



2007

# PRODUCT SUMMARY



Product Innovation From  CIRRUS LOGIC®



# High Current Product Selector Guide

Customers use Apex Precision Power high current power operational amplifiers and pulse width modulation (PWM) amplifiers for motor speed control, position control and torque control. These power solutions are designed to work with fractional horsepower DC brush motors, and more recently for the unique requirements of three-phase brushless DC motors.

## High Current Linear Amplifiers

Model	Output Current MAX (A)	Supply Voltage MAX (V)	Slew Rate TYP (V/us)	Standby Current MAX (mA)	Power Dissipation MAX (W)
PA50	40	100	50	36	400
PA52	40	200	50	36	400
MP230FC	30	100	15	35	210
PA03	30	150	8	300	500
PA05	30	100	100	120	250
MP240FC	20	200	14	25	170
PA04	20	200	50	90	200
MP111FD	15	100	130	157	170
PA12A	15	100	4	50	125
PA13A	15	90	4	50	135
MP108FDA	11	200	170	65	100
MP39CLA	11	100	10	24	125
MP108FD	10	200	170	65	100
MP39CL	10	100	10	24	125
PA12	10	90	4	50	125
PA13	10	90	4	50	135
PA51	10	72	2.6	10	97
PA61	10	90	2.8	10	97
MP38CLA	8	200	63	24	125
PA93	8	400	50	14	125
MP38CL	7	200	63	24	125
PA01	5	56	2.6	50	67
PA02	5	38	20	40	48
PA07	5	100	4	30	67
PA10	5	90	3	30	67
PA16	5	38	20	40	62.5
PA73	5	60	2.6	5	67
PA119	4	80	900	120	78
PA92	4	400	50	14	80
PA09M	3	80	200	85	78
PA74A	3 X 2	40	1.4	40	36/60
PA76A	3 X 2	40	1.4	40	36/60
PA74	2.5 X 2	40	1.4	40	36/60
PA76	2.5 X 2	40	1.4	40	36/60
PA09	2	80	200	85	78
PB50	2	200	100	25	35
PA60EU	1.5	40	1.4	10	16/31
PA75CC	1.5	40	1.4	10	19/28
PA96	1.5	300	250	18	83
PB51	1.5	300	100	18	83
PB58	1.5	300	250	35	70
PA12H	1	90	4	100	6

# High Current Product Selector Guide

## High Current PWM Amplifiers

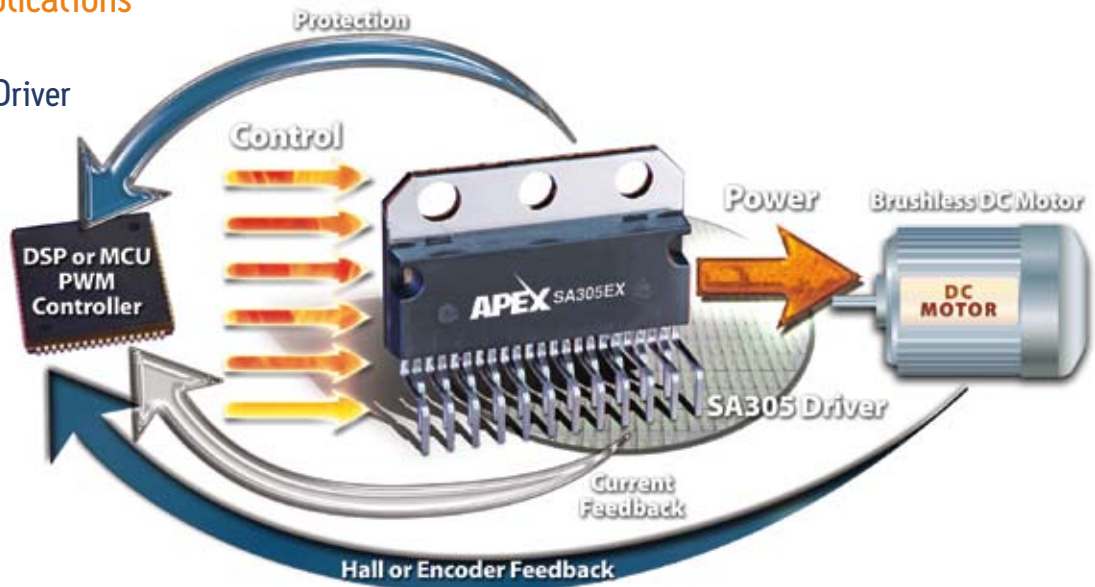
Model	Output Current MAX (A)	Supply Voltage MAX (V)	Switching Frequency (kHz)	Power Delivery MAX (W)	Power Dissipation MAX (W)
SA03	30	100	22.5	73	300
SA08	20	450	22.5	90	250
SA01	20	100	42	78	185
MSA260KC	20	450	50	20	250
MSA240KC	20	100	50	78	250
SA12	15	200	200	200	250
SA60	10	80	250	12	140
SA56	5	60	500	15	80
SA50	5	80	45	18	120
SA305	5	60	300	35	130
SA07	5	40	500	90	80

