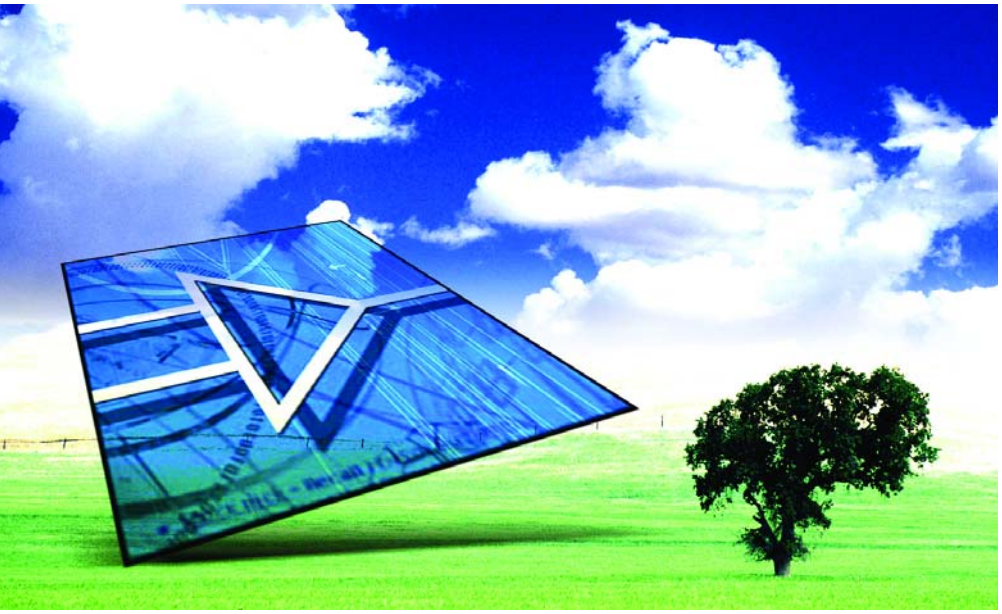
Standard linear portfolio

From innovative devices to application specific products

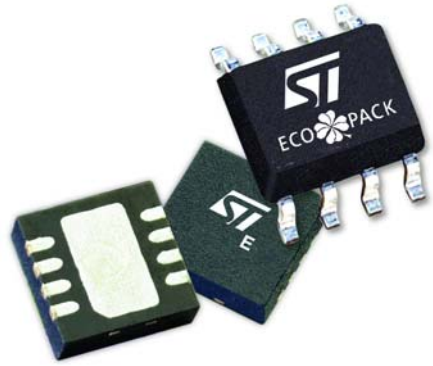
Selection guide



May 2005

ECOPACK

As part of ST's ongoing commitment to minimize the environmental impact of its activities, ST has begun to produce Pb-free packages under the ECOPACK name. This table summarizes ST's roadmap for Pb-free packages used by the standard linear group portfolio.



Packages	Tape width (mm)	Qty/reel (min. order qty)	Lead-free available
Flip-Chip	8	3000	Yes
DFN/QFN	12	3000	Yes
Mini SO8	12	4000	Yes
SO8	12	2500	Yes
SO14/16	16	2500	Yes
SO20	24	1000	Yes
SO24 batwing	24	1000	Yes
SOT23-3/5	8	3000	Yes
SOT323-5L (SC70)	8	3000	Yes
TO92	18	2000	Yes
TQFP44/48	16	2400	Yes
TSSOP8	12	4000	Yes
TSSOP14/16	16	2500	Yes
TSSOP28	16	2500	Yes

www.st.com/stdlinear

For selected STMicroelectronics sales offices fax:
France +33 1 55489569; Germany +49 89 4605454; Italy +39 02 8250449; Japan +81 3 57838216; Singapore +65 6481 5124;
Sweden +46 8 58774411; Switzerland +41 22 9292900; United Kingdom and Eire +44 1628 890391; USA +1 781 861 2678
Full product information at www.st.com

Order code: SGSTDLINPO/0105

Audio amplifiers

Headphone drivers

TS419 ***	300mW BTL, active-high standby
TS421 ***	300mW BTL, active-low standby
TS482	100mW stereo headphone amplifier
TS486 ***	100mW stereo headphone amplifier, active-low standby
TS487 ***	100mW stereo headphone amplifier, active-high standby
TS4975*	Stereo low power with I^2C bus interface

Speaker drivers

TS4871	1W BTL mono amplifier, active-high standby
TS4890	1W BTL mono amplifier, active-low standby
TS4900	700mW BTL mono amplifier, active-high standby
TS4902	700mW BTL mono amplifier, active-low standby
TS4972	1.2W BTL mono amplifier, active-high standby, Flip-Chip
TS4974*	1.2W full differential speaker driver
TS4984	Stereo 2x1W speaker driver
TS4985*	Stereo 2x1W speaker driver with separate standby
TS4990	1.2W BTL mono amplifier, active-low standby, Flip-Chip and Mini SO-8, DFN8
TS4994	1.2W BTL differential mono amplifier with selectable standby, Flip-Chip and Mini SO-8, DFN10

