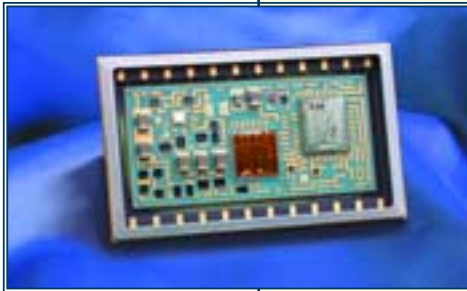


13-Bit, Synchro-to-Digital Converter

MODEL: SDC -14545



FEATURES

- Small Size
- Unique Open Line Detector
- MIL-PRF-38534 Processing Available

DESCRIPTION

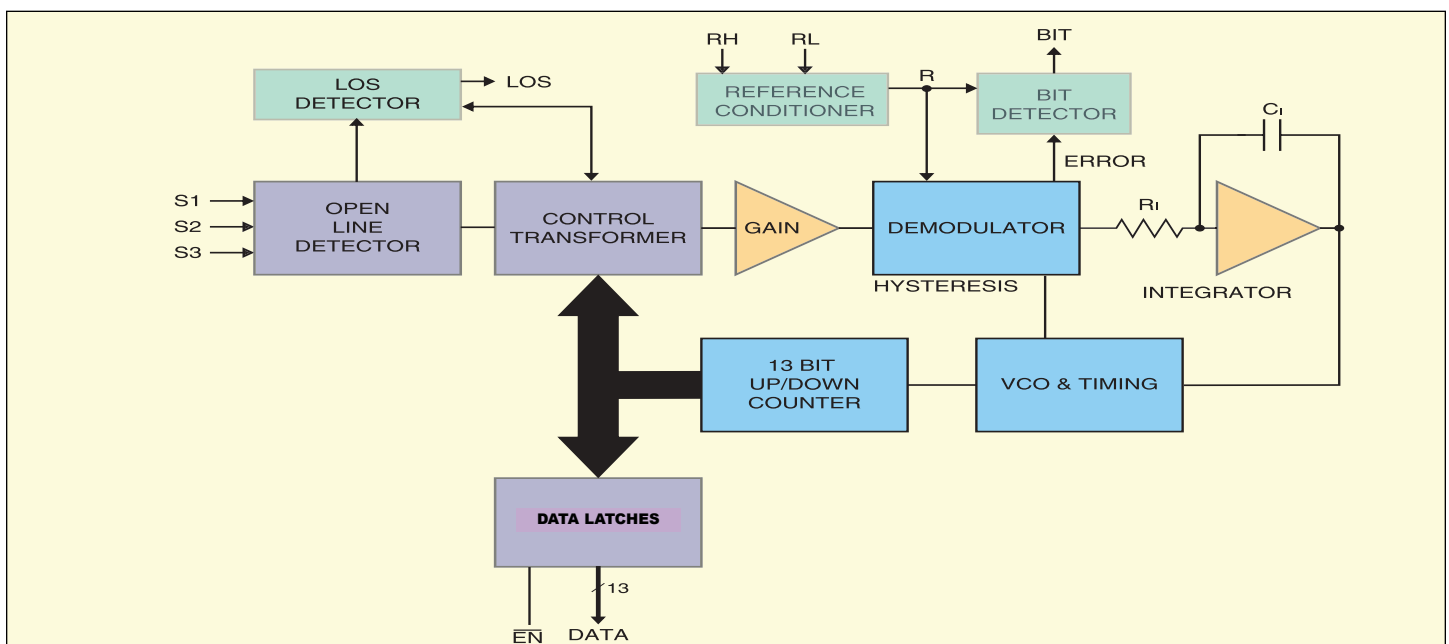
The SDC-14545 is a small, 13-bit tracking 11.8 V synchro-to-digital converter. A unique feature is its built in detection of any single open line of the five synchro lines. Based on a single monolithic chip, it is intended for those applications demanding the ultimate in reliability and "fail safe" performance.

The SDC-14545 is packaged in a 24 pin hermetic DDIP package with an operating temperature range of -55°C to $+125^{\circ}\text{C}$. The SDC-14545 is also available with MIL-PRF-38534 processing.

APPLICATIONS

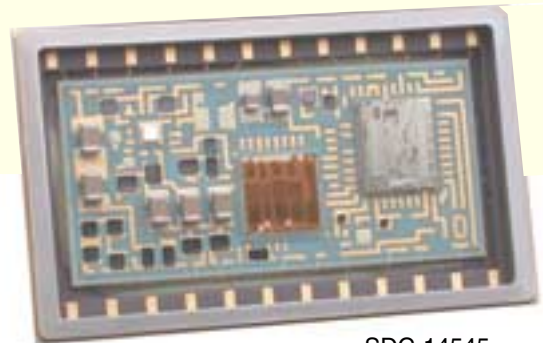
The SDC-14545, designed for high reliability and high MTBF applications, is ideally suited for critical performance military and commercial position control systems.

