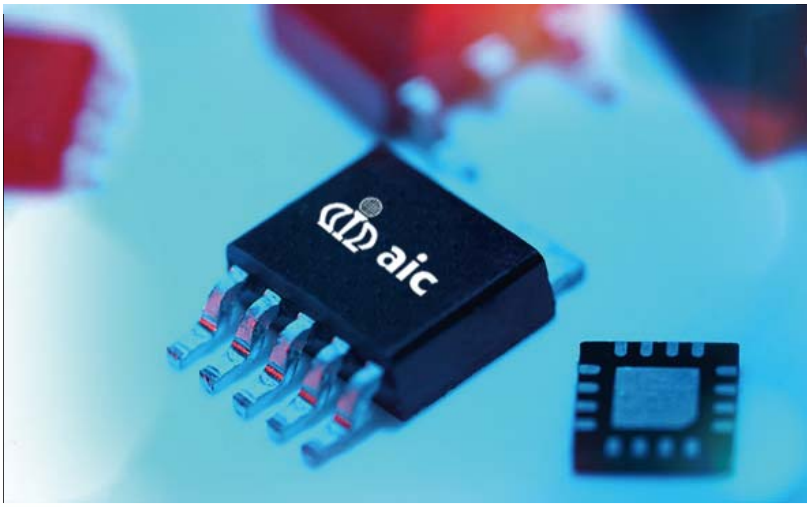
Selection Guide

Analog Integrations Corporation



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Selection Guide

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- **Smart Low Dropout**: AIC1531, AIC1532, AIC1729
- **Ultra Low Dropout**: AIC1190, AIC1221, AIC1701, AIC1702, AIC1722A, AIC1730, AIC1731, AIC1733, AIC1734, AIC1735, AIC1742, AIC1746, AIC1747, AIC1748, AIC1952, AIC1953
- **Fan Control**: AIC1993
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- **DDR**: AIC1385, AIC1386, AIC1387, AIC1388

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- **Buck-Boost**: AIC2341

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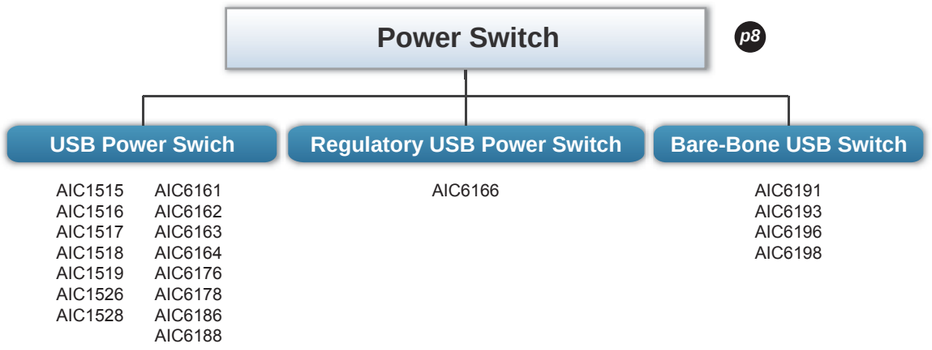

Note:
Information provided by AIC is believed to be accurate and reliable. However, we cannot assume responsibility for use of any circuitry other than circuitry entirely embodied in an AIC product; nor for any infringement of patents or other rights of third parties that may result from its use. We reserve the right to change the circuitry and specifications without notice.

Life Support Policy:
AIC does not authorize any AIC product for use in life support devices and / or systems. Life support devices or systems are devices or systems which, (I) are intended for surgical implant into the body or (ii) support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.

