

AS3606/7 - AN01 - Evalboard System PMU with HV Back Light Driver

1 General Description

The AS3606/07 is an ultra compact System PMU with integrated battery charger and HV back light driver. The device offers advanced power management functions. All necessary ICs and peripherals in a battery powered mobile device are supplied by the AS3606/07. It features 3 DCDC converters as well as 5 low noise LDOs.

The different regulated supply voltages are programmable via the serial control interface.

The step-up converter for the backlight can operate up to 26V. Both constant voltage (OLED supply) as well as constant current (white LED backlight) operations with 2 current sinks are possible. An internal voltage protection is limiting the output voltage in the case of external component failures.

AS3606/07 also contains a Li-lon battery charger with constant current and constant voltage. The maximum charging current is 1A. An integrated battery switch and an optional external switch are separating the battery during charging or whenever an external power supply is present. With this switch it is also possible to operate with no or deeply discharged batteries. A programmable current limit can be used to control the maximum current used from a USB supply.

The single supply voltage may vary from 2.7V to 5.5V.

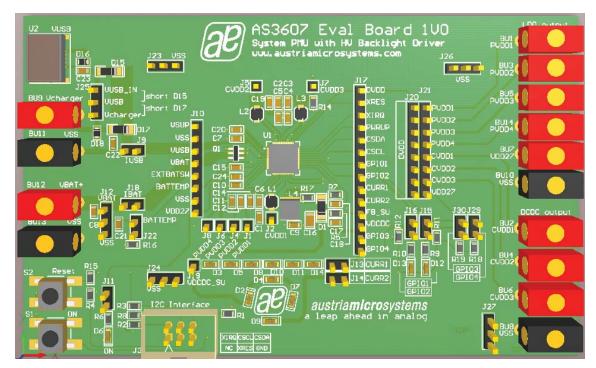




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2 Other applicable documents and papers

Data Sheet: AS3607 0v1

3 Further Applications

Applications based on the AS3607 are continuously updated. Visit our home-page: http://www.austriamicrosystems.com

4 Revision status

AS3607_AN01_Evalboard Application note (this document):

AS3607 Evalboard schematic:

AS3607 Evalboard layout

AS3606 Evalboard schematic:

AS3606 Evalboard layout

AS3606 Evalboard layout

Rev.: 1v1

Rev.: 1v1

Rev.: 1v1

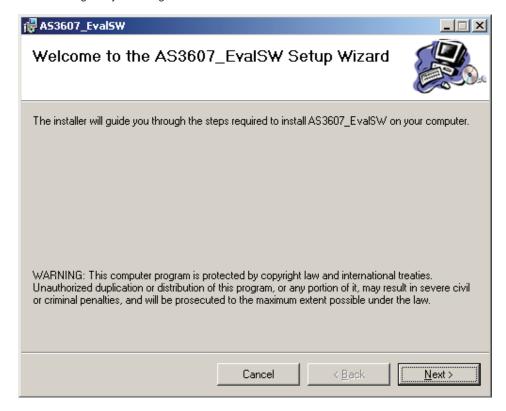
5 General description

Remark: all subsequent component numbering refers to the application schematics, shown in pt. Application Schematic.

6 Getting Started

6.1 AS3606/07 Demo Software Installation

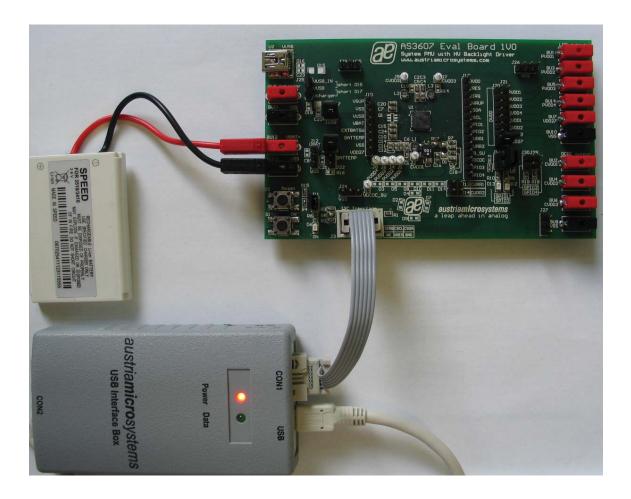
Start the demo software Installation Shield with "Install Demo Software". The Install Shield will guide you through the rest of the installation.