Audio ASSP

TS4851	Loudspeaker and headset driver with volume control, Flip-Chip
TS4855	Dedicated driver with volume control, Flip-Chip
TS4973	1.2W BTL mono amplifier, active-low standby with 2 audio inputs, Flip-Chip

Class D

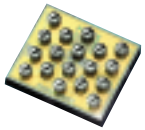
TS4962*	Class D low power audio amplifier

Microphone preamplifier

TS472*	Microphone preamplifier with 2V bias output

* Next releases

*** Fixed gain available on request



High-speed op-amps

Voltage feedback

TSH340	Negative in/out rail, 320MHz
TSH341	Negative in/out rail, 300MHz
TSH80	Single, rail-to-rail, 100MHz, 5 to 12V, SOT23-5
TSH81	Single, rail-to-rail, 100MHz, 5 to 12V, 1 standby
TSH82	Dual, rail-to-rail, 100MHz, 5 to 12V
TSH70	Single, rail-to-rail, 100MHz, 3 to 12V, SOT23-5
TSH71	Single, rail-to-rail, 100MHz, 3 to 12V, 1 standby
TSH72	Dual, rail-to-rail, 100MHz, 3 to 12V
TSH73	Triple, rail-to-rail, 100MHz, 3 to 12V, 3 standby
TSH74	Quad, rail-to-rail, 100MHz, 3 to 12V
TSH75	Quad, rail-to-rail, 100MHz, 3 to 12V, 2 standby
TSH93	Triple, 150MHz
TSH94	Quad, 150MHz[4], standby
TSH95	Quad, 150MHz[4], standby

Current feedback

TSH110	Single, 3nV/√Hz, 100MHz, SOT23-5
TSH111	Triple, 3nV/√Hz, 100MHz[1], standby
TSH112	Dual, 3nV/√Hz, 100MHz
TSH113	Triple, 3nV/√Hz, 100MHz[3], standby
TSH114	Quad, 3nV/√Hz, 100MHz
TSH310	Single, 130MHz, 400µA, SOT23-5 and SO8
TSH330	Single, 1.3nV/√Hz, 1.1GHz, SO8
TSH350	Single, 1.5nV/√Hz, 550MHz, SOT23-5 and SO8

VGA

TS652	-9db to +30db VGA in SO14

ADSL

Line drivers

TS612	High output current, large bandwidth, very low distortion, SO20 batwing
TS613	High output current, large bandwidth, very low distortion, SO8 exposed-pad
TS615	Low consumption, very large band width, TSSOP14 exposed-pad
TS616	Low noise, wide band, high output current, SO8 exposed-pad

Rail-to-rail op-amps

Input and output

1.8V supply low power

TS1851	Single, I_{cc} = 120µA, SOT23-5
TS1852	Dual, I_{cc} = 120µA
TS1854	Quad, I_{cc} = 120µA
TS1871	Single, I_{cc} = 400µA, SOT23-5
TS1872	Dual, I_{cc} = 400µA
TS1874	Quad, I_{cc} = 400µA

Low noise high output current

TS921	Single, I_{out} = 80mA
TS922FC	Dual, I_{out} = 80mA, Flip-Chip 8 bumps
TS922	Dual, I_{out} = 80mA
TS924	Quad, I_{out} = 80mA
TS925	Quad + standby + phantom ground, I_{out} = 80mA
TS951	Single, I_{out} = 22mA, SOT23-5
TS952	Dual, I_{out} = 22mA
TS954	Quad, I_{out} = 22mA
TS982	Dual, I_{out} = 200mA, SO8 exposed pad

Precision

TS922A	Dual, Vio = 0.9mV max
TS924A	Quad, Vio = 0.9mV max
TS925A	Quad + standby + phantom ground, Vio = 0.9mV max

CMOS low power

TS912	Dual, I_{cc} = 200µA
TS914	Quad, I_{cc} = 200µA

Output

Micropower

TS931	Single, I_{cc} = 20µA, SOT23-5
TS932	Dual, I_{cc} = 20µA per amp
TS934	Quad, I_{cc} = 20µA per amp
TS941	Single, I_{cc} = 1.2µA, SOT23-5
TS942	Dual, I_{cc} = 1.2µA per amp
TS944	Quad, I_{cc} = 1.2µA per amp

