



DESCRIPTION

The A4775 is a low voltage, high performance single N-MOSFET power switch, designed for power rail on/off control with low $R_{DS(ON)} \approx 70m\Omega$ and full protection functions. The A4775 equipped with a charge pump circuitry to drive the internal MOSFET switch. In order to fit different application, an ISET pin is offered for current limit point setting, a resistor from ISET to ground sets the current limit for the switch.

Additional features include soft-start to limit inrush current during plug-in, thermal shutdown to prevent catastrophic switch failure from high-current loads, Output anti back irrigation Protection whether EN pin is connected GND or V_{IN} , under-voltage lockout (UVLO) to ensure that the device remains off unless there is a valid input voltage present, a precision resistor-programmable output current limit up to 3.5A. Besides, the lower quiescent current as $40\mu A$ making this device ideal for portable battery-operated equipment.

The A4775 is available in SOT-25 package.

ORDERING INFORMATION

| Package Type | Part Number | |
|---|---|-----------|
| SOT-25 | E5 | A4775E5R |
| | | A4775E5VR |
| Note | V: Halogen free Package R: Tape & Reel | |
| AiT provides all RoHS products Suffix " V " means Halogen free Package | | |

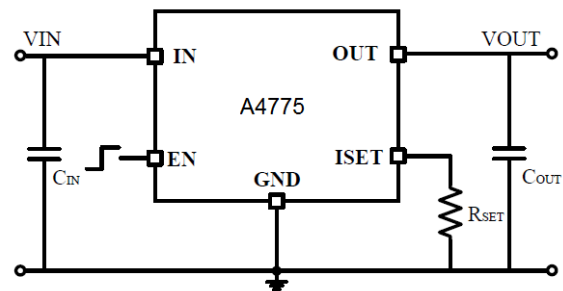
FEATURES

- Adjustable Current Limiting up to 3.5A
- Built-In (Typically 70mΩ) N-MOSFET
- Reverse Current Flow Blocking (no body diode)
- Output Can Be Forced Higher than Input (Off or On State)
- Low Supply Current :
40μA Typical at Switch on State
Less than 1μA Typical at Switch Off State
- Guaranteed Continuous Load Current : 2.1A
- Wide Input Voltage Ranges : 2V to 5.5V
- Hot Plug-In Application (Soft-Start)
- 1.7V Typical Under-Voltage Lockout (UVLO)
- Thermal Shutdown Protection
- Available in SOT-25 Package

APPLICATION

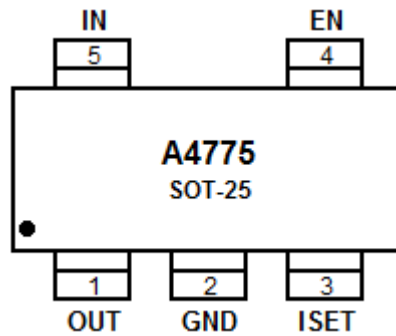
- USB 3G Datacard
- USB Dongle
- MiniPCI Accessories
- LCD Monitor, LCD-TV
- USB Power Module for ADSL
- Information Appliance and Set-Top Box
- Battery-Powered Equipment
- Hot-Plug Power Supplies
- ACPI Power Distribution
- PCI Bus Power Switching
- Motherboard & Notebook PCs
- PC Card Hot Swap Application

TYPICAL APPLICATION





PIN DESCRIPTION



Top View

| Pin # | Symbol | Function |
|-------|--------|----------------------------------|
| 1 | OUT | Output Voltage. |
| 2 | GND | Ground. |
| 3 | ISET | Current Limit Programming Input. |
| 4 | EN | Chip Enable (Active High). |
| 5 | IN | Power Input Voltage. |



ABSOLUTE MAXIMUM RATINGS

| | | |
|--|--------|--------------|
| Supply Voltage | | 6.5V |
| Chip Enable Input Voltage | | -0.3V~6.5V |
| P _D , Power Dissipation @ T _A = 25°C | SOT-25 | 0.6W |
| Package Thermal Resistance | SOT-25 | 200°C/W |
| Junction Temperature | | 125°C |
| Lead Temperature (Soldering, 10 sec.) | | 260°C |
| Storage Temperature Range | | -65°C ~150°C |
| ESD Susceptibility | | |
| HBM (Human Body Mode) | | 8kV |
| MM (Machine Mode) | | 800V |

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.



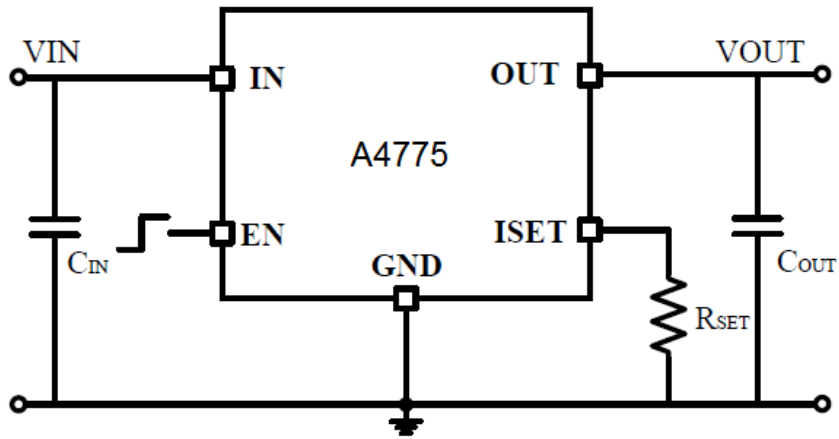
ELECTRICAL CHARACTERISTICS

$V_S = +5V$, $V_{CM} = +2.5V$, $V_O = +2.5V$, $T_A = +25^\circ C$, unless otherwise noted.

