



泛模拟产品及解决方案的领先者

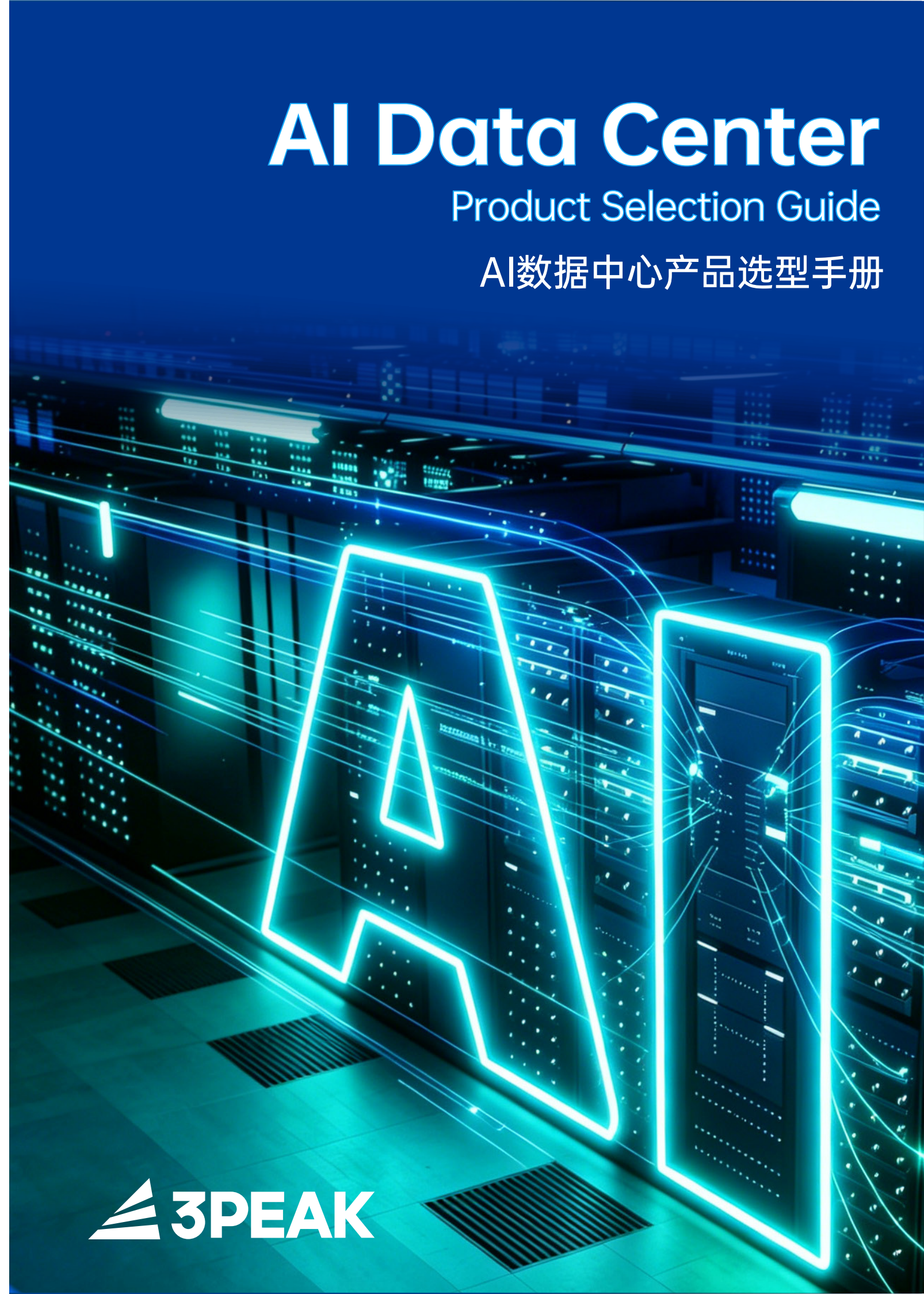
www.3peak.com



AI Data Center

Product Selection Guide

AI数据中心产品选型手册



AI数据中心核心组成



AI算力需求的快速增长，离不开底层模拟芯片的硬件支持。高功率密度、7×24小时不间断运行、严苛的精度与可靠性要求、复杂的电磁环境，对数据中心全链路模拟芯片提出了远超传统场景的挑战。

思瑞浦凭借在高性能模拟芯片领域的深度积累与全品类布局，为AI数据中心打造覆盖**算力核心单元、数据中心电源系统、AIDC备电BMS系统**的全链条解决方案，已服务国内外主流AI服务器、电源模块、储能备电头部客户超百家，在AI与数据中心领域实现营收高速增长，成为智算时代国产模拟芯片的核心供给力量。