Part No.	Input Voltage max. (V)	Output Voltage (V)	Output Current	Output Voltage Accuracy	Package
Smart Low Dropout Linear Regulator					
AIC1531	7	3.3	500mA	±5%	SOP8, DIP8, QFN12L
AIC1532	7	3.3	500mA	±5%	SOP8, DIP8
AIC1729	8	1.8 ~ 4.0V, in step of 0.1V	400mA	±2%	SOP8, DIP8
Low Dropout Linear Regulator					
AIC1084	7.0	1.5/1.8/2.5/3.3/adj	5A	±1%	TO220, TO252, TO263
AIC1085	7.0	1.5/1.8/ 2.5/3.3/adj.	3A	±1%	TO220, TO252, TO263
AIC1086	7.0	1.8/2.5/2.85/3.3/5.0/adj.	1.5A	±1%	TO220, SOT223, TO263, TO252
AIC1117	7.0	1.8/2.5/2.85/3.3/5.0/adj.	800mA	±1%	TO252, TO220, SOT223, TO263
AIC1117A	7.0	1.8/2.5/2.85/3.3/5.0/adj.	1A	±1%	TO252, TO220, SOT223, TO263
Ultra Low Dropout Linear Regulator					
AIC1190	6.0	0.8 ~ 4.5V, in step of 0.1V	1A	±2%	SOT223, TO220, SOP8(Exposed Pad), TO252-5, TO263-5
AIC1221	6.0	0.8 ~ 5.5V, in step of 0.1V	2A	±2%	SOT223, TO220, SOP8(Exposed Pad), TO252-5, TO263-5
AIC1701	6.0	0.8 ~ 5V, in step of 0.1V	150mA	±2%	SOT23, SOT23-5, SOT89, DFN6L
AIC1702	6.8	0.8 ~ 5V, in step of 0.1V	350mA	±2%	SOT23, SOT23-5, SOT89, DFN6L
AIC1722A	8.0	1.5/1.8/2.0/2.5/2.7/3.0/3.3/3.5/3.7/3.8/5.0/5.2	300mA	±2%	SOT23, SOT89
AIC1730	8.0	1.8 ~ 3.3V, in step of 0.1V	150mA	±2%	SOT23-5
AIC1731	12	1.3/1.5/1.8/2.5/2.8/3.0/3.3	300mA	±2%	SOT23-5, SOT89-5
AIC1733	12	1.3/1.5/1.8/2.5/2.8/3.0/3.3	500mA	±2%	SOT23-5, SOT89-5, TO252-5
AIC1734	12	1.8/2.0/2.5/2.7/3.0/3.3/3.5/3.7/3.8/5.0/5.2	300mA	±2%	SOT89, TO92, SOT23
AIC1735	12	1.8/2.0/2.5/2.7/3.0/3.3/3.5/3.7/3.8/5.0/5.2	500mA	±2%	SOT89, SOT223, TO252, SOT23
AIC1742	9.0	1.5/1.8/2.0/2.5/2.8/2.85/2.9/3.0/3.3	150mA	±2%	SOT23-5
AIC1746	6.0	1.1 ~ 4.2V, in step of 0.1V	150mA	±2%	SOT23-5, TSOT23-5, SC70-5, SOT89-5, DFN6L 2x2
AIC1747	6.0	1.1 ~ 4.2V, in step of 0.1V	300mA	±2%	SOT23-5, TSOT23-5, SC70-5, SOT89-5, DFN6L 2x2
AIC1748	6.0	0.8 ~ 4.5V, in step of 0.1V	600mA	±2%	SOT23, SOT89, SOT223, SOT23-5, SOT89-5, TO252, TO252-5
AIC1952	6.0	0.8 ~ 3.8V, in step of 0.1V	300mA/300mA	±2%	SOT23-6, DFN6L 2x2
AIC1953	6.0	0.8 ~ 3.8V, in step of 0.1V	600mA/600mA	±2%	SOP8(Exposed Pad)

Part No.	Input Voltage max. (V)	Output Voltage (V)	Output Current	Load Regulation	Package
Fan Control Driver IC					
AIC1993	5.5	1.6x VSET	500mA	±0.5%	SOP8
DDR Regulator					
AIC1385	5.5	adj.	2A	±20mV	SOP8(Exposed Pad)
AIC1386	5.5	adj.	2A	±20mV	SOP8(Exposed Pad)
AIC1387	5.5	adj.	3A	±20mV	SOP8(Exposed Pad)
AIC1388	5.5	adj.	3A	±20mV	SOP8(Exposed Pad)

