

## 02\_IC データシート

### ■ NJM072B/082B 電気的特性 (V<sup>+</sup>/V<sup>-</sup>=±15V, Ta=25°C)

項目	記号	条件	最小	標準	最大	単位
入力オフセット電圧	V <sub>IO</sub>	R <sub>g</sub> =50Ω	-	3(5)	10(15)	mV
入力オフセット電流	I <sub>IO</sub>		-	5	50(200)	pA
入力バイアス電流	I <sub>B</sub>		-	30	200(400)	pA
入力抵抗	R <sub>IN</sub>		-	10 <sup>12</sup>	-	Ω
電圧利得	A <sub>v</sub>	R <sub>g</sub> =2kΩ, V <sub>S</sub> =±10V	88	106	-	dB
最大出力電圧振幅	V <sub>OPP</sub>	R <sub>L</sub> =10kΩ	24	27	-	V <sub>PP</sub>
同相入力電圧範囲	V <sub>IPM</sub>		±10	-	-	V
同相信号除去比	CMR	R <sub>g</sub> ≤10kΩ	70	76	-	dB
電源電圧除去比	SVR	R <sub>g</sub> ≤10kΩ	70	76	-	dB
消費電流	I <sub>CC</sub>		-	3	5(5.6)	mA
スルーレート	SR		-	13	-	V/μs
ユニティゲイン周波数	f <sub>T</sub>		-	3	-	MHz
入力換算雑音電圧	V <sub>NN</sub>	R <sub>g</sub> =100Ω, BW=10~10kHz	-	4	-	μV <sub> rms</sub>

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電源電圧除去比	SVR	R <sub>g</sub> ≤10kΩ	70	76	-	dB
消費電流	I <sub>CC</sub>		-	3	5(5.6)	mA
スルーレート	SR		-	20	-	V/μs
ユニティゲイン周波数	f <sub>T</sub>		-	5	-	MHz
入力換算雑音電圧	V <sub>NN</sub>	R <sub>g</sub> =100Ω, BW=10~10kHz	-	4	-	μV <sub> rms</sub>

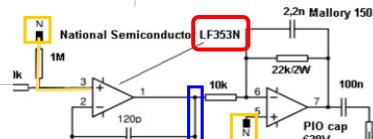
OPA134, OPA2134, OPA4134  
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SBOS058A – DECEMBER 1997 – REVISED OCTOBER 2015

### 6.4 Electrical Characteristics

At T<sub>A</sub> = +25°C, V<sub>S</sub> = ±15 V, unless otherwise noted

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>AUDIO PERFORMANCE</b>					
Total Harmonic Distortion + Noise	G = 1, f = 1 kHz, V <sub>O</sub> = 3 Vrms	R <sub>L</sub> = 2 kΩ	0.00008%		
		R <sub>L</sub> = 600 Ω	0.00015%		
Intermodulation Distortion	G = 1, f = 1 kHz, V <sub>O</sub> = 1 Vp-p		-98	dB	
Headroom <sup>(1)</sup>	THD < 0.01%, R <sub>L</sub> = 2 kΩ, V <sub>S</sub> = 18 V		23.6	dBu	
<b>FREQUENCY RESPONSE</b>					
Gain-Bandwidth Product			8	MHz	
Slew Rate <sup>(2)</sup>		±15	±20	V/μs	
Full Power Bandwidth			1.3	MHz	
Settling Time 0.1%	G = 1, 10-V Step, C <sub>L</sub> = 100 pF		0.7	μs	
Settling Time 0.01%	G = 1, 10-V Step, C <sub>L</sub> = 100 pF		1	μs	
Overload Recovery Time	V <sub>IN</sub>   × (Gain) = V <sub>S</sub>		0.5	μs	