思瑞浦在各个核心组成的产品布局

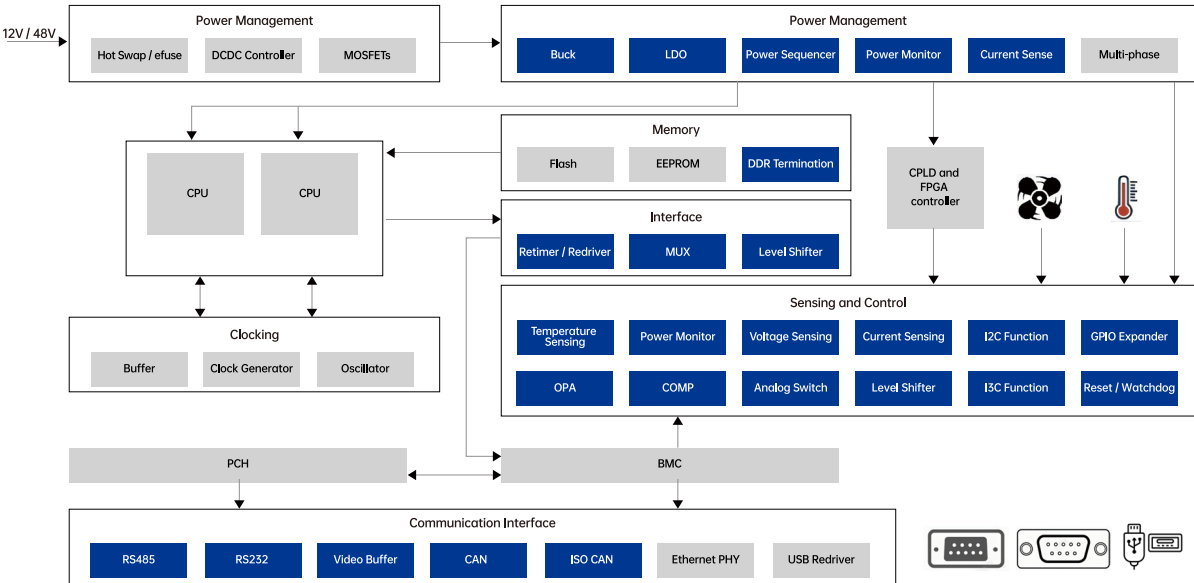
分类	产品类别	算力核心			电源系统			备电BMS系统	
		通算服务器	AI服务器	加速卡	PSU	BBU	SST	主从式BMS架构	菊花链式BMS架构
监测与保护	Power Monitor AFE	✓	✓	✓		✓			
	ADC	✓	✓	✓			✓	✓	✓
	OPA	✓	✓	✓	✓	✓	✓		
	CSA	✓	✓	✓	✓	✓			
	COMP	✓	✓	✓	✓	✓	✓		
	Isolated AMP				✓	✓	✓		
	EMI AEF				✓	✓	✓		
	BMS AFE							✓	✓
	Temprature sensor	✓	✓	✓	✓	✓	✓		
电源管理	DCDC	✓	✓	✓	✓	✓	✓	✓	✓
	LDO	✓	✓	✓	✓	✓	✓	✓	✓
	REF	✓	✓	✓	✓	✓	✓	✓	✓
	EFUSE	✓	✓	✓					
	Oring Controller				✓	✓			
	Isolated Power				✓	✓	✓	✓	✓
	Power MOS				✓	✓			
	Gate Driver				✓	✓	✓		
	Isolated Gate Driver				✓	✓	✓		
接口管理	RESET	✓	✓	✓	✓	✓	✓		
	I2C	✓	✓	✓				✓	✓
	I3C	✓	✓	✓					
	RS485				✓	✓	✓	✓	✓
	RS232	✓	✓		✓	✓	✓		
	CAN				✓	✓	✓	✓	✓
信号处理	Digital Isolator				✓	✓	✓	✓	✓
	Video buffer	✓	✓						
	Analog Switch	✓	✓	✓	✓	✓	✓	✓	✓
	Voltage Translation	✓	✓	✓					
Logic Products	Logic Products	✓	✓	✓	✓	✓	✓	✓	✓

算力核心单元

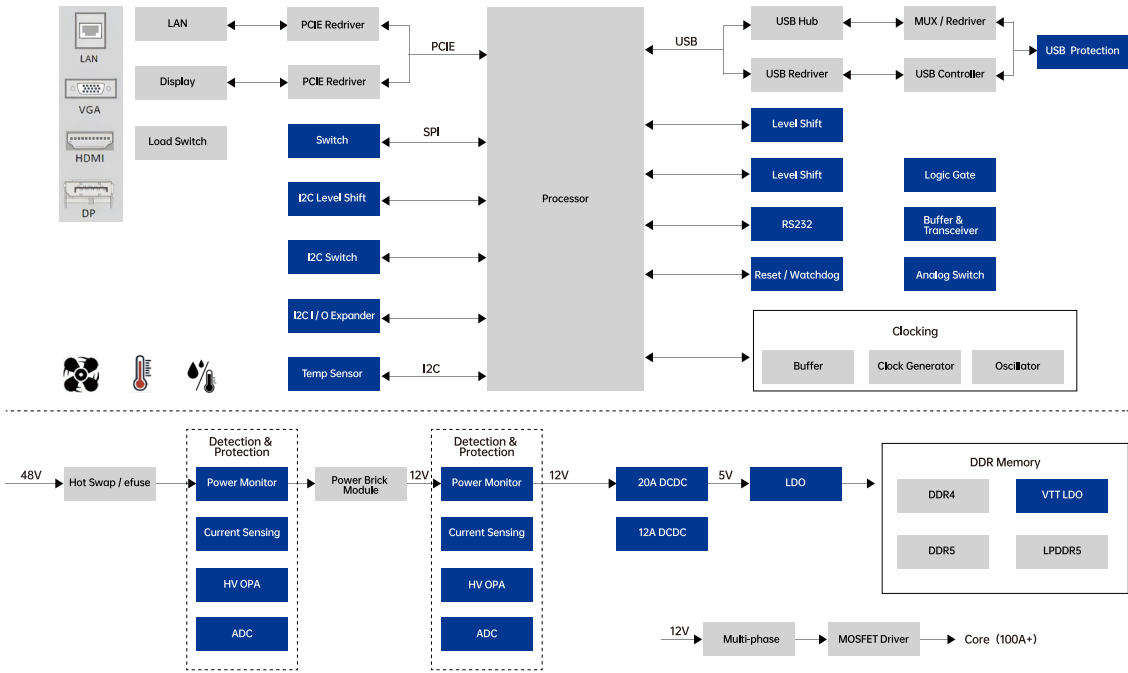
算力核心单元是AI数据中心的“算力引擎”，涵盖CPU/GPU/AI加速芯片集群、显存配套、板级信号处理与供电网络，核心职责是最大化释放算力效率。此场景对模拟芯片提出极为严苛要求：超高精度供电监测、微秒级信号响应、极低噪声干扰、以及7×24小时满负荷运行的长期稳定性。即便毫伏级供电波动，也可能导致算力芯片降频、运算异常乃至系统宕机。