FIGURE 1. SDC-14545 BLOCK DIAGRAM



Specifications

PARAMETER	MIN	TYP	MAX	UNITS	PARAMETER	MIN	TYP	MAX	UNITS
RESOLUTION		13		Bits	DIGITAL INPUT/OUTPUT				
ACCURACY	5.3		8	Min	Logic Type	TTL/CMOS compatible			
REPEATABILITY			1	LSB	Inputs:				
DIFFERENTIAL LINEARITY			1	LSB	• Logic 0			0.8	V
POWER SUPPLY CHARACTERISTICS					• Logic 1	2.0			V
• Nominal Voltage & Range					• Loading, P.U. current source to +5 V//15 pF max. CMOS transient protected			30	µA
• +5 V	+4.75	+5	+5.25	VDC	• Enable (EN)/(INH)			150	ns
• -5 V	+4.75	-5	-5.25	VDC	• Logic 0, enabled			100	ns
• Max voltage without damage					• Logic 1, High Impedance			450	ns
• +5 V			+7	VDC	• Data Valid				
• -5 V			-7	VDC	Outputs				
• Current					• Parallel Data (1-13), natural binary angle, positive logic		13 bits		
• +5 V		20	30	mA	• Built-In-Test (BIT). Logic 1 for fault conditions: ±50 LSBs of tracking error with a filter of 500 µs, and Loss-of-Reference to synchro rotor		±50		LSBs
• -5 V		20	30	mA	• Loss-of-Stator (LOS). Logic 1 for loss (open) of any one or more stator lines.		50		ms
REFERENCE INPUT (RH, RL)					• Drive Capability (1-13)			50+	pF
Carrier Frequency	360	400	3600	Hz	• Logic 0; 1 TTL load at 1.6 mA			0.4	V
Voltage Range	15		30	Vrms	• Logic 1; 10 TTL loads at -0.4 mA	2.8			V
• Input Impedance					• Logic 1; no load: 4.5 V min	4.5			V
• Single Ended	100k			Ohms	• High Z: 10 µA//5 pF (1-13)			10	µA
• Differential	200k			Ohms	• Drive Capability (LOS, BIT)				
• Common Mode Range					• Logic 0; 1 TTL load at 1.6 mA			0.4	V
• Peak			60	V	TEMPERATURE RANGES				
• Transient peak			200	V	Operating (see ordering information)				
SYNCHRO INPUT CHARACTERISTICS					• -3X1	0		+70	°C
Synchro	9.44	11.8	14.16	V _{L-L}	• -2X1	-40		+85	°C
• Zin line-to-line	35k			Ohms	• -1X1	-55		+125	°C
• Zin each line-to-gnd	35k			Ohms	Storage	-65		+150	°C
• Common Mode Range					PHYSICAL CHARACTERISTICS				
• Peak			25	V	Size				
• Transient peak			100	V	• 24 pin DDIP,	1.30 x 0.77 x 0.2			in
DYNAMIC CHARACTERISTICS						(33.02 x 19.56 x 5.08)			(mm)
Tracking Rate			10	RPS	Weight				
Bandwidth (closed loop)		110		Hz	• 24 pin DDIP		0.5		oz
Ka		57k		1/sec ²			14		(g)
A		240		1/sec					
B		120		1/sec					
Accuracy (1 LSB lag)		2400		deg/sec ²					
Settling Time			140	msec					
Open Loop Transfer Function:									

