Sipex
SIGNAL PROCESSING EXCELLENCE

SP-2620/22/25

Very Wideband, Uncompensated Operational Amplifiers

T-79-07-10

Features

- 100 MHz Gain Bandwidth Product (A_V = 5)
- 500 MΩ Input Impedance
- 500 µV Input Offset Voltage
- 150K V/V Open Loop Voltage Gain

Applications

- Video Amplifiers
- Pulse Amplifiers
- High Speed Comparators
- Low Distortion Oscillators
- High-Q Active Filters

Description

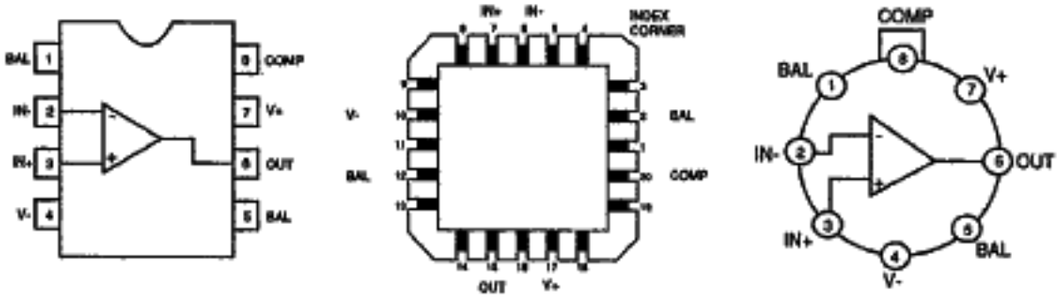
The SP-2620/22/25 are uncompensated, wide bandwidth operational amplifiers. They are stable for gains of five (5) or greater. In addtion to their wide bandwidth, the SP-2620/22/25 offer the advantages of high input impedance, low input bias, input offset currents, low input offset voltage, and short circuit protection. These characteristics combined with the option for complete control of the amplifier's compensation to make it a superior amplifier for high frequency analog signal applications.

These amplifiers provide the designer with the ability to tailor its transfer characteristics through compensation. Offsets can also be trimmed by connecting a nulling potentiometer between its balance pins, and connecting the wiper to the positive supply, V+. A 100KΩ potentiometer is recommended.

The SP-2620 and the SP-2622 are offered in military (-55°C to 125°C) versions: both are available in metal can, ceramic mini DIP, and LCC packages as well as in die form. The SP-2625 is offered in plastic, ceramic mini DIP, and metal can packages as well as in die form.

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Connection Diagrams



SP-2620/22/25

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Absolute Maximum Ratings

Voltage Between V^+ and V^- Terminals	45.0V	Operating Temperature Range	
Differential Input Voltage, V_d	±12.0V	SP-2620	$-55^oC \le T_A \le 125^oC$
Internal Power Dissipation , P_d	300mV	Storage Temperature Range	$-65^oC \le T_A \le 150^oC$
Peak Output Current	Full Short Circuit Protection		

Electrical Characteristics: $V^+ = +15V$, $V^- = -15V$, $T_A=25^oC$ unless otherwise specified in "Conditions".

SP-2620

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Input Characteristics						
Offset Voltage	V_{os}			0.5	4	mV
		$-55^oC \le T_A \le 125^oC$			6	mV
Bias Current	I_b			1	15	nA
		$-55^oC \le T_A \le 125^oC$		10	35	nA
Offset Current	I_{os}			1	15	nA
		$-55^oC \le T_A \le 125^oC$		5	35	nA
Input Impedance	Z_{in}	Guaranteed by Design	65	500		MΩ
Common Mode Range	V_{cm}	$-55^oC \le T_A \le 125^oC$	±11.0			V
Transfer Characteristics						
Large Signal Voltage Gain	Av_{OL}	$R_L = 2K\Omega$, $V_O = \pm10V$, $C_L = 50pF$	100K	150K		V/V
		$-55^oC \le T_A \le 125^oC$, $R_L = 2K\Omega$, $C_L = 50pF$, $V_O = \pm10V$	70K			V/V
Common Mode Rejection Ratio	CMRR	$-55^oC \le T_A \le 125^oC$, $V_{cm} = \pm10V$	80	100		dB
Gain Bandwidth Product	GBW	$V_{OL} < 90mV$, $R_L = 2K\Omega$, $C_L = 50pF$, $A_V = 40dB$		100		MHz
Output Characteristics						
Output Voltage Swing	V_O	$-55^oC \le T_A \le 125^oC$, $R_L = 2K\Omega$, $C_L = 50pF$	±10.0	±12.0		V
Output Current	I_{out}	$V_O = \pm10V$	±15	±22		mA
Full Power Bandwidth	FPBW	$V_O = \pm10V$, $FPBW = (SR)(2\pi V_p)^{-1}$, $R_L = 2K\Omega$, $C_L = 50pF$	400	600		kHz
Transient Response						
Rise Time	t_R	$R_L = 2K\Omega$, $C_L = 50pF$, $V_O = \pm200mV$, $A_V = 40dB$		17	45	nS
Slew Rate	SR	$R_L = 2K\Omega$, $C_L = 50pF$, $V_O = \pm5V$, $A_V = 40dB$	±25	±35		V/µS
Power Supply						
Supply Current	I_S			3.0	4.0	mA
Power Supply Rejection Ratio	PSRR	$-55^oC \le T_A \le 125^oC$, $\Delta V_s = \pm5V$	80	90		dB