服务器结构框图



加速卡结构框图



算力核心单元产品列表

Category	3PEAK PN	Description	Package	Competition
Power Monitor	TPA626	36V 16-bit input Current/Power monitor with I2C interface	MSOP10	INA226
Power Monitor	TPA6270	36V 16-bit input Current/Power monitor with I2C interface	MSOP10	INA226
Power Monitor	TPA630	36V 16-bit input Current/Power monitor with I2C interface	QFN3X3-16	INA230
Power Monitor	TPA631	36V 16-bit input Current/Power monitor with I2C interface	WLCSP-12	INA231
Power Monitor	TPA6190	36V 12-bit input Current/Power monitor with I2C interface	SOP8, SOT23-8	INA219
Power Monitor	TPA6290	36V 3-ch 16-bit input Current/Power monitor with I2C interface	QFN4X4-16	INA3221
Power Monitor	TPA6271	120V 16-bit input Current/Power monitor with I2C interface	MSOP10	INA237, INA238
ADC	TPAFE0808	8-ch ADC + 8ch DAC + GPIO in small package with I2C interface	QFN3X3-16, WLCSP-16	AD5593
ADC	TPC5022	8-ch 12-Bit SAR ADC with I2C	TSSOP-16	ADS7828
Amplifier	LMV321X, LMV358X, LMV324X	5V 1-ch/2-ch/4-ch Rail-to-Rail Input/Output 1.5-MHz Op Amp	SOT353, SOT23-5, SOP8, MSOP8, SOP14, TSSOP14	LMV321B, LMV358B, LMV324B
Amplifier	TPA5561, TPA5562	5V 1-ch/2-ch Zero-Drift Rail-to-Rail Input/Output 3.5-MHz Op Amp	SOT353, SOT23-5, SOP8, MSOP8, TSSOP8	LMP2021, LMP2022
CSA	TPA183	30V Zero-Drift, Precision Current Sense Amplifier	SOT23-5	INA183, INA210, INA213, INA214
CSA	TPA191	36V Current Sense Amplifier	SOT363	INA199, INA181, INA191
CSA	TPA132	80V Bidirectional, Current-Sense Amplifier with PWM Rejection	SOP8, TSSOP8	INA240, INA241
CSA	TPA133	95V Bidirectional, Current-Sense Amplifier with PWM Rejection	MSOP8, SOT23-8	INA241
CSA	TPA158	150V VCM, 1 MHz, High-Precision, Current-Sense Amplifier	SOT23-5	INA281, INA293
CSA	TPA2295C	70V High side Current Sense Amplifier with Internal Comparator	MSOP8	INA301, INA281
CSA	TPA1285	76V High Precision, High Voltage, 2ch Current Sense Amplifier	MSOP8	INA218x, INA2290
Comparator	TPCMP271, TPCMP272	5V 1-ch/2-ch High speed Comparators with Push-pull Output	SOT23-5, SOT353, SOP8, MSOP8	TLV3511, TLV3512
Comparator	LMV331X, LMV393X	5V 1-ch/2-ch Low-Power Comparators with Open Drain Output	SOT353, SOT23-5, SOP8, MSOP8	LMV331, LMV393
Comparator	LM2903	36V High Voltage, Low cost, BJT input, Comparators with Open-Drain	SOP8, MSOP8, TSSOP8	LM2903
Temprature Sensor	TPTMP75	Digital output Temperature Sensor with I2C and SMBUS Interface	SOP8, MSOP8	TMP75, LM75
I2C IO Expander	TPT29555A	16-bit I2C to GPIO expander	TSSOP24, QFN4X4-24	PCA9555, TCA9555
I2C IO Expander	TPT29554A	8-bit I2C to GPIO expander	TSSOP16	PCA9554, TCA9554
I2C IO Expander	TPT29508	8-bit I2C to GPIO expander with Voltage-level Translation	QFN1.8X2.6-16	TCA6408A
I2C Arbiter	TPT29641	2-channel I2C-bus Master Arbiter	TSSOP16, QFN3X3-16	PCA9641
I2C Switch	TPT29545	4-Channel I2C Switch with Interrupt and Reset	TSSOP20	PCA9545, TCA9545
I2C Switch	TPT29546L	4-Channel I2C Switch with Reset, VCC = 1.65V - 5.5V	SOP16, TSSOP16	PCA9546, TCA9546
I2C Switch	TPT29548L	8-Channel I2C Switch with Reset, VCC = 1.65V - 5.5V	TSSOP24, QFN4X4-24	PCA9548, TCA9548
I2C Hotswap Buffer	TPT29511H	Hot-Swap I2C-BUS Buffer	SOP8, MSOP8	PCA9511A, TCA9511A, TCA4311A
I2C Level Shifter	TPT29617A	Dual Channel Bidirectional I2C Bus Level Shift and Repeater	SOP8, MSOP8	PCA9617A, TCA9617A
I2C Level Shifter	TPT29306	Dual Channel Bidirectional I2C Bus and SMBus Voltage-Level Translator	MSOP8, VSSOP8, DFN1.4X1-8, DFN3X4-8	PCA9306

