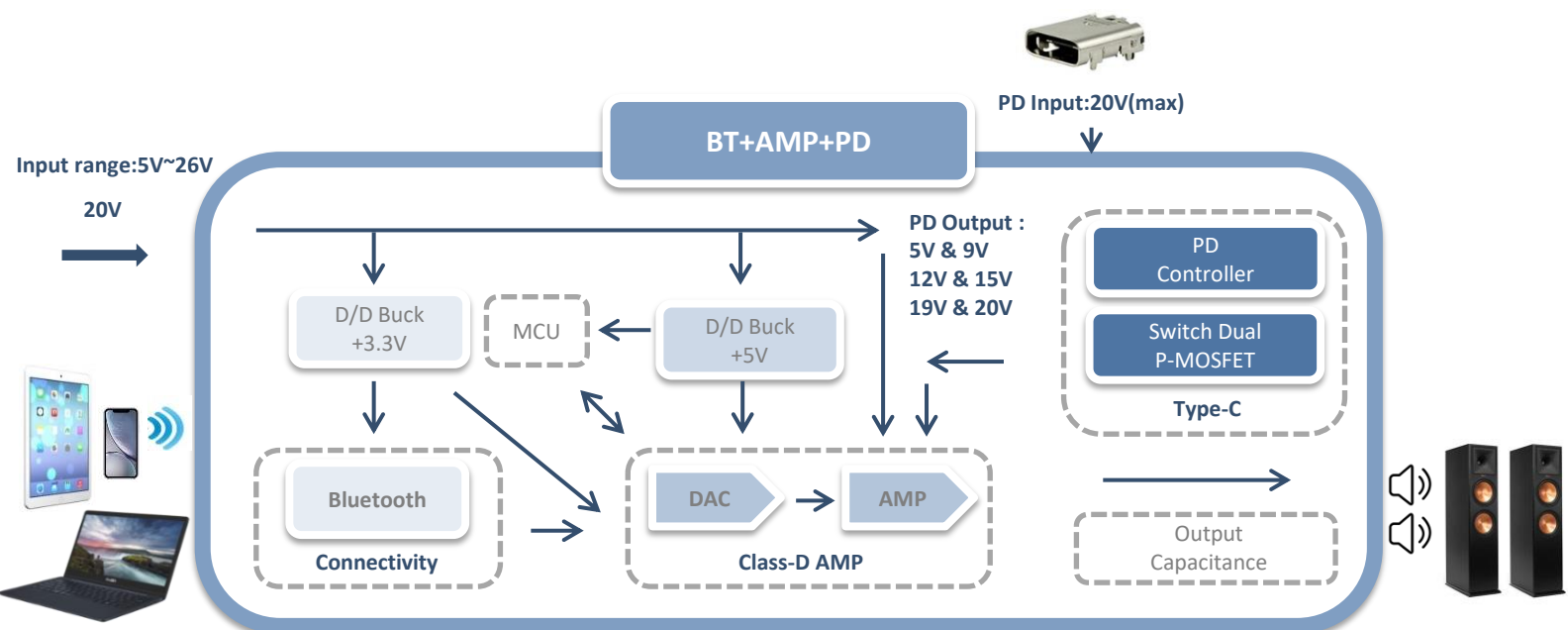
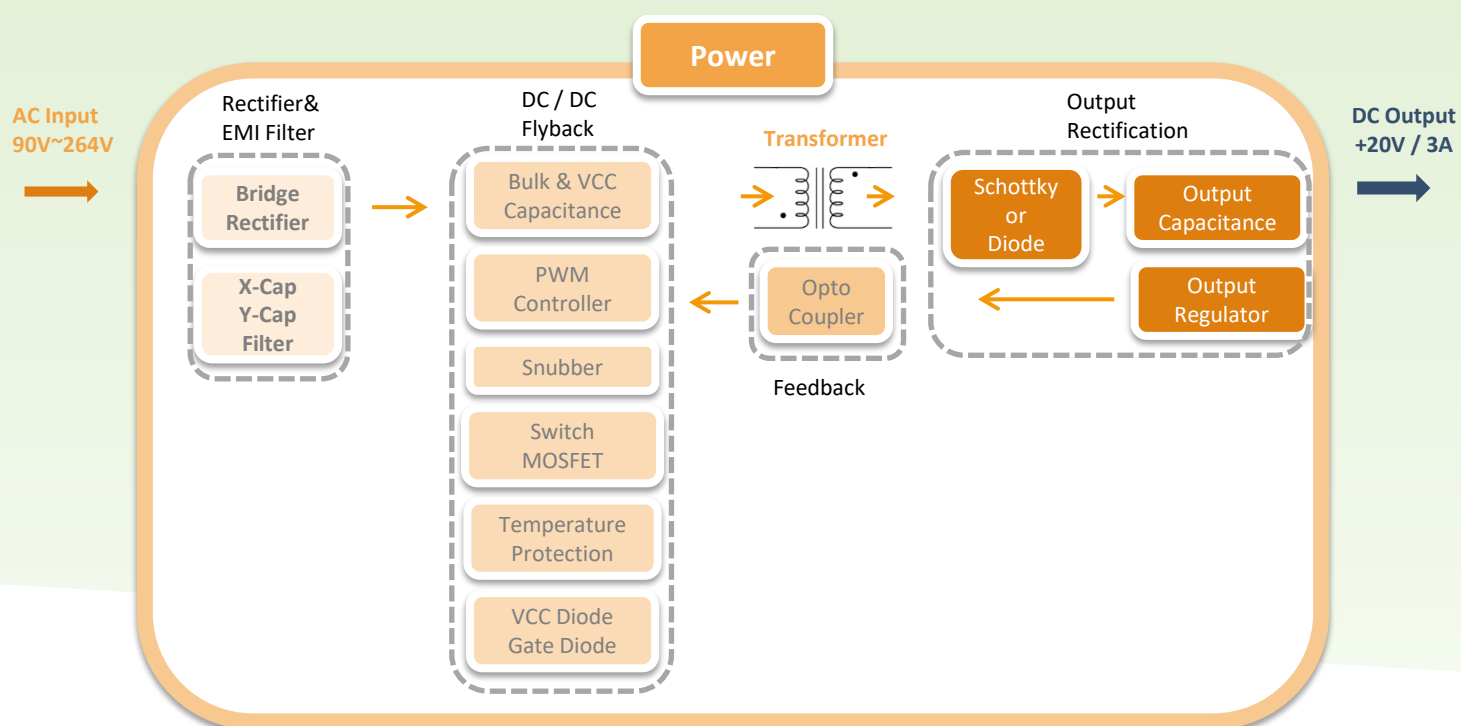
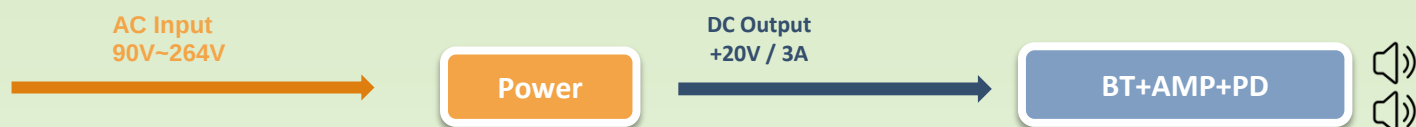


