	-	V
EN PIN Input Low Voltage			-	-	0.8	V
Shutdown Supply Current	I <sub>OFF</sub>	EN = "0"	-	0.1	1	μA
Output Leakage Current	I <sub>LEAKAGE</sub>	EN = "0", V <sub>OUT</sub> = 0V	-	0.5	10	μA
V <sub>IN</sub> Under voltage LOCKOUT	UVLO		1.3	1.8	-	V
V <sub>IN</sub> under voltage Hysteresis			-	100	-	mV
Thermal Limit	T <sub>SD</sub>		-	130	-	°C
Thermal Limit Hysteresis	ΔT <sub>SD</sub>		-	20	-	°C



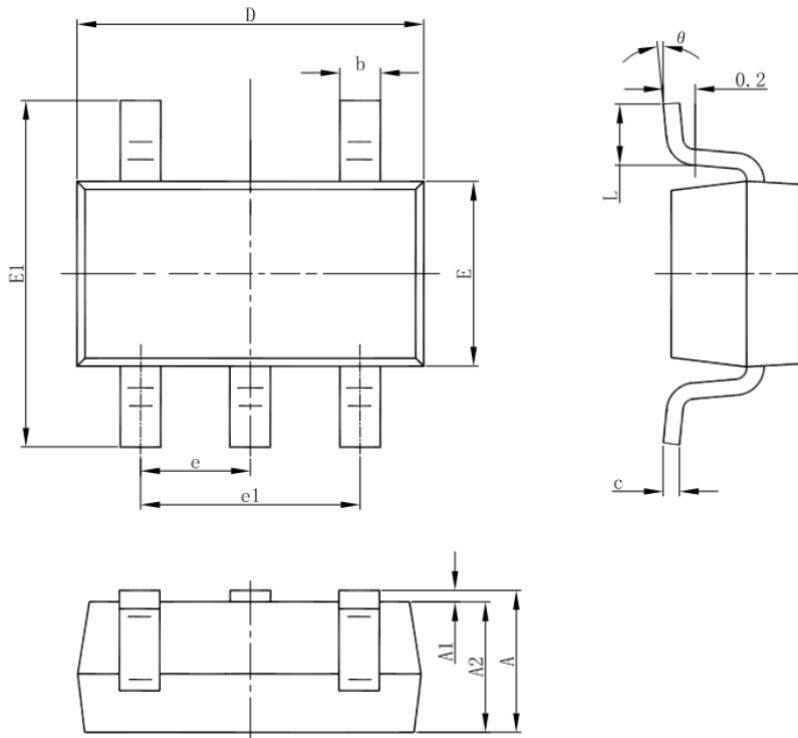
**BLOCK DIAGRAM**





**PACKAGE INFORMATION**

Dimension in SOT-25 (Unit: mm)



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°



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