

DESCRIPTION

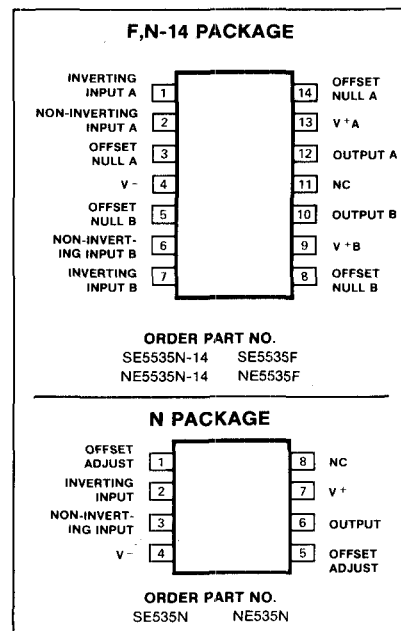
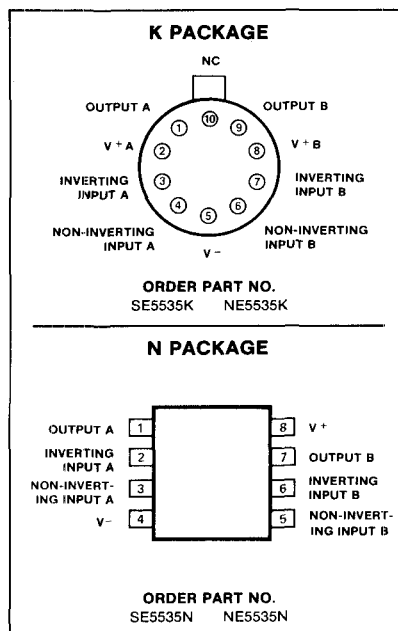
The 535 and 5535 are new generation operational amplifiers featuring high slew rates combined with improved input characteristics. The 535 is a single device while the 5535 is a dual configuration. Internally compensated for unity gain, the SE535 and SE5535 feature a guaranteed unity gain slew rate of $10\text{V}/\mu\text{s}$ 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

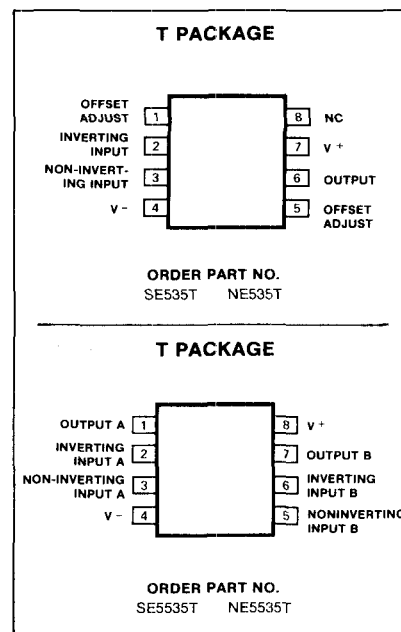
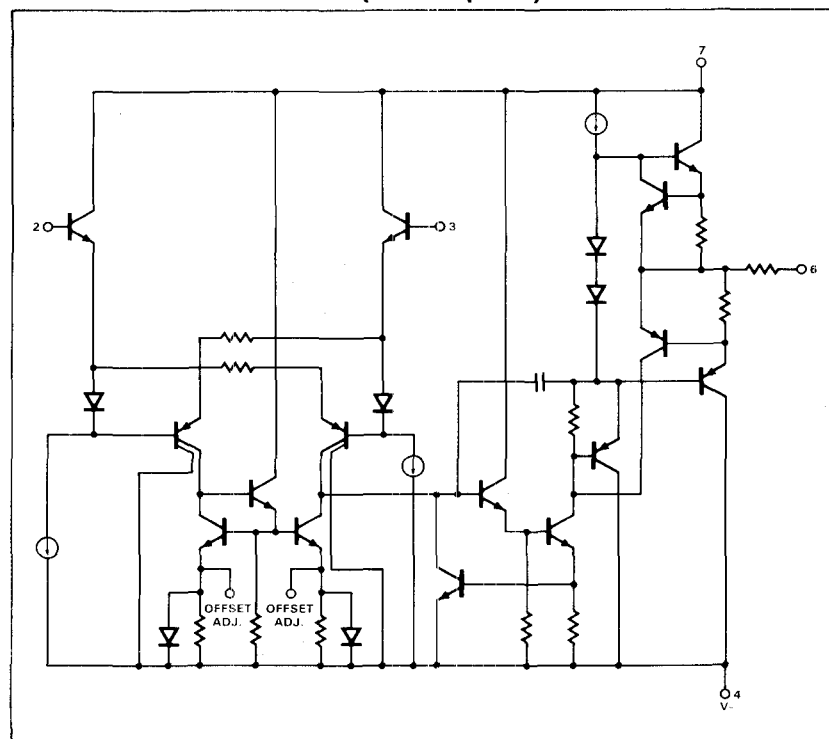
- $15\text{V}/\mu\text{s}$ unity gain slew rate
- Internal frequency compensation
- Low input offset voltage— 2mV max
- Low input bias current 60nA max
- Short circuit protected
- Offset null capability
- Large common mode and differential voltage ranges

