



Product Innovation from



Amplifiers

A world-wide industry innovator in power analog. Apex defines power analog in terms of product solutions that deliver output currents above 100mA or operate on voltage supplies greater than 24V.

Power Op Amps

| Description | Digi-Key Part No. | Price Each 1 | Price Each 25 | Cirrus Logic Part No. |
|---|-------------------|--------------|---------------|-----------------------|
| High voltage, high speed with supply voltage boost, 50V - 350V out, 150mA, 42-DIP | 598-1483-ND | 120.46 | 105.22 | MP400FC |
| High voltage, high current, class A/B output, +/-20V, up to 5A peak, TO-3-8 | 598-1285-ND | 111.72 | 97.59 | PA01 |
| Broadband, high output current, complementary collector output, +/-15V, 5A, TO-3-8 | 598-1286-ND | 93.22 | 81.43 | PA02 |
| Broadband, high output current, complementary collector output, +/-15V, 5A, TO-3-8 | 598-1287-ND | 113.21 | 98.60 | PA02A |
| Broadband, high output current, complementary collector output, +/-15V, 5A, TO-3-8 | 598-1418-ND | 231.59 | 201.71 | PA02M |
| Broadband, high output current, complementary collector output, +/-15V, 5A, TO-3-8 | 598-1288-ND | 277.75 | 249.03 | PA02M/883 |
| Super-power, copper dip package, high internal power dissipation 500W, 150V, MO-127-12 | 598-1289-ND | 643.19 | 607.46 | PA03 |
| Super-power, copper dip package, high internal power dissipation 500W, 150V, MO-127-12 | 598-1419-ND | 836.17 | 789.72 | PA03A |
| High voltage MOSFET, external sleep mode control, 50V/uS slew rate, 200V, 20A, MO-127-12 | 598-1420-ND | 331.60 | 297.30 | PA04 |
| High voltage MOSFET, external sleep mode control, 50V/uS slew rate, 200V, 20A, MO-127-12 | 598-1290-ND | 384.71 | 344.92 | PA04A |
| High voltage MOSFET, external shutdown control, 100V/uS slew rate, 100V, 30A, MO-127-12 | 598-1291-ND | 391.71 | 351.19 | PA05 |
| High voltage MOSFET, external shutdown control, 100V/uS slew rate, 100V, 30A, MO-127-12 | 598-1292-ND | 484.98 | 434.81 | PA05A |
| FET input, low bias current, thermal shutdown, class A/B output, 100V, 5A, TO-3-8 | 598-1293-ND | 139.03 | 121.10 | PA07 |
| FET input, low bias current, thermal shutdown, class A/B output, 100V, 5A, TO-3-8 | 598-1421-ND | 345.34 | 309.62 | PA07M |
| FET input, low bias current, thermal shutdown, class A/B output, 100V, 5A, TO-3-8 | 598-1294-ND | 180.72 | 157.41 | PA07A |
| FET input, low bias current, thermal shutdown, class A/B output, 100V, 5A, TO-3-8 | 598-1295-ND | 442.77 | 396.97 | PA07M/883 |
| High voltage, programmable output current limit, low bias current, +/-150V, 200mA, TO-3-8 | 598-1296-ND | 150.57 | 131.14 | PA08 |
| High voltage, programmable output current limit, low bias current, +/-150V, 200mA, TO-3-8 | 598-1422-ND | 195.69 | 170.44 | PA08A |
| High voltage, programmable output current limit, low bias current, +/-150V, 200mA, TO-3-8 | 598-1423-ND | 372.29 | 333.78 | PA08M |
| High voltage, programmable output current limit, low bias current, +/-150V, 200mA, TO-3-8 | 598-1297-ND | 477.29 | 427.92 | PA08M/883 |
| 4MHz gain bandwidth, class A/B output, high output current, +/-45V, 5A, TO-3-8 | 598-1301-ND | 105.51 | 92.17 | PA10 |
| 4MHz gain bandwidth, class A/B output, high output current, +/-50V, 5A, TO-3-8 | 598-1302-ND | 126.82 | 110.46 | PA10A |
| 4MHz gain bandwidth, class A/B output, high output current, +/-45V, 5A, TO-3-8 | 598-1425-ND | 261.01 | 227.34 | PA10M |
