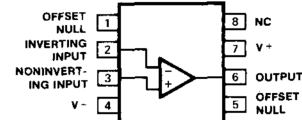


SINGLE OR DUAL HIGH SLEW RATE OP AMP**NE/SE535/5535****DESCRIPTION**

The 535 and 5535 are new generation operational amplifiers featuring high slew rates combined with improved input characteristics. The 535 is a single device while the 5535 is a dual configuration. Internally compensated for unity gain, the SE535 and SE5535 feature a guaranteed unity gain slew rate of $10\text{V}/\mu\text{s}$ with 2mV maximum offset voltage. Industry standard pin out and internal compensation allow the user to upgrade system performance by directly replacing general purpose amplifiers, such as 741, 747 and 1558.

FEATURES

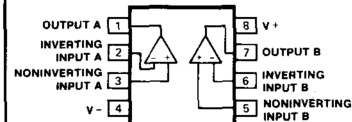
- $15\text{V}/\mu\text{s}$ unity gain slew rate
 - Internal frequency compensation
 - Low input offset voltage— 2mV
 - Low input bias current 80nA max
 - Short circuit protected
 - Offset null capability
 - Large common mode and differential voltage ranges
 - Pin compatibility
- | | | |
|-----------------|------------|------------------|
| | 535 | 5535 |
| | 741 | 747, 1558 |
| • Configuration | Single | Dual |

PIN CONFIGURATIONS**FE, N PACKAGE**

TOP VIEW

ORDER NUMBERS

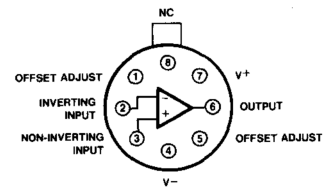
SE535N, FE NE535N, FE

N PACKAGE

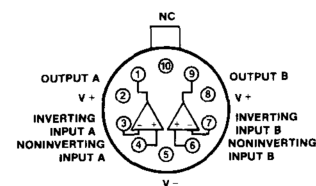
TOP VIEW

ORDER NUMBERS

SE5535N NE5535N

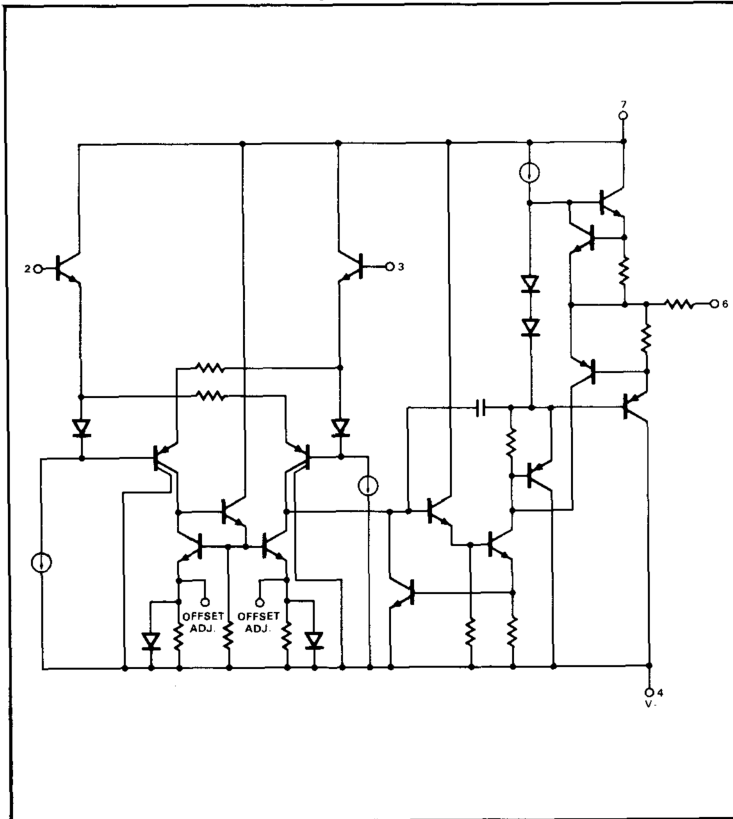
H PACKAGE***ORDER NUMBERS**

SE535H NE535H

H PACKAGE***ORDER NUMBERS**

SE5535H NE5535H

*Metal cans (H) not recommended for new designs

EQUIVALENT SCHEMATIC (One Amplifier)

SINGLE OR DUAL HIGH SLEW RATE OP AMP

NE/SE535/5535

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SE535/ SE5535	NE535/ NE5535	UNIT
Supply voltage	±22	±18	V
Internal power dissipation ¹			
N Package	500	500	mW
H Package	800	800	mW
F Package	1000	1000	mW
Differential input voltage	±30	±30	V
Input voltage ²	±15	±15	V
Operating temperature range	-55 to +125	0 to +70	°C
Storage temperature range	-65 to +150	-65 to +150	°C
Lead temperature (solder, 60sec)	300	300	°C
Output short circuit ³	Indefinite	Indefinite	

NOTES

- Rating applies for thermal resistances junction to ambient of 240°C/W and 150°C/W for N and H packages, respectively. Maximum chip temperature is 150°C.
- For supply voltages less than ±15V, the absolute maximum input voltage is equal to the supply voltage.
- Short circuit may be to ground or either supply. Rating applies to 125°C case temperature or 75°C ambient temperature.