	535	5535
• Pin out	741	747, 1558
• Configuration	Single	Dual

PIN CONFIGURATIONS



EQUIVALENT SCHEMATIC (One Amplifier)



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SE535/ SE5535	NE535/ NE5535	UNIT
Supply voltage	±22	±18	V
Internal power dissipation ¹			
N Package	500	500	mW
K/T 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

1. Rating applies for thermal resistances junction to ambient of 240°C/W and 150°C/W for N and K, T packages, respectively. Maximum chip temperature is 150°C.
2. For supply voltages less than ±15V, the absolute maximum input voltage is equal to the supply voltage.
3. 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		0.7	2.0		2.0	5.0	mV
	R _S ≤ 10kΩ, over temp.			3.0			6.0	mV
ΔV _{OS} Input offset voltage drift	R _S = 0Ω, over temp.		3.0	15		6.0		V/°C
I _{OS} Input offset current	Over temp.		5	10		15	40	nA
				20			80	μVnA
I _B Input current	Over temp.		45	60		65	150	nA
				100			200	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	50	500		50	500		V/mV
	R _L ≥ 2kΩ, V _{OUT} = ±10V, over temp.	25			25			V/mV
V _{OUT} Output voltage	R _L ≥ 2kΩ, over temp.	±10	±13		±10	±13		V
	R _L ≥ 10kΩ, over temp.	±12	±14		±12	±14		V
I _{CC} Supply current	Per amplifier		1.8	2.8		1.8	2.8	mA
	Per amplifier, over temp.		2	3.3				mA
P _D Power dissipation	Per amplifier		54	84		54	84	mW
	Per amplifier, over temp.		60	99		60		mW
I _{SC} Output short circuit current			25			25		mA
R _{OUT} Output resistance			100			100		Ω

*NOTE

Temperature range

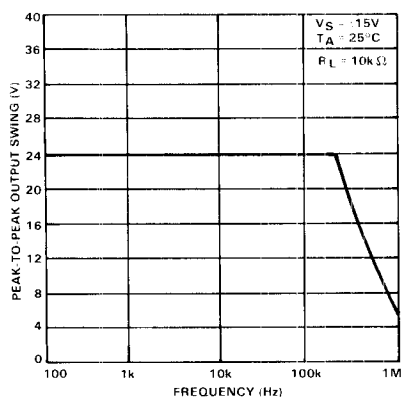
SE types -55°C ≤ T_A ≤ 125°CNE types 0°C ≤ T_A ≤ 70°C

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

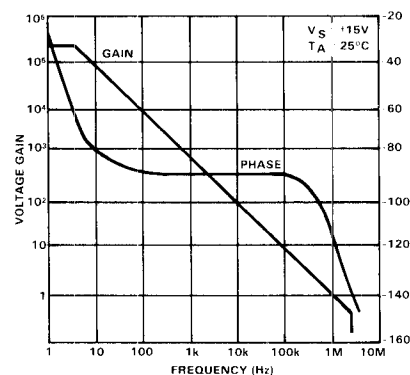
PARAMETER	TEST CONDITIONS	SE535/SE5535			NE535/NE5535			UNIT
		Min	Typ	Max	Min	Typ	Max	
Gain/bandwidth product			1			1		MHz
Transient response			0.25			0.25		μs
Small signal rise time			6			6		%
Small signal overshoot			3			3		μs
Settling time			15			15		$\text{V}/\mu\text{s}$
Slew rate	$T_A = 25^\circ\text{C}$, $R_L \geq 10\text{k}\Omega$, unity gain, non-inverting	10			10			