6.2 Connecting the Evalboard and USB Box with the PC

After the successful installation of the demo software, the USB Box can be connected to the PC and to the Evalboard as shown in the picture below.

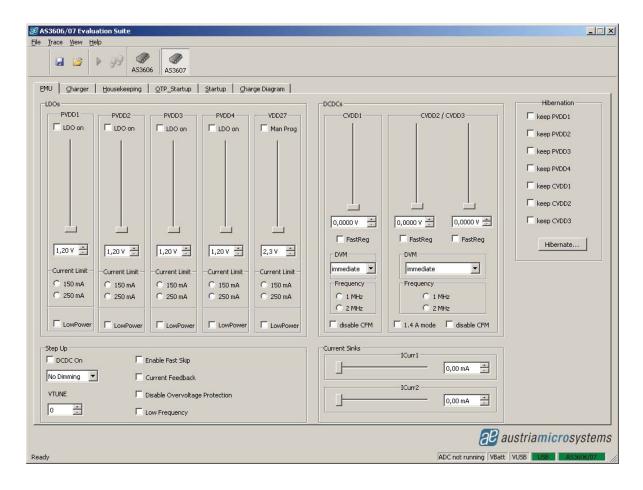




6.3 Starting the AS3607 Demo software

The correct installed demo software can be started from **Start > Programs > austriamicrosystems > AS3607 EvalSW**.

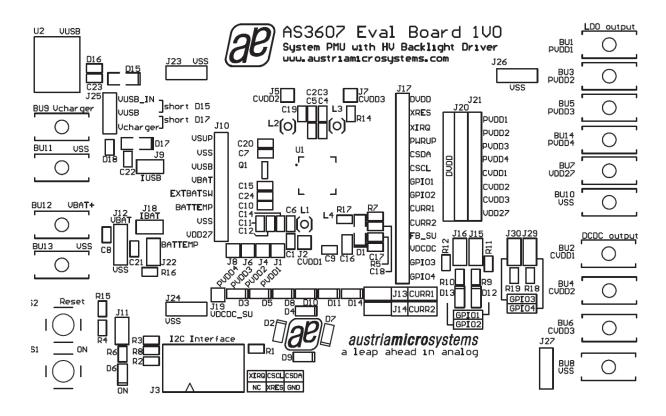
USB connection is immediately indicated in the status bar of the demo software.



7 AS3607 Evalboard 1V0 connector and jumper locations

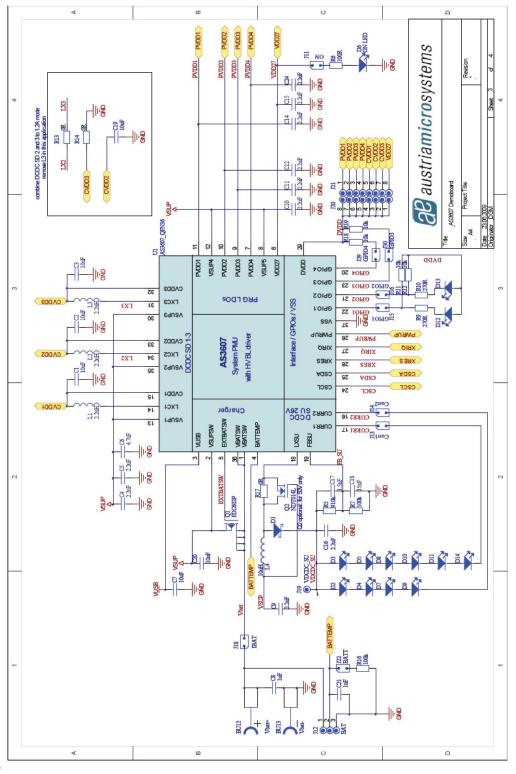
Listed below are the various connectors and jumpers.

