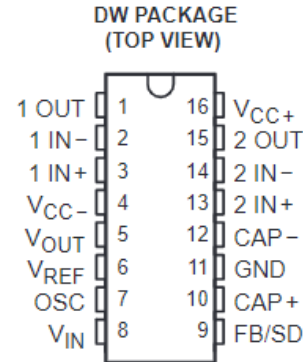


TLE2682

HIGH-SPEED JFET-INPUT DUAL OPERATIONAL AMPLIFIER WITH SWITCHED-CAPACITOR VOLTAGE CONVERTER

SLOS127 – JUNE 1993

- Single-Supply Operation With Rail-to-Rail Inputs
- ± 30 -mA Min Short-Circuit Output Current
- Wide V_{CC} Range . . . 3.5 V to 15 V
- V_{OUT} Supplies up to 100 mA for External Loads
- Shutdown Mode
- External 2.5-V Voltage Reference Available
- 40-V/ μ s Slew Rate Typ
- High Gain-Bandwidth Product . . . 10 MHz



description

The TLE2682 offers the advantages of JFET-input operational amplifiers and rail-to-rail common-mode input voltage range with the convenience of single-supply operation. By combining a switched-capacitor voltage converter with a dual operational amplifier in a single package, Texas Instruments now gives circuit designers new options for conditioning low-level signals in single-supply systems.

The TLE2682 features two high-speed, high-output drive JFET-input operational amplifiers with a switched-capacitor building block. Using two external capacitors, the switched-capacitor network can be configured as a voltage inverter generating a negative supply voltage capable of sourcing up to 100 mA. This supply functions not only as the amplifier's negative rail but is also available to drive external circuitry. In this configuration, the amplifier common-mode input voltage range extends from the positive rail to below ground, thus providing true rail-to-rail inputs from a single supply. Furthermore, the outputs can swing to and below ground while sinking over 25 mA. This feature was previously unavailable in operational amplifier circuits. The TLE2682 operational amplifier section has output stages that can drive 20-mA loads to 2.3 V with a 5-V rail. With a 2-mA load, the output swing extends to 3.9 V.

This amplifier design features a 25-V/ μ s minimum slew rate, which results in a high-power bandwidth. Settling time to 0.1% of a 10-V step (1-k Ω /100-pF load) is approximately 400 ns. Gain-bandwidth product is typically 10 MHz with an 8-MHz minimum. The TLE2682 offers significant speed and noise advantages at a low 1.5-mA typical supply current per channel.

The TLE2682 features a shutdown pin (FB/SD), which can be used to disable the switched-capacitor section. When disabled, the switched-capacitor voltage converter block draws less than 150 μ A from the power supply, V_{IN} .

The switched-capacitor voltage converter block also provides an on-board regulator; with the addition of an external divider, a well-regulated output voltage is easily obtained. The internal oscillator runs at a nominal frequency of 25 kHz. This can be synchronized to an external clock signal or can be varied using an external capacitor. A 2.5-V reference is brought out to V_{REF} for use with the on-board regulator or external circuitry. Additional filtering can be added to minimize switching noise.

The TLE2682 is characterized for operation over the industrial temperature range of -40°C to 85°C . This device is available in a 16-pin wide-body surface-mount package.

AVAILABLE OPTION

T _A	PACKAGE
	SMALL OUTLINE (DW)
-40°C to 85°C	TLE2682IDW

The DW package is available taped and reeled. Add the suffix R to the device type, (i.e., TLE2682IDWR).

PRODUCTION DATA information is current as of publication date. Products conform to specifications per the terms of Texas Instruments standard warranty. Production processing does not necessarily include testing of all parameters.

Copyright © 1993, Texas Instruments Incorporated

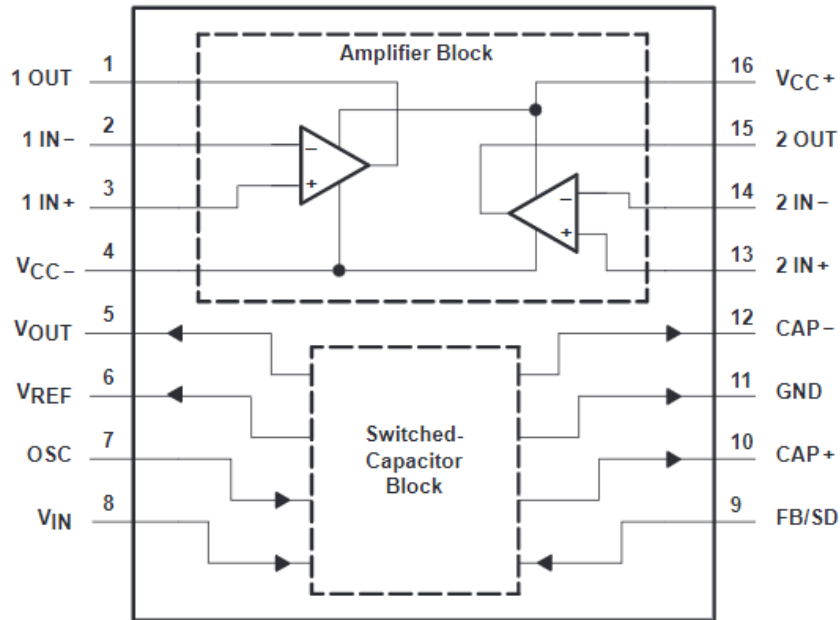


POST OFFICE BOX 655303 • DALLAS, TEXAS 75265
POST OFFICE BOX 1443 • HOUSTON, TEXAS 77251-1443

TLE2682
HIGH-SPEED JFET-INPUT DUAL OPERATIONAL AMPLIFIER
WITH SWITCHED-CAPACITOR VOLTAGE CONVERTER

SLOS127 - JUNE 1993

functional block diagram



ACTUAL DEVICE
 COMPONENT COUNT

AMPLIFIER BLOCK		SWITCHED-CAPACITOR BLOCK	
Transistors	57	Transistors	71
Resistors	37	Resistors	44
Diodes	5	Diodes	2
Capacitors	11	Capacitors	5