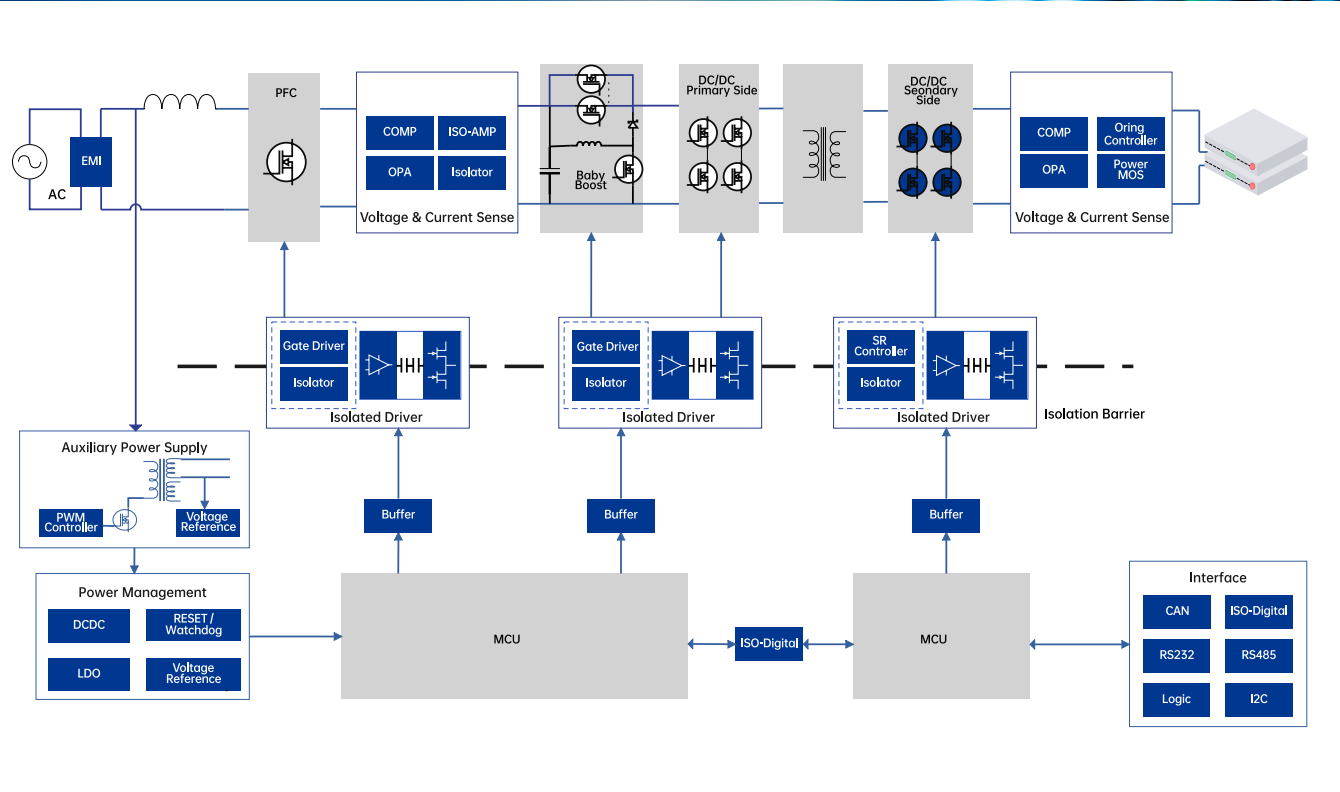
算力核心单元产品列表

Category	3PEAK PN	Description	Package	Competition
I3C Level Shifter	TPT29336	Dual Channel Bidirectional I3C Bus and SMBus Voltage-Level Translator	SOP8, VSSOP8	PCA9306, TCA39306
I3C Level Shifter	TPT29606	Dual Channel Bidirectional I3C/I2C-bus and SPI Voltage-Level Translator	SOT23-8, DFN1.4X1-8	P3A9606, TCA39416
I3C Hub	TPT23H87/88/89	I3C HUB with Two Master Ports and Eight Slave Ports	QFN4X4-28	RG3MB87B12, RG3MB88B12, RG3MB89B12
I3C Hub	TPT23H47/48/49	I3C HUB with Two Master Ports and Four Slave Ports	QFN4X4-28	RG3MB47B12, RG3MB48B12, RG3MB49B12
Level Shifter	TPT20104	4-ch Bidirectional 80-Mbps Level Shifter with OD and Push-Pull Output	TSSOP14, QFN3.5X3.5-14, QFN1.7X2-12	TXS0104, NXS0104
Level Shifter	TPT20108	8-ch Bidirectional 80-Mbps Level Shifter with OD and Push-Pull Output	TSSOP20, QFN3.5X4.5-14, QFN1.7X2-12	TXS0108, NXS0108
Level Shifter	TPT20204	4-ch Bidirectional 100-Mbps Level Shifter with Push-Pull Output	QFN1.7X2-12	TXB0204, NXB0204
Level Shifter	TPT20208	8-ch Bidirectional 100-Mbps Level Shifter with Push-Pull Output	TSSOP20, QFN3.5X4.5-20	TXB0208, NXB0208
Analog Switch	TPW3257	4-ch 2:1 400-MHz Bus Switch	SOP16, TSSOP16, QSOP16	SN74CBTLV3257, SN74CB3Q3257, SGM330
Analog Switch	TPW3227	2.5-GHz 1:2 Multiplexer and Demultiplexer Analog Switch, USB 2.0	QFN1.4X1.8-10	TMUXHS221, SGM722x
Analog Switch	TPW3625	6-Channel, 1:2 Multiplexer and Demultiplexer with 1.8V Logic Compatible Control Inputs	QFN4X4-24	TS3A27518E, SGM6505
Analog Switch	TPD160221	16-Gbps 2-ch Diff 2:1 Multiplexer and Demultiplexer Switch, USB3.x, PCIe Gen3/4, SAS 3.0	QFN2.5x4.5-20	TMUXHS4212, CBTL02043A, TC7PCI3212MT
RS232 Transceiver	TPT3232A	3-V to 5.5-V, 250-kbps 2T2R RS-232 Transceivers	SSOP16, TSSOP16, SOP16	MAX3232E, TRS3232, ST3232E
RS232 Transceiver	TPT3335	3-V to 5.5-V, 1-Mbps 3T5R Multi-Channel RS-232 Transceiver	SOP28, TSSOP28, SSOP28, QFN5X5-32	MAX3243
LDO	TPL9308	3-A 0.8-V REF High-Current High-Accuracy Low-Noise LDO	QFN3.5X3.5-20	TPS7A8400
LDO	TPL9305	3-A 0.5-V REF High-Current High-Accuracy Low-Noise LDO	QFN3.5X3.5-20	TPS7A8401
LDO	TPL9218	2-A 0.8-V REF High-Current High-Accuracy Low-Noise LDO	DFN2.5X2.5-10	TPA7A9201
LDO	TPL51200	3-A Sink and Source DDR Termination Regulator	DFN3X3-10	TPS51200
LDO	TPL7031	350-nA Ultra Low Quiescent Current, 300mA Linear Regulator	SOT23-5, DFN1X1-4	TPS7A03, SGM2040
Voltage Reference	TL431	Precision Programmable Shunt Voltage Reference	SOT23G-3	TL431
Voltage Reference	TPR6040	High-Precision Shunt Voltage Reference	SOT23G-3	LM4040, TL4040, TL4050, ADR504x
efuse	TPS14P50	12-V 5-A eFuse Protection Switches with Inrush Control	DFN3X3-10	TPS259260, TPS259261
efuse	TPS05P50	5-V 5-A eFuse Protection Switches with Inrush Control	DFN3X3-10	TPS259250, TPS259251
POL	TPP22006	16-V 20-A Sync. Step-Down Regulator With Fixed Frequency, POL	QFN3X4-21	MPQ8633B
POL	TPP21206	16-V 12-A Sync. Step-Down Regulator With Fixed Frequency, POL	QFN3X4-21	MPQ8633A
Reset	TPV8308	Low Quiescent Current Supervisory Circuits with Programmable Reset Delay	SOT23-6, DFN2X2-6	TPS3808
Watchdog	TPV706	Low-Voltage Supervisory Circuits with Power-Fail Detector	SOP8	ADM706
Sequencer	TPK1031	Simple 3-ch Power Sequencer with Adjustable Timing	MSOP8	LM3881
Sequencer	TPK1034	4-Channel Power Supply Sequencing and Supervisory Circuits	QFN3.5x3.5-20	SGM864
Video Buffer	TPF153	Low Power, 3-channel 6dB gain Video buffer for HD-Video	SOP8	THS7316, THS7314
Video Buffer	TPF143	Low Power, 3-channel 6dB gain Video buffer for HD-Video	SOP8	THS7316, THS7314
Logic Products		Please refer to Logic Products Selection Guide	Click ▶ https://static.3peak.com/res/doc/guide/3peak_logical-product-selection-guide_cn.pdf	