| 4MHz gain bandwidth, class A/B output, high output current, +/-45V, 5A, TO-3-8 | 598-1426-ND | 381.76 | 342.27 | PA10M/883 |
| High voltage, very high output current, class A/B output, +/-45V, 15A, TO-3-8 | 598-1303-ND | 119.13 | 104.06 | PA12 |
| High voltage, very high output current, class A/B output, +/-50V, 15A, TO-3-8 | 598-1304-ND | 135.88 | 118.35 | PA12A |
| High voltage, very high output current, class A/B output, +/-45V, 15A, TO-3-8 | 598-1427-ND | 283.34 | 254.03 | PA12M |
| High voltage, very high output current, high temperature, class A/B output, +/-45V, 15A, TO-3-8 | 598-1305-ND | 357.97 | 320.94 | PA12H |
| High voltage, very high output current, class A/B output, +/-45V, 15A, TO-3-8 | 598-1306-ND | 363.23 | 325.66 | PA12M/883 |
| High voltage, very high output current, class A/B output, +/-45V, 15A, 12-SIP | 598-1307-ND | 145.73 | 126.93 | PA13 |
| High voltage, very high output current, class A/B output, +/-45V, 15A, 12-SIP | 598-1308-ND | 167.39 | 145.79 | PA13A |
| FET input, 350kHz power bandwidth, 20V/uS slew rate, A/B output, +/-19V, 5A, 12-SIP | 598-1429-ND | 132.56 | 115.46 | PA16 |
| FET input, 350kHz power bandwidth, 20V/uS slew rate, A/B output, +/-19V, 5A, 12-SIP | 598-1310-ND | 142.35 | 123.99 | PA16A |
| MOSFET, high current, 50V/uS slew rate, boost voltage inputs, +/-50V, 100A, MO-127-12 | 598-1433-ND | 521.09 | 467.19 | PA50 |
| MOSFET, high current, 50V/uS slew rate, boost voltage inputs, +/-50V, 100A, MO-127-12 | 598-1313-ND | 630.70 | 595.66 | PA50A |
| High voltage, high output current, common emitter class C output, +/-36V, 10A, TO-3-8 | 598-1434-ND | 116.81 | 101.74 | PA51 |
| High voltage, high output current, common emitter class C output, +/-40V, 10A, TO-3-8 | 598-1314-ND | 122.88 | 107.03 | PA51A |
| High voltage, high output current, common emitter class C output, +/-36V, 10A, TO-3-8 | 598-1435-ND | 218.37 | 190.19 | PA51M |
| High voltage, high output current, common emitter class C output, +/-36V, 10A, TO-3-8 | 598-1315-ND | 279.97 | 243.85 | PA51M/883 |
| MOSFET, high current, 50V/uS slew rate, boost voltage inputs, +/-100V, 80A, MO-127-12 | 598-1316-ND | 546.61 | 516.24 | PA52 |
| MOSFET, high current, 50V/uS slew rate, boost voltage inputs, +/-100V, 80A, MO-127-12 | 598-1436-ND | 710.62 | 671.15 | PA52A |
| High output current, class C type output stage, low quiescent current, +/-45V, 10A, TO-3-8 | 598-1317-ND | 115.70 | 101.06 | PA61 |
| High output current, class C type output stage, low quiescent current, +/-45V, 10A, TO-3-8 | 598-1318-ND | 113.66 | 98.99 | PA61A |
| High output current, class C type output stage, low quiescent current, +/-45V, 10A, TO-3-8 | 598-1437-ND | 269.12 | 241.29 | PA61M/883 |
| High voltage, high speed, 300V/uS slew rate, user def. current limit, +/-100V, 100mA, 12-SIP | 598-1438-ND | 28.96 | 24.46 | PA69EU |
| High voltage, high output current, class C output, isolated case, +/-30V, 5A, TO-3-8 | 598-1319-ND | 111.72 | 97.59 | PA73 |
| High voltage, high output current, class C output, isolated case, +/-30V, 5A, TO-3-8 | 598-1439-ND | 219.10 | 190.83 | PA73M |
| High voltage, high output current, class C output, isolated case, +/-30V, 5A, TO-3-8 | 598-1320-ND | 280.87 | 244.64 | PA73M/883 |
| High voltage, high speed, over 200kHz power bandwidth, +/-175V, 150mA, 20-PSOP (SMT) | 598-1351-ND | 30.92 | 26.12 | PA78DK |