Jumper Function comment J1 PVDD1 measurement pinhead of LDO PVDD1 J2 CVDD1 measurement pinhead of DOC CVDD1 J3 I2C Interface USB-Box connector J4 PVDD2 measurement pinhead of LDO PVDD2 J5 CVDD2 measurement pinhead of LDO PVDD2 J6 PVDD3 measurement pinhead of LDO PVDD3 J7 CVDD3 measurement pinhead of DOC CVDD3 J8 PVDD4 measurement pinhead of DOC CVDD3 J8 PVDD4 measurement pinhead of DOC CVDD3 J9 I USB current measurement jumper of charge current J10 measurement pinhead J11 ON LED status LED connected to VDD27 J12 VBAT Battery voltage measurement pinhead J13 CURR1 current measurement jumper of CURR1 J14 CURR2 current measurement jumper of CURR2 J15 GPIO1 if set, LED D12 is connected to GPIO2 J17 measurement pinhead J18 I BAT current measurement jumper of battery current J20 DVDD DVDD DVDD can be supplied with one of the regulators; default: set to VDD27 J21 regulator output DVDD can be supplied with one of the regulators; default: set to VDD27 J23, J24, J25 J26, J27 J25 disable protection jumper J29, J30 GPIO3, GPIO4 if set, pull up resistor is connected to GPIO3/4 BU1 - LDO and DCDC converter output BU7 Charger input Charger input: 2mm connector U2 Charger input Charger input: USB connector B12 VBAT+ Battery connector B13 VBAT- Battery connector B14 ON ON DN button S2 Reset Reset button	ř.	Listed below are the various connectors and jumpers.					
J2 CVDD1 measurement pinhead of DCDC CVDD1 J3 I2C Interface USB-Box connector WSB-Box connector J4 PVDD2 measurement pinhead of LDO PVDD2 J5 CVDD2 measurement pinhead of LDO PVDD3 J7 CVDD3 measurement pinhead of LDO PVDD3 J8 PVDD4 measurement pinhead of LDO PVDD3 J9 I USB current measurement pinhead of LDO PVDD4 J9 I USB current measurement pinhead of LDO PVDD4 J10 measurement pinhead J11 ON LED status LED connected to VDD27 J12 VBAT Battery voltage measurement pinhead J13 CURR1 current measurement jumper of CURR1 J14 CURR2 current measurement jumper of CURR2 J15 GPIO1 if set, LED D12 is connected to GPIO1 J16 GPIO2 if set, LED D13 is connected to GPIO2 J17 measurement pinhead J18 I BAT current measurement jumper of battery current J20 DVDD DVDD DVDD can be supplied with one of the regulators; default: set to VDD27 J21 regulator output DVDD can be supplied with one of the regulators; default: set to VDD27 J22 BATTEMP J23, J24, VS J25, J27 disable protection jumper J29,J30 GPIO3, GPIO4 if set, pull up resistor is connected to GPIO3/4 BU1 - LDO and DCDC converter output BU7 Charger input Charger input: 2mm connector U2 Charger input Charger input: USB connector B13 VBAT- Battery connector B8,B10, VSS S1 ON ON button			comment				
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J13 CURR1 current measurement jumper of CURR1 J14 CURR2 current measurement jumper of CURR2 J15 GPIO1 if set, LED D12 is connected to GPIO1 J16 GPIO2 if set, LED D13 is connected to GPIO2 J17 measurement pinhead J18 I BAT current measurement jumper of battery current J20 DVDD DVDD DVDD can be supplied with one of the regulators; default: set to VDD27 J21 regulator output DVDD can be supplied with one of the regulators; default: set to VDD27 J22 BATTEMP J23, J24, J26, J27 J25 disable protection jumper J29,J30 GPIO3, GPIO4 if set, pull up resistor is connected to GPIO3/4 BU1 - LDO and DCDC converter output BU7 BU9 Charger input Charger input: 2mm connector U2 Charger input Charger input: USB connector B12 VBAT+ Battery connector B13 VBAT- Battery connector B16 ON ON button	J11	ON LED	status LED connected to VDD27				
J14 CURR2 current measurement jumper of CURR2 J15 GPIO1 if set, LED D12 is connected to GPIO1 J16 GPIO2 if set, LED D13 is connected to GPIO2 J17 measurement pinhead J18 I BAT current measurement jumper of battery current J20 DVDD DVDD can be supplied with one of the regulators; default: set to VDD27 J21 regulator output DVDD can be supplied with one of the regulators; default: set to VDD27 J22 BATTEMP J23, J24, VSS J26,J27 J25 disable protection jumper J29,J30 GPIO3, GPIO4 if set, pull up resistor is connected to GPIO3/4 BU1 - LDO and DCDC converter output BU7 BU9 Charger input Charger input: 2mm connector U2 Charger input Charger input: USB connector B12 VBAT+ Battery connector B13 VBAT- Battery connector B8,B10, VSS B13 S1 ON ON button	J12	VBAT	Battery voltage measurement pinhead				
J15 GPIO1 if set, LED D12 is connected to GPIO1 J16 GPIO2 if set, LED D13 is connected to GPIO2 J17 measurement pinhead J18 I BAT current measurement jumper of battery current J20 DVDD DVDD can be supplied with one of the regulators; default: set to VDD27 J21 regulator output DVDD can be supplied with one of the regulators; default: set to VDD27 J22 BATTEMP J23, J24, J26,J27 J25 disable protection jumper J29,J30 GPIO3, GPIO4 if set, pull up resistor is connected to GPIO3/4 BU1 - LDO and DCDC converter output BU7 BU9 Charger input Charger input: 2mm connector U2 Charger input Charger input: USB connector B12 VBAT+ Battery connector B13 VBAT- Battery connector B8,B10, VSS B13 S1 ON ON button	J13	CURR1	current measurement jumper of CURR1				
J16 GPIO2 if set, LED D13 is connected to GPIO2 J17 measurement pinhead J18 I BAT current measurement jumper of battery current J20 DVDD DVDD DVDD can be supplied with one of the regulators; default: set to VDD27 J21 regulator output DVDD can be supplied with one of the regulators; default: set to VDD27 J22 BATTEMP J23, J24, JVSS J25 disable protection jumper J29,J30 GPIO3, GPIO4 if set, pull up resistor is connected to GPIO3/4 BU1 - BU7 BU9 Charger input Charger input: 2mm connector U2 Charger input Charger input: USB connector B12 VBAT+ Battery connector B13 VBAT- Battery connector B3,B10, B13 S1 ON ON button	J14	CURR2	current measurement jumper of CURR2				