## Motor Control Applications

### Brushless DC Motor Driver

#### SA305

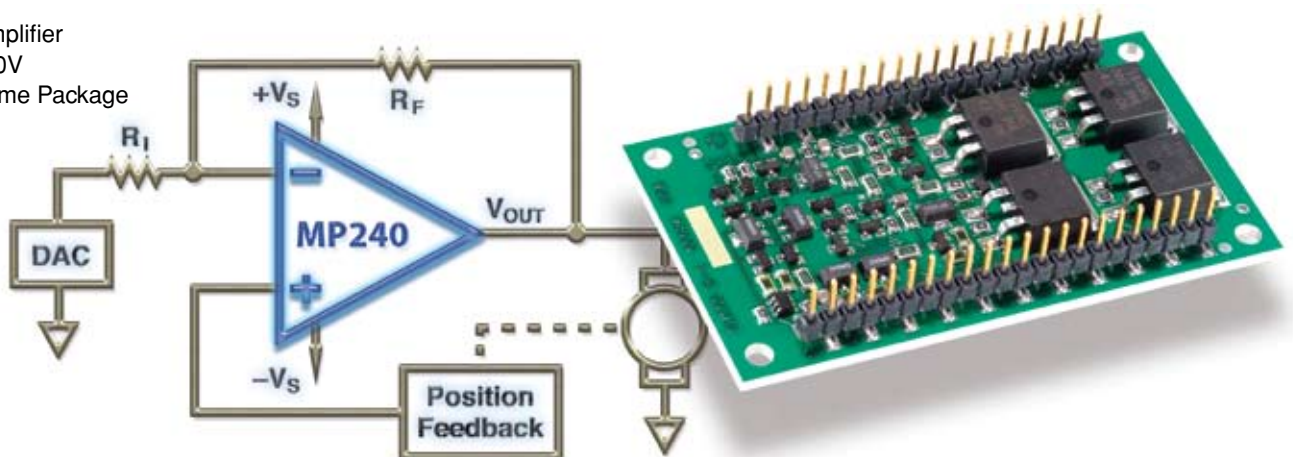
PWM Amplifier  
5A, 60V  
23-Pin ZIP Package



### Brush DC Motor Driver

#### MP240

Power Amplifier  
40A,  $\pm 100V$   
Open Frame Package



# High Voltage Product Selector Guide

Apex Precision Power is the industry leader in very high voltage power operational amplifiers through innovative product designs that combine supply voltage operation, slew rate and output current. These off-the-shelf solutions are used alone, in bridge configurations, or in composite configurations with other small signal amplifiers.

