

FEATURES

- Full Four Quadrant Multiplication
- 12-Bit Linearity
- Guaranteed Monotonic; All Grades; All Temperatures.
- TTL/15 V CMOS Compatible
- Stable, More Accurate Decoded Architecture
 - 2.0 ppm/°C Typ. Gain Error Tempco
 - 0.2 ppm/°C Max. Linearity Tempco
 - Lowest Sensitivity to Output Amplifier Offset
- Latch-Up Free
- Use MP7541B for New Designs

APPLICATIONS

- Industrial Automation
- Automatic Test Equipment
- Disk Drive Servo Systems
- Digital/Synchro Conversion
- Programmable Gain Amplifiers
- Ratiometric A/D Conversion
- Function Generation
- Digitally Controlled Filters

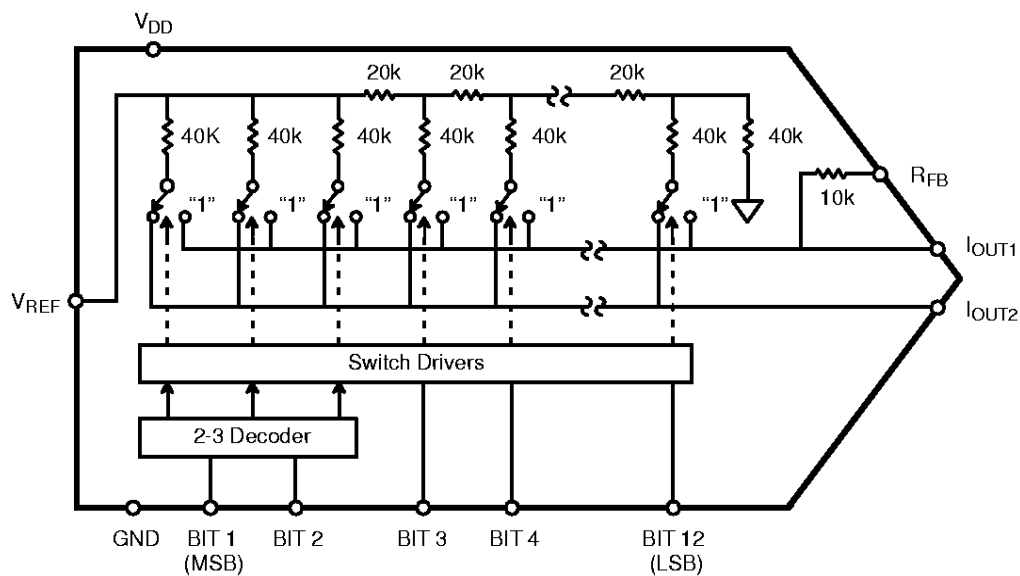
GENERAL DESCRIPTION

The MP7541 is a 12-Bit Digital-to-Analog Converter which is manufactured using EXAR's patented advanced thin film resistor and double metal CMOS process. The MP7541 incorporates a bit decoding technique yielding lower glitch, higher speed and excellent accuracy over temperature and time. The MP7541 outstanding features are:

Stability: Both Integral-Non-Linearity and Differential-Non-Linearity are rated at 0.2 ppm/°C maximum. Monotonicity is guaranteed over the entire temperature range. Gain Temperature Coefficient (TCGE) is 2.0 ppm/°C typical.

Lower Sensitivity to Output Amplifier Offset: Multiplying DACs provide an output current into a virtual ground of the output op amp. Additional linearity error caused by the op amp is reduced by a factor of 2 in the MP7541 versus conventional R-2R DACs.

