

BST8532

1. Product Overview

The BST8532 is a dual channel, 16-bit digital-to analog converter (DAC) with low power operation and a flexible serial host interface. Each on-chip precision output amplifier allows operation at 2.7 V to 5.5 V. The device supports a standard 3-wire serial interface allowing input data clock frequencies up to 30 MHz for VDD = 5 V.

The BST8532 requires an external reference voltage to set the output range of each DAC channel. The device incorporates a power-on reset circuit which ensures that the DAC outputs power up at zero-scale and remain there until a valid write takes place. The BST8532 provides a flexible power-down mode, accessible over the serial interface, that reduces the current consumption of the device to 200nA @ 5V. The device's low-power consumption in normal operation makes it ideally suited to portable battery-operated equipment and other low-power applications. The power consumption is 2.5 mW at 5 V, reducing to 1 μ W in power-down mode.

2. Product Features

- Low power mode: 500 μ A @ 5 V.
- Power-on reset to zero.
- Power supply voltage: + 2.7V ~ + 5.5V.
- Resolution: 16 Bit.
- Setup time: 10 μ A To ± 0.003 % FSR.
- On-chip rail-to-rail buffered output amplifier.
- Dual channel structure.
- Gain error: ± 1 % of FSR.
- Package: CSOP 8.
- Working temperature: -55~125°C.
- ESD Specification: ESD ≥ 2000 V.

3. Compatible models

This product is compatible with TI DAC8532 Chip in terms of function, performance, pin, die size, die PAD The coordinates are fully compatible, some parameters are better than the corresponding products, and PIN-TO-PIN can be performed. Complete replacement. This product is available in ceramic housing.

