QSC AUDIO PRODUCTS, INC.

Hear the Power of Technology

1675 MacArthur Blvd., Costa Mesa, CA 92626
Phone 714.754.6175 Fax 714.754.6174

DETAILED POWER RATINGS FOR PL3 SERIES

QSC Audio Products, Inc. May 1, 2007

Background:
The PL3 series uses linear Class-H technology for the two lower ratings and Class D technology for the higher power rating. Every effort has been made to ensure that performance is musically similar, so that the user may choose based on the overall features of the platform and the power required for each application. Nevertheless, the characteristics of each technology differ slightly, making them hard to specify on a common format, and other high-power competitors offer only basic information about power ratings. In the interest of focusing on the key parameters, and allowing direct comparisons, the published spec sheet shows midband power ratings at clipping, plus a description of typical distortion performance. For those users who desire a more complete picture, the full-range performance of the amplifiers is shown in tabular and graphic form below. Part of this disclosure involves an explanation of the typical properties of Class-D amplifiers that make it difficult to publish specs in the usual format developed around linear amplifiers. Please read these notes carefully for the full story.

PL-3 Series Amplifier Rating Charts with Wideband Ratings

Specifications	PL325	PL340	PL380
MAXIMUM OUTPUT POWER			
8 ohms, both channels driven, 1kHz, 1% clipping	500	800	1500
8 ohms, both channels driven, 20-20kHz, THD	460 0.03%	760 0.03%	1450 0.25%
4 ohms, both channels driven, 1kHz, 1% clipping	850	1250	2500
4 ohms, both channels driven, 20-20kHz, THD	770 0.05%	1130 0.05%	2500 20-10kHz, 0.35% 1500 at 20kHz, 0.35%
2 ohms, both channels driven, 1kHz, 1% clipping	1250	2000	4000

NOTES
On all models, full power at 2 ohms is automatically limited after several seconds to protect against prolonged component overloading and excess AC current consumption. Burst mode testing should be used to assess the true dynamic limits of the output section.

On the PL380, outputs above 15kHz are limited to about 1000 watts after a short delay to prevent prolonged overload of internal R-C output stabilization networks.

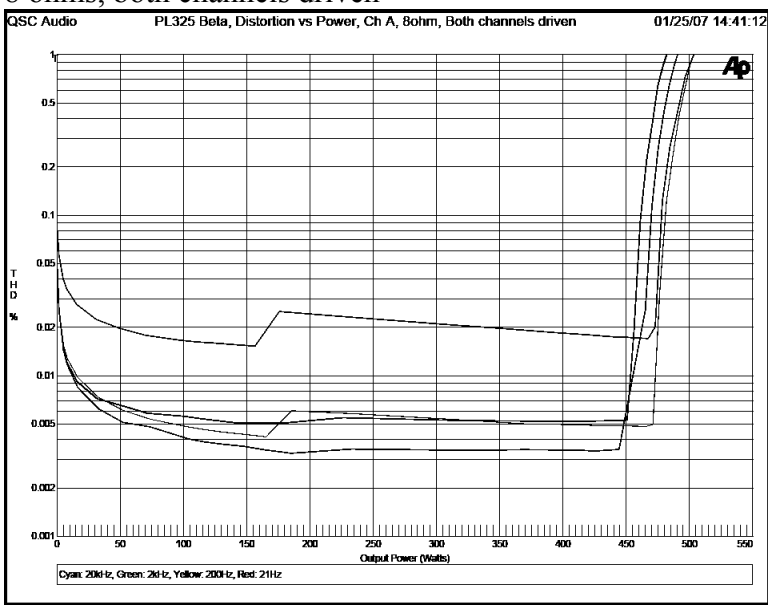
All PL3 amplifiers have automatic AC current limiting that reduces 120V AC current draw to 30A within several seconds.

