MULTI-CHANNEL POWER AMPLIFIERS

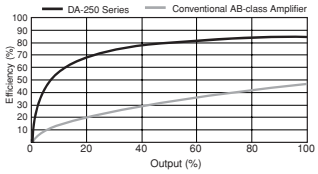
DA-250 SERIES

DESCRIPTION

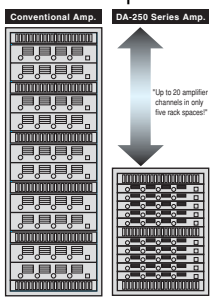
The DA-250F and DA-250FH power amplifiers utilize advanced digital technology to provide multi-channel high power outputs. Featuring high efficiency amplifier topology, the low impedance DA-250F and high impedance DA-250FH are ideal for various installed sound applications. The lightweight construction and compact dimensions of the DA Series allows for easy placement in virtually any venue, as well as for use in stacked configurations as required. Each amplifier is equipped with low-noise constant speed fans for adequate cooling and designed for ultra-reliable longterm operation with multiple independent power supplies that ensure uninterrupted operation even if a channel fails. Redundant protection circuitry monitors amplifier status and protects the amplifier and system in case of problems.

FEATURES

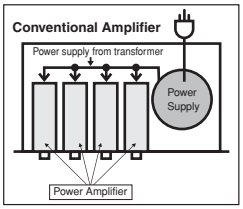
- **High-efficiency amplifier topology.**
  TOA's proprietary amplifier topology achieves approx. 85% efficiency in AC mains to output power conversion. The high-efficiency, compact design operates at much lower temperature levels eliminating the need for large heat sinks.

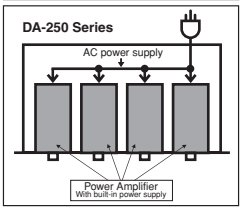


- **Amplifier design optimized for installed sound applications**
  The DA-250F and 250FH are specifically designed to produce high power with high efficiency. Along with switching mode power supplies, the amplifiers also offer the high power advantages of Pulse Width Modulation (PWM) which requires much smaller power supply voltage than conventional amplifier designs.
- **Two configurations suit different applications.**
  Along with the low impedance DA-250F, a high impedance version, the DA-250FH, is available for 70/100 volt application.
- **Easily accommodates high power requirements.**
  Both amplifiers can be conveniently bridged* (Channels 1/2 and 3/4 bridgeable), increasing the output from 250W into 4 channels up to 500W into 2 channels.
  * without DA-250FH 220 – 240V AC version.
- **Versatile enough for any venue.**
  Both amplifiers are well-suited for a wide variety of installed sound requirements. The DA-250FH is ideal for venues ranging from exhibition halls, sports facilities and gymnasiums to houses of worship and meeting halls and many other locations. The DA-250FH proves ideal for sound reinforcement in multi-zone applications such as presentation and press conference rooms as well as restaurants and similarly sized locations.
- **Compact dimensions facilitate installation**
  The powerful yet compact DA-250F and DA-250FH amplifiers occupy only one standard rack space and weight only 6.6kg (14.6 lbs)* allowing flexible installation options. For complex installed sound applications, amplifiers can be stacked together, requiring only one perforated airflow panel between every 5 units. The amplifiers are also equipped with dual low-noise constant speed fans to ensure adequate cooling in demanding environments and extend operational reliability and service life.
  *220 – 240V AC version: 6.8kg (15.0 lbs)



- **Enhanced reliability for trouble-free operation.**
  Both amplifiers have been over-engineered to provide long term operation under demanding conditions. Fully independent power supplies for each of the 4 amplifier channels enhances reliability and allows uninterrupted operation in the event a channel should fail. This is a significant advantage in remote installations where service access may be difficult. Each unit also incorporates TOA's no-compromise build quality to minimize any problem as well as comprehensive protection circuitry.





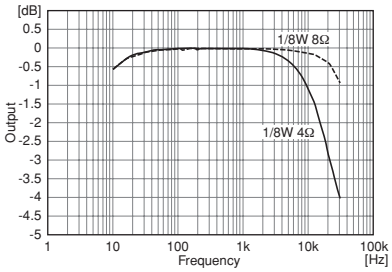
- **Comprehensive protection circuitry.**
  Advanced protection circuitry monitors voltage, current and thermal levels and disables output to minimize potential damage from overloads, short circuit, DC offset or overheating.
- **Control cover eliminates tampering.**
  Each amplifier includes attenuator security covers to prevent control settings from unauthorized adjustments.