**Gainster...IC**  
...SlewRate...over13V/μs



### ■ ELECTRICAL CHARACTERISTICS NJM4558/4559

PARAMETER	SYMBOL	TEST CONDITION	MIN.	Typ.	MAX.	UNIT
Input Offset Voltage	V <sub>IO</sub>	R <sub>g</sub> ≤10kΩ	-	0.5	6	mV
Input Offset Current	I <sub>IO</sub>		-	5	200	nA
Input Resistance	R <sub>IN</sub>		-	25	500	MΩ
Large Signal Voltage Gain	A <sub>V</sub>	R <sub>g</sub> ≥2kΩ, V <sub>O</sub> =±10V	86	100	-	dB
Maximum Output Voltage Swing 1	V <sub>OM1</sub>	R <sub>L</sub> ≥10kΩ	±12	±14	-	V
Maximum Output Voltage Swing 2	V <sub>OM2</sub>	R <sub>L</sub> ≥2kΩ	±10	±13	-	V
Input Common Mode Voltage Range	V <sub>ICMR</sub>		±12	14	-	V
Common Mode Rejection Ratio	CMR	R <sub>g</sub> ≤10kΩ	70	90	-	dB
Supply Voltage Rejection Ratio	SVR	R <sub>g</sub> ≤10kΩ	76.5	90	-	dB
Operating Current	I <sub>CC</sub>		-	3.5	5.7	mA
Slew Rate	SR		-	1	-	V/μs
	SR		-	2	-	V/μs
Equivalent Input Noise Voltage (note2)	V <sub>NN</sub>	RIIA, R <sub>g</sub> =2.2kΩ, 30kHz LPF	-	1.4	-	μV <sub> rms</sub>
Gain Bandwidth Product	GB	RIIA, V <sub>S</sub> =±15V, 30kHz LPF	-	3	6	MHz
	GB	NJM4558	-	-	-	MHz
	GB	NJM4559	-	-	-	MHz



### LF353

GainsterオリジナルのIC

### 広帯域 JFET 入力デュアル・オペアンプ

Symbol	Parameter	Conditions	LF353			Units
			Min	Typ	Max	
	Amplifier to Amplifier Coupling	T <sub>A</sub> =25°C, f=1 Hz~20 kHz (Input Referred)		-120		dB
SR	Slew Rate	V <sub>S</sub> =±15V, T <sub>A</sub> =25°C	8.0	13		V/μs
GBW	Gain Bandwidth Product	V <sub>S</sub> =±15V, T <sub>A</sub> =25°C	2.7	4		MHz
$\epsilon_n$	Equivalent Input Noise Voltage	T <sub>A</sub> =25°C, R <sub>g</sub> =100Ω, f=1000 Hz		16		nV/√Hz
$i_n$	Equivalent Input Noise Current	T <sub>A</sub> =25°C, f=1000 Hz		0.01		pA/√Hz

### 7.6 Operating Characteristics

NE5532, NE5532A, SA5532, SA5532A

PARAMETER	TEST CONDITIONS	NE5532, SA5532		NE5532A, SA5532A		UNIT
		MIN	Typ	MAX	MIN	Typ
SR Slew rate at unity gain			9		9	V/μs
Overshoot factor	V <sub>I</sub> = 100 mV, R <sub>L</sub> = 600 Ω, A <sub>V</sub> = 1, C <sub>L</sub> = 100 pF		10		10	%
V <sub>n</sub> Equivalent input noise voltage	f = 1 kHz		8		8	nV/√Hz
$i_n$ Equivalent input noise current	f = 30 Hz		5		5	pA/√Hz
	f = 1 kHz		2.7		2.7	
			0.7		0.7	

### Dual Bipolar/JFET, Audio Operational Amplifier

OP275\*

DYNAMIC PERFORMANCE	Slew Rate	SR	R <sub>L</sub> = 2 kΩ	15		22	V/μs
				kHz	MHz		
Full-Power Bandwidth	BW <sub>P</sub>					9	
Gain Bandwidth Product	GBP					62	
Phase Margin	$\phi_m$						
Overshoot Factor				V <sub>IN</sub> = 100 mV, A <sub>V</sub> = +1, R <sub>L</sub> = 600 Ω, C <sub>L</sub> = 100 pF		10	Degrees