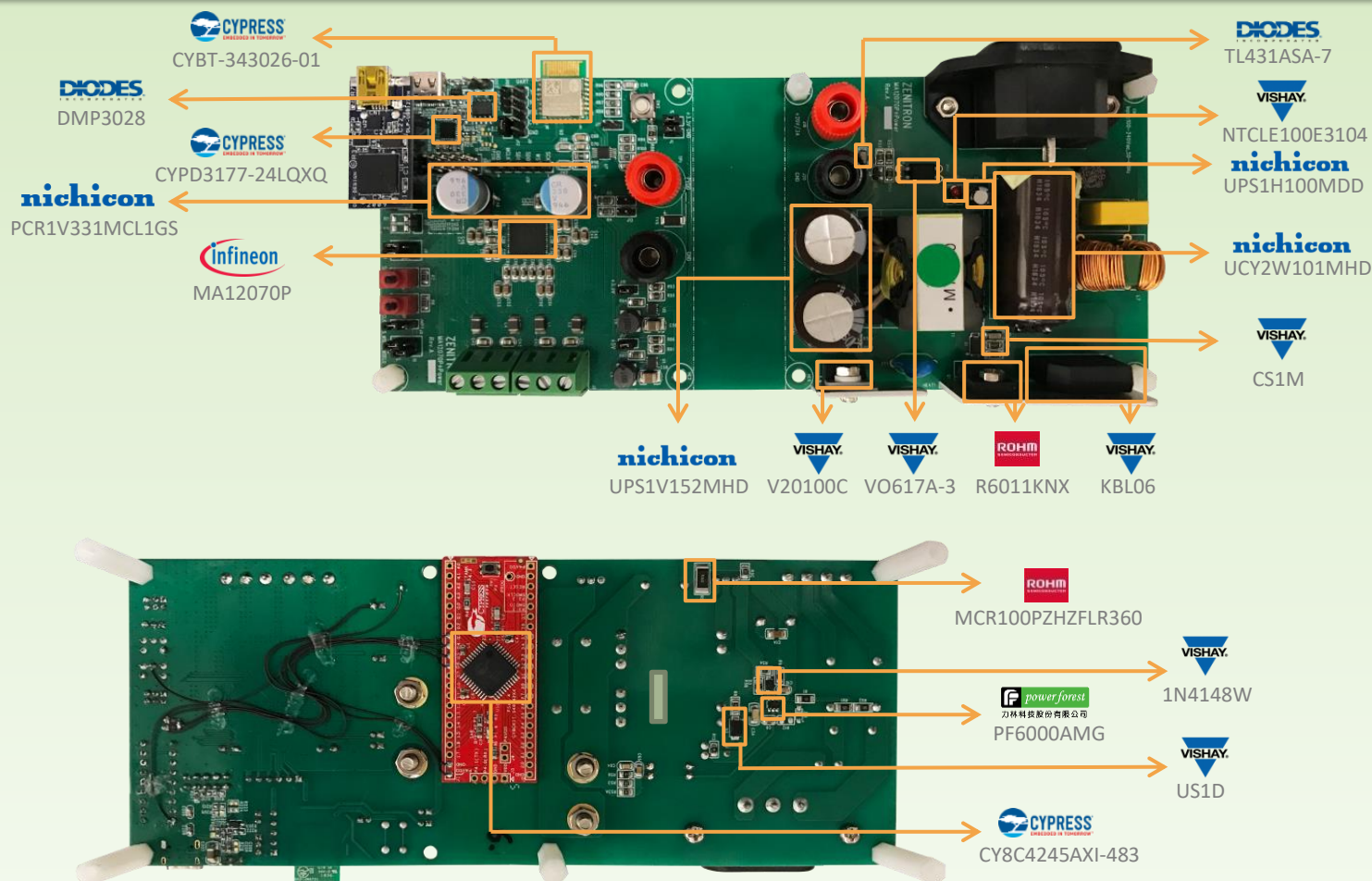


Zenitron Class-D Bluetooth Speaker 60W

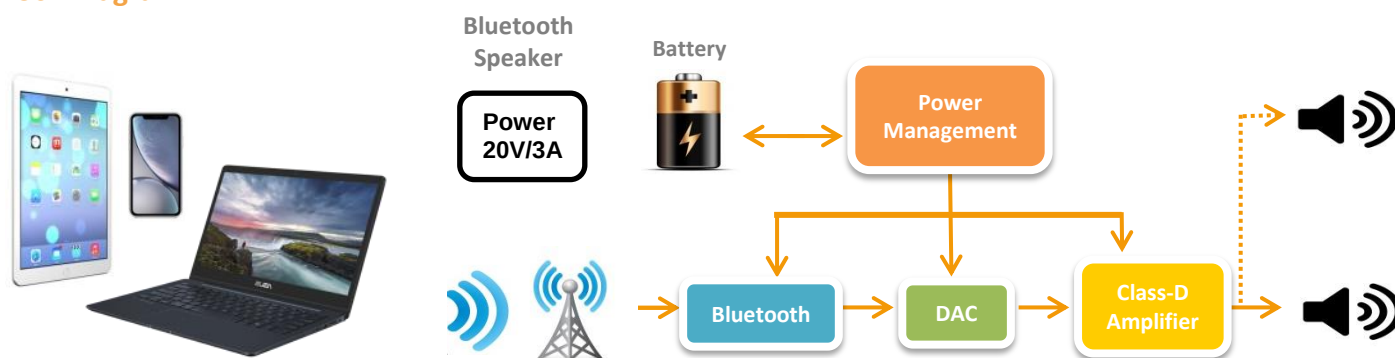




Zenitron Class-D Bluetooth Speaker 60W



Block Diagram



Solution feature description

Audio Amplifier:

- Amplifier integrated digital-to-analog converter enables Digital I2S audio stream input.
- It supports sample rates from 44.1 kHz to 192 kHz
- 3-level and 5-level modulation
- Low EMI emission
- Filterless amplification
- Digital Power Management Algorithm
- Amp input is from 5V to 26V

Type C:

- Power AC(90V~264V) to DC is at 20V/3A
- Type C Input 20V(max), Output are 5V, 9V, 12V, 15V, 19V individually

Bluetooth:

- Advanced Audio Distribution Profile (A2DP) support
- I2S digital stereo audio 44.1Khz 16bit output

Application

- Battery Operated Speakers
- Wireless and Docking Speakers
- Sound bars
- Multi room Systems
- Home Theater Systems



Zenitron Class-D Bluetooth Speaker 60W

Specification description

Audio Amplifier :

- Peak 2 x 80 W sine 1 kHz (RMS) into 4 Ω (10 %THD + N)
- Peak 2 x 40 W sine 1 kHz (RMS) into 8 Ω (10 % THD + N)
- Continuous 2 x 9.0 W sine 1 kHz (RMS) into 4 Ω (less than 0.02% THD + N)
- Under-voltage-lockout
- Over-temperature warning/error
- Short-circuit/overload protection
- Power stage pin-to-pin short-circuit