J17 measurement pinhead J18 I BAT current measurement jumper of battery current J20 DVDD DVDD DVDD can be supplied with one of the regulators; default: set to VDD27 J21 regulator output DVDD can be supplied with one of the regulators; default: set to VDD27 J22 BATTEMP J23, J24, VSS J25 disable protection jumper J29,J30 GPIO3, GPIO4 if set, pull up resistor is connected to GPIO3/4 BU1 - BU7 BU9 Charger input Charger input: 2mm connector U2 Charger input Charger input: USB connector B12 VBAT+ Battery connector B13 VBAT- Battery connector B8,B10, B13 S1 ON ON button	J15	GPIO1	if set, LED D12 is connected to GPIO1				
J18 I BAT current measurement jumper of battery current J20 DVDD DVDD can be supplied with one of the regulators; default: set to VDD27 J21 regulator output DVDD can be supplied with one of the regulators; default: set to VDD27 J22 BATTEMP J23, J24, VSS J26,J27 J25 disable protection jumper J29,J30 GPIO3, GPIO4 if set, pull up resistor is connected to GPIO3/4 BU1 - LDO and DCDC converter output BU7 BU9 Charger input Charger input: 2mm connector U2 Charger input Charger input: USB connector B12 VBAT+ Battery connector B13 VBAT- Battery connector B3,B10, VSS B13 S1 ON ON button	J16	GPIO2	if set, LED D13 is connected to GPIO2				
J20 DVDD DVDD can be supplied with one of the regulators; default: set to VDD27 J21 regulator output DVDD can be supplied with one of the regulators; default: set to VDD27 J22 BATTEMP J23, J24, VSS J26,J27 J25 disable protection jumper J29,J30 GPIO3, GPIO4 if set, pull up resistor is connected to GPIO3/4 BU1 — LDO and DCDC converter output BU7 BU9 Charger input Charger input: 2mm connector U2 Charger input Charger input: USB connector B12 VBAT+ Battery connector B3 VBAT- Battery connector B8,B10, B13 S1 ON ON button	J17	measurement pinhead					
J20 DVDD DVDD can be supplied with one of the regulators; default: set to VDD27 J21 regulator output DVDD can be supplied with one of the regulators; default: set to VDD27 J22 BATTEMP J23, J24, VSS J26,J27 J25 disable protection jumper J29,J30 GPIO3, GPIO4 if set, pull up resistor is connected to GPIO3/4 BU1 — LDO and DCDC converter output BU7 BU9 Charger input Charger input: 2mm connector U2 Charger input Charger input: USB connector B12 VBAT+ Battery connector B3 VBAT- Battery connector B8,B10, B13 S1 ON ON button	J18	I BAT	current measurement jumper of battery current				
J22 BATTEMP J23, J24, J26, J27 J25 disable protection jumper J29, J30 GPIO3, GPIO4 if set, pull up resistor is connected to GPIO3/4 BU1 - LDO and DCDC converter output BU7 BU9 Charger input Charger input: 2mm connector U2 Charger input Charger input: USB connector B12 VBAT+ Battery connector B13 VBAT- Battery connector B8,B10, B13 S1 ON ON button	J20	DVDD					
J23, J24, J25 disable protection jumper J29,J30 GPIO3, GPIO4 if set, pull up resistor is connected to GPIO3/4 BU1 - LDO and DCDC converter output BU7 BU9 Charger input Charger input: 2mm connector U2 Charger input Charger input: USB connector B12 VBAT+ Battery connector B13 VBAT- Battery connector B8,B10, B13 S1 ON ON button	J21	regulator output	DVDD can be supplied with one of the regulators; default: set to VDD27				
J25 disable protection jumper J29,J30 GPIO3, GPIO4 if set, pull up resistor is connected to GPIO3/4 BU1 - LDO and DCDC converter output BU9 Charger input Charger input: 2mm connector U2 Charger input Charger input: USB connector B12 VBAT+ Battery connector B13 VBAT- Battery connector B8,B10, VSS B13 S1 ON ON button	J22	BATTEMP					
J25 disable protection jumper J29,J30 GPIO3, GPIO4 if set, pull up resistor is connected to GPIO3/4 BU1 - LDO and DCDC converter output BU9 Charger input Charger input: 2mm connector U2 Charger input Charger input: USB connector B12 VBAT+ Battery connector B13 VBAT- Battery connector B8,B10, VSS B13 ON ON button		VSS					
J29,J30 GPIO3, GPIO4 if set, pull up resistor is connected to GPIO3/4 BU1 - LDO and DCDC converter output BU9 Charger input Charger input: 2mm connector U2 Charger input Charger input: USB connector B12 VBAT+ Battery connector B13 VBAT- Battery connector B8,B10, VSS B13 ON ON button		disable protection jumper					
BU1 - BU7 BU9 Charger input Charger input: 2mm connector U2 Charger input Charger input: USB connector B12 VBAT+ Battery connector B13 VBAT- Battery connector B8,B10, B13 S1 ON ON button			if set, pull up resistor is connected to GPIO3/4				
BU7 Charger input Charger input: 2mm connector U2 Charger input Charger input: USB connector B12 VBAT+ Battery connector B13 VBAT- Battery connector B8,B10, B13 VSS S1 ON ON button							
U2 Charger input Charger input: USB connector B12 VBAT+ Battery connector B13 VBAT- Battery connector B8,B10, VSS B13 ON ON button							
B12 VBAT+ Battery connector B13 VBAT- Battery connector B8,B10, B13 VSS ON button	BU9	Charger input	Charger input: 2mm connector				
B13	U2	Charger input	Charger input: USB connector				
B8,B10, VSS B13 ON ON button	B12	VBAT+	Battery connector				
B13 ON S1 ON ON button	B13	VBAT-	Battery connector				
S1 ON ON button		VSS					
S2 Reset Reset button		ON	ON button				
	S2	Reset	Reset button				