Low noise

TS971	Single, 4nV/√Hz, SOT23-5
TS972	Dual, 4nV/√Hz, DFN8
TS974	Quad, 4nV/√Hz
TS461	Single, 4nV/√Hz, SOT23-5
TS462	Dual, 4nV/√Hz, DFN8
TS464	Quad, 4nV/√Hz

High-speed

TSH80	Single, 100MHz, SOT23-5
TSH81	Single, 100MHz, 1 standby
TSH82	Dual, 100MHz
TSH70	Single, 100MHz, SOT23-5
TSH71	Single, 100MHz, 1 standby
TSH72	Dual, 100MHz
TSH73	Triple, 100MHz, 3 standby
TSH74	Quad, 100MHz
TSH75	Quad, 100MHz, 4 standby

Precision op-amps

OP07	Single, 0.15mV max
TS512	Dual, 0.5mV max
TS514	Quad, 2.5mV max
TS522	Dual, 0.85mV max
TS524	Quad, 0.95mV max
TS507*	Single, 60µV max, SOT23-5

Low noise op-amps

LM833	Dual, 4.5nV/√Hz
LS204	Dual, 8nV/√Hz
LS404	Quad, 8nV/√Hz
MC33078	Dual, 4.5nV/√Hz
MC33079	Quad, 4.5nV/√Hz
MC4558	Dual, 12nV/√Hz

High-temperature op-amps and comparators

LM2901H	Quad, bipolar low power comparator
LM2902H*	Quad, low power operational amplifier
LM2903H	Dual, bipolar low power comparator
LM2904WH	Dual, general purpose op-amp
TS922H	Dual, low noise rail-to-rail op-amp

RF and communication

TSH690	Wide band amplifier (13.5dBm, 28dB @ 450MHz)
TSH511	Hifi stereo infrared receiver
TSH512	Hifi stereo infrared transmitter

General purpose op-amps

Bipolar

LM101A/201A/301A	Single, I_{cc} = 1.8mA
LM124/224/324	Quad, I_{cc} = 170µA
LM146/246/346	Quad, I_{cc} = 250µA
LM148/248/348	Quad, I_{cc} = 0.5mA
LM158/258/358(A)	Dual, I_{cc} = 350µA
LM158/258/358W(A)	Dual, I_{cc} = 350µA
LM2902	Quad, I_{cc} = 170µA
LM2904	Dual, I_{cc} = 170µA
MC1458	Dual, I_{cc} = 1.15mA
MC3403	Quad, I_{cc} = 0.7mA
TS321	Single, I_{cc} = 500µA, SOT23-5
TSH22	Dual, I_{cc} = 2.15mA
TSH24	Quad, I_{cc} = 2.15mA
UA741	Single, I_{cc} = 1.7mA
UA748	Single, I_{cc} = 1.8mA

Low power

MC33171	Single, I_{cc} = 200µA
MC33172	Dual, I_{cc} = 200µA
MC33174	Quad, I_{cc} = 200µA

JFET

LF147/247/347	Quad, I_{cc} = 1.4mA
LF151/251/351	Single, I_{cc} = 1.4mA
LF153/253/353	Dual, I_{cc} = 1.4mA
TL071	Single, I_{cc} = 1.4mA
TL072	Dual, I_{cc} = 1.4mA
TL074	Quad, I_{cc} = 1.4mA
TL081	Single, I_{cc} = 1.4mA
TL082	Dual, I_{cc} = 1.4mA
TL084	Quad, I_{cc} = 1.4mA

Low power

TL061	Single, I_{cc} = 200µA
TL062	Dual, I_{cc} = 200µA
TL064	Quad, I_{cc} = 200µA

CMOS

TS272	Dual, I_{cc} = 1mA
TS274	Quad, I_{cc} = 1mA

Low power

TS271	Single, programmable, I_{cc} = 10µA, 150µA, 800µA
TS27L2	Dual, I_{cc} = 10µA
TS27L4	Quad, I_{cc} = 10µA
TS27M2	Dual, I_{cc} = 150µA
TS27M4	Quad, I_{cc} = 150µA

I_{cc} (consumption current) is per operator

Comparators

Micropower (<10µA/op)

Open drain

TS339	Quad, CMOS
TS393	Dual, CMOS

Push pull

TS3702	Dual, CMOS
TS3704	Quad, CMOS

Rail-to-rail

TS7211	Single, BiCMOS, push pull, SOT23-5
TS7221	Single, BiCMOS, open drain, SOT23-5
TS861	Single, BiCMOS, push pull, SOT23-5
TS862	Dual, BiCMOS, push pull
TS864	Quad, BiCMOS, push pull

General purpose

Open collector low power (<200µA/op)

LM2901	Quad, bipolar
LM2903	Dual, bipolar
LM139/239/339	Quad, bipolar
LM193/293/393	Dual, bipolar
TS391	Single, bipolar, SOT23-5

