

DESCRIPTION

The 5556 is an internally compensated precision monolithic operational amplifier featuring extremely low offset and bias currents and offset null capability. The 5556 is short circuit protected and its high common mode and differential input voltage range provides exceptional performance when used as an integrator, summing amplifier, and voltage follower.

The 5556 features industry standard pinout and is a direct pin-for-pin replacement for the MC15556G and MC14556G.

ABSOLUTE MAXIMUM RATINGS

Power Supply Voltage

S5556	$\pm 22\text{V}$
N5556	$\pm 18\text{V}$

Differential Input Voltage $\pm V^+$

Common Mode Input Voltage $\pm V^+$

Load Current 20mA

Output Short Circuit Duration Indefinite

Power Dissipation 680mW

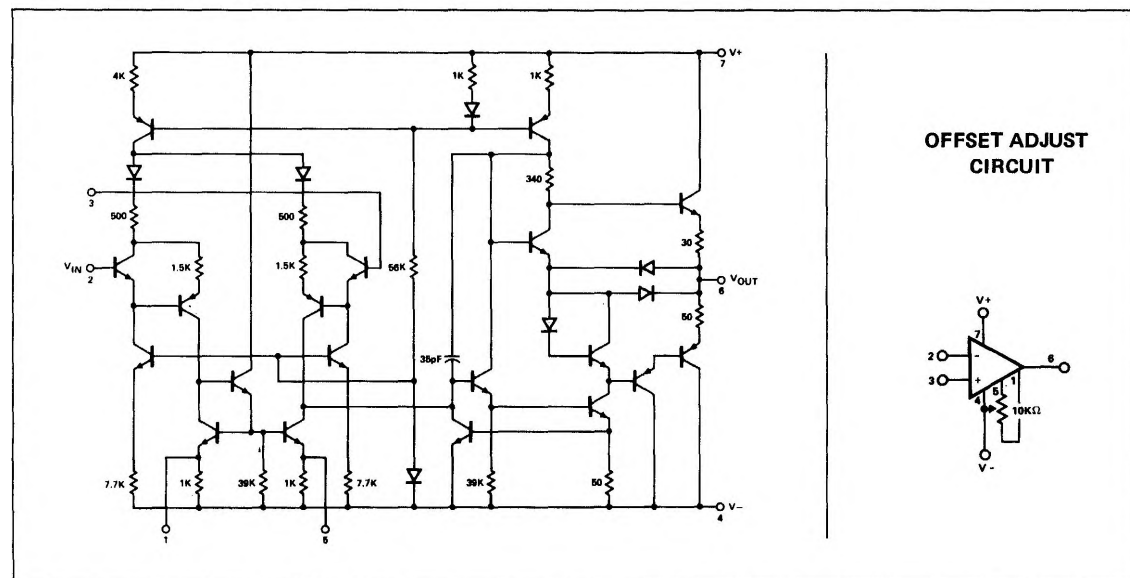
Derate Above $T_A = 25^\circ\text{C}$ 4.6mW/ $^\circ\text{C}$

Operating Temperature Range

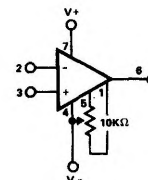
S5556	-55°C to $+125^\circ\text{C}$
N5556	0°C to $+70^\circ\text{C}$

Storage Temperature Range -65°C to $+150^\circ\text{C}$

EQUIVALENT CIRCUIT



OFFSET ADJUST CIRCUIT

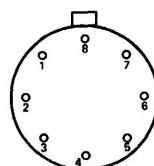


FEATURES

- LOW INPUT BIAS CURRENT - 15nA maximum
- LOW INPUT OFFSET CURRENT - 2.0nA maximum
- LOW INPUT OFFSET VOLTAGE - 4.0mV maximum
- HIGH SLEW RATE - 2.5 V/ μs typical
- LARGE POWER BANDWIDTH - 40kHz typical
- LOW POWER CONSUMPTION - 45mW maximum
- OFFSET VOLTAGE NULL CAPABILITY

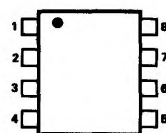
PIN CONFIGURATIONS (Top View)