## High Voltage Linear Amplifiers

Model	Supply Voltage MAX (V)	Output Current MAX (A)	Slew Rate TYP (V/us)	Standby Current MAX (mA)	Power Dissipation MAX (W)
PA89	1200	0.075	30	6	40
PA94	900	0.1	700	24	30
PA95	900	0.1	30	2.2	30
PA97	900	0.01	8	1	5
PA15	450	0.2	20	3	30
PA85	450	0.2	1000	25	30
PA88	450	0.1	30	2	15
PA91	450	0.2	300	14	30
PA98	450	0.2	1000	25	30
PA90	400	0.2	300	14	30
PA92	400	4	50	14	80
PA93	400	8	50	14	125
PA08V	350	0.15	30	8.5	17.5
PA240CC	350	0.06	40	2.5	14
PA241CE	350	0.06	40	2.5	12
PA243DF	350	0.06	40	5	11/20
PA78DK	350	0.15	350	2.5	23
PA79DK	350	0.15	350	2.5	TBD
PA08	300	0.15	30	8.5	17.5
PA82J	300	0.015	20	8.5	11.5
PA83	300	0.075	30	8.5	17.5
PA84	300	0.04	180	7.5	17.5
PA96	300	1.5	250	18	83
PB51	300	1.5	100	18	83
PB58	300	1.5	250	35	70
MP108FD	200	10	170	65	100
MP240FC	200	20	14	25	170
MP38CL	200	7	63	24	125
PA04	200	20	50	90	200
PA52	200	40	50	36	400
PA69EU	200	0.05	200	2.5	23
PA86EU	200	0.15	350	2.5	23
PB50	200	2	100	25	35
PA03	150	30	8	300	500
PA81J	150	0.03	20	8.5	11.5
MP111FD	100	15	130	157	170
MP230FC	100	30	15	35	210
MP39CL	100	10	10	24	125
PA05	100	30	100	120	250
PA07	100	5	4	30	67
PA50	100	40	50	36	400

# High Voltage Product Selector Guide

## High Voltage PWM Amplifiers

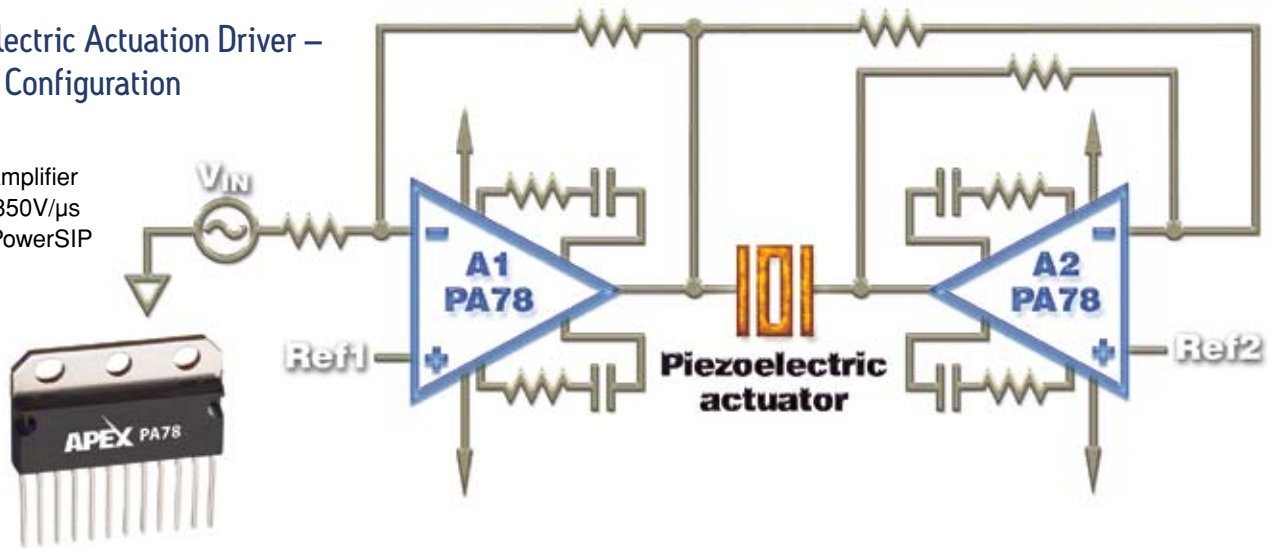
Model	Supply Voltage MAX (V)	Output Current MAX (A)	Switching Frequency %kHz	Power Delivery MAX (W)	Int. Power W Max
MSA260KC	450	20	50	250	300
SA08	450	20	22.5	250	250
SA12	200	15	200	250	185
MSA240KC	100	20	50	250	250
SA01	100	20	42	185	250
SA03	100	30	22.5	300	250
SA50	80	5	45	120	140
SA60	80	10	250	140	80
SA305	60	5	300	130	120
SA56	60	5	500	80	130
SA07	40	5	500	80	80