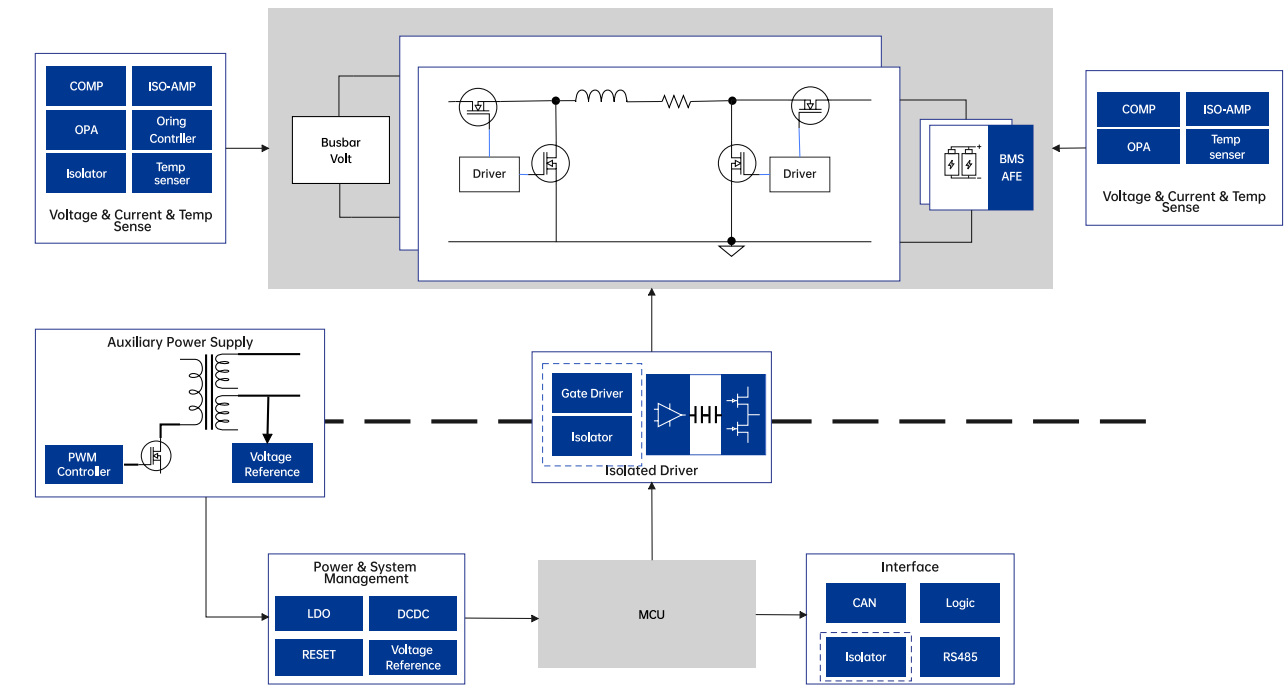
数据中心电源系统

数据中心电源系统作为AI数据中心的“能量大动脉”，覆盖PSU电源模块、BBU电池备份单元、SST固态变压器三大核心场景，贯穿中压-低压电能变换、PFC功率因数校正、隔离型双向DC/DC变换、直流母线稳压、冗余保护全链路。当前AIDC单台服务器功耗突破10kW、800V高压架构加速普及，电源系统对模拟芯片提出更高要求：高频高效功率变换、纳秒级瞬态响应、强抗扰隔离驱动、低EMI电磁兼容设计、冗余供电高可靠性，同时需满足严苛能效标准与10年以上长寿命运行要求。