Open drain low power (<200µA/op)

TS372	Dual, CMOS
TS374	Quad, CMOS

High-speed

LM311	Single, bipolar
LM319	Dual, bipolar, tr=80ns
TS3021*	Single, BiCMOS, SOT323-5L (SC70)
TS3022*	Dual, BiCMOS

Voltage references

Micropower

TS4040-2.5	2.5V fixed, shunt, 2%, 1%, SOT23-3
TS4041-1.2	1.225V fixed, shunt, 2%, 1%, 0.5%, SOT23-3
TS431	1.24 to 6V adj, shunt, 2%, 1%, 0.5% SOT23-5
TS432	1.24 to 10V adj, shunt, 1%, 0.5%, SOT23-3
TS821	1.225V fixed, shunt, 2%, 1%, 0.5%, SOT23-3
TS822	2.5V fixed, shunt, 2%, 1%, SOT23-3
TS824-1.2	1.225V fixed, shunt, 1%, 50ppm/°C, SOT23-3
TS824-2.5	2.5V fixed, shunt, 1%, 0.5%, 50ppm/°C, SOT23-3

General purpose

LM336	2.5V fixed, shunt, 2%, 1%
MC1403	2.5V fixed, series, 1%
TL1431	2.5 to 36V adj, shunt, 0.4%, 0.25%
TL431	2.5 to 36V adj, shunt, 2%, 1%
TS2431	2.5 to 24V adj, shunt, 2%, 1%, 0.5%, SOT23-3
TS3431	1.24 to 24V adj, shunt, 2%, 1%, 0.5%, SOT23-3
TS4431*	1.24 to 10V adj, shunt regulator, 0.5%

Thermal sensors

LM334	1A to 10mA adj
LM335	10mV/°K, 1°K initial accuracy

Timers

Low power (max freq: 2.7MHz)

TS555	Single
TS556	Dual

General purpose

NE555	Single
NE556	Dual

Micropower reset circuits

TS831-3/4/5	Reset active low, V_{thr} = 2.7V, 4.5V, 4.33V
TS834-5	Reset active low, V_{thr} = 4.33V
TS836-4	Reset active high, V_{thr} = 4.5V

* Next releases

Audio amplifiers

Part number	Description	Supply voltage		PSRR typ (dB)	Output power		Load		THD typ (%)	Output channels	Input channels	Standby current typ (µA)	Communic. bus type	No pop noise	Packages
		V_{cc} min (V)	V_{cc} max (V)		Single-ended typ (W)	Bridge typ (W)	Single-ended typ	Bridge typ							
Headphone drivers															
TS419	360mW mono audio amplifier with standby active high	2	5.5	56		0.36		16, 32	0.1	1	1	0.01		False	SO-8, mini SO-8, DFN8
TS421	360mW mono audio amplifier with standby active low	2	5.5	56		0.36		16, 32	0.1	1	1	0.01		False	SO-8, mini SO-8, DFN8
TS482	100mW stereo headphone amplifier	2	5.5	85 (1)	0.1		16, 32		0.1	2	2			False	O-8, mini SO-8, DFN8
TS486	100mW stereo headphone amplifier with standby active low	2	5.5	58 (2)	0.1		16, 32		0.1	2	2	0.01		False	SO-8, mini SO-8, DFN8
TS487	100mW stereo headphone amplifier with standby active high	2	5.5	58 (2)	0.1		16, 32		0.1	2	2	0.01		False	SO-8, mini SO-8, DFN8
TS4975*	Stereo headphone audio amplifier with I²C bus interface and phantom ground	2.5	5.5	55 (3)	2x0.11		16,32		0.5	2	2	0.01	I²C	True	Flip-Chip
Speaker drivers															
TS4871	1W mono audio amplifier with standby active high	2.5	5.5	75		1		8	0.1	1	1	0.01		False	SO-8, mini SO-8, DFN8
TS4890	1W mono audio amplifier with standby active low	2.5	5.5	75		1		8	0.1	1	1	0.01		True	SO-8, mini SO-8, DFN8
TS4900	0.7mW mono audio amplifier at 3.3V supply with standby active high	2.5	5.5	77		0.7		8	0.1	1	2	0.01		True	SO-8, mini SO-8
TS4902	0.7mW mono audio amplifier at 3.3V supply with standby active low	2.2	5.5	75		0.7		8	0.1	1	2	0.01		True	SO-8, mini SO-8
TS4972	1.2W speaker driver with standby active high	2.5	5.5	77		1		8	0.1	1	1	0.01		False	Flip-Chip
TS4974*	1.2W full differential speaker driver with up/down volume control	2.5	5.5	85		1.2		8	0.1	1	1	0.3		True	QFN10
TS4984	Stereo 2x1W speaker driver, near-zero pop and click	2.2	5.5	62		2x1.2		8	0.1	2	2	0.01		True	QFN, Flip-Chip
TS4985	Stereo 2x1.2W speaker driver with separate standby	2.2	5.5	62		2x1.2		8	0.1	2	2	0.01		True	Flip-Chip
TS4990	1.2W Flip-Chip speaker driver with standby mode active low and near-zero pop and click	2.2	5.5	62		1.2		8	0.2	1	2	0.01		True	Flip-Chip, mini SO-8, DFN8
TS4994	1W fully differential audio amplifier with selectable standby and zero pop and click	2.2	5.5	100		1		8	0.15	1	1	0.01		True	Flip-Chip, mini SO-8, DFN10
ASSPs															
TS4851	1W loudspeaker and 2x160mW headset BTL drivers with digital volume control	3	5.5	62		1		8	0.5	3	3	0.01	SPI	True	Flip-Chip
TS4855	Loudspeaker and headset driver with volume control	3	5.5	62		1		8	0.5	3	4	0.01	SPI	True	Flip-Chip
TS4973	1.2W dual input power audio amplifier with gain control and standby mode active low	2.8	5.5	53		1.2		8	0.1	1	2	0.01	-	False	Flip-Chip
Class D															
TS4962*	Mono class D, 3W audio amplifier	2.4	5.5	63		3		4-8	0.2	1	1	0.01			Flip-Chip
Microphone preamplifier															
TS472*	Microphone pre-amplifier with gain control (0 to 40dB) and 2V output bias	2.8	5.5	70						1	1	0.01			Flip-Chip