TYPICAL PERFORMANCE CHARACTERISTICS

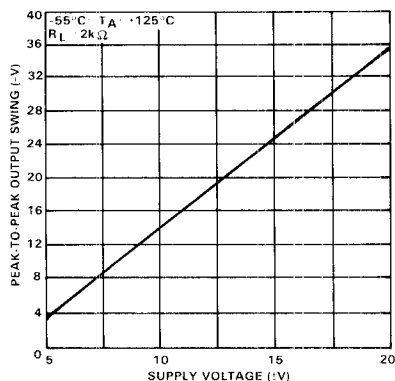
**OUTPUT VOLTAGE SWING
AS A FUNCTION OF
FREQUENCY**



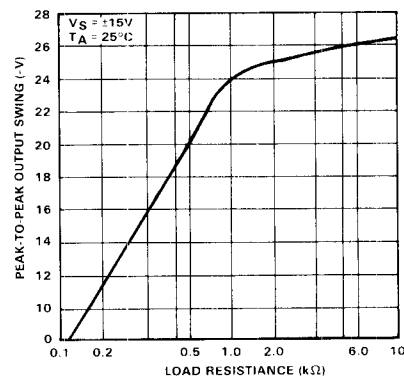
**OPEN LOOP VOLTAGE GAIN
AS A FUNCTION OF
FREQUENCY**



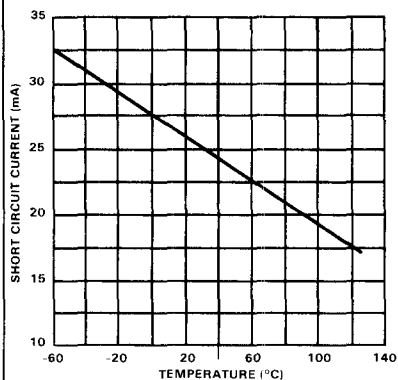
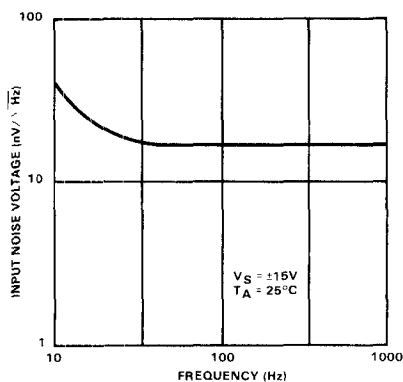
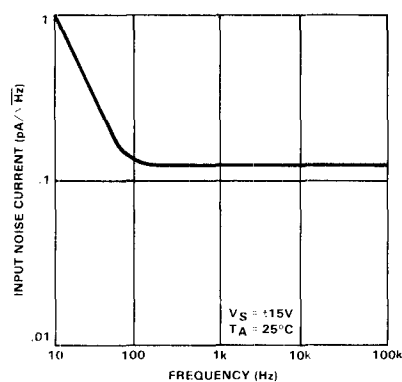
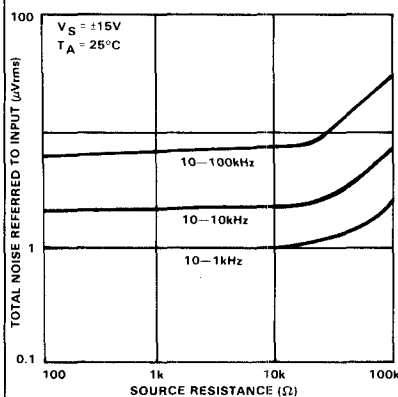
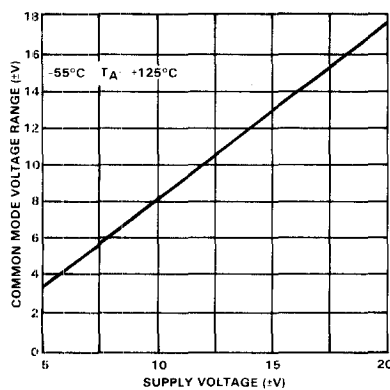
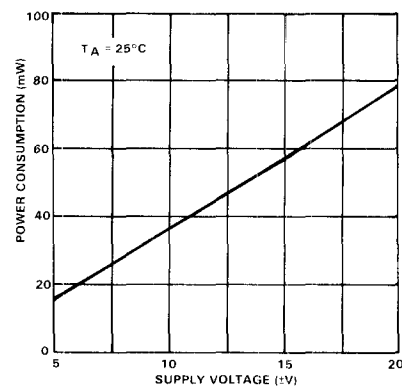
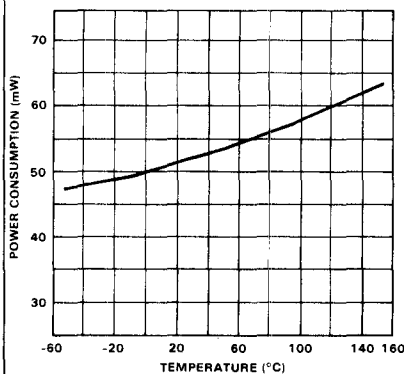
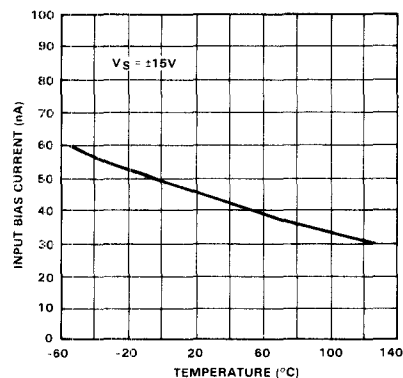
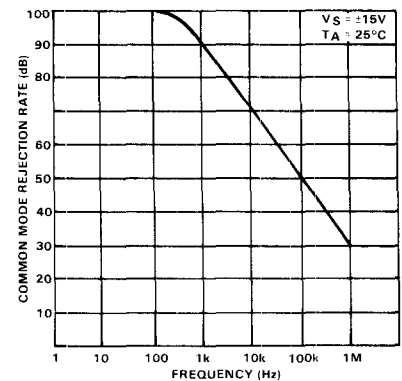
**OUTPUT VOLTAGE SWING
AS A FUNCTION OF
SUPPLY VOLTAGE**