- Error-reporting through serial interface (I2C)
- DC protection
- I2C control (four selectable addresses)
- Heatsink free operation with EPAD-down package

Type-C:

- Fixed-function USB Type-C and Power Delivery controller supporting USB-PD Rev 3 and Type-C Rev 1.2
- Integrated precision Rd and dead-battery Rd termination resistors
- Integrated regulator to power from VBUS

- Supports a high-voltage P-MOSFET gate driver with slew-rate control
- Supports on-chip OVP and UVP to protect system from faults
- System level ESD protection on CC, VBUS, DP and DM pins. $\pm 8\text{kV}$ Contact Discharge and $\pm 15\text{kV}$ Air Gap Discharge
- based on IED61000-4-2 Level 4C

Bluetooth:

- Bluetooth 5.0, ADC, PWM, UART, I2C, SPI
- Module size: 12.00 mm $\times$ 15.50 mm $\times$ 1.95 mm
- Bluetooth 4.2 Smart Ready module
- Castellated solder pad connections for ease-of-use
- 512-KB on-module serial flash memory
- Up to 11 GPIOs
- Temperature range: -30°C to $+85^\circ\text{C}$
- Cortex-M3 32-bit processor
- Maximum TX output power:
 - +12 dBm for Bluetooth Classic
 - +9 dBm for Bluetooth Low Energy
- RX Receive Sensitivity:
 - -93.5 dBm for Bluetooth Classic, 1Mbps, GFSK
 - -96.5 dBm for Bluetooth Low Energy
- Certified to FCC, ISCED, MIC, and CE regulations.