SIMPLIFIED BLOCK DIAGRAM

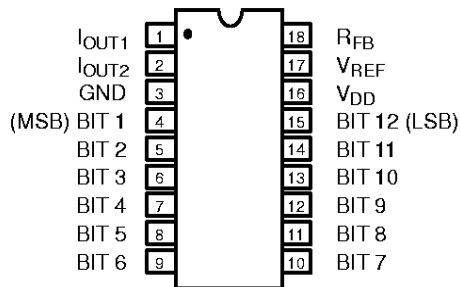


ORDERING INFORMATION

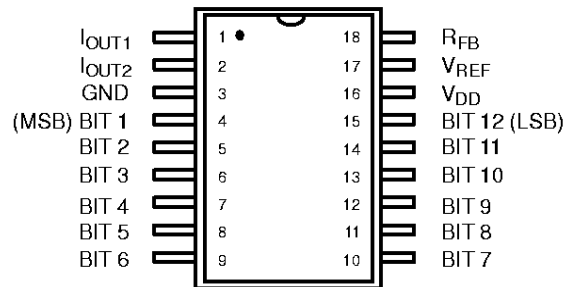
Package Type	Temperature Range	Part No.	INL (LSB)	DNL (LSB)	Gain Error (% FSR)
Plastic Dip	-40 to +85°C	MP7541JN	±1	±1	±0.4
Plastic Dip	-40 to +85°C	MP7541KN	±1/2	±1	±0.4
SOIC	-40 to +85°C	MP7541JS	±1	±1	±0.4
SOIC	-40 to +85°C	MP7541KS	±1/2	±1	±0.4
Ceramic Dip	-40 to +85°C	MP7541AD	±1	±1	±0.4
Ceramic Dip	-40 to +85°C	MP7541BD	±1/2	±1	±0.4
Ceramic Dip	-55 to +125°C	MP7541SD*	±1	±1	±0.4
Ceramic Dip	-55 to +125°C	MP7541TD*	±1/2	±1	±0.4
Plastic Dip	-40 to +85°C	MP7541AJN	±1	±1	±8
Plastic Dip	-40 to +85°C	MP7541AKN	±1/2	±1/2	±5
SOIC	-40 to +85°C	MP7541AJS	±1	±1	±8
SOIC	-40 to +85°C	MP7541AKS	±1/2	±1/2	±5
Ceramic Dip	-40 to +85°C	MP7541AAD	±1	±1	±8
Ceramic Dip	-40 to +85°C	MP7541ABD	±1/2	±1/2	±5
Ceramic Dip	-55 to +125°C	MP7541ASD*	±1	±1	±8
Ceramic Dip	-55 to +125°C	MP7541ATD*	±1/2	±1/2	±5