Long-term, thermally limited current draw of the PL325 and PL340 is approximately 15A. The long-term thermally limited current draw of the PL380 is approximately 30A. Both these limits are relatively difficult to approach with actual program material and speakers, and even during heavy overdrive, excursions above these limits are brief and do not trigger limiting.

All models are thoroughly protected against shorts, opens, and abnormal signals. Protection systems are designed to maintain operation if possible. Repeated muting may indicate an abnormal load condition or out-of-band input signal.

PL325, DISTORTION VS POWER, AT 20Hz, 200Hz, 2kHz, 20kHz.

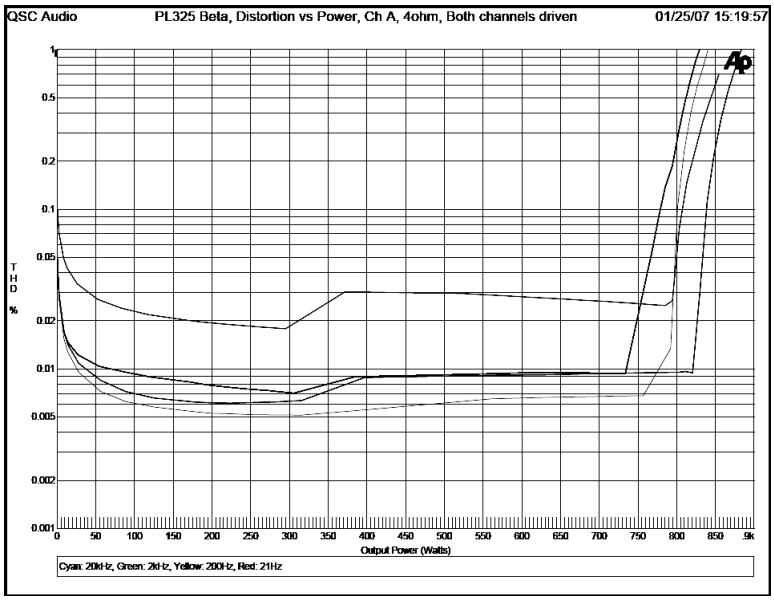
8 ohms, both channels driven



20kHz

2kHz, 200Hz
20Hz

4 ohms, both channels driven



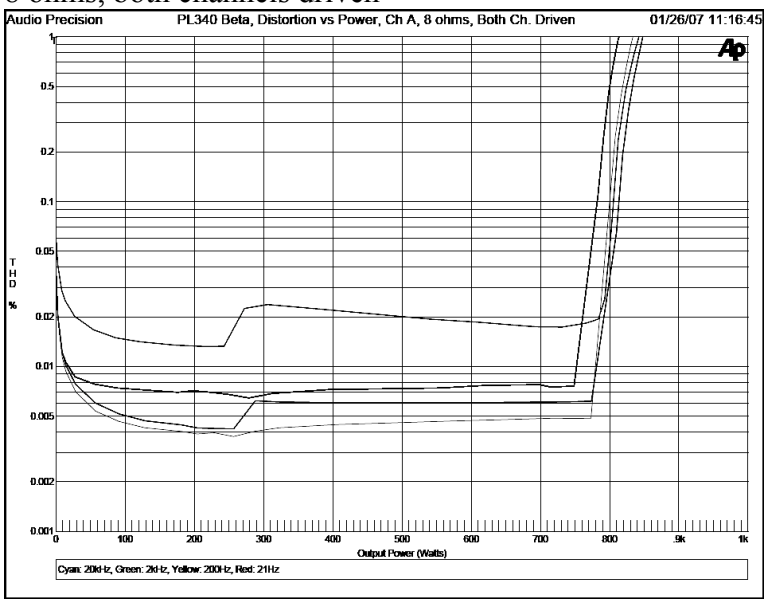
20kHz

2kHz, 200Hz
20Hz

NOTES:
Like most linear amps, distortion remains low right up to the point of clipping. The reader will also note relatively little change in power vs frequency, demonstrating the stiffness of the power supply.
The Class-H transition that occurs about 4dB below clipping is slightly visible in the chart but remains below 0.03% at 20kHz and below 0.01% at lower frequencies. Although Ch A is shown, both channels are driven. The performance of Ch B is very similar, and neither channel changes greatly due to activity on the other channel.