Connector and Jumper locations of AS3607 Eval Board 1V0

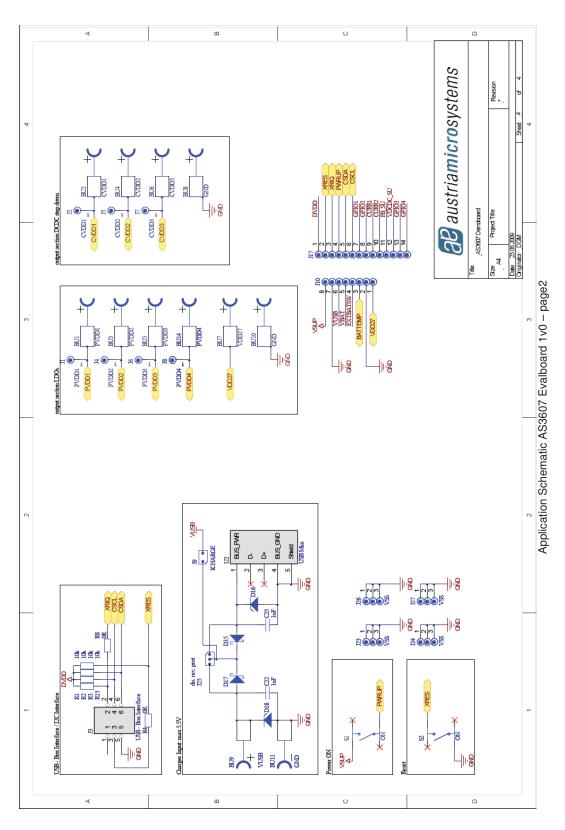
8 Application Schematic of AS3607 Evalboard 1v0