* Next releases

Notes:
Operating temperature range for all devices -40 to 85°C
1. f=100kHz 2. f=1kHz 3. V_{cc} = 2.5V 4. V_{cc} = 3.0V

High-speed op-amps

Part number	Description	Operating temp (°C)	No. of operators	Supply current I_{cc} typ (mA)	Supply voltage		Input offset voltage V_{io} max (mV)	GBP typ (MHz)	Slew rate SR typ (V/µs)	Input equivalent noise voltage (nV/√Hz)	Rail-to-rail
					V_{cc} min (V)	V_{cc} max (V)					
Voltage feedback											
TSH340	Video buffer, 320MHz single supply, negative in/out rail	-40 to 85	1	9.4	3.3	5.5		320	780	7	Yes
TSH341	Video op-amp, 300MHz single supply, negative in/out rail	-40 to 85	1	9.8	3.3	5.5	15	300	400	7	Yes
TSH70	Wide band video op-amp in SO23-5	0 to 70	1	7.2	3	12	10	100	100	8	Yes
TSH71	Wide band video op-amp with standby mode	0 to 70	1	7.2	3	12	10	100	100	8	Yes
TSH72/4	Dual wide band video op-amp	0 to 70	2/4	7.2	3	12	10	100	100	8	Yes
TSH73/5	Triple wide band video op-amp with standby mode	0 to 70	3/4	7.2	3	12	10	100	100	8	Yes
TSH80/1/2	Wide band rail-to-rail operational amplifier with standby function	-40 to 85	1/2	8.2	4.5	12	10	100	100	8	Yes
TSH93/4/5	Video amplifier	-40 to 125	3/4	4.5	7	12	4	150	110	4.2	
VGA											
TS652	ADSL line receiver with standby mode, differential variable gain amplifier	-40 to 85	Differential	28	5	12	6	110	100	4.5	

Part number	Description	Operating temp (°C)	No. of operators	Supply current I_{cc} typ (mA)	Supply voltage		Input offset voltage V_{io} max (mV)	Bandwidth		Slew rate SR typ (V/µs)	Input equivalent noise voltage (nV/√Hz)	Rail-to-rail
					V_{cc} min (V)	V_{cc} max (V)		Gain	MHz			
Current feedback												
TSH110/1/2/3/4	Wide band, low noise video op-amp	-40 to 85	1/2/3/4	3	5	12	3	1	100	450	3	
TSH330	1.1GHz low noise op-amp	-40 to 85	1	16.6	4.5	5.5	7	2	1100	1800	1.3	
TSH350	550MHz, low noise video op-amp	-40 to 85	1	4.1	4.5	5.5	4	1	550	940	1.5	
TSH310	400µA high-speed op-amp	-40 to 85	1	0.4	4.5	5.5	6.5	2	130	115	7.5	
ADSL line drivers												
TS612	ADSL line driver with standby mode	-40 to 85	2	14	7	12	6	1	130	40	3	
TS613	ADSL line driver in SO8	-40 to 85	2	11	7	12	6	1	130	40	3	
TS615	ADSL line driver with standby mode (short circuited output)	-40 to 85	2	11.9	5	12	6	4	40	410	2.5	Yes
TS616	ADSL line driver in SO8	-40 to 85	2	11.9	5	12	6	4	40	410	2.5	Yes