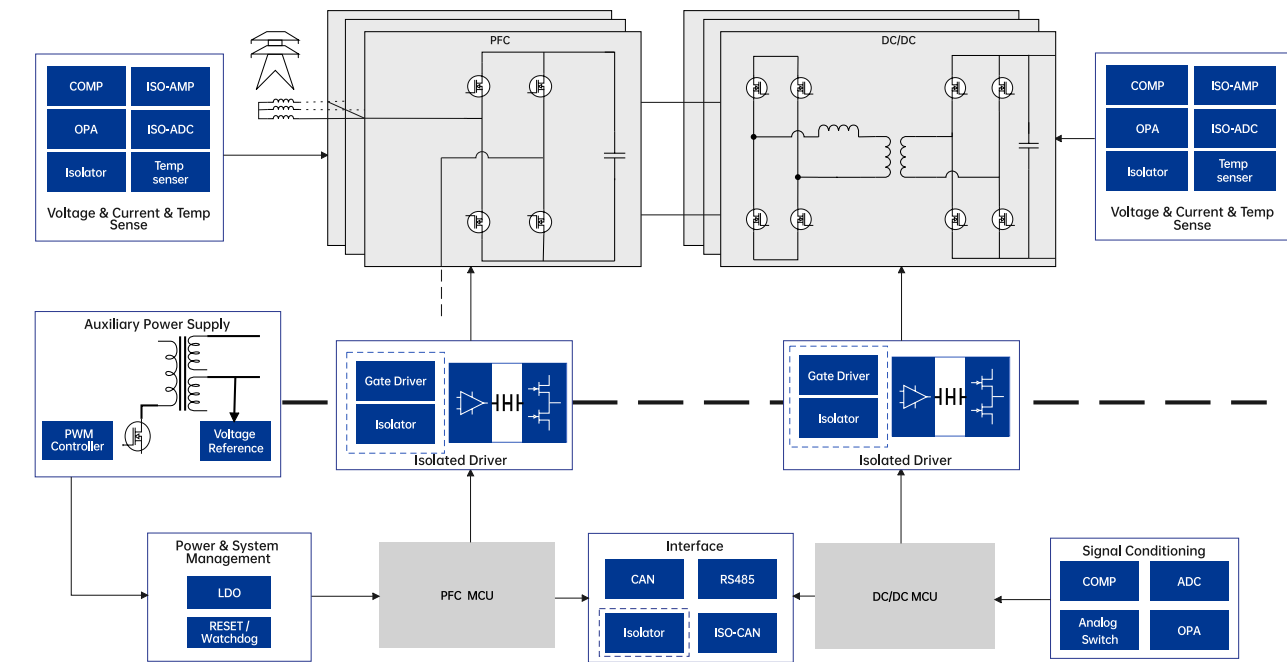
PSU结构框图



BBU结构框图



SST结构框图





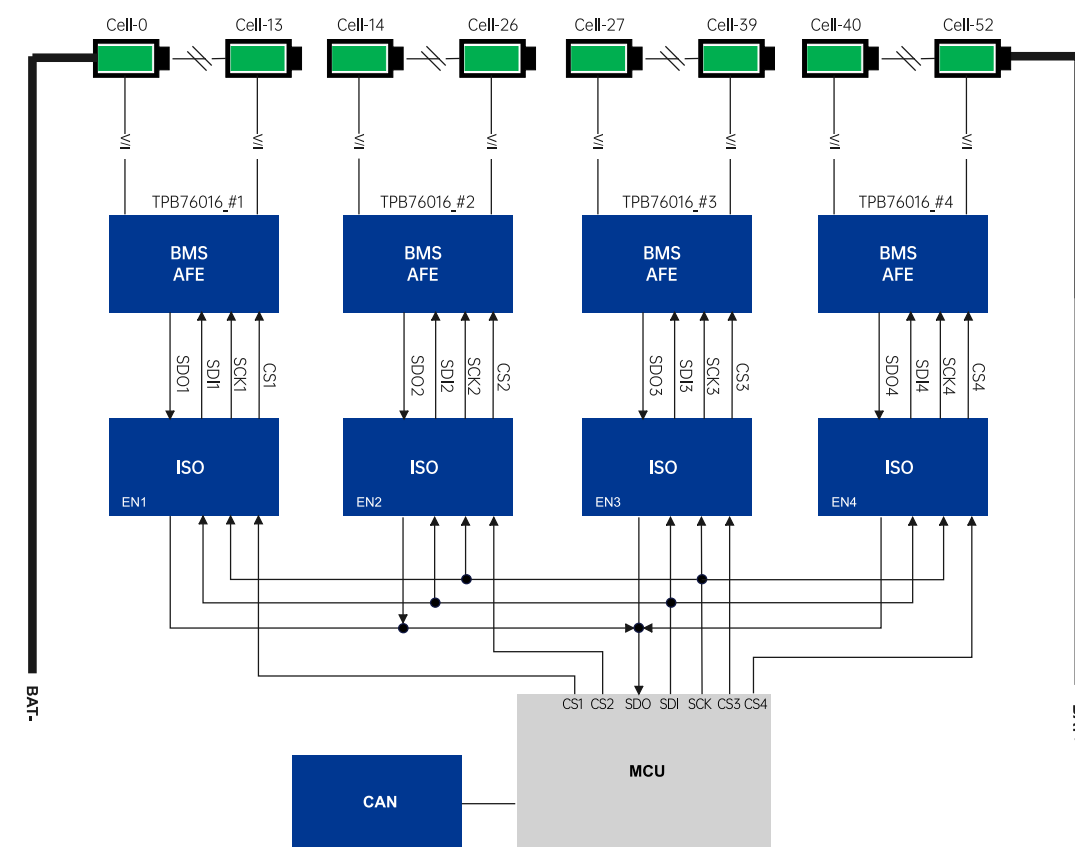
数据中心电源系统产品列表

Category	3PEAK PN	Description	Package	Competition
Comparator	LM393, LM339	40V 2-ch/4-ch High-Voltage Comparators with Open-Drain Output	SOP8, MSOP8, TSSOP8, SOP14, TSSOP14	LM339、LM393
Comparator	TP1961, TP1962, TP1964	7ns, 1/2/4, Ultra-High-Speed, +3V/+5V, Beyond-the-Rails Comparators	SOT23-5, SOT353,SOP8, DFN2*2-8	
Amplifier	TPA1551, TPA1552, TPA1554	40V 1-ch/2-ch/4-ch 6-MHz Bipolar Input Op Amp	SOT23-5, SOP8, MSOP8, TSSOP8, SOP14, TSSOP14	LM2904, LM2902
Amplifier	TP5531, TP5532, TP5534	5.5V 1-ch/2-ch/4-ch 350-kHz 42-μA RRIO Zero-Drift Op Amp	SOT23-5, SOT353, SOP8, DFN2X2-8, MSOP8, SOP14, TSSOP14	SGM855x
Amplifier	TP2261, TP2262, TP2264	36V 1-ch/2-ch/4-ch 3.5-MHz 15-V/μs Operational Amplifier	SOT23-5, SOT353, SOP8, DFN2X2-8, DFN3X3-8, MSOP8, SOP14, TSSOP14	OPAx171
Amplifier	TPA6581,TPA6582,TPA6584	5.5V 1-ch/2-ch/4-ch Low noise, 10-MHz, Operational Amplifiers	DFN0.8X0.8-4,DFN2X2-8,SOT23-5,SOT353,SOP8,TSSOP8,MSOP8,SOP14,TSSOP14	TLV906x,SGM72x,MCP602x
CSA	TPA191	36V Current Sense Amplifier	SOT363	INA199, INA181, INA191
CSA	TPA158	150V VCM, 1 MHz, High-Precision, Current-Sense Amplifier	SOT23-5	INA281, INA293
Isolated Amplifier	TPA8012	±1.6-V Input Isolated Amplifier	SOP8, WSOP8	NSI1312
Temprature Sensor	TPR9001	Linear Thermistor	X1SON, SOT23-3	TMP35
Active EMI Filter	TPAEF0040	Active EMI Filter for Common-mode Noise Mitigation	SOP8	
Active EMI Filter	TPAEF0041	Active EMI Filter for Common-mode Noise Mitigation	SOP8	
Hall Sensor	TPA850x	Hall Current Sense Amplifier	SOP8, SOW16	NSM211x、ACS3703X、TMCS11xx
PWM Controller	CM2842	High Performance Current Mode controller	SOP8, DIP8	UCC2842
Isolated DCDC	TPM6902	40-V, 1-A Full-Bridge Transformer Driver for Isolated Power Supplies	ESOP8, EMSOP8	VPS8703