## Piezo Drive Applications

### Piezoelectric Actuation Driver – Bridge Configuration

#### PA78

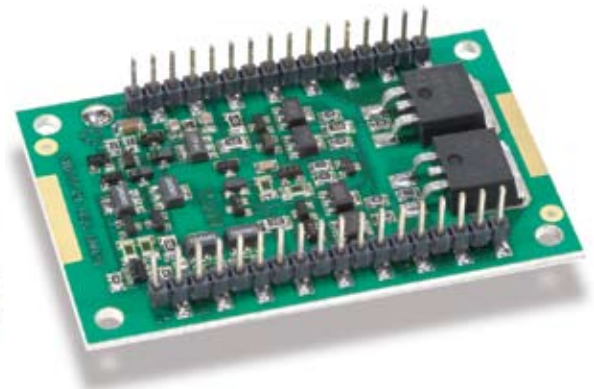
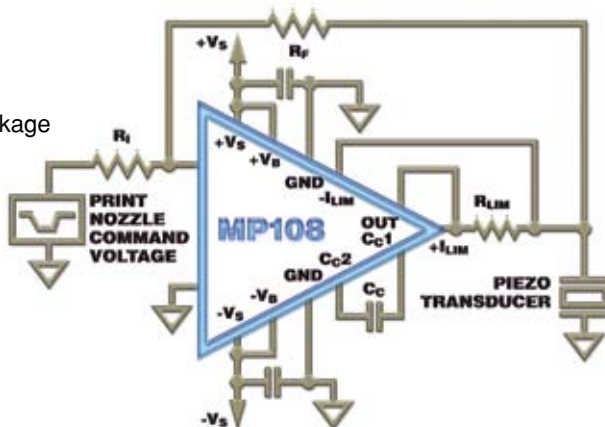
Power Amplifier  
 $\pm 175\text{V}$ ,  $350\text{V}/\mu\text{s}$   
 12-Pin PowerSIP



### Piezo Transducer Drive

#### MP108

Power Amplifier  
 $\pm 100\text{V}$ ,  $170\text{V}/\mu\text{s}$   
 Open Frame Package



# High Speed Product Selector Guide

## High Speed Linear Amplifiers

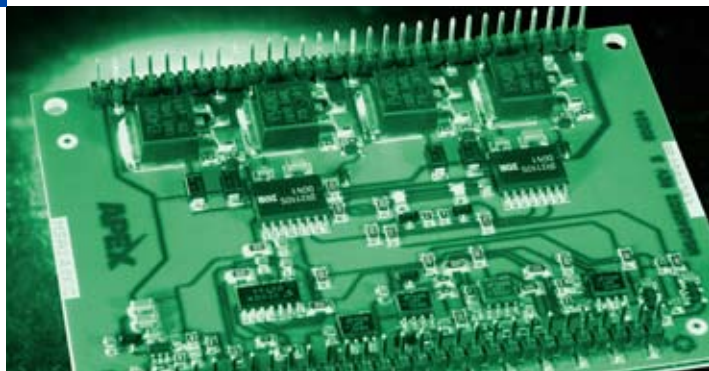
Model	Slew Rate TYP (V/us)	Supply Voltage MAX (V)	Output Current MAX (A)	Standby Current MAX (mA)	Power Dissipation MAX (W)
PA98	1000	450	0.2	25	30
PA85	1000	450	0.2	25	30
PA119	900	80	4	120	78
PA94	700	900	0.1	24	30
PA79DK	350	350	0.15	2.5	TBD
PA78DK	350	350	0.15	2.5	23
PA86EU	350	200	0.15	2.5	23
PA91	300	450	0.2	14	30
PA90	300	400	0.2	14	30
PB58	250	300	1.5	35	70
PA96	250	300	1.5	18	83
PA69EU	200	200	0.05	2.5	23
PA09	200	80	2	85	78
PA84	180	300	0.04	7.5	17.5
MP108FDA	170	200	11	65	100
MP108FD	170	200	10	65	100
MP111FD	130	100	15	157	170
PB51	100	300	1.5	18	83
PB50	100	200	2	25	35
PA05	100	100	30	120	250

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