◆ RoHS Compliant

| Description | Digi-Key Part No. | Price Each 1 | Price Each 25 | Cirrus Logic Part No. |
|---|-------------------|--------------|---------------|-----------------------|
| High voltage, high speed, over 200kHz power bandwidth, +/-175V, 150mA, 12-SIP | 598-1440-ND | 53.63 | 45.17 | PA78EU |
| High voltage, 200V/uS slew rate, fully protected FET input, +/-150V, 50mA, TO-3-8 | 598-1324-ND | 167.73 | 146.09 | PA84 |
| High voltage, 200V/uS slew rate, fast settling time, FET input, +/-150V, 50mA, TO-3-8 | 598-1325-ND | 176.06 | 153.34 | PA84S |
| High voltage, high speed, over 200kHz power bandwidth, +/-125V, 150mA, 12-SIP | 598-1353-ND | 41.15 | 37.04 | PA86EU |
| Ultra high voltage, MOSFET, 1140Vpp signal output, +/-600V, 75mA, MO-127-12 | 598-1329-ND | 643.19 | 607.46 | PA89 |
| High voltage, MOSFET, high bandwidth, 1000V/uS slew rate, +/-225V, +/-200mA, 12-SIP | 598-1337-ND | 224.83 | 195.83 | PA98 |
| High voltage, MOSFET, high bandwidth, 1000V/uS slew rate, +/-225V, +/-200mA, 12-SIP | 598-1450-ND | 273.39 | 245.11 | PA98A |
| Quad. power op amp, 1.1MHz, 1.5A per amp, thermal shutdown, +/-20V, MO-166-AB | 598-1430-ND | 23.04 | 19.45 | PA162DK |
| High voltage, high current, 100 watt dissipation capability, +/-100V, 10A, 34-DIP | 598-1407-ND | 237.68 | 207.01 | MP108FD |
| High voltage, high current, 100 watt dissipation capability, +/-100V, 11A, 30-DIP | 598-1408-ND | 244.15 | 212.65 | MP108FDA |
| High voltage, high current, 500kHz power bandwidth, +/-50V, 15A, 34-DIP | 598-1409-ND | 241.02 | 209.92 | MP111FD |
| High voltage, high current, class A/B or class C output, +/-50V, 30A, 42-DIP | 598-1410-ND | 212.65 | 185.21 | MP230FC |
| High voltage, high current, class A/B or class C output, +/-100V, 20A, 42-DIP | 598-1411-ND | 220.99 | 192.49 | MP240FC |
| High voltage, high current, 10V/uS slew rate, 4-wire sense, +/-100V, 10A, 30-DIP | 598-1412-ND | 123.38 | 107.46 | MP38CL |
| High voltage, high current, 10V/uS slew rate, 4-wire sense, +/-100V, 11A, 30-DIP | 598-1413-ND | 143.81 | 125.26 | MP38CLA |
| High voltage, high current, 10V/uS slew rate, 4-wire sense, +/-50V, 10A, 30-DIP | 598-1414-ND | 118.37 | 103.10 | MP39CL |
| High voltage, high current, 10V/uS slew rate, 4-wire sense, +/-50V, 11A, 30-DIP | 598-1415-ND | 141.52 | 123.26 | MP39CLA |

