DOLPHIN SEMICONDUCTOR

IP solutions catalog 2025

SPIDER IPs: State-of-the art solution for Power Management

As a three-decade leader in Power Management IP, we've tailored solutions to fit your exact design needs, saving you time and resources while accelerating your time-to-market and boosting design productivity.

Power Management IP platform										
		V_{IN} (V)	V_{OUT} (V)	I_{OUT}	Iq (µA)	180nm	55nm	40nm	22nm	12nm
DC/DC Buck	**SIMO DC**/DC Single Input Multiple Outputs	[1.8 - 5.5]	[0.5 -3.5]	Up to 400 mA	0.64 to 1.5 µA				✓	○
	DC/DC - Low Quiescent (LQ)	[1.62 - 5.5]	[0.5 - 3.3]	100 mA - 1 A	0.35 to 0.37 µA			✓	✓	○
		[1.62 - 3.63]	[0.5 -2.5]		0.29 to 0.37 µA			✓	✓	
	DC/DC - Mainstream	[1.9 - 5.5]	[0.5 - 3.3]	100 mA - 1 A	80 to 100 µA				✓	
		[2.7 - 5.5]	[0.55 - 3.3]		130 to 187 µA			✓		
	DC/DC - Legacy	[1.62 - 3.63]	[0.6 - 3.3]	100 mA - 1 A	75 to 100 µA	✓	✓	✓	✓	
		[1.9 - 4.4]	[0.6 - 3.3]		70 to 125 µA	✓	✓			
	Combo DC/DC Mainstream DC/DC + LQ LDO	[1.9 - 5.5]	[0.5 - 3.3]	100 mA - 1 A	(sleep) = 0.25 to 0.6 µA (active) = 100 to 130 µA				✓	
		[2.7 - 5.5]	[0.55 - 3.3]		(sleep) = 0.37 µA (active) = 155 µA			✓		
		[1.62 - 3.63]	[0.55 - 3.3]	100 mA - 700 mA	(sleep) = 0.14 to 0.37 µA (active) = 75 to 100 µA	✓	✓	✓	✓	
LDD	**LDO • High Performances (HP)** Fast transient response High PSRR	[1.8 - 5.5]	[0.5 - 3.3]	100 mA - 500 mA	25 to 65 µA			✓	✓	○
		[2.7 - 5.5]	[0.55 - 3.3]		40 to 125 µA	✓		✓		
		[1.44 - 1.98]	[0.6 - 1.2]		40 µA				✓	
		[1.62 - 3.63]	[0.6 - 2.5]		23 to200 µA		✓	✓	✓	
	LDO - Low Quiescent {LQ)	[2.7 -5.5]	[0.55 - 3.3]	up to 1 mA	0.37 µA			✓		
		[1.9 - 4.4]	[0.55 - 3.3]	up to 1 mA	0.075 to 0.17 µA	✓	✓			
		[1.62 - 3.63]	[0.5 - 3.3]	up to 2 mA	0.14 to 0.37 µA	✓	✓	✓	✓	○
	LDO - Capacitor Less (CL)	[0.72 -1.8]	[0.5 - 0.9]	upto50 mA	7.5 to 12 µA				✓	○
	Combo LDO HP LDO + LQ LDO	[2.7 -5.5]	[0.5 - 2.5]	100 mA - 500 mA	(sleep) = 0.37 µA (active) = 40 µA			✓		
		[1.62 - 3.63]	[0.55 - 2.5]		(sleep) = 0.14 to 0.16 µA (active) = 45 to 75 µA		✓		✓	
OSCILLATORS	**32 kHz XTAL**	[0.72 - 0.99]	Freq = 32.768 kHz		Iq = 97 to 165 nA - CL= 4 to 12.5 pF Accuracy = ±50 ppm				✓	✓
		[0.81 - 1.21]			Iq = 50 to 120 nA / / CL = 4 to 7 pF		✓	✓		

	32 kHz RC	[O. 72 - 0.88]			Iq = 400 nA // Accuracy (full V & T
					ranges): ±500 ppm@ 3a (10 sec max
									○	

		[0.54 - 0.99]			Iq = 55 to 70 nA Accuracy (after trimming)				✓	○
		[0.495 - 1.21]			Iq = 70 to 420 nA Accuracy (after trimming)		✓	✓		
MONITORS	**POR-BOR**	[1.62 - 3.63]	Monitored (V) = [0-AVD]		13 to 15 µA (continuous operation) < 150 nA (burst operation) < 100 nA (BOR disabled)		✓	✓	✓	○
		[1.44 - 1.98]			16 µA (continuous operation) < 150 nA (burst operation) < 100 nA (BOR disabled)				✓	
PMU	**RTC** (RTL IP)	Core voltage			Accuracy: -2.1 to 1.6 ppm Nominal freq: 32.768 kHz	✓	✓	✓	✓	○
	Adaptative Body Bias (ABB)								✓	
	Configurable Power Controller	GUI-based power controller configurator (RTL & C-drivers)				✓	✓	✓	✓	○
		GUI-based UPF backbone generator				✓	✓	✓	✓	○

BAT IPs: Amplifying Audio Excellence

For over 30 years, we are leading Audio premium IPs, catering to diverse applications including TWS, Smart speakers,Wearables, IoT, Automotive, and more. Our BAT IP family offers seamless configurability and assembly for high-fidelity, low-power audio devices, ensuring faster time-to-market with robust and advanced IPs.