Isolated DCDC	TPQ5180	75-V, PSR Flyback DC/DC Converter with 100-V, 1.5-A Internal Switch	DFN4X4-8	LM5180
DCDC	TPP36208	36-V Input, 2-A Synchronous Step-Down Voltage Regulator	TSOT23-6	TPS54202、LMR51402
DCDC	TPP00801	80V Synchronous Buck Controller	QFN4.5x3.5-20	LM5145
LDO	TPL8031	40-V 300-mA Wide-Input Ultra-Low Quiescent Current Low-Dropout Linear Regulator	SOT89-3, SOT23-5, SOT223-3	TPS709
LDO	TPL51117x	16-V 800-mA, Low-Dropout Linear Regulato	SOT223-3	x1117
Gate Driver	TPM27524	Dual 5-A High-speed, Low-side Gate Driver	SOP8, EMSOP8, DFN3X3-8, DFN2X2-8, DFN1.5X1.5-8	UCC27524
Isolated Gate Driver	TPM5355	5-A / 5-A,1-Ch Isolated Gate Driver with Miller Clamp, Split Gate	SOP8, WSOP8	UCC5350
Isolated Gate Driver	TPM21550	4.2-A Source, 7.8-A Sink, 5-kVRMS Dual-Channel Isolated Gate Driver	WSOP16, WSOP14	UCC21550
Half Bridge Driver	TPM27282	120-V Supply, 3.5-A Peak, High-frequency HS and LS Gate Driver	SOP8, DFN3X3-10	UCC27282
Voltage Reference	TL431	Precision Programmable Shunt Voltage Reference	SOT23G-3	TL431
Ideal Diode Controller	TPS75R01	75-V High-Side Ideal Diode/OR-ing MOSFET Controller	SOT23-6	LM5050
RS485 Transceiver	TPT487A	3-V to 5.5-V, ±20-kV ESD Protected, 500-Kbps, Full Fail-safe, RS-485 Transceiver	SOP8, MSOP8, DFN3X3-8	THVD1500D, SN65HVD3082
Isolated RS485 Transceiver	TPT7487	Isolated Half-Duplex RS485 Transceiver	WSOP16	ISO1410, MAX33070, ISL3274X
CAN Transceiver	TPT1255, TPT1256	Fault Protected High-Speed CAN FD Transceiver with Silent Mode	SOP8, DFN3X3-8	TJA1051, TCAN1051
Isolated CAN Transceiver	TPT71044, TPT71050	Isolated CAN Transceiver with Flexible Data Rate	WSOP8, WSOP16, SMP8	ISO1044、ISO1055
Digital Isolator	TPT76xx	1-ch/2-ch/3-ch/4-ch/6-ch Reinforced High-Performance Digital Isolator	SOP8, WSOP8, SOP16, QSOP16, WSOP16, WWSOP16	ISO77xx、NSi82xx