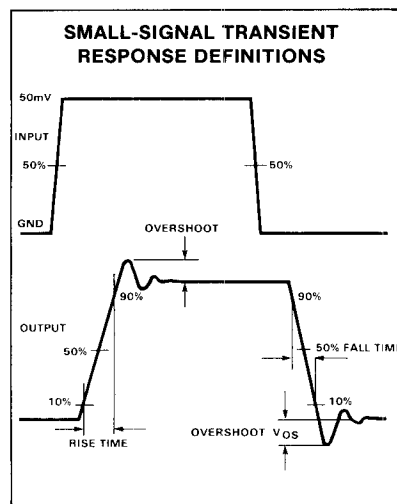
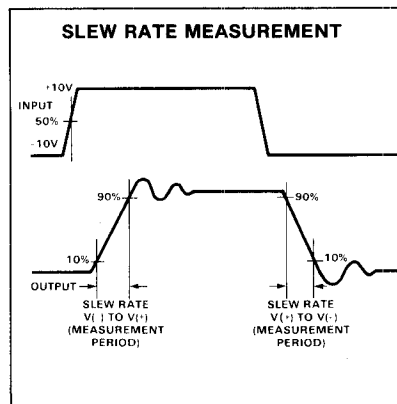
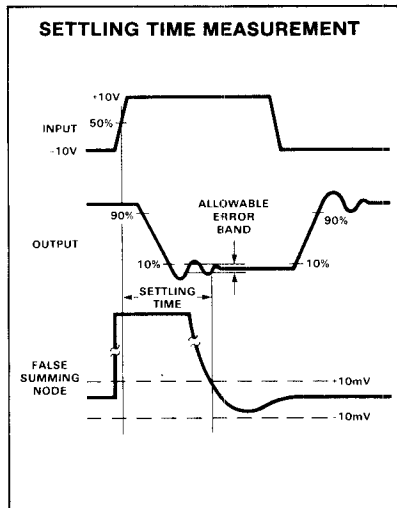
**OUTPUT VOLTAGE SWING
AS A FUNCTION OF
LOAD RESISTANCE**



TYPICAL PERFORMANCE CHARACTERISTICS (Cont'd)

OUTPUT SHORT-CIRCUIT CURRENT
AS A FUNCTION OF
AMBIENT TEMPERATUREINPUT NOISE VOLTAGE
AS A FUNCTION OF
FREQUENCYINPUT NOISE CURRENT
AS A FUNCTION OF
FREQUENCYBROADBAND NOISE FOR
VARIOUS BANDWIDTHSINPUT COMMON MODE
VOLTAGE RANGE AS A
FUNCTION OF SUPPLY VOLTAGEPOWER CONSUMPTION
AS A FUNCTION OF
SUPPLY VOLTAGEPOWER CONSUMPTION
AS A FUNCTION OF
AMBIENT TEMPERATUREINPUT BIAS CURRENT
AS A FUNCTION OF
AMBIENT TEMPERATURECOMMON MODE REJECTION
RATIO AS A FUNCTION OF
FREQUENCY

VOLTAGE WAVEFORMS



TEST CIRCUITS