Part list

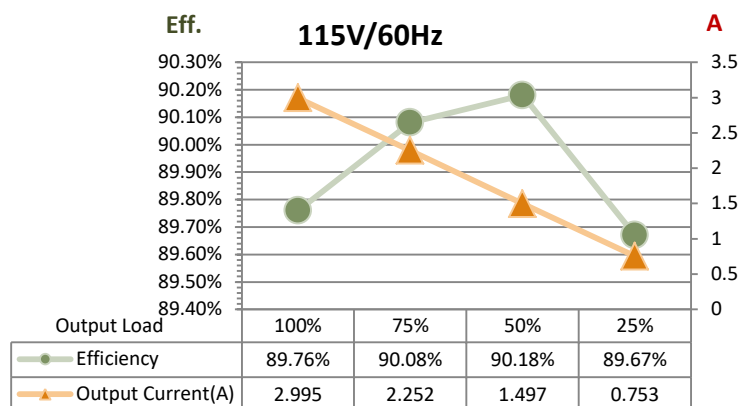
Block	Vendor	Part number	Description
Input Rectifier		KBL06	BRIDGE 600V 4A
DC/DC Flyback		PF6000AMG	Flyback Controller IC SW=100KHz
		UCY2W101MHD	100uF 450V M 105°C 18x35.5 P=7.5 / UCY series
		UPS1H100MDD	10uF 50V M 105°C 5x11 P=2.0 / UPS series
		US1D	DIODE 200V 1A Trr=50ns SMA
		1N4148W	DIODE 75V 150mA Trr=4ns SOD-123
		CS1M	DIODE 1000V 1A Trr=1.5us SMA
		NTCLE100E3104	NTC 100Kohm P=2.5
		R6011KNX	NMOSFET 600V 11A TO-220FM
		MCR100JZHFLR360	shunt resistor 2512 / 0.36 ohm 1%
Feedback		VO617A-3	Optocoupler CTR=130-260 DIP4 P=7.62
Output Rectification		TL431ASA-7	IC-SMD REGULATOR SOT23
		V20100C	SCHOTTKY 100V 20A TO-220AB
		UPS1V152MHD	1500uF 35V M 105°C 16x25 P=7.5 / UPS series
Connectivity		CYBT-343026-01	Buletooth 5.0 (ADC and PWM, UART, I2C, and SPI)
MCU		CY8C4245AXI-483	MCU 32-bit
Class-D AMP		MA12070P	Digital I2S Audio, 4xSE, 2xBTL, 1xPBTl
Type-C		CYPD3177-24LQXQ	Type-C PD controller
		DMP3028	-30V Dual P-Channel
Output Capacitance		PCR1V331MCL1GS	330uF 35V M105°C 10x12.5 P=10



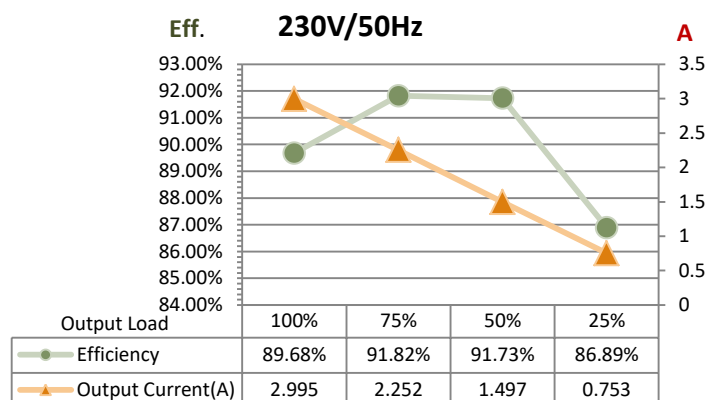
Zenitron Class-D Bluetooth Speaker 60W

Power efficiency

Power 60W	Output Load	Output Current(A)	Output Voltage(V)	Output Power (W)	Input Power (W)	Efficiency
115V	100%	2.995	20.08	60.137	67	89.76%
60Hz	75%	2.252	20.09	45.231	50.21	90.08%
	50%	1.497	20.09	30.065	33.34	90.18%
	25%	0.753	20.09	15.128	16.87	89.67%
	Average					89.92%