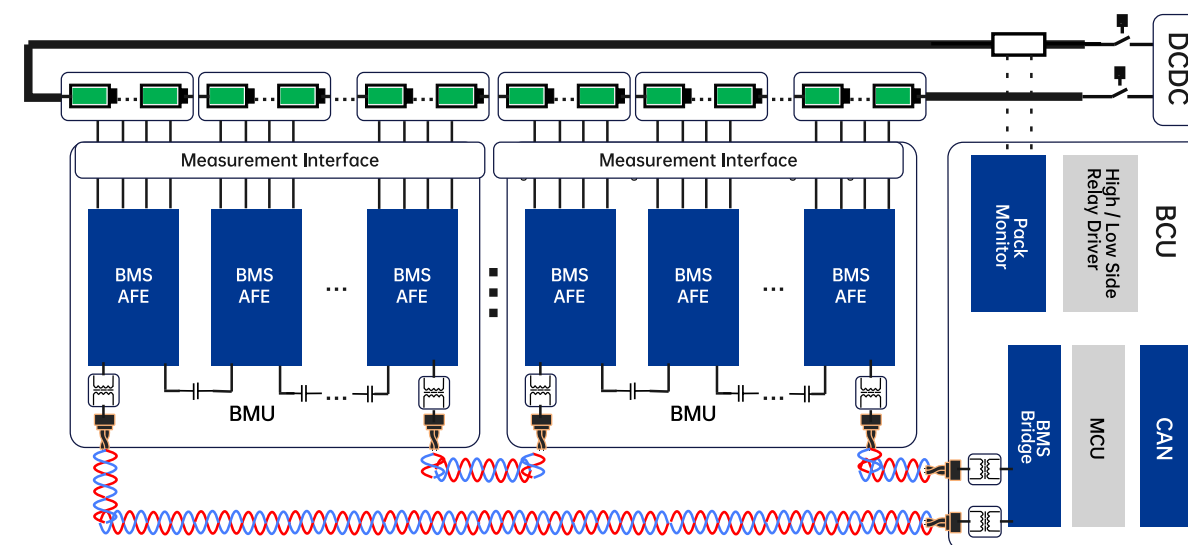
AIDC备电与BMS系统

AIDC备电与BMS系统是AI数据中心的“安全续航底座”，由锂电池组、电池管理系统（BMS）、储能变流器（PCS）构成，可实时监控电芯全生命周期状态，在电网异常时实现毫秒级不间断供电，保障核心算力业务连续不中断，是数据中心安全运行的最后一道关键防线。随着800V高压直流架构的广泛应用，行业对BMS的电压精度、毫秒级响应速度以及绝缘安全提出更高要求，直接驱动高性能BMS方案的需求爆发。

主从式BMS AFE堆叠架构框图



菊花链BMS AFE堆叠架构框图



AIDC备电与BMS系统产品列表

Category	3PEAK PN	Description	Package	Competition
BMS AFE	TPB76016	17 Channels Battery Management System Analog Front-end	LQFP7X7-48	BQ76952
BMS AFE	TPB79818	18-s Automotive Grade, Battery Management Analog Front-End	eLQFP10X10-64	BQ79718
BMS AFE	TPB7717	Automotive Grade SPI Communication Interface With Functional Safety Compliant	TSSOP-16	BQ79600
ADC	TPC6160I	16-Bit, 8 kSPS, 4-Channel Sigma-Delta ADC with Internal Reference	MSOP10	ADS1115
ADC	TPC5121	12-Bit 8-Channel 1MSPS SAR ADC	QFN4X4-24	ADS7951
ADC	TPC6200S	24-Bit, 32 kSPS, 4-Channel Sigma-Delta ADC with Internal Reference	MSOP10	ADS1118
Digital Isolator	TPT7641	4-Channel Reinforced High-Performance Digital Isolator	SOP16, QSOP16, WSOP16, WWSOP16	ISO7741
CAN Transceiver	TPT1255, TPT1256	±15KV ESD Protected,CAN FD 5Mbps,Fault Protected High-Speed CAN FD Transceiver with Silent Mode	SOP8, DFN3X3-8	TJA1051
Isolated CAN Transceiver	TPT71050	5kv rms iso,CAN FD 5Mbps, Isolated CAN Transceiver with Flexible Data Rate	WSOP8, WSOP16, SMP8	ISO1050
RS485 Transceiver	TPT487L1	±12KV ESD Protected,500Kbps,Full Fail-safe, RS-485 Transceivers	SOP8, MSOP8, DFN3X3-8	SN65HVD3082
Isolated RS485 Transceiver	TPT7487	5kv iso, 500kbps Isolated Full- and Half-Duplex RS485 Transceiver	WSOP16	ISO3082
Analog Switch	TPW4051	12-V 8:1 General Purpose Analog Switch	SOP16, TSSOP16, QFN3X3-16, WSOP16	CD4051
DCDC	TPP36308X	36-V Input, 3-A Synchronous Step-Down Voltage Regulator	SOT23-6	LM51430
DCDC	TPP15051	170-V, 0.8-A Buck Converter	SOP8	SD4938
Isolated DCDC	TPM6501	5.5V 1A Lowside Center-Tapped Transformer Driver	SOT23-5	SN6501
Isolated DCDC	TPQ5180	75-V, PSR Flyback DC/DC Converter with 100-V, 1.5-A Internal Switch	DFN4X4-8	LM5180
LDO	TPL8031	40-V 300-mA Wide-Input Ultra-Low Quiescent Current Low-Dropout Linear Regulator	SOT89-3, SOT23-5, SOT223-3	TPS7B82
LDO	TPL5031	5.5V 300-mA Output, High PSRR, Low-Dropout Linear Regulator	SOT23-5	TLV700
Voltage Reference	TL431	Precision Programmable Shunt Voltage Reference	SOT23G-3	TL431
I2C IO Expander	TPT29555A	16-bit I2C to GPIO expander	TSSOP24, QFN4X4-24	PCA9555, TCA9555