Absolute Maximum Ratings

Voltage Between V^+ and V^- Terminals	45.0V	Operating Temperature Range	
Differential Input Voltage, V_d	±12.0V	SP-2622	$-55^oC \le T_A \le 125^oC$
Internal Power Dissipation , P_d	300mW	Storage Temperature Range	$-65^oC \le T_A \le 150^oC$
Peak Output Current	Full Short Circuit Protection		

Electrical Characteristics: $V^+ = +15V$, $V^- = -15V$, $T_A = 25^oC$ unless otherwise specified in "Conditions".

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SP-2622

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Input Characteristics						
Offset Voltage	V_{os}			3	5	mV
		$-55^oC \le T_A \le 125^oC$			7	mV
Bias Current	I_b			5	25	nA
		$-55^oC \le T_A \le 125^oC$			60	nA
Offset Current	I_{os}			5	25	nA
		$-55^oC \le T_A \le 125^oC$			60	nA
Input Impedance	Z_{in}	Guaranteed by Design	40	300		MΩ
Common Mode Range	V_{cm}	$-55^oC \le T_A \le 125^oC$	±11.0			V
Transfer Characteristics						
Large Signal Voltage Gain	Av_{OL}	$R_L = 2K\Omega$, $V_O = \pm 10V$, $C_L = 50pF$	80K	150K		V/V
		$-55^oC \le T_A \le 125^oC$, $R_L = 2K\Omega$, $C_L = 50pF$, $V_O = \pm 10V$	60K			V/V
Common Mode Rejection Ratio	CMRR	$-55^oC \le T_A \le 125^oC$, $V_{cm} = \pm 10V$	74	100		dB
Gain Bandwidth Product	GBW	$V_O < 90mV$, $R_L = 2K\Omega$, $C_L = 50pF$, $A_V = 40dB$		100		MHz
Output Characteristics						
Output Voltage Swing	V_O	$-55^oC \le T_A \le 125^oC$, $R_L = 2K\Omega$, $C_L = 50pF$	±10.0	±12.0		V
Output Current	I_{out}	$V_O = \pm 10V$	±10	±18		mA
Full Power Bandwidth	FPBW	$V_O = \pm 10V$, $FPBW = (SR)(2\pi V_p)^{-1}$, $R_L = 2K\Omega$, $C_L = 50pF$	320	600		KHz
Transient Response						
Rise Time	t_R	$R_L = 2K\Omega$, $C_L = 50pF$, $V_O = \pm 200mV$, $A_V = 40dB$		17	45	nS
Slew Rate	SR	$R_L = 2K\Omega$, $C_L = 50pF$, $V_O = \pm 5V$, $A_V = 40dB$	±20	±35		V/µS
Power Supply						
Supply Current	I_S			3.0	4.0	mA
Power Supply Rejection Ratio	PSRR	$-55^oC \le T_A \le 125^oC$, $\Delta V_s = \pm 5V$	74	90		dB

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Absolute Maximum Ratings

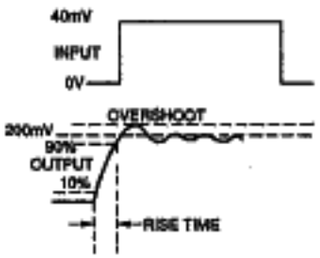
Voltage Between V^+ and V^- Terminals	45.0V	Operating Temperature Range	
Differential Input Voltage, V_d	±12.0V	SP-2625	$0\,^{\circ}C \le T_A \le 75^{\circ}C$
Internal Power Dissipation , P_d	300mW	Storage Temperature Range	$-65^{\circ}C \le T_A \le 150^{\circ}C$
Peak Output Current	Full Short Circuit Protection		

Electrical Characteristics: $V^+ = +15V$, $V^- = -15V$, $T_A = 25^{\circ}C$ unless otherwise specified in "Conditions".