4. Functional Block Diagram

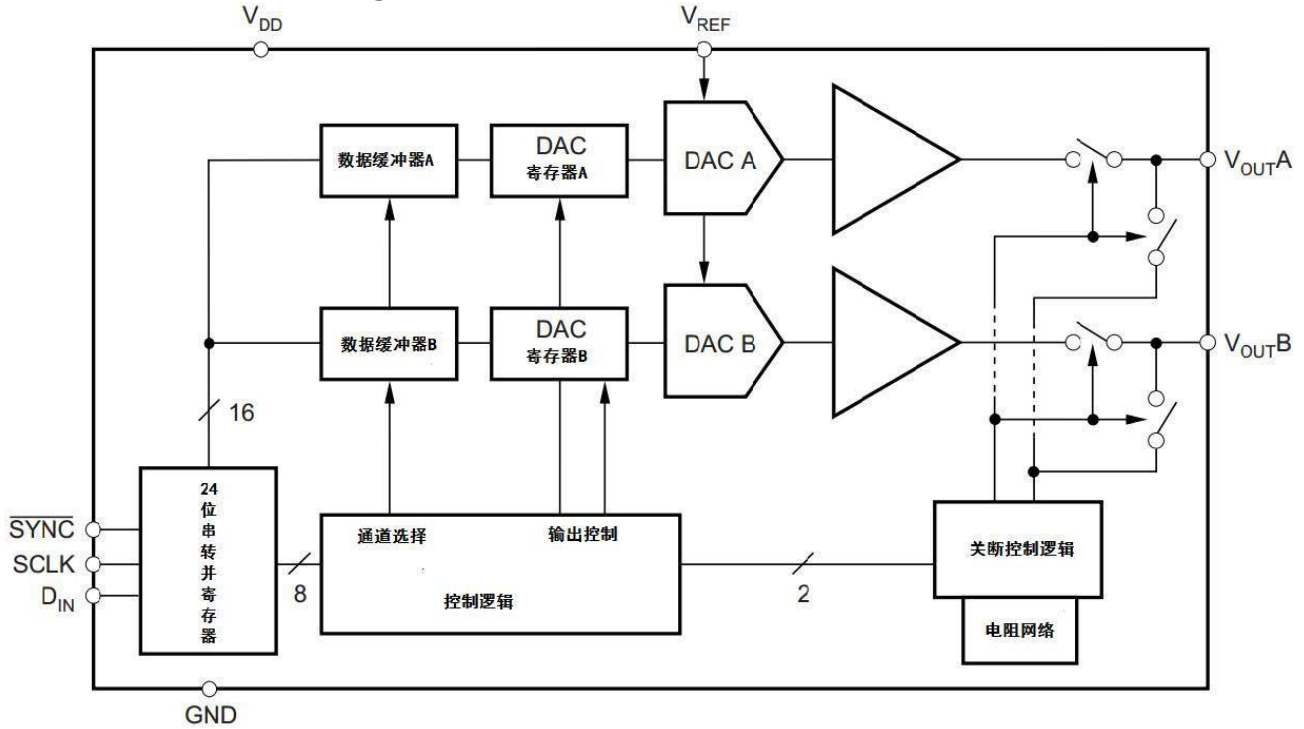


Figure 1. BST8532 Circuit diagram

5. Electrical Parameters

Standard test conditions: $V_{IN} = 2.7\text{ V} \sim 5.5\text{ V}$, $T_A = -55^\circ\text{C} \sim 125^\circ\text{C}$, unless otherwise specified in Table 1.

Electrical characteristics parameter table

Parameter	Condition	BST8532			Unit
		Minimum	Typical Value	Maximum	
Static parameters					
Resolution		16			Bits
Relative accuracy				±0.0987	% of FSR
Differential Nonlinearity	16-Bit Monotonic			±1	LSB
Zero scale error			+5	±25	mV
Full scale error			- 0.15	- 1.0	% of FSR
Gain Error				±1.0	% of FSR
Zero scale			±20		uV/°C
Gain Temperature Coefficient			±5		ppm of FSR/°C
Channel matching	RL=2kΩ CL=200pF		15		mV
Power Supply Rejection Ratio PSRR			0.75		mV/V
Output Characteristics					
Output voltage range		0		Vref	V
Output voltage settling time	To ±0.003% FSR, 0200H to FD00H, RL=2kΩ		8	10	us
	0pF<CL<200Pf, RL=2kΩ CL=500pF		12		
Conversion rate			1		V/ us
Load stability	RL=∞		470		pF
	RL=2kΩ		1000		
Code word glitch pulse	1LSB Change Around Major Carry		20		nV- s
Digital Feedthrough			0.5		nV- s
DC Crosstalk			0.25		LSB
AC Crosstalk					dB
DC output impedance			1		Ω
Short circuit current	VDD= +5V		50		mA
	VDD=+3V		20		
Power-on time	Coming Out of Power-down Mode VDD= 5V		2.5		us
	Coming Out of Power-down Mode VDD= 3V		5		
AC performance					
Signal-to-Noise Ratio (SNR)	BW=20kHz VDD=5V Fout=1kHz, 1st 19 Harmonics		94		dB
Total Harmonic Distortion THD			67		dB
Spurious Free Dynamic Range SFDR			69		dB
Signal-to-Noise/ Anti-Resonance Ratio (SINAD)			65		dB
Reference Input					
Reference current	Vref=VDD=+5V		67	90	uA
	Vref=VDD=+3V		40	54	uA
Reference input voltage range	-	0		VDD	V
Reference input impedance	-		75		KΩ

Parameter	Condition	BST8532			Unit
		Minimum	Typical Value	Maximum	
Logic Input					
Input Current				±1	uA
Input low level VinL	VDD=+5V			0.8	V
	VDD=+3V			0.6	V
Input high level VinH	VDD=+5V	2.4			V
	VDD=+3V	2.1			V
Pin capacitance				3	pF
Power supply and power consumption					
Power supply voltage VDD		2.7		5.5	
Power supply current Idd(normal modes)	DAC Active and Excluding Load Current				
	VDD =3.6V to5.5V, Vih = VDD and Vil = GND		500	800	uA
	VDD =2.7V to 3.6V, Vih = VDD and Vil = GND		450	750	uA
Supply current Idd (all power- down modes)	VDD =3.6V to5.5V, Hate = VDD and Nasty = GND		0.2	1	uA
	VDD =2.7V or 3.6V, Hate = VDD and Nasty = GND		0.05	1	uA
Efficiency Iout/Idd	Iload = 2mA, VDD=+5V		89		%
Operating temperature range		- 55		125	°C