Application Schematic AS3607 Evalboard 1v0-page 1

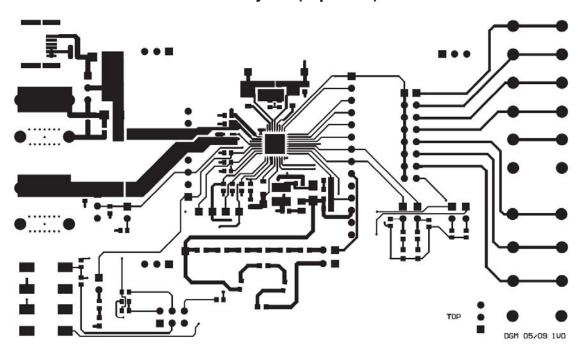
Revision 1v1 / 20100309

Preliminary Application Note - Confidential



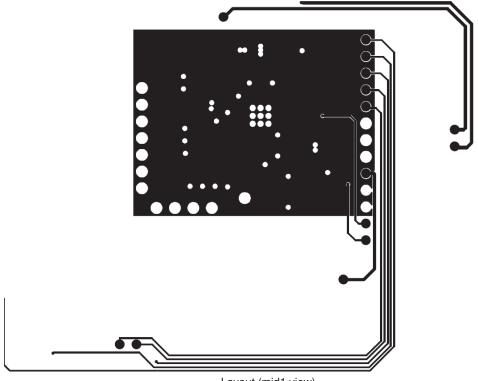


9 AS3607 Evalboard 1v0: Layout (top view)



Layout (top view)

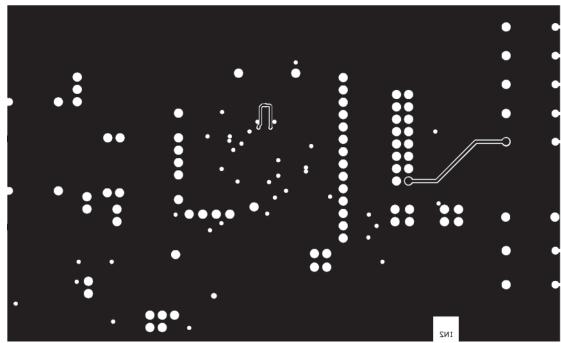
10 AS3607 Evalboard 1v0: Layout (mid layer 1)



Layout (mid1 view)

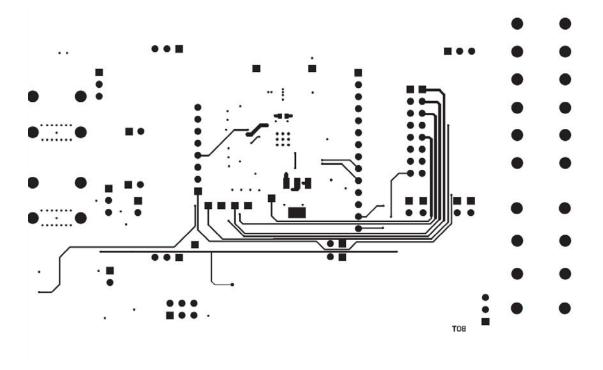
IN1

11 AS3607 Evalboard 1v0: Layout (mid layer 2)



Layout (mid2 view)