High Voltage Power Op Amps

| Description | Digi-Key Part No. | Price Each 1 | Price Each 25 | Cirrus Logic Part No. |
|---|-------------------|--------------|---------------|-----------------------|
| Low quiescent current, MOSFET input and output, +/-225V, 3mA, 10-SIP | 598-1428-ND | 144.38 | 125.75 | PA15FL |
| Low quiescent current, MOSFET input and output, +/-225V, 3mA, 10-SIP | 598-1309-ND | 150.23 | 130.85 | PA15FLA |
| High output current, FET input, low bias current, low noise, +/-25V, 15mA, TO-3-8 | 598-1321-ND | 160.02 | 139.38 | PA81J |
| High output current, FET input, low bias current, low noise, +/-150V, 15mA, TO-3-8 | 598-1441-ND | 176.90 | 154.08 | PA82J |
| FET input, low bias current, low noise, class A/B output, +/-150V, 100mA, TO-3-8 | 598-1322-ND | 181.01 | 157.65 | PA83 |
| FET input, low bias current, low noise, class A/B output, +/-150V, 100mA, TO-3-8 | 598-1323-ND | 222.48 | 193.77 | PA83A |
| FET input, low bias current, low noise, class A/B output, +/-150V, 100mA, TO-3-8 | 598-1442-ND | 407.02 | 364.93 | PA83M |
| FET input, low bias current, low noise, class A/B output, +/-150V, 100mA, TO-3-8 | 598-1443-ND | 521.83 | 467.85 | PA83M/883 |
| High voltage, 600V/uS slew rate, FET input, wide supply voltage range, +/-150V, TO-3-8 | 598-1444-ND | 218.08 | 189.95 | PA84A |
| High voltage, 600V/uS slew rate, FET input, wide supply voltage range, +/-150V, TO-3-8 | 598-1445-ND | 430.50 | 385.97 | PA84M |
| High voltage, 200V/uS slew rate, FET input, wide supply voltage range, +/-150V, TO-3-8 | 598-1446-ND | 513.87 | 485.32 | PA84M/883 |
| MOSFET, 1000V/uS slew rate, high output current, +/-225V, 200mA, TO-3-8 | 598-1326-ND | 224.83 | 195.83 | PA85 |
| MOSFET, 1000V/uS slew rate, high output current, +/-225V, 200mA, TO-3-8 | 598-1327-ND | 267.54 | 233.02 | PA85A |
| MOSFET, high output current, low bias current, +/-225V, 100mA, TO-3-8 | 598-1328-ND | 202.55 | 176.42 | PA88 |
| High voltage, MOSFET amp, high output current, 450V, 100mA, TO-3-8 | 598-1447-ND | 263.32 | 229.35 | PA88A |
| Ultra high voltage, MOSFET op amp, programmable current limit, +/-600V, 75mA, MO-127-12 | 598-1448-ND | 836.17 | 789.72 | PA89A |
| 300V/uS slew rate, high current MOSFET output, +/-200V, 200mA, 12-SIP | 598-1330-ND | 154.45 | 134.52 | PA90 |
| 300V/uS slew rate, high current MOSFET output, +/-225V, 200mA, 12-SIP | 598-1331-ND | 181.12 | 157.75 | PA91 |
| MOSFET, low quiescent current, high output current, +/-200V, 4A, 12-SIP | 598-1332-ND | 194.00 | 168.97 | PA92 |
| MOSFET, low quiescent current, high output current, +/-200V, 8A, 12-SIP | 598-1333-ND | 221.97 | 193.33 | PA93 |
| MOSFET, 500V/uS slew rate, high output current, +/-450V, 100mA, 8-SIP | 598-1334-ND | 189.17 | 164.76 | PA94 |
| MOSFET, low quiescent current, high output current, +/-450V, 100mA, 8-SIP | 598-1335-ND | 173.75 | 151.33 | PA95 |
| Small signal amplifier plus power booster, 250V/uS slew rate, 300V, 1.5A, TO-3-8 | 598-1449-ND | 186.47 | 162.41 | PA96CE |
| MOSFET, low quiescent current, high output current, +/-175V, 120mA, 7-SIP | 598-1336-ND | 155.70 | 135.61 | PA97DR |
| Monolithic MOS technology, low quiescent current, +/-175V, 120mA, 7-DDPAK | 598-1354-ND | 25.65 | 21.66 | PA240CC |
| Monolithic MOS technology, low quiescent current, +/-175V, 120mA, TO-220-7 | 598-1355-ND | 25.65 | 21.66 | PA240CX |
| Monolithic MOS technology, low quiescent current, +/-175V, 120mA, TO-3-8 | 598-1356-ND | 51.87 | 43.68 | PA241CE |
| Monolithic MOS technology, low quiescent current, +/-175V, 120mA, TO-3-8 | 598-1431-ND | 60.28 | 52.66 | PA241CEA |
| Monolithic MOS technology, low quiescent current, +/-175V, 120mA, TO-3-8 | 598-1432-ND | 117.82 | 102.92 | PA241CEM |
| Monolithic MOS technology, low quiescent current, +/-175V, 120mA, 24-PSOP | 598-1357-ND | 30.16 | 25.47 | PA241DF |
| Monolithic MOS technology, low quiescent current, +/-175V, 120mA, 10-SIP | 598-1358-ND | 51.87 | 43.68 | PA241DW |
| Monolithic MOS technology, low quiescent current, +/-175V, 120mA, 10-SIP | 598-1397-ND | 60.28 | 52.66 | PA241DWA |
| High voltage power dual op amp, monolithic MOS technology, low quiescent current, +/-175V, 120mA, 24-PSOP | 598-1359-ND | 55.16 | 46.46 | PA243DF |

◆ RoHS Compliant

(Continued)

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