Part No.	Cathode Voltage max. (V)	Reference Voltage (V)	Sink Current	Reference Voltage Accuracy	Package
Voltage Reference					
AIC431	30	2.495	250μA ~ 200mA	±0.5%	SOP8, SOT23, SOT89
TL431	30	2.495	250μA ~ 200mA	±1.6%	SOP8, SOT23, SOT89
TL431A	30	2.495	250μA ~ 200mA	±1.0%	SOP8, SOT23, SOT89

Part No.	Supply Voltage (V)		Output Voltage (V)	Current Function (A)			Control Mode	Freq. (KHZ)	Description	Package
				Internal Switch	External Switch	Low IQ (<100μA)	F: PFM S: PSM W: PWM C: COT			
	min.	max.		I_{SW} Limit	I_{OUT}					
Step Up Series										
AIC1610	1.1	5.5	1.8 ~ 5.5V	1.0		20μA	F	500	High Efficiency Synchronous Step-Up PFM DC-DC Converter	MSOP8
AIC1611	1.1	5.5	1.8 ~ 5.5V	0.65		20μA	F	500	High Efficiency Synchronous Step-Up PFM DC-DC Converter	MSOP8
AIC1628	4.0	20	V_{IN} ~ 4.5x V_{IN}		0.3 (BJT)	100μA	S-F	90 ~ 250	High-Efficiency, Step-Up PFM-PSM DC-DC Controller	SOP8
AIC1634	2.6	10	V_{IN} ~ 30.0V	0.5		100μA	W	1400	1.4MHz Current-Mode Step-Up PWM DC-DC Converter	SOT23-6
AIC1638	0.9	6.0	2.7, 3.0, 3.3, 4.5, 5.0	0.04~0.35		15μA	F	105	1-Cell, 3-Pin, Step-Up PFM DC-DC Converter	SOT89, TO92, SOT23
AIC1639	0.9	6.0	2.7, 3.0, 3.3, 5.0		0.5 (BJT)	18μA	F	105	1-Cell, 3-Pin, Step-Up PFM DC-DC Controller	SOT89, TO92, SOT23
AIC1642	0.9	6.0	2.7, 3.0, 3.1, 3.3, 3.7, 4.5, 5.0	0.04~0.35		15μA	F	105	3-Pin One-Cell Step-Up PFM DC-DC Converter	SOT89, TO92, SOT23
AIC1647	2.5	5.5	V_{IN} ~ 30.0V			70μA	W	1200	White LED Step-Up PWM Converter	SOT23-5, TSOT23-5, QFN12L
AIC1880	2.6	5.5	V_{IN} ~ 11.0V	1.6			W	640 - 1220	Low Noise, Step-Up PWM DC-DC Converter	MSOP8
AIC1896	2.5	10	V_{IN} ~ 30.0V			100μA	W	1400	1.4MHz SOT23 Current-Mode Step-Up PWM DC-DC Converter	SOT23-6, TSOT23-6
AIC3412	0.5	5	1.65 ~ 5.5V	0.48		12μA	S-C	-	Low No-Load Input Current Synchronous Constant Off Time/PSM Step-Up Converter	SOT23-6
AIC3413	0.9	5.5	2.5 ~ 5.5V	0.6		40μA	S-W	1200	400mA, 1.2MHz Synchronous Step-Up Converter	SOT23-6
AIC3415	0.9	5.5	2.5 ~ 5.5V	1.1		40μA	S-W	1200	700mA, 1.2MHz Synchronous Step-Up Converter	SOT23-6
AIC3416	0.9	5.5	2.5 ~ 5.5V	1.6		40μA	S-W	1200	1A, 1.2MHz Synchronous Step-Up Converter	DFN12L
AIC3643	2.5	5.5	V_{IN} ~ 22.0V	1.0			W	1200	Built-in OVP White LED Step-Up Converter	SOT23-6, TSOT23-6
LV Step Down Series										
AIC2300	2.5	5.5	0.6V ~ V_{IN} -0.3	0.6	0.4	65μA	W	1500	400mA Synchronous PWM Step-Down DC-DC Converter	SOT23-5
AIC2302	2.5	5.5	0.6V ~ V_{IN} -0.3	1.1	0.7	65μA	W	1500	700mA Synchronous PWM Step-Down DC-DC Converter	SOT23-5
AIC2304	2.5	5.5	0.6V ~ V_{IN} -0.3	1.6	1.0	65μA	W	1500	1A Synchronous PWM Step-Down DC-DC Converter	SOT23-5, DFN6L