12 AS3607 Evalboard 1v0: Layout (bottom view)



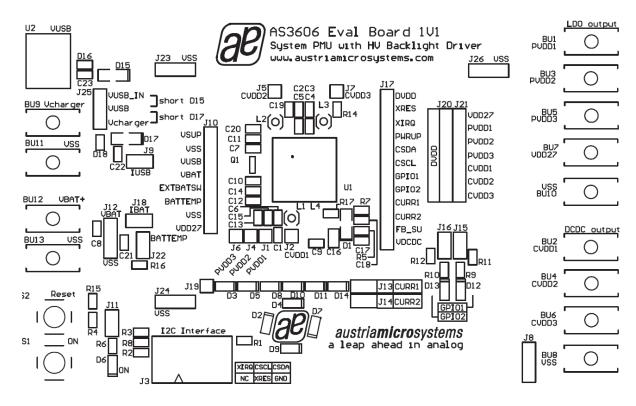
Layout (bottom view)



13 AS3606 Evalboard 1V1 connector and jumper locations

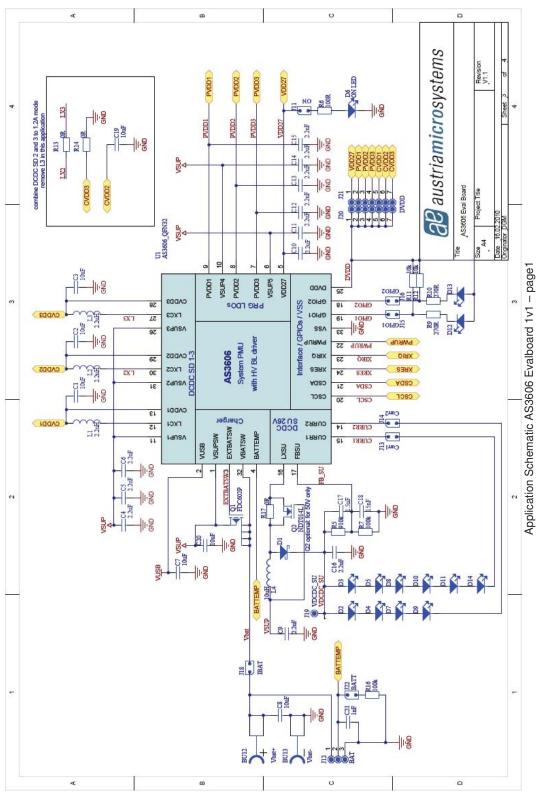
Listed below are the various connectors and jumpers

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Jumper	Function	comment			
J1	PVDD1	measurement pinhead of LDO PVDD1			
J2	CVDD1	measurement pinhead of DCDC CVDD1			
J3	I2C Interface	USB-Box connector			
J4	PVDD2	measurement pinhead of LDO PVDD2			
J5	CVDD2	measurement pinhead of DCDC CVDD2			
J6	PVDD3	measurement pinhead of LDO PVDD3			
J7	CVDD3	measurement pinhead of DCDC CVDD3			
J9	I USB	current measurement jumper of charge current			
J10	measurement pinhead				
J11	ON LED	status LED connected to VDD27			
J12	VBAT	Battery voltage measurement pinhead			
J13	CURR1	current measurement jumper of CURR1			
J14	CURR2	current measurement jumper of CURR2			
J15	GPIO1	if set, LED D12 is connected to GPIO1			
J16	GPIO2	if set, LED D13 is connected to GPIO2			
J17	measurement pinhead				
J18	I BAT	current measurement jumper of battery current			
J20	DVDD	DVDD can be supplied with one of the regulators; default: set to VDD27			
J21	regulator output	DVDD can be supplied with one of the regulators; default: set to VDD27			
J22	BATTEMP				
J23, J24, J26,J8	VSS				
J25	disable protection jumper				
BU1 – BU7	LDO and DCDC converter output				
BU9	Charger input	Charger input: 2mm connector			
U2	Charger input	Charger input: USB connector			
B12	VBAT+	Battery connector			
B13	VBAT-	Battery connector			
B8,B10, B11	VSS				
S1	ON	ON button			
S2	Reset	Reset button			