TOA

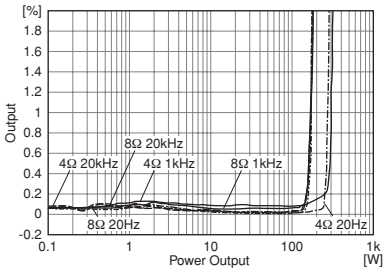
DA-250 SERIES

(220 – 240V AC Version)

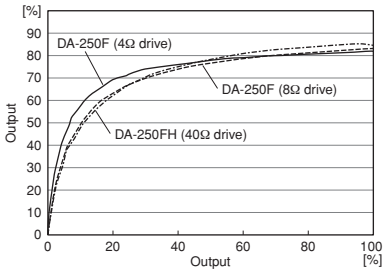
DA-250F Frequency response



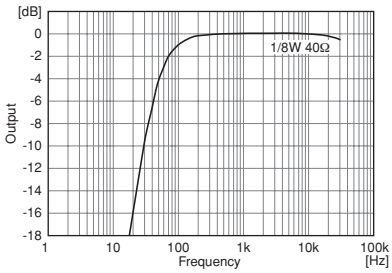
DA-250F T.H.D vs Power Output



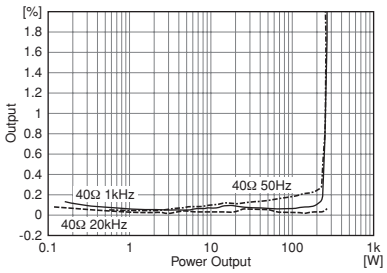
Efficiency vs Output



DA-250FH Frequency response

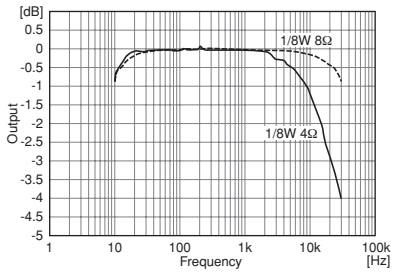


DA-250FH T.H.D vs Power Output

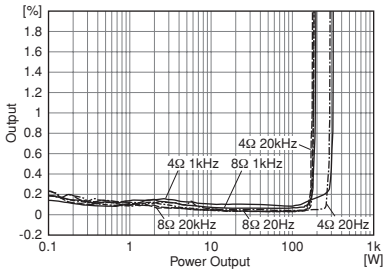


(120V AC Version)

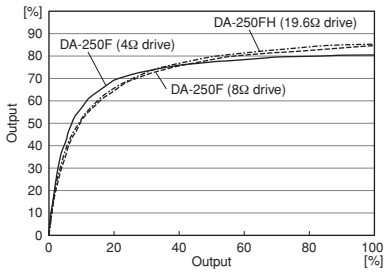
DA-250F Frequency response



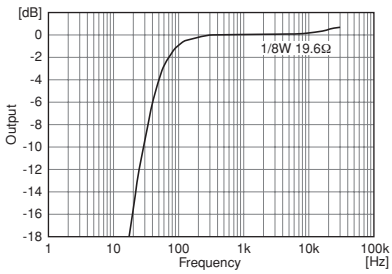
DA-250F T.H.D vs Power Output



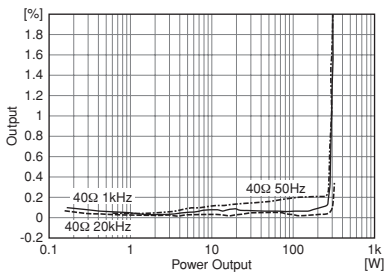
Efficiency vs Output



DA-250FH Frequency response

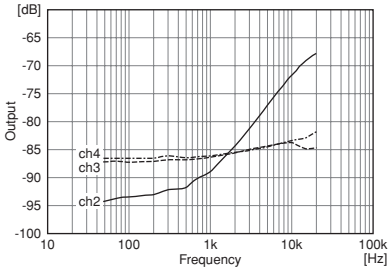


DA-250FH T.H.D vs Power Output

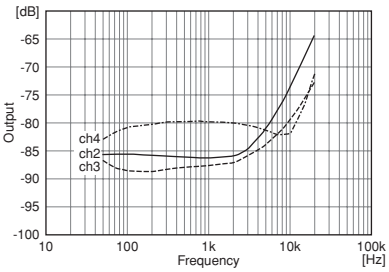


(120V AC Version/220 – 240V AC Version)

DA-250F Channel Seperation



DA-250FH Channel Seperation



THERMAL LOSS TABLE

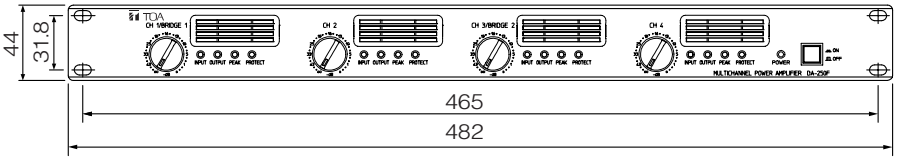
(220-240V AC version)