PL340, DISTORTION VS POWER, AT 20Hz, 200Hz, 2kHz, 20kHz.

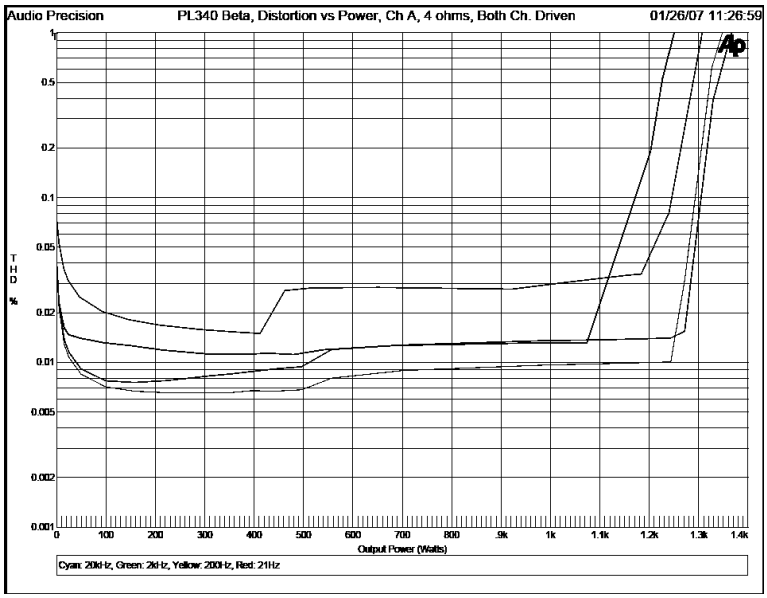
8 ohms, both channels driven



20kHz

2kHz, 200Hz
20Hz

4 ohms, both channels driven



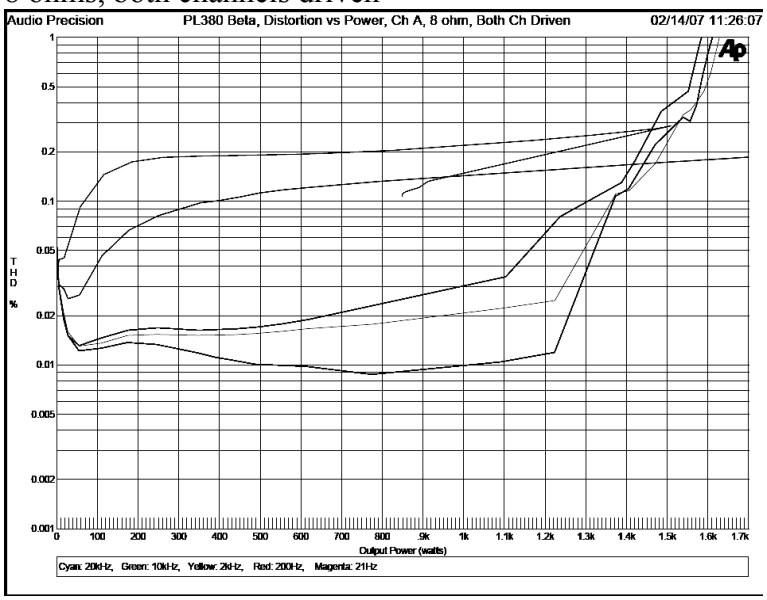
20kHz

2kHz, 200Hz
20Hz

NOTES:
Like most linear amps, distortion remains low right up to the point of clipping. The reader will also note relatively little change in power vs frequency, demonstrating the stiffness of the power supply.
The Class-H transition that occurs about 4dB below clipping is slightly visible in the chart but remains below 0.03% at 20kHz and below 0.01% at lower frequencies. Although Ch A is shown, both channels are driven. The performance of Ch B is very similar, and neither channel changes greatly due to activity on the other channel.