AIC2309	2.5	5.5	0.6V ~ V_{IN} -0.3	1.6	1.0 / 1.0	65μA	W	1500	1A Dual Synchronous PWM Step-Down DC-DC Converter	DFN12L
AIC2322	2.5	6.0	0.8V ~ V_{IN}	3.4	2.0		W	550/1100	2A 550k/1.1MHz Synchronous PWM Step-Down Converter	SOP8
AIC2323	2.5	6.0	0.8V ~ V_{IN}	5	3.2		W	550/1100	3.2A 550k/1.1MHz Synchronous PWM Step-Down Converter	SOP8(Exposed Pad), DFN10L
AIC2324	2.5	6.0	0.8V ~ V_{IN} -0.5		4.0		W	550/1100	4A 550k/1.1MHz Synchronous PWM Step-Down Converter	SOP8(Exposed Pad), DFN10L
AIC2350	2.5	5.5	0.6V ~ V_{IN} -0.3	0.6	0.4	65μA	S-W	1500	400mA Synchronous PWM-PSM Step-Down DC-DC Converter	SOT23-5
AIC2352	2.5	5.5	0.6V ~ V_{IN} -0.3	1.1	0.7	65μA	S-W	1500	700mA Synchronous PWM-PSM Step-Down DC-DC Converter	SOT23-5
AIC2354	2.5	5.5	0.6V ~ V_{IN} -0.3	1.6	1.0	65μA	S-W	1500	1A Synchronous PWM-PSM Step-Down DC-DC Converter	SOT23-5, DFN6L
AIC2359	2.5	5.5	0.6V ~ V_{IN} -0.3	1.6	1.0 / 1.0	65μA	S-W	1500	1A Dual Synchronous PWM-PSM Step-Down DC-DC Converter	DFN12L
AIC2362	2.5	6.0	0.8V ~ V_{IN}	3.4	2.0		S-W	550/1100	2A 550k/1.1MHz Synchronous Step-Down Converter with High Light-Load Efficiency	SOP8
AIC2363	2.5	6.0	0.8V ~ V_{IN}	5	3.2		S-W	550/1100	3.2A 550k/1.1MHz Synchronous Step-Down Converter with High Light-Load Efficiency	SOP8(Exposed Pad), DFN10L
AIC2364	2.5	6.0	0.8V ~ V_{IN} -0.5		4.0		S-W	550/1100	4A 550k/1.1MHz Synchronous Step-Down Converter with High Light-Load Efficiency	SOP8(Exposed Pad), DFN10L
Inverting Series										
AIC1650	4.0	20	V_{OUT}= -1.22 ~ (-40)V		0.025 (BJT)	100μA	F	100 ~ 320	High-Efficiency, Inverting PFM DC-DC Controller	SOP8
AIC1652	2.4	7.0	V_{OUT}= -1.22 ~ (-40)V		0.025 (BJT)	80μA	F	70 ~ 160	Micro-Power Inverting PFM DC-DC Controller	SOP8
AIC1653	1.8	10	-1.23V ~ -28V	0.1		15μA	F	-	Micropower Inverting PFM DC-DC Converter in SOT-23-5	SOT23-5
Charge Pump Series										
AIC1660	1.5	6.0	(-V_{IN}), 0.5V_{IN} , 2.0V_{IN}		0.2	36μA	-	10 - 50	Switched-Capacitor Voltage Converter	SOP8
AIC1841	2.7	5.5	5.0V (up to 4 WLEDs)				W	1000	High Efficiency 1.5x PWM Charge Pump For 4 White LEDs Backlighting	QFN12L
AIC1842	2.7	5.5	5.0V (up to 6 WLEDs)				W	1000	High Efficiency 1.5x PWM Charge Pump For 6 White LEDs Backlighting	QFN16L
AIC1843	2.7	5.5	5.0V (up to 4 WLEDs)				W	1000	High Efficiency 1.5x PWM Charge Pump For 4 White LEDs Backlighting	DFN12L
AIC1848	2.7	4.5	5.0	0.3			W	1800	Regulated 5V PWM Charge Pump In SOT-23 For White LEDs Backlighting	SOT23-6
AIC7660	1.5	6.0	(-V_{IN}), 0.5V_{IN} , 2.0V_{IN}		0.2	30μA	-	10 - 50	Switched-Capacitor Voltage Converter	SOP8

