

AD390—SPECIFICATIONS ($T_A = +25^\circ\text{C}$, $V_S = \pm 15\text{V}$ unless otherwise indicated, specifications guaranteed after 10 minute warmup)

Model	AD390JD/SD			AD390KD/TD			Units
	Min	Typ	Max	Min	Typ	Max	
DATA INPUTS (Pins 1-12 and 23-28)¹							
TTL or 5 Volt CMOS							
Input Voltage							
Bit ON (Logic "1")	+2.0		+5.5	+2.0		+5.5	V
Bit OFF (Logic "0")			+0.8			+0.8	V
Input Current (Pin 24 is 3 × Larger)							
Bit ON (Logic "1")		500	1200		500	1200	μA
Bit OFF (Logic "0")		150	400		150	400	μA
RESOLUTION		12			12		Bits
OUTPUT²							
Voltage Range ³			±10			±10	V
Current	5			5			mA
Settling Time (to ± ½LSB)		4	8		4	8	μs
ACCURACY							
Gain Error (w/ext. 10.000V reference)		±0.05	±0.1		±0.025	±0.05	% of FSR ⁴
Offset		±0.025	±0.05		±0.012	±0.025	% of FSR
Linearity Error		±1/4	±3/4		±1/8	±1/2	LSB
Differential Linearity Error		±1/2	±3/4		±1/4	±1/2	LSB
TEMPERATURE DRIFT							
Gain (internal reference)			±40			±20	ppm/°C
(external reference)			±10			±5	ppm/°C
Zero			±10			±5	ppm/°C
Linearity Error $T_{\min} - T_{\max}$		±1/2	±3/4		±1/4	±1/2	LSB
Differential Linearity							
MONOTONICITY GUARANTEED OVER FULL TEMPERATURE RANGE							
CROSSTALK⁵		0.1			0.1		LSB
REFERENCE OUTPUT							
Voltage (without load)	9.997	10.000	10.003	9.997	10.000	10.003	V
Current (available for external use)	2.5	3.5		2.5	3.5		mA
REFERENCE INPUT							
Input Resistance		10 ¹⁰			10 ¹⁰		Ω
Voltage Range	5		11	5		11	V
POWER REQUIREMENTS							
Voltage ⁶	±13.5	±15	±16.5	±13.5	±15	±16.5	V
Current							
+ V_S		20	35		20	35	mA
- V_S		-85	-100		-85	-100	mA
POWER SUPPLY GAIN SENSITIVITY							
+ V_S		0.002	0.006		0.002	0.006	%FS/%
- V_S		0.0025	0.006		0.0025	0.006	%FS/%
TEMPERATURE RANGE							
Operating (Full Specifications) J, K	0		+70	0		+70	°C
S, T	-55		+125	-55		+125	°C
Storage	-65		+150	-65		+150	°C

NOTES

¹Timing specifications appear in Table 2.

²The AD390 outputs are guaranteed stable for load capacitances up to 300pF.

³±10V range is standard. A 0 to 10V version is also available. To order, use the following part numbers:

AD50207-1 J Grade
AD50207-2 K Grade
AD50207-3 S Grade
AD50207-4 T Grade
AD50207-7 S/883B Grade
AD50207-8 T/883B Grade

⁴FSR means Full Scale Range and is equal to 20V for a ±10V range.

⁵Crosstalk is defined as the change in any one output as a result of any other output being driven from -10V to +10V into a 2kΩ load.

⁶The AD390 can be used with supply voltage as low as ±11.4V, Figure 10.

Specifications subject to change without notice.

ABSOLUTE MAXIMUM RATINGS

$+V_S$ to DGND	0 to +18V
$-V_S$ to DGND	0 to -18V
Digital Inputs (Pins 1-12, 23-28) to DGND	-1 to +7V
Ref In to DGND	$\pm V_S$
AGND to DGND	$\pm 0.6V$

Analog Outputs (Pins 16, 18-21)

	Indefinite Short to AGND or DGND
	Momentary Short to $\pm V_S$
Storage Temperature	-65°C to +150°C
Lead Temperature (Soldering, 10 Seconds)	+300°C

ORDERING GUIDE

Model	Temperature Range	Gain Error 25°C	Linearity Error $T_{min} - T_{max}$	Package Option*
AD390JD	0 to +70°C	$\pm 4LSB$	$\pm 3/4LSB$	DH-28
AD390KD	0 to +70°C	$\pm 2LSB$	$\pm 1/2LSB$	DH-28
AD390SD	-55°C to +125°C	$\pm 4LSB$	$\pm 3/4LSB$	DH-28
AD390TD	-55°C to +125°C	$\pm 2LSB$	$\pm 1/2LSB$	DH-28

*DH-28 = Side Brazed Ceramic DIP for Hybrid. For outline information see Package Information section.

PIN CONFIGURATION