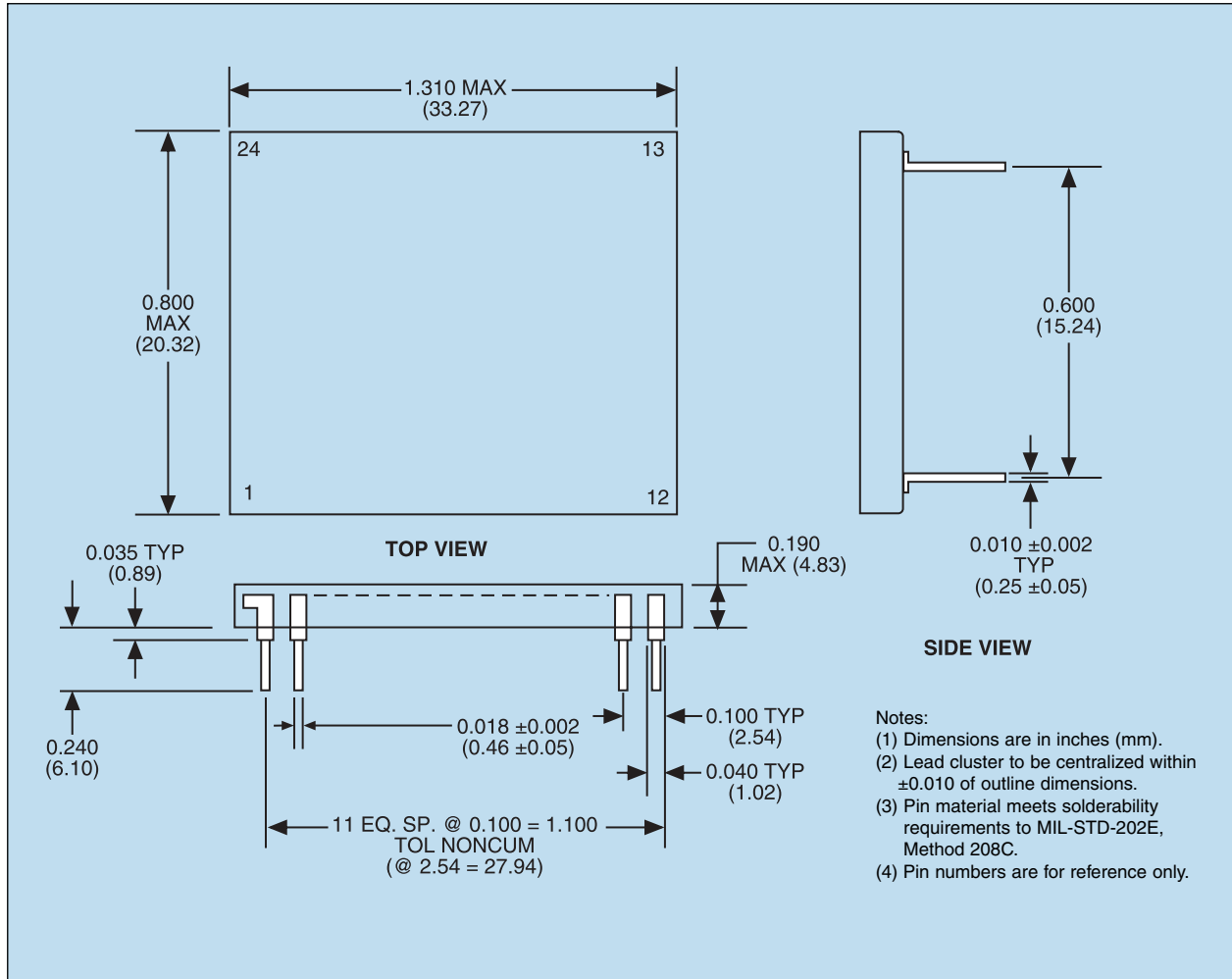


SDC-14545

Note:

These specs apply over the rated power supply, temperature, reference frequency ranges, 20% signal amplitude variation, and 10% harmonic distortion.

FIGURE 2. SDC-14545 MECHANICAL OUTLINE



SDC-14545 PIN FUNCTIONS			
PIN	FUNCTION	PIN	FUNCTION
1	RH	13	BIT 8
2	RL	14	BIT 9
3	S1	15	BIT 10
4	S2	16	BIT 11
5	S3	17	BIT 12
6	BIT 1 (MSB)	18	BIT 13 (LSB)
7	BIT 2	19	$\overline{\text{EN}}$
8	BIT 3	20	BIT
9	BIT 4	21	LOS
10	BIT 5	22	-5 VDC
11	BIT 6	23	GND
12	BIT 7	24	+5 VDC

ORDERING INFORMATION

SDC -14545 - X X X

Accuracy:

- 1 = 8 min
- 2 = 5.3 min

Reliability Grade:

- 0 = Standard DDC procedures
- 1 = Fully Compliant with MIL-PRF-38534*
- 2 = Screened to MIL-PRF-38534 but without QCI testing*
- 3 = Fully Compliant with MIL-PRF-38534 + PIND Testing*
- 4 = Fully Compliant with MIL-PRF-38534 + Solder Dip*
- 5 = Fully Compliant with MIL-PRF-38534 + PIND Testing + Solder Dip*
- 6 = Screened to MIL-PRF-38534 + PIND Testing but without QCI Testing*
- 7 = Screened to MIL-PRF-38534 + Solder Dip but without QCI Testing*
- 8 = Screened to MIL-PRF-38534 + PIND Testing + Solder Dip but without QCI testing*

Operating Temperature Range:

- 1 = -55 to +125°C
- 3 = 0 to +70°
- 4 = -55 to +125°C + Variables Data
- 8 = 0 to +70°C + Variables Data

* -55 to +125°C Temperature Range Only.

The above products contain tin-lead solder finish as applicable to solder dip requirements.



www.ddc-web.com

105 Wilbur Place, Bohemia, New York, U.S.A. 11716-2482

For Technical Support - 1-800-DDC-5757 ext. 7771

Headquarters, N.Y., U.S.A. - Tel: (631) 567-5600, Fax: (631) 567-7358

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