*Contact factory for non-compliant military processing

PIN CONFIGURATIONS *See Packaging Section for Package Dimensions*

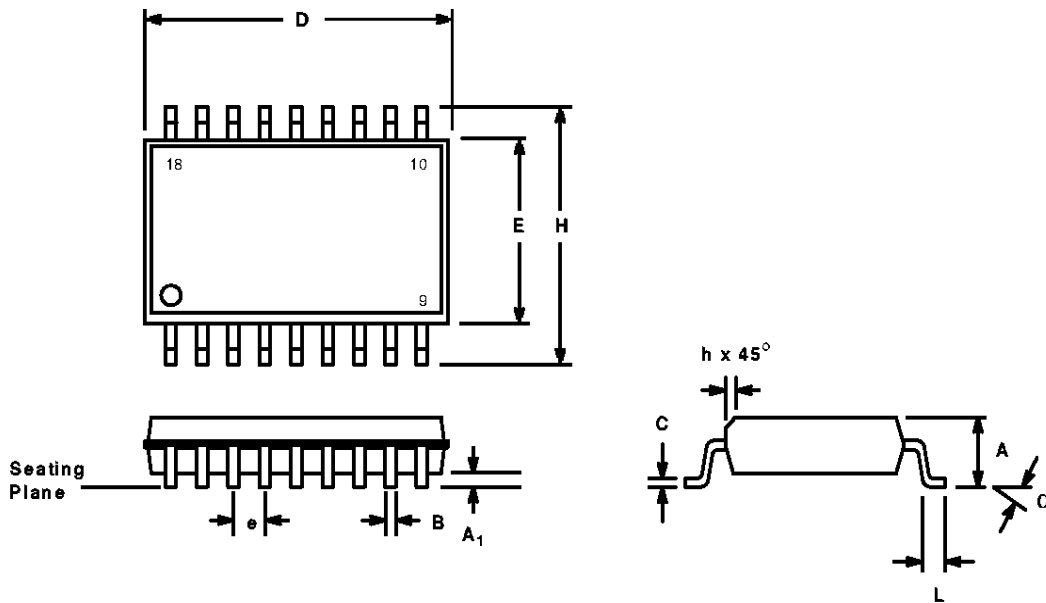


**18 Pin PDIP, CDIP (0.300")
N18, D18**



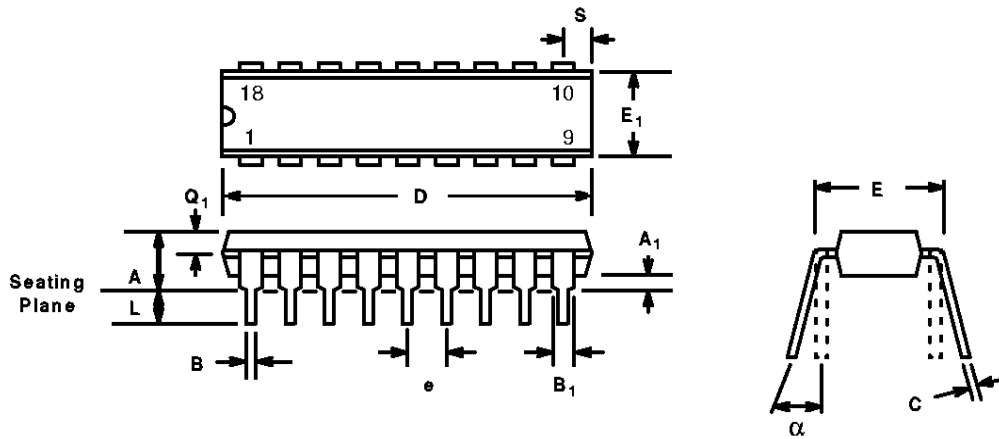
**18 Pin SOIC (Jedec, 0.300")
S18**

18 LEAD SMALL OUTLINE
(300 MIL JEDEC SOIC)
S18



SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.097	0.104	2.464	2.641
A ₁	0.0050	0.0115	0.127	0.292
B	0.014	0.019	0.356	0.483
C	0.0091	0.0125	0.231	0.318
D	0.451	0.461	11.46	11.71
E	0.292	0.299	7.42	7.59
e	0.050 BSC		1.27 BSC	
H	0.400	0.410	10.16	10.41
h	0.010	0.016	0.254	0.406
L	0.016	0.035	0.406	0.889
α	0°	8°	0°	8°

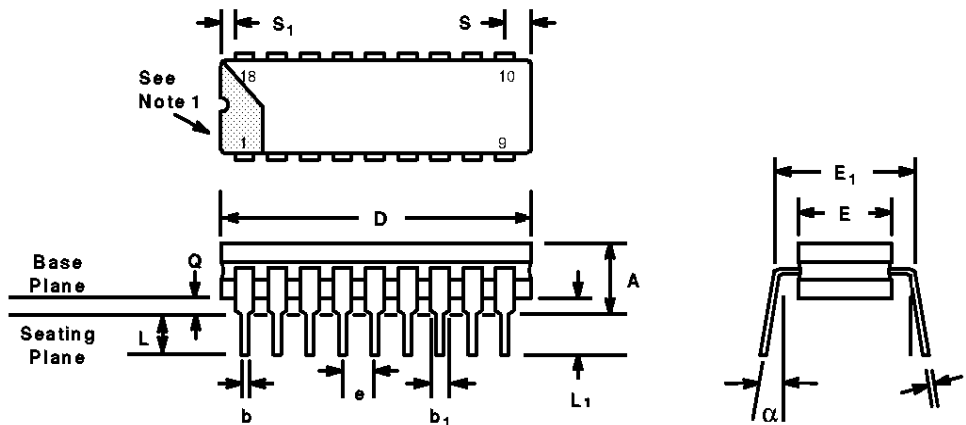
18 LEAD PLASTIC DUAL-IN-LINE (300 MIL PDIP) N18



SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	—	0.200	—	5.08
A ₁	0.015	—	0.38	—
B	0.014	0.023	0.356	0.584
B ₁ (1)	0.038	0.065	0.965	1.65
C	0.008	0.015	0.203	0.381
D	0.845	0.925	21.46	23.50
E	0.295	0.325	7.49	8.26
E ₁	0.220	0.310	5.59	7.87
e	0.100 BSC		2.54 BSC	
L	0.115	0.150	2.92	3.81
α	0° 15°		0° 15°	
Q ₁	0.055	0.070	1.40	1.78
S	0.040	0.098	1.02	2.49

Note: (1) The minimum limit for dimensions B₁ may be 0.023" (0.58 mm) for all four corner leads only.

18 LEAD CERAMIC DUAL-IN-LINE
(300 MIL CDIP)
D18



SYMBOL	INCHES		MILLIMETERS		NOTES
	MIN	MAX	MIN	MAX	
A	—	0.200	—	5.08	—
b	0.014	0.023	0.356	0.584	—
b ₁	0.038	0.065	0.965	1.65	2
c	0.008	0.015	0.203	0.381	—
D	—	0.960	—	24.38	4
E	0.220	0.310	5.59	7.87	4
E ₁	0.290	0.320	7.37	8.13	7
e	0.100 BSC		2.54 BSC		5
L	0.125	0.200	3.18	5.08	—
L ₁	0.150	—	3.81	—	—
Q	0.015	0.070	0.381	1.78	3
S	—	0.098	—	2.49	6
S ₁	0.005	—	0.13	—	6
α	0°	15°	0°	15°	—

NOTES

1. Index area; a notch or a lead one identification mark is located adjacent to lead one and is within the shaded area shown.
2. The minimum limit for dimension b₁ may be 0.023 (0.58 mm) for all four corner leads only.
3. Dimension Q shall be measured from the seating plane to the base plane.
4. This dimension allows for off-center lid, meniscus and glass overrun.
5. The basic lead spacing is 0.100 inch (2.54 mm) between centerlines.
6. Applies to all four corners.
7. This is measured to outside of lead, not center.

Notes

Notes

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