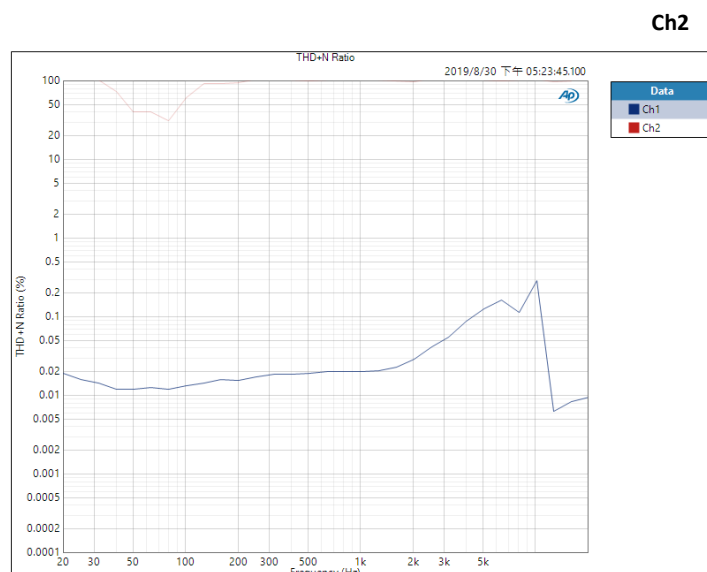
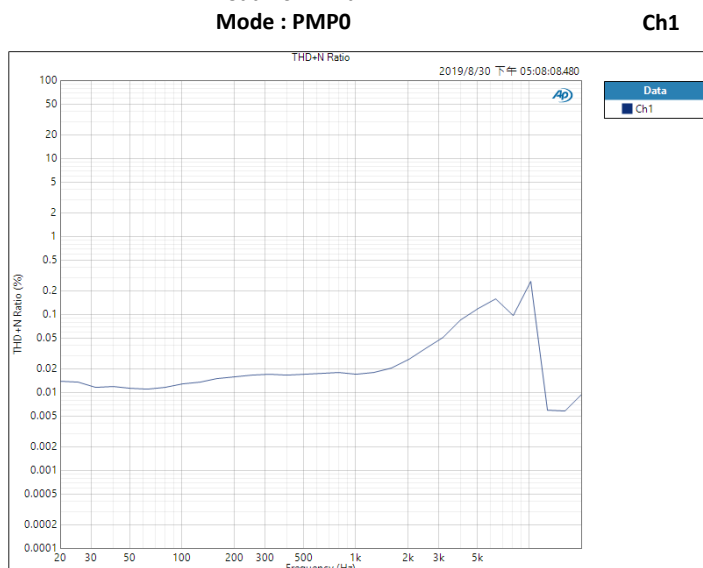


Power 60W	Output Load	Output Current(A)	Output Voltage(V)	Output Power (W)	Input Power (W)	Efficiency
230V	100%	2.995	20.08	60.131	67.05	89.68%
50Hz	75%	2.252	20.08	45.222	49.25	91.82%
	50%	1.497	20.09	30.06	32.77	91.73%
	25%	0.753	20.09	15.128	17.41	86.89%
	Average					90.03%



AMP THD+N

測試條件:
Instrument : APX-525+AUX-0025
PVDD : 20V
Load : 6Ω+22uH
Mode : PMP0



Contact Us:

Taipei (Headquarter)
brett_chen@zenitron.com.tw

China-ShangHai
helen_jiang@zenitron.com.cn

China-ShenZhen
helen_jiang@zenitron.com.cn