Glossary:
(1) V_{REF} could be the minimum V_{OUT}. In the application, V_{OUT} depends on the designed external resistors.
Please check with datasheets for more information.
(2) Internal Switch I_{OUT}: built-in switch output current. I_{SW} Limit: Internal switching current limit Maximum I_{OUT} can never exceed I_{SW} limit.
Max. I_{OUT}=(Efficiency) • (V_{IN}/V_{OUT}) • I_{SW}

(3) External Switch I_{OUT}: Possible external power switch I_{OUT}. The external device driving capacity may change the I_{OUT} value, possibly greater than the max. I_{OUT}, shown in the table above. The real I_{OUT} depend on the external device's driving capability. (BJT : β ; MOS : Gm)
Example: If customers request -> VIN=1.5V(Alkaline Battery) and minimum VIN=1.1V; VOUT=3.3V(IOUT=250mA); Low battery detective is needed. High efficiency (>90%) is needed.
Solution: Choose AIC1610 for the solution

Part No.	Multioutput	Supply Voltage (V) min.	Supply Voltage (V) max.	*Output Voltage (V)	Current Function (A) Internal Switch I_{SW} Limit	Current Function (A) External Switch I_{OUT}	Control Mode F: PFM, S: PSM W: PWM	Freq. (KHZ)	Description	Package
Multiple Output Series										
AIC1883	1. Step Up DC-DC Converter 2. Charge-pump	2.5	5.5	Step Up: 13 Charge-pump: +24/-10		1.6 0.1/0.1	W	1.5M 1M/700k	Triple-Output LCD Power Supply	QFN24L