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---------------------------------|---------------------|--|------|------|------|------|
| Switch On Resistance | $R_{DS(ON)}$ | $I_{OUT} = 1A$ | | 70 | 80 | mΩ |
| Supply Current | I_{SW_ON} | Switch On, $V_{OUT} = \text{Open}$ | | 40 | 50 | μA |
| Shutdown Current | I_{SW_OFF} | Switch Off, $V_{OUT} = \text{Open}$ | | 0.1 | 1 | μA |
| CE Threshold Logic-Low Voltage | V_{IL} | Switch Off | | | 0.8 | V |
| CE Threshold Logic-High Voltage | V_{IH} | Switch On | 2.0 | | | V |
| CE Input Current | I_{CE} | $V_{CE} = 0V \text{ to } 5.5V$ | | 10 | | pA |
| Output Leakage Current | $I_{LEAKAGE}$ | $V_{CE} = 0V$, $R_{LOAD} = 0\Omega$ | | 0.5 | | μA |
| Output Turn-On Rise Time | T_{ON_RISE} | 10% to 90% of V_{OUT} rising | | 1.5 | | ms |
| Current Limit Factor | | $I_{LIM} \times R_{SET}$ | | 270k | | A·Ω |
| Max. Current Limit Setting | I_{LIMSET} | $V_{IN} = 3.3V \text{ to } 5.5V$, $R_{SET} = 75k\Omega$ | | | 3.5 | A |
| Current Limit Setting Accuracy | ΔI_{LIMSET} | $I_{LIMSET} = 0.5A \text{ to } 3A$ ($R_{SET} = 540k\Omega \text{ to } 90k\Omega$) | -20 | | +20 | % |
| Under-Voltage Lockout | V_{UVLO} | V_{IN} increasing | 1.3 | 1.7 | | V |
| Under-Voltage Hysteresis | ΔV_{UVLO} | V_{IN} decreasing | | 0.1 | | V |
| Thermal Shutdown Protection | T_{SD} | | | 120 | | °C |
| Thermal Shutdown Hysteresis | ΔT_{SD} | | | 30 | | °C |



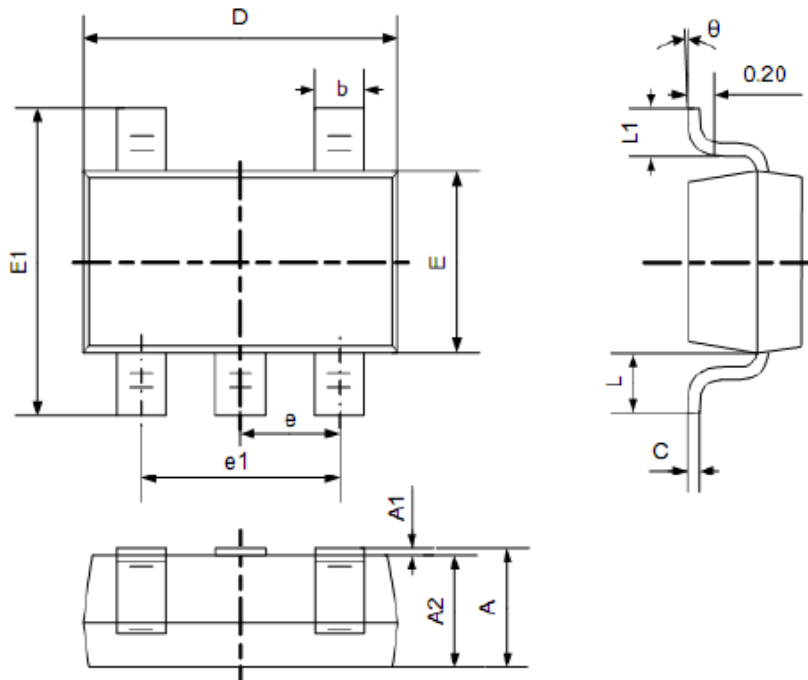
TEST CIRCUIT





PACKAGE INFORMATION

Dimension in SOT-25 (Unit: mm)



| Symbol | Min | Max |
|----------|------------|-------|
| A | 1.050 | 1.250 |
| A1 | 0.000 | 0.100 |
| A2 | 1.050 | 1.150 |
| b | 0.300 | 0.400 |
| c | 0.100 | 0.200 |
| D | 2.820 | 3.020 |
| E | 1.500 | 1.700 |
| E1 | 2.650 | 2.950 |
| e | 0.950(TYP) | |
| e1 | 1.800 | 2.000 |
| L | 0.700(REF) | |
| L1 | 0.300 | 0.600 |
| θ | 0° | 8° |



IMPORTANT NOTICE

AiT Semiconductor Inc. (AiT) reserves the right to make changes to any its product, specifications, to discontinue any integrated circuit product or service without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is current.

AiT Semiconductor Inc.'s integrated circuit products are not designed, intended, authorized, or warranted to be suitable for use in life support applications, devices or systems or other critical applications. Use of AiT products in such applications is understood to be fully at the risk of the customer. As used herein may involve potential risks of death, personal injury, or severe property, or environmental damage. In order to minimize risks associated with the customer's applications, the customer should provide adequate design and operating safeguards.

AiT Semiconductor Inc. assumes to no liability to customer product design or application support. AiT warrants the performance of its products of the specifications applicable at the time of sale.

www.s-manuals.com