1 Product Overview

BST9765 is a high-speed dual-channel 12 -bit digital-to-analog converter product with a maximum operating clock frequency of 125MHz . The product integrates an internal voltage reference source and has two working modes: single-channel and interleaved. It is fully compatible with the foreign ADI product AD9765AST and can be used in radar, communication and other systems to realize the conversion function of high-speed digital signals to analog signals.

2 Features

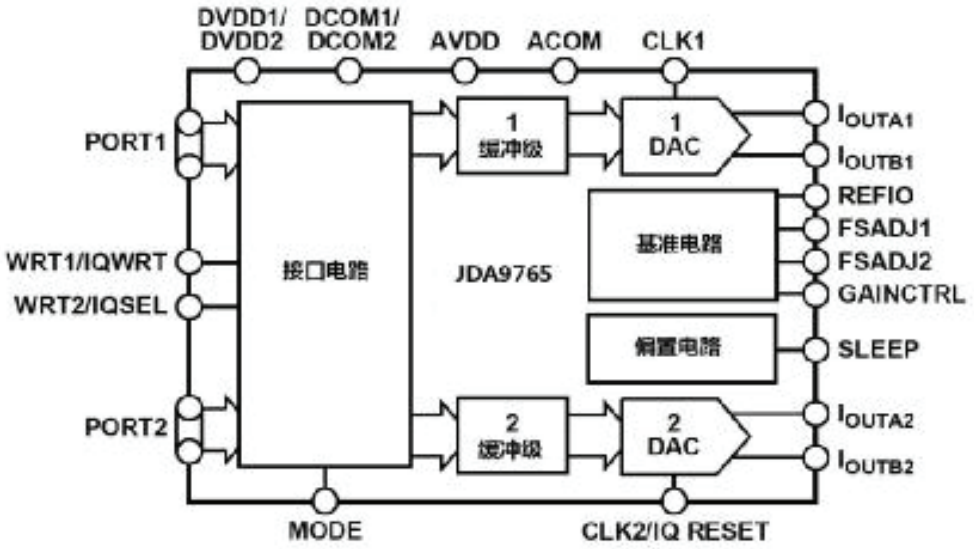
- With AD The company's AD9765AST Circuit compatibility
- Supply voltage: 3.3V/5V
- Operating frequency: 125MHz
- Accuracy: 12 Bit
- Output current: 2mA ~ 20mA
- Two working modes: single channel / interleaved
- ESD : ≥500V
- Operating temperature: -55 °C ~ 125 °C
- Package: CQFP48
- Package size: 16.30×16.30×3.30 (unit: mm)

3 Corresponding to the situation of replacing foreign products

BST9765 With ADI The company's AD9765AST The circuits are compatible and can be plugged in and used as a replacement.

4 Circuit Function Block Diagram

BST9765 It is a mixed digital-analog circuit with a high-performance DAC integrated inside. Core, built-in voltage reference, calibration circuit, gain modulation
Circuit and other modules, the circuit function block diagram is shown in Figure 1 shown.



picture 1. BST9765 Functional Block Diagram

5 Electrical characteristics parameters

Table 1 Full parameter comparison between BST9765 and foreign sample circuits.