Rail-to-rail op-amps

Part number	Description	No. of operators	Supply current I_{cc} typ/operator (µA)	Supply voltage		Input offset voltage V_{io} max (mV)	GBP typ (MHz)	Slew rate SR typ (V/µs)	Output current I_{out} typ (mA)
				V_{cc} min (V)	V_{cc} max (V)				
TS1851/2/4	1.8V min. voltage supply, micropower	1, 2, 4	120	1.8	6	3	0.48	0.2	40
TS1871/2/4	1.8V min. voltage supply, micropower	1, 2, 4	400	1.8	6	3	1.6	0.54	65
TS461/2/4	TS321, LM324, LM358 replacement in low voltage applications	1, 2, 4	2000	2.7	10	5	10	4	1.5
TS912/4	Low power with CMOS inputs	2, 4	200	2.7	16	10, 5, 2	1.3	0.4	40
TS921/2/4/5	Excellent audio performance, low distortion (0.005%)	1, 2, 4	1000	2.7	12	3, 0.9	4	1.3	80
TS931/2/4	Micropower amplifier with CMOS inputs	1, 2, 4	20	2.7	10	10, 5, 2	0.1	0.05	1.5
TS941/2/4	Ultra-micropower amplifier with CMOS inputs	1, 2, 4	1.2	2.7	10	10, 5, 2	0.01	0.004	1.5
TS951/2/4	Real input and output rail-to-rail, low distortion (0.01%)	1, 2, 4	900	2.7	12	6	3	1	22
TS971/2/4	High-performance, suitable for battery powered applications	1, 2, 4	2000	2.7	10	5	12	4	1.5
TS982	High output current dual operational amplifier	2	5500	2.5	5.5	5	2	0.7	200

Precision op-amps

Part number	Description	No. of operators	Supply current I_{cc} typ/operator (µA)	Supply voltage		Input offset voltage V_{io} max (mV)	GBP typ (MHz)	Slew rate SR typ (V/µs)	Output current I_{out} typ (mA)
				V_{cc} min (V)	V_{cc} max (V)				
OP07	Very low offset, bipolar op-amp	1	2700	6	44	0.15	0.5	0.17	12
TS512/4	Low noise and distortion (8nV/√Hz and 0.03%)	2, 4	350, 400	6	30	0.5, 2.5	3	1.5	23
TS522/4	Very low noise suitable for audio applications (4.5nV/√Hz)	2, 4	2000	5	30	0.85, 0.95	15	7	29
TS507*	High precision single supply rail-to-rail op-amp	1	850	2.7	5.5	0.06	2.2	0.6	120

* Next releases

Low noise op-amps

Part number	Description	No. of operators	Supply current I_{cc} typ/operator (µA)	Supply voltage		Input offset voltage V_{io} max (mV)	GBP typ (MHz)	Slew rate SR typ (V/µs)	Output current I_{out} typ (mA)	Input equivalent noise voltage typ nV/√Hz (1kHz)
				V_{cc} min (V)	V_{cc} max (V)					
LM833	Very low noise and low distortion (0.002%)	2	2000	5	30	5	15	7	30	4.5
LS204/LS404	Low noise and low distortion (0.01%)	2, 4	350	6	36	2.5, 3.5	3	1.5	23	8, 10
MC33078/9	Very low noise and low distortion (0.002%)	2, 4	2000	5	30	2, 2.5	15	7	30	4.5
MC4558	Very low noise and low distortion (0.008%)	2	1150	6	44	5	5.5	2.2	20	12

High-temperature op-amps and comparators

Part number	Description	Operating temp (°C)	No. of operators	Supply current I_{cc} typ (µA)	Supply voltage V_{cc} max (V)	Input offset voltage V_{io} max (mV)	GBP typ (MHz)	Response time (µs)
Voltage comparators								
LM2901H	High-temperature, low-power quad voltage comparator	-40 to 150	4	275	36	7	-	1.3
LM2903H	High-temperature, low-power dual voltage comparator	-40 to 150	2	200	36	7	-	1.3
Operational amplfiers								
LM2904WH	Dual, general purpose op-amp	-40 to 150	2	350	36	7	1.1	-
TS922H	Dual, low noise rail-to-rail op-amp	-40 to 150	2	1000	36	3	4	-
LM2902H*	High temperature, low power quad operational amplifier	-40 to 150	4	350	32	7	1.1	-