Mode	Model No.	Load	Btu/hr	kcal/hr	Effciency(%)
Idle	DA-250FH	100V × 4ch	257.9	65	
	DA-250F	8 Ω × 4ch	163.9	41.3	
1/8 Power (pink noise)	DA-250FH	100V × 4ch	496.0	125	46.2
	DA-250F	8 Ω × 4ch	280.1	70.6	50.9
		4 Ω × 4ch	423.0	106.6	50.2
1/3Power (pink noise)	DA-250FH	100V × 4ch	540.0	136.1	67.8
	DA-250F	8 Ω × 4ch	418.2	105.4	64.9
		4 Ω × 4ch	606.3	152.8	65.2
Full Power (sin)	DA-250FH	100V × 4ch	562.7	141.8	85.5
	DA-250F	8 Ω × 4ch	442.4	111.5	83.1
		4 Ω × 4ch	821.0	206.9	81.8

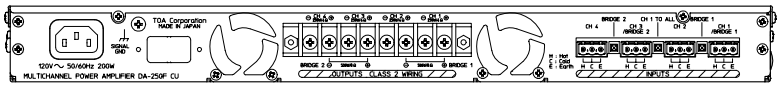
(120V AC version)

Mode	Model No.	Load	Btu/hr	kcal/hr	Effciency(%)
Idle	DA-250FH	70V × 4ch	199.7	50.3	
	DA-250F	4 Ω × 4ch	193.6	48.8	
1/8 Power (pink noise)	DA-250FH	70V × 4ch	446.2	112.4	50.8
	DA-250F	8 Ω × 4ch	317.9	80.1	49.2
		4 Ω × 4ch	385.5	97.1	56.2
1/3Power (pink noise)	DA-250FH	70V × 4ch	850.1	214.1	59.1
	DA-250F	8 Ω × 4ch	417.9	105.3	66.2
		4 Ω × 4ch	720.1	181.4	64.7
Full Power (sin)	DA-250FH	70V × 4ch	688.1	173.4	86.2
	DA-250F	8 Ω × 4ch	512.7	129.2	84.4
		4 Ω × 4ch	1071.0	269.9	80.4

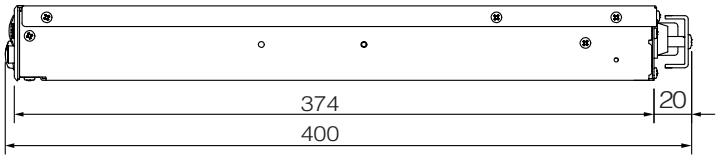
APPEARANCE AND DIMENSIONAL DIAGRAM



Front View



Rear View



Side View

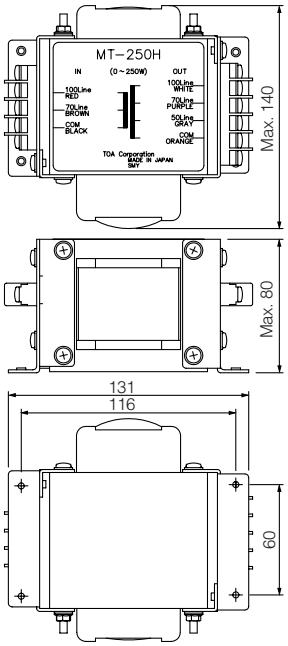
Unit: mm

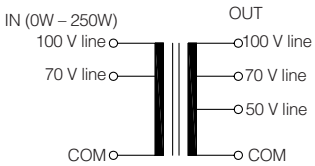
MATCHING TANSFORMER

MT-250H

Designed for use with the DA-250FH Multi-Channel Power Amplifier (option), the MT-250H Output Transformer electrically isolates the amplifier and the high-impedance speaker system.

- **Capacity:** 0W – 250W
- **Primary Side:** 100V line, 70V line
- **Secondary Side:** 100V line, 70V line, 50V line
- **Frequency Response:** 30 – 18,000Hz (+0dB, –3dB)
- **Conection Terminal:** M4 screw terminal, distance between barriers: 8.1mm
- **Weight:** 3.7kg