PL380, DISTORTION VS POWER, AT 20Hz, 200Hz, 2kHz, 10kHz, 20kHz.

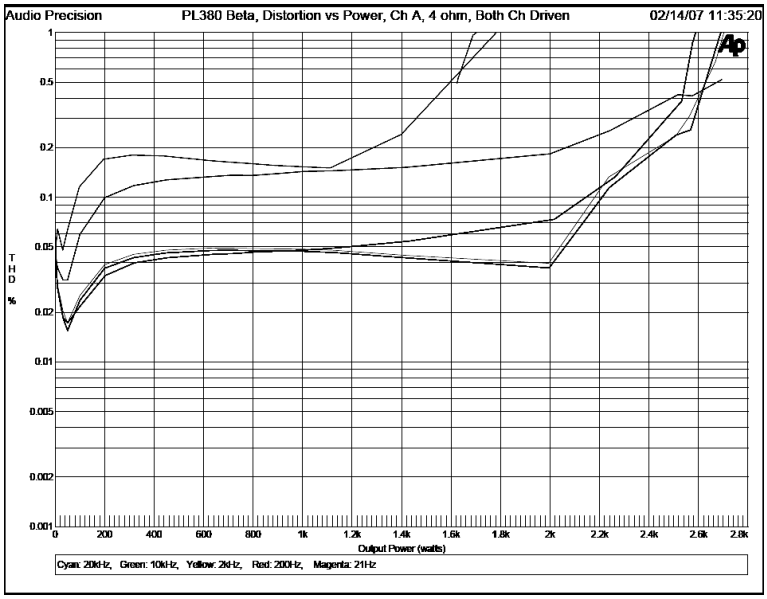
8 ohms, both channels driven



20kHz (note limiter cutback after reaching 1500 watts)
10kHz

2kHz,
200Hz
20Hz

4 ohms, both channels driven

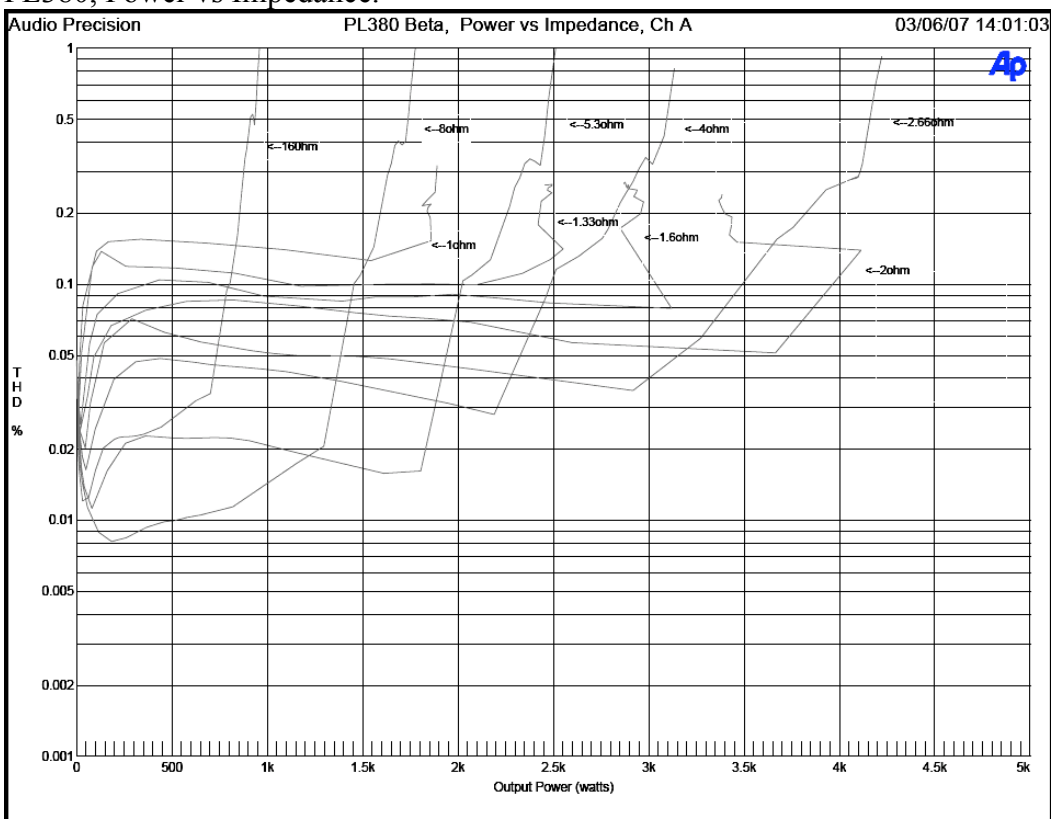


20kHz (note reduced power limit)
10kHz (reaches full power)

2kHz,
200Hz, 20Hz

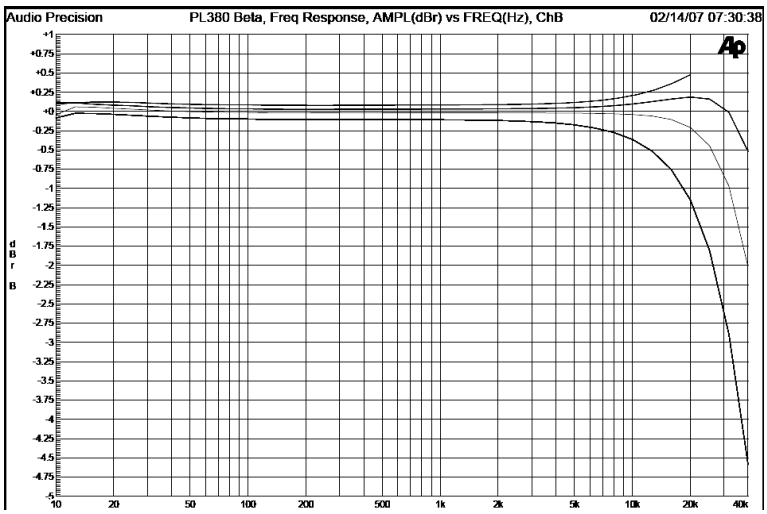
NOTES:
Class-D amplifiers generally experience increased THD near clipping as the PWM pulses become very narrow. The P380 confines this zone to the last dB of the output swing.
Note the uniform low frequency power bandwidth, demonstrating good power supply capacitance.
Class-D amplifiers generally experience higher THD readings at higher frequencies. Note however that the high frequency performance below 100 watts, where compression drivers operate, is quite respectable.
Reasonably good Class-D amplifiers are free of high-order distortion products and have no abrupt discontinuities in their transfer function. The results shown here are comparable to many linear amps.

PL380, Power vs Impedance.



This chart illustrates the exceptional power envelope of the PL380 output section. These curves were generated by driving the output to either clipping or self-limiting into impedances ranging from 16 ohms to 1 ohm. Even at 1 ohm, almost 2000 watts are available, and over 3000 watts are available between 1.6 ohms and 4 ohms, peaking at a very useful range of 2-2.6 ohms.

PL380 Frequency Response vs Load Impedance.



No Load
8 ohms
4 ohms

2 ohms

This chart shows the frequency response into various loads on an expanded vertical scale (+1dB, -5dB) Class-D amplifiers traditionally suffer from excessive output impedance at high frequencies due to the inductive filter required to remove switching frequencies. The PL380 holds this load-dependent frequency variance to +/-0.8dB at 20kHz, and +/-0.25dB at 10kHz. Note that the output impedance is relatively uniform up to 5kHz, and varies in a simple manner above this point, thus avoiding midband coloration. Note also that the amplifier has usable frequency response extending to 40kHz or higher.