

Monolithic Linear IC

LA1806



AM/FM-IF/MPX Tuner System for Radio-Cassette Recorders, Music Centers

Overview

The LA1806 is a characteristics-improved version of the LA1811, with the same pin assignment and package as those of the LA1811. Improvements are made on the following points:

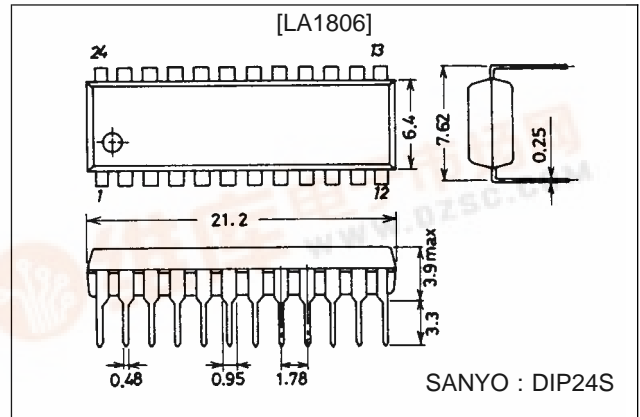
- Separation (35 dB → 48 dB) and its dependence on free-running frequency (Refer to the separate catalog of the LA1805.)
- FM main distortion (0.8% → 0.45%)
- AM detection output (approximately 5 dB increased)

The constants on five external parts are changed as LA1811

Package Dimensions

unit : mm

3067-DIP24S



Functions

- FM-IF: IF amplifier quadrature detector, soft muting, tuning indicator
- MPX: PLL stereo decoder, stereo indicator, forced monaural, VCO stop
- AM: RF amplifier, MIX, OSC (with ALC), IF amplifier, detector, AGC, tuning indicator

Features

- FM/AM/MPX functions contained on a single chip
- Minimum number of external parts required
- On-chip FM muting function
- High sensitivity
- Less carrier leak of MPX

Specifications

Maximum Ratings at Ta = 25°C, See specified Test Circuit

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V _{CC} max	Pins 3, 7, 8, 11, 20, 21	9	V
Maximum supply current	I _{CC} max	Pins 3 + 20 + 21	50	mA
Flow-in current (Indicator drive current)	I _{LED}	Pins 7, 8	20	mA
Flow-out current	I ₂₃	Pin 23	0.1	mA
Allowable power dissipation	P _d max	Ta ≤ 70°C	500	mW
Operating temperature	T _{opr}		-20 to +70	°C
Storage temperature	T _{stg}		-40 to +125	°C



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Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}		4.5	V
Operating voltage range	V_{CCOP}		3.0 to 8.0	V

* The FM output level forms an N curve (LA1805) and an S curve (LA1806).

LA1805: N curve (for US band)

LA1806: S curve (for Japanese band). Since an output load resistor is connected to pins 9, 10 externally, your desired output level can be set by varying the output resistance.