SPECIFICATIONS

Model	DA-250F		DA-250FH	
	120V AC Version	220 – 240V AC Version	120V AC Version	220 – 240V AC Version
Number of channels	4	4	4	4
Total output all channel driven	1,000W (1kHz, 4Ω) 680W (1kHz, 8Ω)	1,000W (1kHz, 4Ω) 680W (1kHz, 8Ω)	1,000W (1kHz,19.6Ω)	1,000W (1kHz, 40Ω)
Output voltage per channel	31.6V (1kHz, 4Ω) 36.9V (1kHz, 8Ω)	31.6V (1kHz, 4Ω) 36.9V (1kHz, 8Ω)	70V (1kHz, 19.6Ω)	100V (1kHz, 40Ω)
Output current per channel	7.9A (1kHz, 4Ω) 4.6 A(1kHz, 8Ω)	7.9A(1kHz, 4Ω) 4.6A(1kHz, 8Ω)	3.6A(1kHz,19.6Ω)	2.5A(1kHz, 40Ω)
Power output 8 ohms per channel 4 ohms per channel 16 ohms bridged 8 ohms bridged Hi-Z: 70V/100V per channel Hi-Z: 140V bridged, per channel	 170W 250W 340W 500W — —	 170W 250W 340W 500W — —	 — — — — 250W 500W	 — — — — 250W —
Power consumption* Idle power consumption	56W, 1.0A	48W, 0.3A	58W, 1.0A	75W, 0.5A
1/8 Power 8 ohms Pink noise	183W, 3.0A	167W, 1.2A	—	—
4 ohms	257W, 4.2A	248W, 1.6A	—	—
70 Volts	—	—	265W, 4.1A	—
100 Volts	—	—	—	270W, 1.9A
1/3 Power 8 ohms	362W, 5.4A	349W, 2.4A	—	—
4 ohms	597W, 8.6A	511W, 3.7A	—	—
70 Volts	—	—	609W, 8.5A	—
100 Volts	—	—	—	491W, 3.5A
1/8 Power 8 ohms 1kHz	152W, 2.5A	143W, 1.0A	—	—
4 ohms	219W, 3.5A	202W, 1.4A	—	—
70 Volts	—	—	224W, 3.6A	—
100 Volts	—	—	—	230W, 1.6A
1/3 Power 8 ohms	314W, 4.7A	284W, 1.9A	—	—
4 ohms	507W, 7.3A	437W, 3.0A	—	—
70 Volts	—	—	499W, 7.2A	—
100 Volts	—	—	—	443W, 3.0A
Frequency response	20Hz – 20kHz, ±1dB	20Hz – 20kHz, ±1dB	20Hz – 20kHz, ±1dB (H.P.F.OFF) 50Hz – 20kHz, –3/+0dB (H.P.F. ON)	50Hz – 20kHz, –3dB, +0dB
Total harmonic distortion (THD) (1kHz)	0.1 %		0.1 %	
S/N ratio (A weighted)	100dB		100dB	
Crosstalk at 10kHz (A weighted)	70dB		70dB	
DC offset*	±5mV		±5mV	
Voltage gain*	29.5dB		35.1dB	
Damping factor*	100		120	
Inputs Input impedance Input sensitivity Input clipping	 10kΩ (unbalanced), 20kΩ (balanced) +4dB (1.23V) 14V (25.1dBu)		 10kΩ (unbalanced), 20kΩ (balanced) +4dB (1.23V) 14V (25.1dBu)	
Front panel Gain controls Indicators per channel: Input Output Peak Protect Power-On	 30 position detent Green LED Yellow LED Red LED Red LED Blue LED		 30 position detent Green LED Yellow LED Red LED Red LED Blue LED	
Rear panel Input connectors Speaker output	 Detachable Euro style terminal block (electrically balanced) Screw terminal (M4). Accept AWG14-22		 Detachable Euro style connector (electrically balanced) Screw terminal (M4). Accept AWG14-22	
Protection circuit Amplifier section Power supply section	DC output, overheat protection, load shorting, overload current, maximum output Overheat protection, AC rush current			
Cooling	Continuously constant speed fan with front-to-rear airflow, 50,000 hours life time			
Power requirement	AC mains, 50/60Hz			
Operating Temperature	–10°C to +40°C			
Operating Humidity	Under 90% RH (no condensation)			
Dimensions (W × H × D)	482mm (19") × 44mm (1.7") × 401mm (15.8") (EIA Standard 19-inch rack mount width)			
Weight	6.6kg (14.6 lbs)	6.8kg (15.0 lbs)	6.6kg (14.6 lbs)	6.8kg (15.0 lbs)
Finish	Panel: Aluminum, alumite process, black Case: Plated steel sheet			
Accessory	Euro style terminal block connector (3-pin) × 4, Volume control cover × 4			
Option	—		Matching transformer: MT-250H	

0dB=0.775Vrms
*Typical data

TOA Corporation
URL : http://www.toa.jp/
Specifications are subject to change without notice.
Printed in Japan (0604) - - - u