symbol	BST9765 specification		AD9765AST manual			Test value		unit
	Minimum	maximum	Minimum	typical	maximum	AD9765AST foreign sample	BST9765	
INL_1	-1.5	1.5	-1.5	±0.4	1.5	0.3668	0.5772	LSB
INL_2	-2.5	2.5	-2	—	2	0.4325	0.5986	LSB
DNL_1	-1.5	1.5	-1	—	1	0.2136	0.1579	LSB
DNL_2	-0.75	0.75	-0.75	±0.3	0.75	0.2862	0.1685	LSB
E_O	-0.02	0.02	-0.02	—	0.02	0.005	0.016	% of FSR
E_{G1}	-2	2	-2	±0.25	2	-0.31	-0.362	% of FSR
E_{G2}	-5	5	-5	±1	5	-0.921	-0.876	% of FSR
IM	-1.6	1.6	-1.6	±0.1	1.6	-0.002	-0.046	% of FSR
I_{OUTFS}	2	20	2	—	20	19.985	19.0534	mA
V_{OC}	-1	1.25	-1	—	1.25	-1	-1	V
R_O	30	—	—	100	—	500	500	kΩ
C_O	—	10	—	5	—	3.68	3.99	pF
V_{REFO}	1.14	1.26	1.14	—	1.26	1.2502	1.2285	V
I_{REF}	—	100	—	100	—	19.3552	10.8833	nA
V_{REFIR}	0.1	1.25	0.1	—	1.25	1	1.01	V
R_{REFI}	0.5	—	—	1	—	1.9	2	MΩ
BW	—	0.5	—	0.5	—	0.5	0.5	MHz
OD	-20	20	—	0	—	5	16	ppm of FSR /°C
GDO	-60	60	—	±50	—	44	51	ppm of FSR/°C
GDI	-120	120	—	±100	—	85	88	ppm of FSR/°C
RD	-60	60	—	±50	—	22	29	ppm /°C
A_{VDD}	3	5.5	3	5	5.5	5	5	V
D_{VDD1} D_{VDD2}	2.7	5.5	2.7	5	5.5	5	5	V
I_{AVDD1}	—	75	—	71	75	66.175	64.2247	mA
I_{DVDD1}	—	7	—	5	7	2.2398	1.5171	mA
I_{DVDD2}	—	15	—	—	15	2.5253	1.461	mA
I_{AVDDS}	—	12	—	8	12	6.5109	5.5855	mA
P_{W1}	—	380	—	380	410	310.6341	328.0552	mW
P_{W2}	—	450	—	420	450	318.3024	327.6505	mW
P_{W3}	—	450	—	450	—	323.1655	328.024	mW
PSR1	-0.4	0.4	-0.4	—	0.4	0.005084	0.015252	% of FSR/V
PSR2	-0.04	0.04	-0.025	—	0.025	0.005032	0.010188	% of FSR/V
t_{ST}	—	35	—	35	—	22.9	17.1	ns
t_{PD}	—	4	—	1	—	1	1	ns
GI	—	5	—	5	—	0.2208	0.1466	pV- s
RT	—	2.5	—	2.5	—	1.3	0.7	ns
FT	—	2.5	—	2.5	—	1.5	0.7	ns

Table 1 (continued)

symbol	BST9765 specification		AD9765AST manual			Test value		unit
	Minimum	maximum	Minimum	typical	maximum	AD9765AST country External samples	BST9765	
$SFDR_1$	65	—	70	81	—	80.5176	72.3252	dB
	62	—	—	77	—	79.6832	76.4713	dB
	57	—	—	72	—	75.2819	71.3867	dB
	55	—	—	70	—	68.3152	59.6189	dB
	65	—	—	81	—	83.5793	77.8506	dB
	64	—	—	79	—	83.1681	79.9258	dB
	63	—	—	78	—	81.7764	77.4235	dB
	53	—	—	68	—	71.4086	67.8485	dB
	48	—	—	55	—	63.9361	61.1016	dB
	52	—	—	67	—	69.0985	65.4744	dB
	48	—	—	60	—	66.5621	62.3276	dB
$SFDR_2$	75	—	80	90	—	95.6235	93.8123	dB
	73	—	—	88	—	89.2276	81.1618	dB
	73	—	—	88	—	90.1502	84.5129	dB
	73	—	—	88	—	93.065	85.5143	dB
THD_1	—	-66	—	-80	-70	-79.7305	-70.8743	dB
THD_2	—	-62	—	-78	—	-74.2163	-66.6585	dB
THD_3	—	-60	—	-75	—	-81.5998	-77.3648	dB
THD_4	—	-60	—	-75	—	-79.544	-75.533	dB
MPR_1	70	—	—	80	—	105.8776	96.2189	dB
MPR_2	68	—	—	79	—	101.6533	97.8609	dB
MPR_3	68	—	—	77	—	95.441	89.0057	dB
MPR_4	66	—	—	75	—	88.6039	80.8949	dB
CI	71	—	—	85	—	82.5051	77.6671	dB
$V_{IH}1$	3.5	—	—	5	—	3.5	3.5	V
V_{IH2}	2.4	—	—	3	—	3	3	V
V_{IL1}	—	1.3	—	0	1.3	1.3	1.3	V
V_{IL2}	—	0.9	0	—	0.9	0.9	0.9	V
I_{IH}	-10	10	-10	—	10	-0.1095	-0.232	μA
I_{IL}	-10	10	-10	—	10	0.2836	0.1319	μA
C_{IN}	—	10		5	—	3.35	3.85	pF
t_S	2.5	—	2.5	—	—	2.5	2.5	ns
t_H	1.5	—	1.5	—	—	1.5	1.5	ns