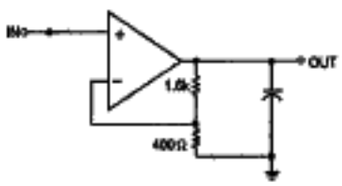
SP-2625

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Input Characteristics						
Offset Voltage	V_{os}			3	5	mV
		$0\,^{\circ}C \le T_A \le 75^{\circ}C$			7	mV
Bias Current	I_B			5	25	nA
		$0\,^{\circ}C \le T_A \le 75^{\circ}C$			40	nA
Offset Current	I_{os}			5	25	nA
		$0\,^{\circ}C \le T_A \le 75^{\circ}C$			40	nA
Input Impedance	Z_{in}	Guaranteed by Design	40	300		MΩ
Common Mode Range	V_{cm}	$0\,^{\circ}C \le T_A \le 75^{\circ}C$	±11.0			V
Transfer Characteristics						
Large Signal Voltage Gain	Av_{OL}	$R_L = 2K\Omega$, $V_O = \pm 10V$, $C_L = 50pF$	80K	150K		V/V
		$0\,^{\circ}C \le T_A \le 75^{\circ}C$, $R_L = 2K\Omega$, $V_O = \pm 10V$, $C_L = 50pF$	70K			V/V
Common Mode Rejection Ratio	CMRR	$0\,^{\circ}C \le T_A \le 75^{\circ}C$, $V_{cm} = \pm 10V$	74	100		dB
Gain Bandwidth Product	GBW	$V_{os} < 90mV$, $C_L = 50pF$, $R_L = 2K\Omega$, $A_V = 40dB$		100		MHz
Output Characteristics						
Output Voltage Swing	V_O	$0\,^{\circ}C \le T_A \le 75^{\circ}C$, $R_L = 2K\Omega$, $C_L = 50pF$	±10.0	±12.0		V
Output Current	I_{OUT}	$V_O = \pm 10V$	±10	±18		mA
Full Power Bandwidth	FPBW	$V_O = \pm 10V$, $FPBW = (SR)(2\pi V_p)^{-1}$, $C_L = 50pF$, $R_L = 2K\Omega$	320	600		KHz
Transient Response						
Rise Time	t_R	$R_L = 2K\Omega$, $C_L = 50pF$, $A_V = 5$		17	45	nS
Slew Rate	SR	$R_L = 2K\Omega$, $C_L = 50pF$, $V_O = \pm 5V$, $A_V = 5$	±20	±35		V/μS
Power Supply						
Supply Current	I_S			3.0	4.0	mA
Power Supply Rejection Ratio	PSRR	$0\,^{\circ}C \le T_A \le 75^{\circ}C$, $\Delta V_s = \pm 5V$	74	90		dB

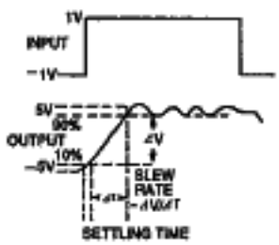
A.C. Performance



Transient Response



A.C. Test Circuit



Slew Rate/Settling Time

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Ordering Information

When ordering the SP-2620/22/25, specify the package and screening according to the following :

SP 2 - 2620 - 2

Prefix: SP (SIPEX)

Generic Part #

PACKAGE :

SCREENING

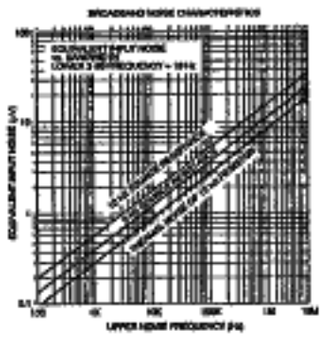
1 - 14 pin ceramic DIP	-2 : -55 °C to 125 °C
2 - Metal Can	-4 : -25 °C to 85 °C
3 - 8 Pin Plastic DIP	-5 : 0 °C to 75 °C
4 - 20 Pin LCC	-6 : 25 °C 100% D.C. Probe (Dice Only)
7 - 8-Pin CERDIP	
0 - DICE	/883 : -55 °C to 125 °C Full Mil Processing

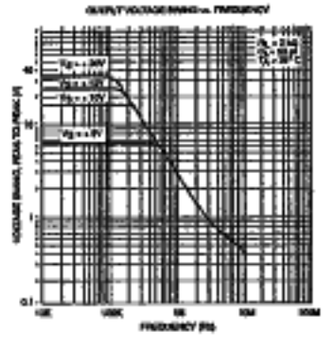
NOTES: 1. Not all package types and screening option combinations are available. Consult local sales office or factory for availability information.

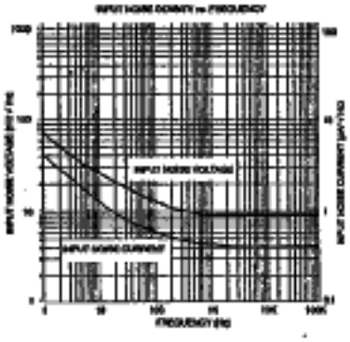
2. Consult factory for special package or screening requirements.

3. Consult factory for 883 revision C compliant data sheet.

4. Consult factory for package mechanical dimensions.







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