

PRECISION POWER ANALOG PRODUCT REFERENCE GUIDE FOR SONOBUOY APPLICATIONS



Linear Amplifiers

| Model | Supply Voltage V_{S10-3} | Output Current peak within SOA (A) | Output Current continuous within SOA (A) | Slew Rate (V/ μ s) | Internal Power Dissipation (W) | Power Bandwidth (kHz) | Package |
|-------|-------------------------------|---------------------------------------|---|---------------------------|-----------------------------------|--------------------------|------------------------|
| MP108 | 200 | 12 | 11 | 170 | 100 | 300 | 34-pin DIP (FD) |
| MP111 | 100 | 50 | 15 | 130 | 170 | 500 | 34-pin DIP (FD) |
| PA04 | 200 | 20 | 20 | 50 | 200 | 90 | 12-pin MO-127 (CR) |
| PA05 | 100 | 30 | 30 | 100 | 250 | 400 | 12-pin MO-127 (CR) |
| PA22 | 220 | 13.6 | 12 | 35 | 250 | 28 | 15-pin SIP (LL) |
| PA50 | 100 | 100 | 40 | 50 | 400 | 200 | 12-pin MO-127 (CR) |
| PA52 | 200 | 80 | 40 | 50 | 400 | 90 | 12-pin MO-127 (CR) |
| PA92 | 400 | 7 | 4 | 50 | 80 | 30 | 12-pin SIP (DP) |
| PA93 | 400 | 14 | 8 | 50 | 125 | 30 | 12-pin SIP (DP) |
| PA94 | 900 | 0.2 | 0.1 | 700 | 30 | 300 | 8-pin SIP (DQ) |
| PA95 | 900 | 0.2 | 0.1 | 30 | 30 | 20 | 8-pin SIP (DQ) |
| PA96 | 300 | 1.5 | 1.5 | 250 | 70 | 100 | 8-pin TO-3 (CE) |
| PA164 | 200 | 4 | 1 | 29 | 28 | 80 | 52-pin Power Quad (PQ) |
| PA165 | 200 | 10 | 4 | 29 | 32 | 80 | 52-pin Power Quad (PQ) |

Switching Amplifiers

| Model | Supply Voltage V_{S10-3} | Output Current peak within SOA (A) | Output Current continuous within SOA (A) | Switching Frequency (kHz) | Internal Power Dissipation (W) | Package |
|-------|-------------------------------|---------------------------------------|---|------------------------------|-----------------------------------|-----------------------|
| SA310 | 650 | 80 | 30 | 400 | 111 | 16-pin Power DIP (KR) |
| SA110 | 400 | 40 | 20 | 400 | 89 | 12-pin DIP (FD) |
| SA12 | 200 | 20 | 15 | 200 | 250 | 12-pin MO-127 (CR) |

WHY APEX?



- All products are “off-the-shelf” to deliver high reliability and reduce design time



- In-house failure analysis



- Dedicated power analog applications engineering technical support to guide product selection, review schematics, and de-debug circuits



- Excellent thermal management allows for smaller designs with improved accuracy



- Documented and guaranteed performance in a smaller, lighter, and proven package



- Customer training and application seminars available

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SHAPING ANTI-SUBMARINE WARFARE

Sonobuoys are a tactical sonar system used for detecting and transmitting submarine activity and are the core technology for anti-submarine warfare (ASW). There are two main design types of sonobuoys:

Passive – listens for any acoustic signal made by submarines or passing ships

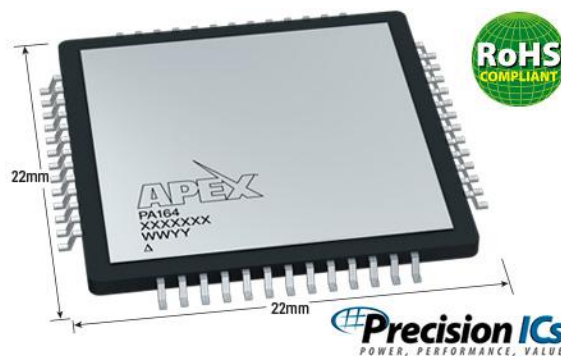
Active – emits sound energy into the water and waits for a return transmission

Apex products drive the piezo transducers of the sonobuoy, the components responsible for its ability to send or receive acoustic transmissions.

PA164/PA165

Best supporting this application from the Apex product portfolio are the PA164 and PA165. These products are well suited to accommodate the high-voltage and high-current demands of this application, all while maintaining low-noise for signal accuracy.

| Specification Parameter | PA164 | PA165 |
|-------------------------------------|--------------------------------|--------------------------------|
| Output Current Continuous | 1A | 4A |
| Output Current PEAK | 4A | 10A |
| Supply Voltage Operation | 200V | 200V |
| Internal Power Dissipation | 28W | 32W |
| Overcurrent Flag and Output Disable | Yes | Yes |
| Built-in Temperature Sensor | Yes | Yes |
| Package Style | QFP style, heat slug on top | QFP style, heat slug on top |



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