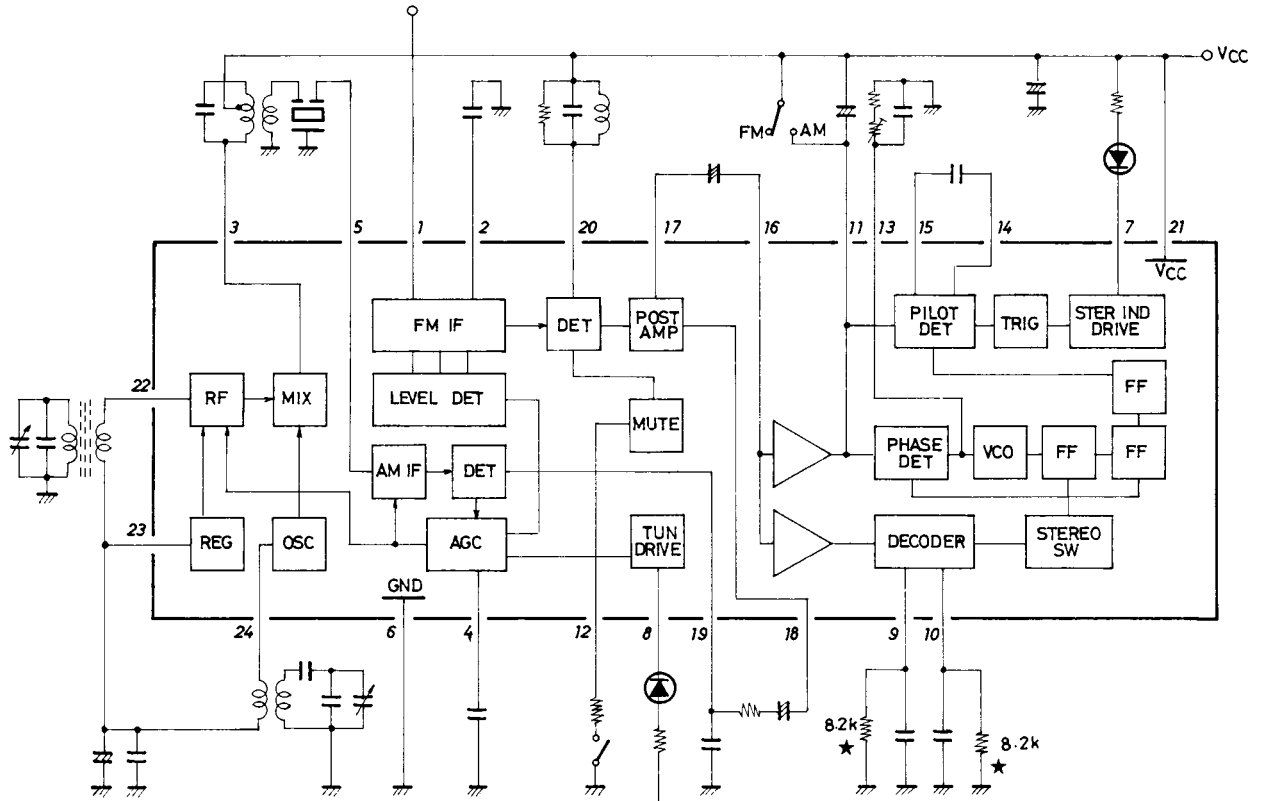
Operating Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 4.5\text{ V}$, See specified Test Circuit.

Parameter	Symbol	Conditions	min	typ	max	Unit
FM characteristics (Mono): $f_c = 10.7\text{ MHz}$, $f_m = 1\text{ kHz}$						
Quiescent current	I_{CCO}	No input		13	20	mA
-3 dB sensitivity	-3dBLS.	Referenced to $V_{IN} = 100\text{ dB}\mu$, 100%, down 3 dB		28	35	dB μ
Demodulation output	V_0	$V_{IN} = 100\text{ dB}\mu$, 100% mod.	154	226	308	mV
Channel balance	C.B.	$V_{IN} = 100\text{ dB}\mu$, 100% mod.	0	0	1.5	dB
Total harmonic distortion	THD	$V_{IN} = 100\text{ dB}\mu$, 100% mod.		0.45	1.2	%
Signal to noise ratio	S/N	$V_{IN} = 100\text{ dB}\mu$, 100% mod.	70	80		dB
LED ON sensitivity	V_{LED}	$I_L = 1\text{ mA}$	23	33	43	dB μ
FM Characteristics (Stereo) : $f_c = 10.7\text{ MHz}$, $f_m = 1\text{ kHz}$, L + R = 90%, pilot = 10%, $V_{IN} = 100\text{ dB}\mu$						
Separation	Sep		32	48		dB
Stereo distortion	THD (MAIN)			0.45	1.2	%
LED ON level	V_{LED-on}		2.4	3.9	5.4	%
LED OFF level	$V_{LED-off}$			2.7		%
AM Characteristics: $f_c = 1000\text{ kHz}$, $f_m = 1\text{ kHz}$						
Quiescent current	I_{CCO}	No input		9.5	14.5	mA
Detection output	V_{O1}	$V_{IN} = 23\text{ dB}\mu$, 30% mod.	29	54	97	mV
	V_{O2}	$V_{IN} = 80\text{ dB}\mu$, 30% mod.	78	126	193	mV
Signal to noise ratio	S/N1	$V_{IN} = 23\text{ dB}\mu$, 30% mod.	17	21		dB
	S/N2	$V_{IN} = 80\text{ dB}\mu$, 30% mod.	50	55		dB
Total harmonic distortion	THD1	$V_{IN} = 80\text{ dB}\mu$, 30% mod.		0.45	1.2	%
	THD2	$V_{IN} = 100\text{ dB}\mu$, 30% mod.		0.6	1.5	%
LED ON sensitivity	V_{LED}	$I_L = 1\text{ mA}$ Note : Be fully careful of dielectric breakdown.	16	24	32	dB μ

Note : For further details, refer to the separate catalog of the LA1805.