Part No.	Supply Voltage (V) min.	Supply Voltage (V) max.	*Output Voltage (V)	Current Function (A) Internal Switch I_{SW} Limit	Current Function (A) External Switch I_{OUT}	Low IQ (<100μA)	Control Mode F: PFM, W: PWM S: PSM	Freq. (KHZ)	Description	Package
HV Step Down Series										
AIC1563	3.0	30	1.25V ~ V_{IN}	2.0	1.5		S	0.1 ~ 100	Versatile DC-DC Converter	SOP8
AIC1573	3.0	30	1.25V ~ V_{IN}	2.0	1.5		S	0.1~100	1.5A Step-down DC-DC Converter	SOP8 (Exposed Pad)
AIC1576	4.0	18	1.22V ~ V_{IN}		5.0	90μA	S-F	90 ~ 280	High-Efficiency, Step-Down DC-DC Controller	SOP8
AIC1577	4.5	24	0.8V ~ 20V		5.0		F-W	500	External NMOS Step-Down PWM Controller	SOP8, MSOP8
AIC2510	4.5	30	1.8V ~ V_{IN}	3.6	3.0		W	150	3A Step-Down PWM Converter	TO263-5, TO220-5, TO220B
AIC2511	4.5	24	1.8V ~ V_{IN}	3.6	3.0		W	150	3A Step-Down PWM Converter	TO263-5, TO220-5, TO220B, TO252-5
AIC2561	4.75	23	1.22V ~ 16V	3.4	2.0		W	380	2A Step-Down PWM Converter	SOP8
AIC2562	4.75	23	0.92V ~ 16V	3.4	2.0		W	380	2A Step-Down PWM Converter	SOP8, MSOP10
AIC2565	4.75	23	1.22V ~ 16V	5.0	3.0		W	385	3A, 23V Step Down DC-DC Converter	SOP8 (Exposed Pad)
AIC2566	4.75	23	0.92V ~ 16V	5.0	3.0		W	385	3A, 23V Step Down DC-DC Converter	SOP8 (Exposed Pad)
AIC2573	4.5	25	0.8V ~ V_{IN}		10		W	300	Synchronous Buck DC-DC Controller	MSOP10
AIC2802	4.5	23	0.92V ~ 12V	5.8	3.0		W	340	3A, 23V Synchronous Step-Down Converter with LDO Controller	SOP8(Exposed Pad)
AIC2822	4.5	23	0.92V ~ 12V	3.4	2.0		W	550	2A, 23V Synchronous Step-Down Converter	SOP8(Exposed Pad)
AIC2823	4.5	23	0.92V ~ 12V	5.8	3.0		W	550	3A, 23V Synchronous Step-Down Converter	SOP8(Exposed Pad)
AIC2832	4.5	23	0.92V ~ 12V	3.4	2.0		W	550	2A, 23V Synchronous Step-Down Converter	SOP8(Exposed Pad)
AIC2833	4.5	23	0.92V ~ 12V	5.8	3.0		W	550	3A, 23V Synchronous Step-Down Converter	SOP8(Exposed Pad)
AIC2857	4.5	23	0.92V ~ 12V	3.4	2.0		W	340	2A, 23V Synchronous Step-Down Converter	SOP8(Exposed Pad)
AIC2858	4.5	23	0.92V ~ 12V	5.8	3.0		W	340	3A, 23V Synchronous Step-Down Converter	SOP8(Exposed Pad)
AIC2862	4.5	23	0.92V ~ 12V	3.4	2.0		S-W	340/550	2A, 23V Synchronous Step-Down Converter with High Light-Load Efficiency	SOP8(Exposed Pad)
AIC2863	4.5	23	0.92V ~ 12V	5.8	3.0		S-W	340/550	3A, 23V Synchronous Step-Down Converter with High Light-Load Efficiency	SOP8(Exposed Pad)
AIC2872	4.5	23	0.92V ~ 12V	3.4	2.0		S-W	340/550	2A, 23V Synchronous Step-Down Converter with High Light-Load Efficiency	SOP8(Exposed Pad)
AIC2873	4.5	23	0.92V ~ 12V	5.8	3.0		S-W	340/550	3A, 23V Synchronous Step-Down Converter with High Light-Load Efficiency	SOP8(Exposed Pad)
Buck-Boost Series										
AIC2341	2.5	5.5	1.8V ~ V_{IN}	1.8	1.0	60μA	S-W	2500	2.5MHz Synchronous Buck-Boost DC/DC Converter	DFN10
LED Backlight										
AIC1634	2.6	10	V_{IN} ~ 30.0V	0.5		100μA	W	1400	1.4MHz Current-Mode Step-Up PWM DC-DC Converter	SOT23-6
AIC1647	2.5	5.5	V_{IN} ~ 30.0V			70μA	W	1200	White LED Step-Up PWM Converter	SOT23-5, TSOT23-5, QFN12L
AIC1896	2.5	10	V_{IN} ~ 30.0V			100μA	W	1400	1.4MHz SOT23 Current-Mode Step-Up PWM DC-DC Converter	SOT23-6, TSOT23-6
AIC3643	2.5	5.5	V_{IN} ~ 22.0V	1.0			W	1200	Built-in OVP White LED Step-Up Converter	SOT23-6, TSOT23-6
AIC3646	7.0	28	V_{IN} ~ 40V	2.0			W	1000	8 String White LED Driver with Active Current Balancing	QFN20L

