

ABSOLUTE MAXIMUM RATINGS

V_{DD} to GND	-0.5V to 17V
V_{REF} to GND	$\pm 25V$
R_{FB} to GND	$\pm 25V$
Digital Inputs to GND	-0.5V to ($V_{DD} + 0.5V$)
OUT 1, OUT 2 to GND	-0.5V to ($V_{DD} + 0.5V$)
Power Dissipation	450mW (Derate 6mW/°C Above 75°C)
Maximum Junction Temperature	-65°C to 125°C
Operating Temperature Range	
Commercial (J, K Versions)	0°C to 70°C
Industrial (B Version)	-40°C to 85°C
Storage Temperature Range	-65°C to 150°C
Lead Temperature (Soldering, 10 sec)	300°C

PACKAGE/ORDER INFORMATION

TOP VIEW		ORDER PART NUMBER
OUT 1 [1]	[18] R_{FB}	LTC7541ABN
OUT 2 [2]	[17] V_{REF}	LTC7541ABSW
GND [3]	[16] V_{DD}	LTC7541AJN
BIT 1 (MSB) [4]	[15] BIT 12 (LSB)	LTC7541AKN
BIT 2 [5]	[14] BIT 11	LTC7541AJSW
BIT 3 [6]	[13] BIT 10	LTC7541AKSW
BIT 4 [7]	[12] BIT 9	
BIT 5 [8]	[11] BIT 8	
BIT 6 [9]	[10] BIT 7	
N PACKAGE SW PACKAGE		
18-LEAD PDIP 18-LEAD PLASTIC SO WIDE		
$T_{JMAX} = 150^{\circ}C$, $\theta_{JA} = 100^{\circ}C/W$ (N)		
$T_{JMAX} = 150^{\circ}C$, $\theta_{JA} = 130^{\circ}C/W$ (SW)		

Consult factory for Military grade parts.

ELECTRICAL CHARACTERISTICS

 $V_{DD} = 15V$, $V_{REF} = 10V$, OUT 1 = OUT 2 = GND = 0V, $T_A = T_{MIN}$ to T_{MAX} , unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	LTC7541AJ			LTC7541AK/LTC7541AB			UNITS			
			MIN	TYP	MAX	MIN	TYP	MAX				
Accuracy												
	Resolution		●	12			12			Bits		
INL	Integral Nonlinearity (Relative Accuracy)	(Note 1)	●	±1			±0.5			LSB		
DNL	Differential Nonlinearity	Guaranteed Monotonic, T _{MIN} to T _{MAX}	●	±1			±0.5			LSB		
GE	Gain Error	(Note 2) T _A = 25°C T _{MIN} to T _{MAX}	●	±6			±1			LSB		
			●	±8			±2			LSB		
	Gain Temperature Coefficient	(Note 3)	●	1		5	1		5	ppm/°C		
I _{LKG}	Output Leakage Current	(Note 4) T _A = 25°C T _{MIN} to T _{MAX}	●	±5			±5			nA		
			●	±10			±10			nA		
PSRR	Power Supply Rejection	V _{DD} = 15V ±5%	●	±0.002			±0.002			%/%		
Reference Input												
R _{REF}	V _{REF} Input Resistance		●	7		11	15	7		11	15	kΩ
	V _{REF} Input Resistance Temperature Coefficient			–100			–100			ppm/°C		

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TYPICAL APPLICATIONS

Unipolar Operation (2-Quadrant Multiplication)

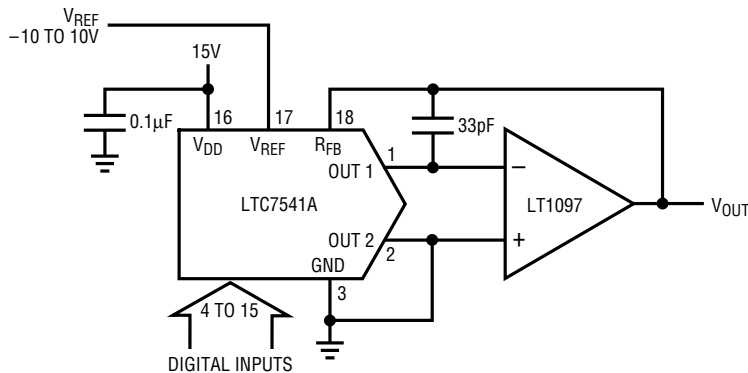


Table 1. Unipolar Binary Code Table

DIGITAL INPUT		ANALOG OUTPUT V _{OUT}
MSB	LSB	
1111	1111 1111	-V _{REF} (4095/4096)
1000	0000 0000	-V _{REF} (2048/4096) = -V _{REF} /2
0000	0000 0001	-V _{REF} (1/4096)
0000	0000 0000	0V

7541 TA03

Bipolar Operation (4-Quadrant Multiplication)

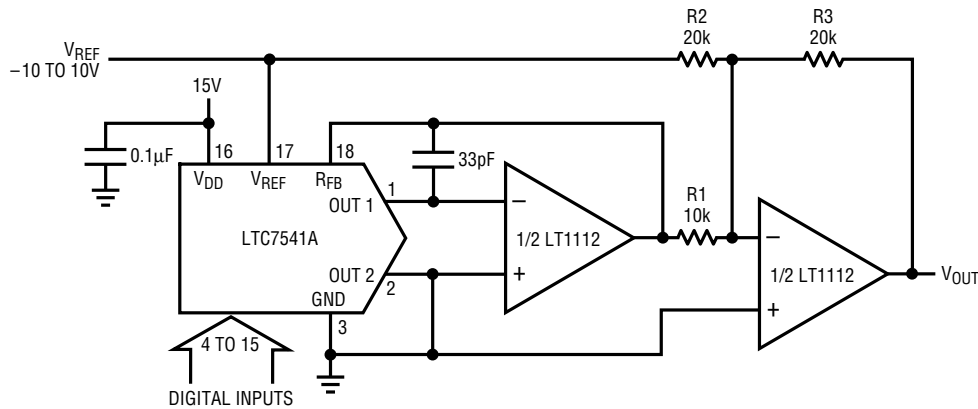


Table 2. Bipolar Offset Binary Code Table

DIGITAL INPUT		ANALOG OUTPUT V _{OUT}
MSB	LSB	
1111	1111 1111	V _{REF} (2047/2048)
1000	0000 0001	V _{REF} (1/2048)
1000	0000 0000	0V
0111	1111 1111	-V _{REF} (1/2048)
0000	0000 0000	-V _{REF}

7541 TA04

RELATED PARTS

PART NUMBER	DESCRIPTION	COMMENTS
LTC1257	Complete Serial I/O V _{OUT} 12-Bit DAC	5V to 15V Single Supply in 8-Pin SO and PDIP
LTC1451/LTC1452/LTC1453	Complete Serial I/O V _{OUT} 12-Bit DACs	3V/5V Single Supply in 8-Pin SO and PDIP
LTC7543/LTC8143	Serial I/O Multiplying 12-Bit DACs	Clear Pin, Serial Data Output (LTC8143)
LTC8043	Serial Multplying 12-Bit DAC	8-Pin SO and PDIP