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Equivalent Circuit Block Diagram

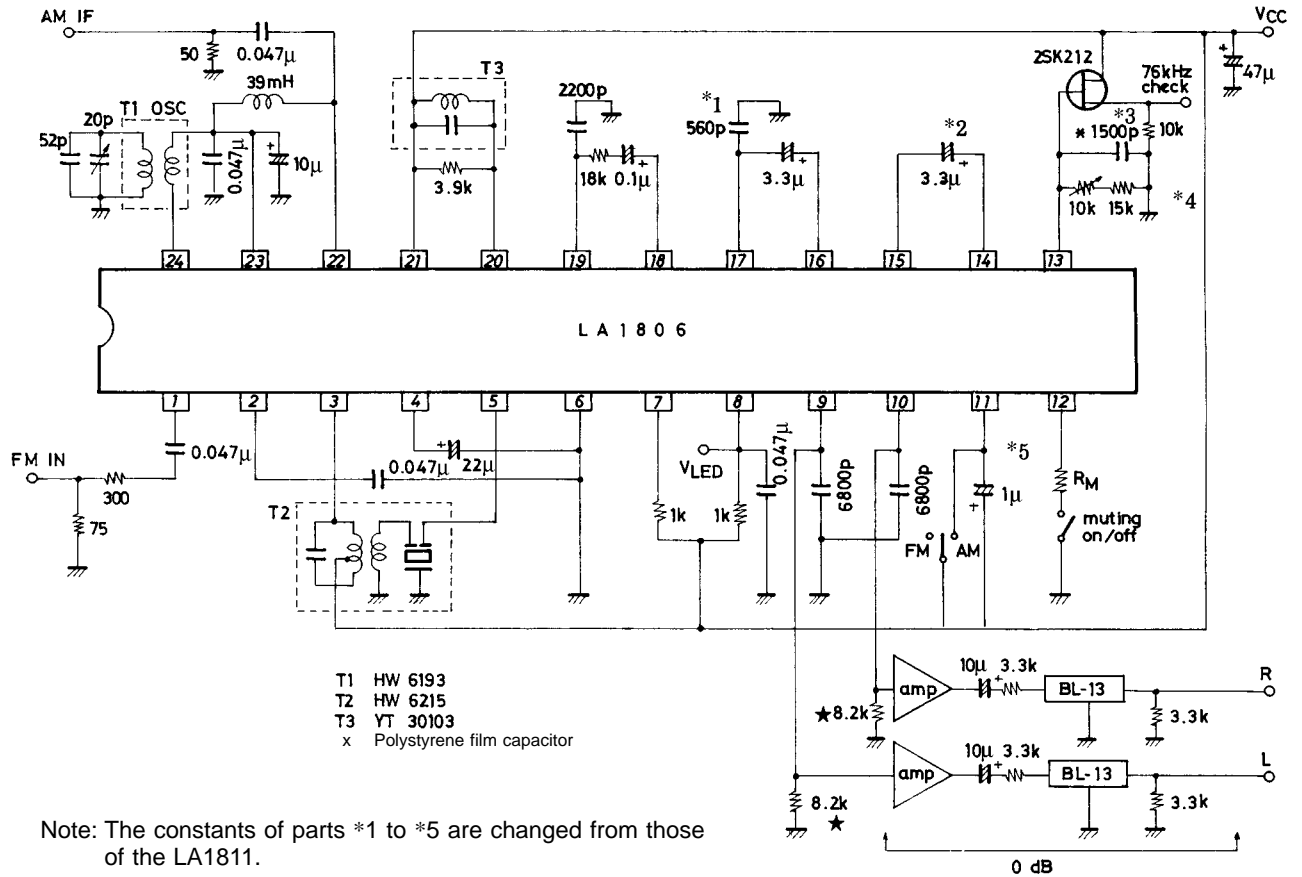


★:Not required for the LA1805

Unit (resistance: Ω)

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Test Circuit



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