Part No.	Supply Voltage max. (V)	RDS-ON (mΩ)	Channel No.	Current Limit (A)	External Control	UVLO	Package
USB Power Switch							
AIC6161	6.5	85	1	0.55 ~ 1	Y	Y	SOT23-5, TSOT23-5
AIC6162	6.5	85	1	0.85 ~ 1.4	Y	Y	SOT23-5, TSOT23-5
AIC6163	6.5	85	1	1.1 ~ 2	Y	Y	SOT23-5, TSOT23-5
AIC6164	6.5	85	1	1.6 ~ 3.2	Y	Y	SOT23-5, TSOT23-5
AIC6176	6.5	100	2	0.06 ~ 1.25	Y	Y	SOP8
AIC6178	6.5	100	2	1 ~ 2	Y	Y	SOP8
AIC6186	6.5	85	2	0.52 ~ 0.85	Y	Y	SOP8
AIC6188	6.5	85	2	1.05 ~ 1.55	Y	Y	SOP8
Regulatory USB Power Switch							
AIC6166	7.0	150	1	1.0 ~ 1.5	Y	Y	SOP8 (Exposed Pad)
Bare-Bone USB Switch							
AIC6191	5.5	170	1	0.55 ~ 1	N	Y	SOT23
AIC6193	5.5	170	1	1.05 ~ 1.8	N	Y	SOT23
AIC6196	5.5	170	2	0.55 ~ 1	N	Y	SOT23-5
AIC6198	5.5	170	2	1.05 ~ 1.8	N	Y	SOT23-5

Part No.	Supply Voltage (V)	Supply Current max. (μA)	Detecting Voltage Accuracy	Detector Threshold Hysteresis	Reset Active Timeout Period (mS)	Package
Supervisory						
AIC809	0.9 ~ 6.0	3.0	±1.5%	-	230 (typ.)	SOT23-3
AIC810	0.9 ~ 6.0	3.0	±1.5%	-	230 (typ.)	SOT23-3
AIC811	0.9 ~ 6.0	3.0	±1.5%	-	230 (typ.)	SOT23-5, SOT143, SOT23-6
AIC812	0.9 ~ 6.0	3.0	±1.5%	-	230 (typ.)	SOT23-5
AIC1680	1.5 ~ 10	4.8	±2.5%	0.05 VDET	0.2	SOT23, SOT23-5, SOT89, TO92

Part No.	Charging Set	Discharge Function	-△V Cutoff	0△V Cutoff Time (of Safety Timer)	△T-△t Cutoff	Safety Timer Cutoff	Max. Voltage Cutoff	Max. Temp. Cutoff	Package
NiMH- NiCd Battery Charger									
AIC1784	Single	--	Yes	1 mode (6%)	Yes	Yes	Yes	Yes	SOP8

Part No.	Input Volt. Range (V)	Charge Current Range (mA)	Charge Termination	Battery Recharge	Safety Timer Cutoff	Battery Temp. Protection	Package
Li-ion Charger							
AIC1790	4.5 ~ 5.5	200 ~ 1000	1/10 Full Charge Current	Yes	Yes	Yes	MSOP10 (Exposed Pad)

Part No.	Supply Voltage max. (V)	Input Voltage max. (V)	Output Voltage max. (V)	Channel No.	Output Current (mA)	Package
High Current Driver						
LB1268	8.0	12	10	3	1000	SOP8

Some Layout Tips for The Printed Circuit Boards of Switching Voltage Regulators

Introduction

In designing switching power supply circuits, switching transients often induce noises if circuit layout is not done properly. Several layout guides lines, which can avoid circuits from switching noises, are suggested as follow.

1. Current loop

The current loop is a significant actor in a circuit layout. In order to keep current loops in an area as small as we can, redundant components should be avoided in the loop. Fig 1-1, 1-2 show the buck dc/dc converter, including four current loops, which are input loop, power switch loop, rectifier loop (low-side mosfet loop) and output loop. Fig 2-1, 2-2 are examples of circuit layout with which the current loops take simply a small area. Be aware that the corresponding control components are placed somewhere, out of the loop, near the power switch.