T PACKAGE



Order Part Nos. S5556T/N5556T

V PACKAGE



Order Part Nos. S5556V/N5556V

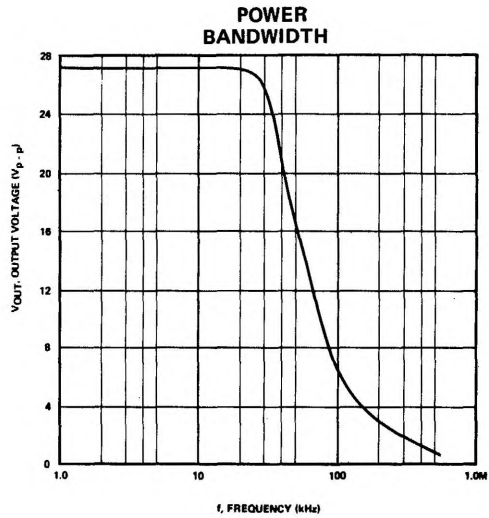
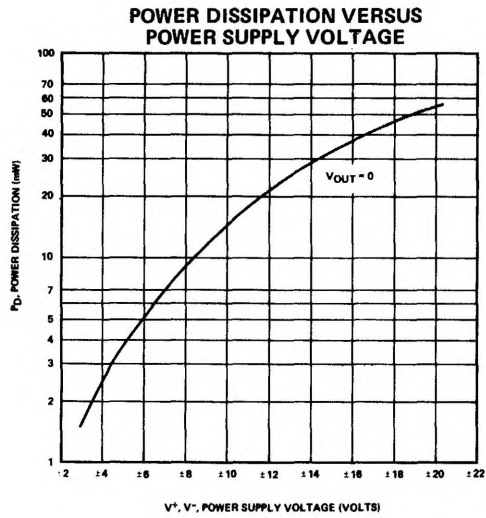
ELECTRICAL CHARACTERISTICS ($V^+ = +15V$, $V^- = -15V$, $T_A = +25^\circ C$ Unless Otherwise Noted)

PARAMETER	SYMBOL	MIN		TYP		MAX		UNITS
		S5556	N5556	S5556	N5556	S5556	N5556	
Input Bias Current $T_A = 25^\circ C$ $T_A = T_{LOW} \text{ to } T_{HIGH}$ (Note 1)	I_B			8	15	15 30	30 40	nA nA
Input Offset Current $T_A = 25^\circ C$ $T_A = 25^\circ C \text{ to } T_{HIGH}$ $T_A = T_{LOW} \text{ to } 25^\circ C$	I_{io}			1.0	5.0	2.0 3.0 5.0	10 14 14	nA nA nA
Input Offset Voltage $T_A = 25^\circ C$ $T_A = T_{LOW} \text{ to } T_{HIGH}$	V_{io}			2.0	5.0	4.0 6.0	10 14	mV mV
Differential Input Impedance (Open Loop— $f = 20Hz$) Parallel Input Resistance Parallel Input Capacitance	R_p C_p			5.0 6.0	3.0 6.0			M pF
Common Mode Input Impedance ($f = 20Hz$)	Z_{IN}			250	250			M
Common Mode Input Voltage Swing	CMV_{IN}	± 12	± 11	± 13	± 12			V
Equivalent Input Noise Voltage ($A_v = 100$, $R_s = 10K\Omega$, $F = 1.0KHz$, $BW = 1.0Hz$)	E_{IN}			45	45			nV/ $\sqrt{Hz}$
Common Mode Rejection Ratio ($f = 100Hz$)	CMRR	80	70	110	110			dB
Open Loop Voltage Gain ($V_{OUT} = \pm 10V$, $R_L = 2K\Omega$ $T_A = 25^\circ C$ $T_A = T_{LOW} \text{ to } T_{HIGH}$)	A_{VO}	100K 40K	70K 40K	200K	100K			V/V V/V
Power Bandwidth $A_v = 1$, $R_L = 2K\Omega$, $THD \leq 5\%$, $V_{OUT} = \pm 10V$)	P_{BW}			40	40			KHz
Unity Gain Crossover Frequency (open-loop)				1.0	1.0			MHz
Phase Margin (open-loop, unity gain)				70	70			Degrees
Gain Margin				18	18			dB
Slew Rate (unity gain)	dV_{OUT}/dt			2.5	2.5			V/ μsec
Output Impedance ($f = 20Hz$)	Z_{OUT}			1.0	1.0	2.0	2.5	$K\Omega$
Output Voltage Swing ($R_L = 2K\Omega$)	V_{OUT}	± 12	± 11	± 13	± 12			V
Power Supply Sensitivity $V^- = \text{Constant}$, $R_S \leq 10K$ $V^+ = \text{Constant}$, $R_S \leq 10K$	S^+ S^-			50 50	75 75	100 100	200 200	$\mu V/V$ $\mu V/V$
Power Supply Current	I_{D+} I_{D-}			1.0 1.0	1.3 1.3	1.5 1.5	3.0 3.0	mA mA
DC Quiescent Power Dissipation ($V_{OUT} = 0$)	P_D			30	40	45	90	mW

NOTE:

 1. $T_{LOW} = 0^\circ C$ for N5556, $-55^\circ C$ for S5556; $T_{HIGH} = 70^\circ C$ for N5556, $125^\circ C$ for S5556

USUAL PERFORMANCE CHARACTERISTICS



TYPICAL INPUT BIAS CURRENT AND INPUT OFFSET CURRENT VERSUS TEMPERATURE FOR S5556