Mixed signal Voice & Audio IP platform

		Power supply	SNR	THD+N	Input noise	Power consumption	55nm	40nm	28nm	22nm	12nm
ΔΣ 24-bit ADC (*)	**Voice/audio ADC - Performance**	1.8 V +/-10%	107 dB	-98dB	3.1 µVrms	Full perf. mode: 250 µA Low power mode: 125 µA				✓	✓
	Voice/audio ADC - Mainstream+	1.8 V +/-10%	104.5 dB	- 75 dB	2.6 µVrms	Full perf. mode: 550 µA Low power mode: 150 µA				✓	✓
		1.8 Vto 3.3 V	109 dB	- 75 dB	2.6 µVrms	Full perf. mode: 550 µA Low power mode: 150 µA		○		○	
	Voice/audio ADC - Mainstream	1.8 V +/-10%	101 dB	-80 dB	3.8 µVrms	Full perf. mode: 550 µA Low power mode: 170 µA				✓	✓
		1.8 Vto 3.3 V	106 dB	-80 dB	3.8 µVrms	Full perf. mode: 550 µA Low power mode:		✓		✓	
	Voice/audio ADC - Legacy	2.7 Vto 3.63 V	90dB	-90 dB	7.7 µVrms	Full perf. mode: 1.7 mA	✓	✓			
		1.8 V +/-10%	85dB	-80 dB	8 µVrms	Full perf. mode: 1.7 mA			✓	✓	

O = roadmap / Under development

		Power supply	SNR	THD+N	Output noise	Power consumption					
ΔΣ 24-BIT ADC (*)	**Audio DAC + class-D amp. - performance**	1.8 V +/-10%	115 dB	-95 dB	1.78 µVrms	915 µA without load 1.055 mA at 0.1 mW				○	✓
	Audio DAC + class-AB amp. - Mainstream	1.8 V +/-10%	115 dB	-90 dB	1.9 µVrms	1,175 µA without load 3.4 mA at 0.1 mW				✓	
		1.8 Vto 3.3 V	120 dB	-90 dB	1.9 µVrms	1,175 µA without load 3.4 mA at 0.1 mW				✓	
	Audio DAC + class-AB amp. - Legacy	2.97 V to 3.63 V	100 dB	-90 dB	6 µVrms	2,200 µA without load	✓	✓			

O = roadmap / Under development

Smart Audio IP platform

		Input signal	Output Signal	Main Clock	Power Consumption	55nm	40nm	28nm	22nm	12nm
VUI	**Combo DC/DC** Mainstream DC/DC + LQ LDO	Analog microphone	IRQ upon voice detection	32 kHz RC or 32 kHz crystal	13 µW @ 40 & 22nm	✓	✓		✓	
		Digital microphone	IRQ upon voice detection	From 6 MHz to 13 MHz	25 µW @ 40 nm	✓	✓	✓	✓	✓
	Combo DC/DC Mainstream DC/DC + LQ LDO	Analog microphone	MFCCdata IRQ upon voice detection	32 kHz RC or 32 kHz crystal	7 µW @ 22 nm		○			✓

O = roadmap / Under development

Digital audio IP platform

		SNR	THD+N	Main Clock	Number of channels	Phase alignement	PLL less filters	Low latency filters	Asynchronous interface
DIGITAL AUDIO	**PDM to PCM converter** Digital microphone input	117 dB	-110 dB	12 or 11 MHz or 19.2 MHz 12.288 MHz or 11.2896 MHz	From 1 to 8	✓		✓	✓
	Digital audio DAC PWM	110 dB	-95 dB	12 or 11 MHz or 19.2 MHz 12.288 MHz or 11.2896 MHz	From 1 to 8	✓	✓	✓	✓
	Asynchronous Sample Rate Converter ASRC	114 dB	-114 dB	24 or 26 MHz or 24.576 MHz	From 1 to 8	✓	✓	✓	✓

Phase alignment: Ensure 0°phase mismatch between channels for accurate beamforming.
PLL-lessU: se standardc locka vailablei n your systema nd save an audio PLL..
Low latency filters: Enable µs latency for applications like ANC or RNC.
Asynchronous interface: Enable to contrai your audio codec as asynchronous slave.

Power Metering Single and Tri-phase IP

		Power supply	Class	Range	Outpur data rate	Power & computation Engine (PCE)	130nm	40nm
ΣΣ 24-bit DAC	**Legacy Serie**	2.8 V to 5.5 V	0,1	up to 7000	4 ksps	Yes	✓	
	Mainstream Series	2.8 V to 5.5 V	0,1	up to 7000	4, 8, 16, 32 ksps	Yes		✓

DOLPHIN SEMICONDUCTOR EMPOWERS YOUR CREATIVITY

Dolphin Semiconductor is a leading provider of semiconductor IP solutions, specializing in IP design targeting markets such as Automotive, Industrial, Personal electronics and IoT.
Dolphin's cutting-edge technology IPs in Power management, High-quality Audio, Power metering and Design safety/robustness, allows their thousand customers and partners to accelerates design cycles, fosters faster time-to-market and builds products/solutions that address the challenges of any industries and support a more sustainable world.

YOUR SALES INTERFACES

ASIA
Ying ZHAO
+33 476 417 425
ying.zhao@dolphinsemi.com

AMERICAS
Anne JOUBERT
anne.joubert@dolphinsemi.com

EMEA
Jacques FIGUEIREIDO
+33 772 515 640
jacques.figuereido@dolphinsemi.com

1bisA et 2A Chemin du Pré Carré
38240 Meylan - France
+33 476 411 096
dolphin-semiconductor.com

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