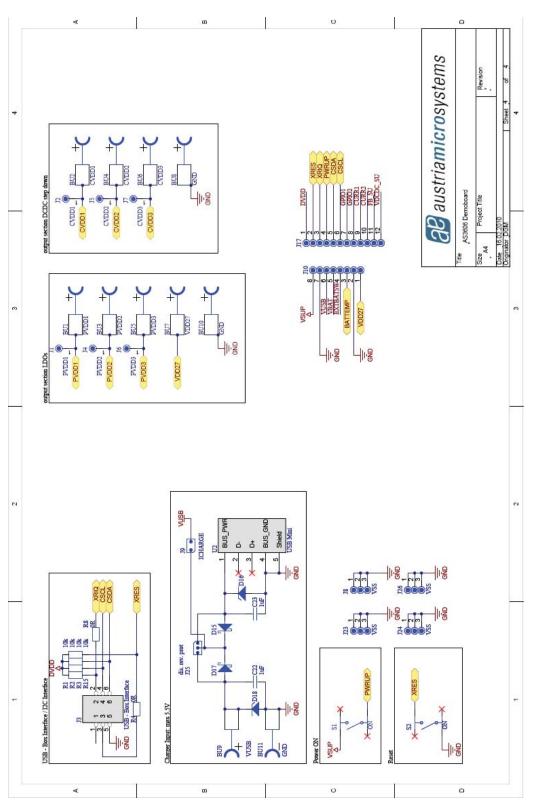
Connector and Jumper locations of AS3606 Eval Board 1V1

14 Application Schematic of AS3606 Evalboard 1v1



Revision 1v1 / 20100309

Preliminary Application Note - Confidential

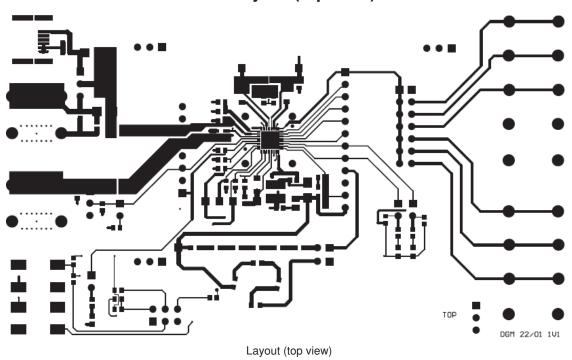


Application Schematic AS3606 Evalboard 1v1 - page2

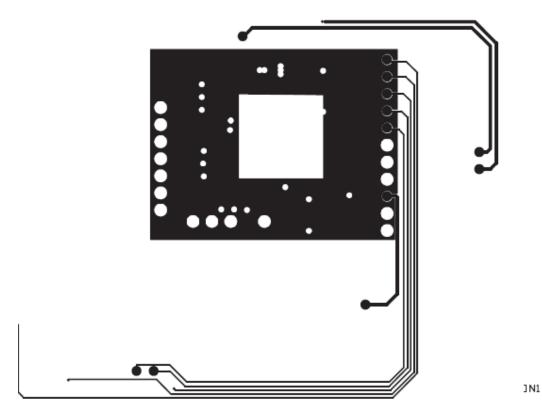
Revision 1v1 / 20100309



15 AS3606 Evalboard 1v1: Layout (top view)



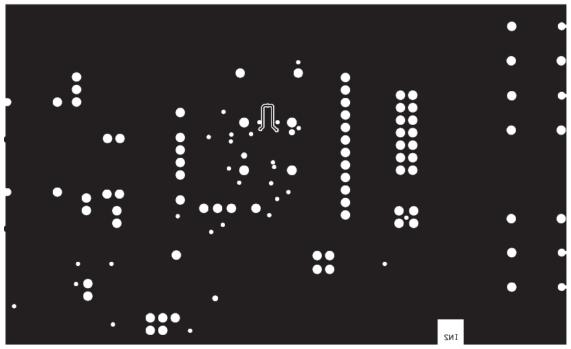
16 AS3606 Evalboard 1v1: Layout (mid layer 1)



Layout (mid1 view)

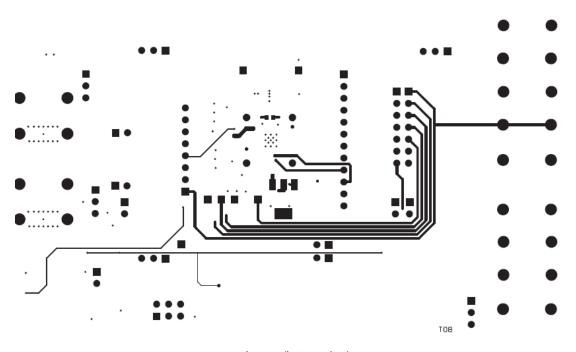


17 AS3606 Evalboard 1v1: Layout (mid layer 2)



Layout (mid2 view)

18 AS3606 Evalboard 1v1: Layout (bottom view)



Layout (bottom view)



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