* Next releases

RF and communication

Part number	Description	Technology	Supply current I_{cc} (µA)	Supply voltage		f_{min} (MHz)	f_{max} (MHz)	Operating temp (°C)	Packages
				V_{dd} min (V)	V_{dd} max (V)				
TSH690	Bipolar wide band amplifier, driver stage	BiCMOS	46	1.5	5	0.1	1GHz	-40 to +85	SO8
Transmitters, receivers and transceivers									
TSH511	Dual FM receiver with audio amplifiers	HF4CMOS	15	2.3	5.5	0.4	11	-40 to +85	TQFP44
TSH512	Dual FM transmitter	HF4CMOS	16	2.3	5.5	0.4	11	-40 to +85	TQFP44

General purpose op-amps

Part number	Description	No. of operators	Supply current I_{cc} typ/operator (µA)	Supply voltage V_{cc} max (V)	Input offset voltage V_{io} max (mV)	GBP typ (MHz)	Slew rate SR typ (V/µs)	Output current I_{out} typ (mA)
LF247/347	JFET inputs, low input bias and offset current, (15nV/√Hz and 0.01%)	4	1400	36	10	4	16	40
LF253/353	JFET inputs, low input bias and offset current, (15nV/√Hz and 0.01%)	2	1400	36	10	4	16	40
LF351	JFET inputs, low input bias and offset current, (15nV/√Hz and 0.01%)	1	1400	36	10	4	16	40
LM124/224/324	Low power, low input bias current	4	170, 400	30	5, 7	1.3	0.4	40
LM148/248/348	Four UA741	4	500	44	5	1.3	0.5	25
LM158/258/358	Low input bias current	2	350	32	3, 7	1	0.6	40
LM201A/301A	Input and output overload protection, low input offset current	1	1800	44	2, 7.5	1	0.5	30
LM246/346	Programmable amplifier	4	250	44	3, 5	1	0.5	20
LM2902/4	Low power, bipolar op-amp	4, 2	170, 400	32	7	1.3	0.4	40
MC1458/1558	Wide input common mode voltage range	2	1150	44	5	1	0.8	20
MC3303/3403	Quad enhanced UA741 version with lower consumption	4	700	36	5	1	0.5	30
MC33171/2/4	Low consumption versus speed	1, 2, 4	200	44	4.5, 5	2.1	2	6
TL061/2/4	JFET inputs, low input bias current	1, 2, 4	200	36	6, 15	1	3.5	20
TL071/2/4	JFET inputs, low input bias current	1, 2, 4	1400	36	3, 6, 10	4	16	20
TL081/2/4	JFET inputs, low input bias current	1, 2, 4	1400	36	3, 6, 10	4	16	20
TS271	Micropower, programmable op-amp	1	10, 150, 800	16	10, 5, 2	0.1, 0.7, 2.3	0.04, 0.6, 4.5	60
TS272/4	Micropower, wide range of input offset voltage	2, 4	1000	16	10, 5, 2	3.5	5.5	60
TS27L2/4	Micropower, wide range of input offset voltage	2, 4	10	16	10, 5, 2	0.1	0.04	60
TS27M2/4	Micropower, wide range of input offset voltage	2, 4	150	16	10, 5, 2	1	0.6	60
TS321	Single LM324, LM358 enhanced version with lower supply voltage	1	500, 600	30	4, 2	0.8	0.4	40
TSH22/4	Very low distortion (0.003% at f=1kHz)	2, 4	2150	30	2.5	25	15	37
UA741	Wide applications range	1	1700	44	5	1	0.5	25
UA748	Wide applications range	1	1800	44	2	1	0.5	30

Comparators

Part number	Description	No. of operators	Technology	Supply current I_{cc} typ (µA)	Supply voltage V_{cc} max (V)	Input offset voltage V_{io} max (mV)	Response time (µs)
Micropower							
TS339	Open drain - micropower	4	CMOS	9	16	5	1.5
TS3702	Push pull - micropower	2	CMOS	9	16	5	1.5
TS3704	Push pull - micropower	4	CMOS	9	16	5	1.2
TS393	Open drain - micropower	2	CMOS	10	16	5	1.5
TS7211	Rail-to-rail inputs, push pull output - micropower	1	BiCMOS	6	10	7	0.5
TS7221	Rail-to-rail inputs, open drain output - micropower	1	BiCMOS	6	10	7	0.5
TS861	Rail-to-rail inputs, push pull output - micropower	1	BiCMOS	6	10	7	0.5
TS862	Rail-to-rail inputs, push pull output - micropower	2	BiCMOS	6	10	7	0.5
TS864	Rail-to-rail inputs, push pull output - micropower	4	BiCMOS	6	10	7	0.5
General							
LM2901	Open collector - low power	4	Bipolar	275	36	7	1.3
LM2903	Open collector - low power	2	Bipolar	200	36	7	1.3
LM339	Open collector - low power	4	Bipolar	275	36	2	1.3
LM393	Open collector - low power	2	Bipolar	200	36	5	1.3
TS372	Open drain - low power	2	CMOS	150	16	10	0.6
TS374	Open drain - low power	4	CMOS	150	16	10	0.6
TS391	Open collector - low power	1	Bipolar	200	36	5	1.3
High-speed							
LM311	Open emitter and collector	1	Bipolar	5000	36	7.5	0.2
LM319	High-speed	2	Bipolar	8000	36	8	0.08
TS3021*	High-speed	1	BiCMOS	67	5.5	5	0.04
TS3022*	High-speed	2	BiCMOS	67	5.5	5	0.04