DC ELECTRICAL CHARACTERISTICS

T_A = 25°C, V_S = ±15V unless otherwise specified.*

PARAMETER	TEST CONDITIONS	SE535/SE5535			NE535/NE5535			UNIT
		Min	Typ	Max	Min	Typ	Max	
V _{OS} Input offset voltage	R _S ≤ 10kΩ R _S ≤ 10kΩ, over temp.		0.7	4.0 5.0		2.0	6.0 7.0	mV mV
ΔV _{OS} Input offset voltage drift	R _S = 0Ω, over temp.		4.0			6.0		μV/°C
I _{OS} Input offset current	Over temp.		5	20 40		15	40 80	nA nA
I _B Input current	Over temp.		45	80 200		65	150 200	nA nA
V _{CM} Common mode voltage range		±12	±13		±12	±13		V
CMRR Common mode rejection ratio	R _S ≤ 10kΩ, over temp.	70	90		70	90		dB
PSRR Power supply rejection	R _S ≤ 10kΩ, over temp.		30	150		30	150	μV/V
R _{IN} Input resistance		3	10		1	6		MΩ
A _{VOL} Large signal voltage gain	R _L ≥ 2kΩ, V _{OUT} = ±10V R _L ≥ 2kΩ, V _{OUT} = ±10V, over temp.	50 25	500		50 25	500		V/mV V/mV
V _{OUT} Output voltage	R _L ≥ 2kΩ, over temp. R _L ≥ 10kΩ, over temp.	±10 ±12	±13 ±14		±10 ±12	±13 ±14		V V
I _{CC} Supply current	Per amplifier Per amplifier, over temp.		1.8 2	2.8 3.3		1.8 2	2.8	mA mA
P _D Power dissipation	Per amplifier Per amplifier, over temp.		54 60	84 99		54 60	84	mW mW
I _{SC} Output short circuit current			25			25		mA
R _{OUT} Output resistance			100			100		Ω

*NOTE

Temperature range
SE types -55°C ≤ T_A ≤ 125°C
NE types 0°C ≤ T_A ≤ 70°C

SINGLE OR DUAL HIGH SLEW RATE OP AMP

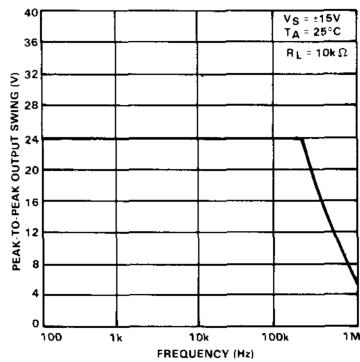
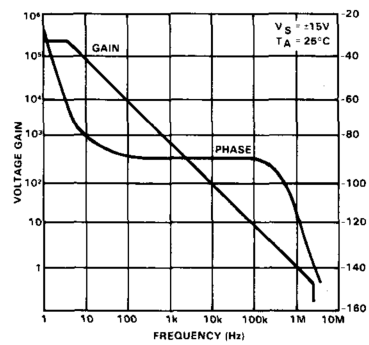
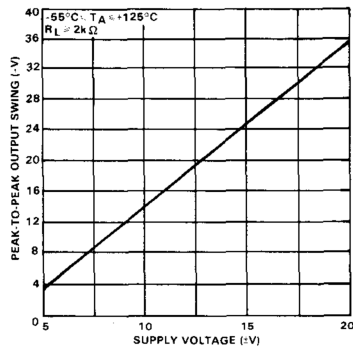
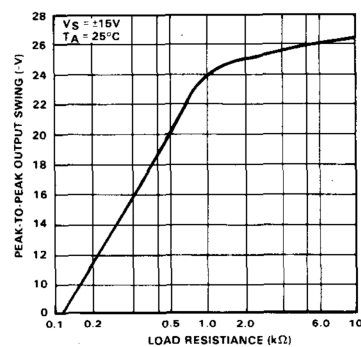
NE/SE535/5535

AC ELECTRICAL CHARACTERISTICS $T_A = 25^\circ\text{C}$ unless otherwise specified.

PARAMETER	TEST CONDITIONS	SE535/SE5535			NE535/NE5535			UNIT
		Min	Typ	Max	Min	Typ	Max	
Gain/bandwidth product			1			1		MHz
Transient response								
Small signal rise time			0.25			0.25		μs
Small signal overshoot			6			6		%
Settling time			3			3		μs
Slew rate			15			15		$\text{V}/\mu\text{s}$
	$T_O = 0.1\%$ $R_L \geq 10\text{k}\Omega$, unity gain, non-inverting	10			10			

3

TYPICAL PERFORMANCE CHARACTERISTICS

OUTPUT VOLTAGE SWING
AS A FUNCTION OF
FREQUENCYOPEN LOOP VOLTAGE GAIN
AS A FUNCTION OF
FREQUENCYOUTPUT VOLTAGE SWING
AS A FUNCTION OF
SUPPLY VOLTAGEOUTPUT VOLTAGE SWING
AS A FUNCTION OF
LOAD RESISTANCE

SINGLE OR DUAL HIGH SLEW RATE OP AMP

NE/SE535/5535

TYPICAL PERFORMANCE CHARACTERISTICS (Cont'd)