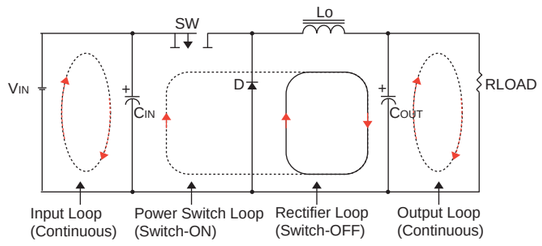

Fig 1-1. Current Loops of an Asynchonous Buck Converter

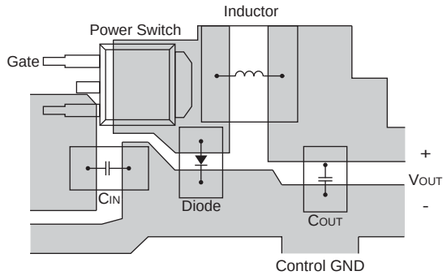

Fig 2-1. Suggested Layout for an Asynchonous Buck converter

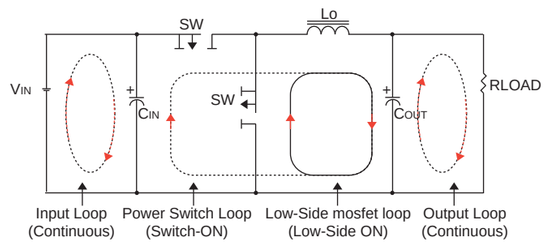

Fig 1-2. Current Loops of a Synchronous Buck Converter

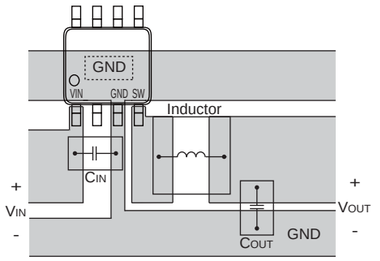

Fig 2-2. Suggested Layout for a Synchronous Buck converter

2.Ground Arrangement

A power converter has three local grounds: input switch ground, output rectifier ground and analog signal ground. The input ground directly connects with the output rectifier ground, but not with the analog signal ground, as shown in Fig 3. In order to achieve tight voltage regulation by ensing low-level signal, the controller sense signal loop has to be separated from current loops because the current loops always bring switching noises. Besides, the signal loop also needs to remain in a small area. The analog signal ground directly connects to the ground associated with the port to be controlled. In fig 3, the output voltage is a controlled port.

Note: The layout rules above apply to other power topologies.

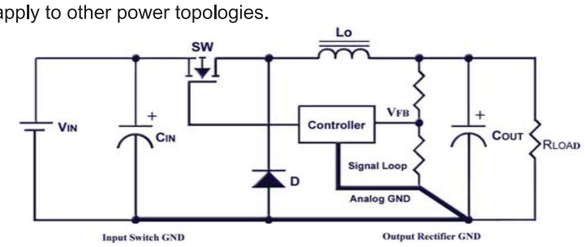

Fig 3. Grounds of a Buck Converter

3. Placements of Components

* The trace on the power path must be as wide as possible. A power plane is preferred if possible.
* The following devices must be placed as close to each other as possible.
  1. Input Source vs. Switching Controllers
  2. Input Capacitor vs. Input Source
  3. Output Capacitor vs. Load
  4. The Feedback Point of the Voltage Divider vs. Switching Controller

For more information, please refer to AIC Application Note AN017 in our website. (www.analog.com.tw)

COMPANY PROFILE

OVERVIEW

Based in Hsinchu Science Park of northern Taiwan, Analog Integrations Corporation (AIC) was founded in January 1992 and is an IC fabless company exclusively devoted to designing, testing, and marketing power management integrated circuits. After having successfully winning a sound reputation for excellence, quality, and customer responsiveness, we quickly emerged as a leading provider of power management IC solutions in the Pacific Rim.

The Taiwanese government bestowed the "National Award of Small and Medium Enterprises" upon AIC for its excellent management and significant dedication to innovation.

QUALITY

AIC is committed to providing customers with products of best-in-class quality and reliability performance. Our quality policy enforcement starts with product design and is fulfilled through development, testing and packaging of each product.

As the first IC design company in Taiwan receiving IQNet certification, AIC focuses on manufacturing products with built-in quality in compliance with ISO9001 and ISO14001. Furthermore, AIC has been certified as Canon Green Activity, LGE Green Program, Ricoh Production Audit, Samsung ECO Partner and Sony Green Partner. Our extensive product testing and robust quality system ensures the highest standards of quality and reliability of all AIC products.

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