* Next releases

Voltage references

Part number	Description	Technology	Precision (%)	Cathode to anode voltage		Reference voltage, V_{ref} (V)	Temp. Coef. of V_{ref}, T_c max (°C)	Operating cathode current		Static impedance R_{ka} max (Ω)	Line regulation max (mV)	Load regulation	Quiescent current (mA)
				V_{ka} min (V)	V_{ka} max (V)			I_k min (mA)	I_k max(mA)				
Micropower													
TS4040-2.5	2.5V micropower shunt voltage reference	BiCMOS	2-1	-	-	2.5	150	0.065	15	0.6	-	-	-
TS4041-1.2	1.225V micropower shunt voltage reference	BiCMOS	2-1- 0.5	-	-	1.225	150	0.065	12	0.5	-	-	-
TS431	Low voltage adjustable shunt reference	BiCMOS	2-1-0.5	1.24	6	1.24	100	0.06	30	0.4	-	-	-
TS432	1.24V adjustable shunt voltage reference	BiCMOS	1-0.5	1.24	10	1.24	100	0.06	12	0.5	-	-	-
TS821	1.225V micropower shunt voltage reference	BiCMOS	2-1-0.5	-	-	1.225	120	0.045	12	0.5	-	-	-
TS822	2.5V micropower shunt voltage reference	BiCMOS	2-1	-	-	2.5	100	0.05	15	0.6	-	-	-
TS824-1.2	High thermal stability micropower shunt voltage reference	BiCMOS	1	-	-	1.225	50	0.05	12	0.7	-	-	-
TS824-2.5	High thermal stability micropower shunt voltage reference	BiCMOS	1-0.5	-	-	2.5	50	0.06	15	0.6	-	-	-
General purpose													
LM336	2.5V voltage reference	Bipolar	2-1	-	-	2.5	-	0.4	10	1	-	-	-
MC1403	2.5V precision serial voltage reference	Bipolar	1	-	-	2.5	40	-	-	-	4.5	10	1.2
TL1431	Programmable voltage reference	Bipolar	0.4-0.25	2.5	36	2.5	100	1	100	0.5	-	-	-
TL431	Programmable voltage reference	Bipolar	2-1	2.5	36	2.5	100	1	100	0.5	-	-	-
TS2431	Programmable shunt voltage reference	BiCMOS	2-1-0.5	2.5	24	2.5	100	1	100	0.75	-	-	-
TS3431	Programmable shunt voltage reference	BiCMOS	2-1-0.5	1.24	24	1.24	100	0.5	100	0.4	-	-	-
TS4431*	Programmable low voltage shunt regulator	BiCMOS	0.5	0.3	10	1.24	100	0	20	-	5	5	0.1
Thermal sensors													
LM334	Three terminal adjustable shunt current source	Bipolar	+/-6	-	-	-	-	-	-	-	-	-	-
LM335	Precision shunt temperature sensor	Bipolar	+/-3	-	-	-	-	-	-	-	-	-	-

* Next releases

Timers

Part number	Description	No. of operators	Technology	Supply current I_{cc} typ (µA)	Supply voltage		Operation
					V_{cc} min (V)	V_{cc} max (V)	
Low power							
TS555	Very long timing possible	1	CMOS	250	2	16	Mono/astable
TS556	Very long timing possible	2	CMOS	500	2	16	Mono/astable
General purpose							
NE555	General purpose single bipolar timer	1	Bipolar	600	4.5	18	Mono/astable
NE556	General purpose dual bipolar timer	2	Bipolar	12000	4.5	18	Mono/astable

Micropower reset circuits

Part number	Description	Technology	Supply current I_{cc} max (µA)	Supply voltage V_{cc} max (V)	Threshold typ (V)	Active output level	Power-on timer typ (ms)
TS831-3/4/5	Micropower voltage supervisor reset active low	BiCMOS	12	5.5	2.71/4.5/4.3	Low	None
TS834-5	Micropower voltage supervisor reset active low or high with integrated timer	BiCMOS	15	15	4.33	Low and high	250
TS836-4	Micropower voltage supervisor reset active high	BiCMOS	12	5.5	4.5	High	None