



# 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  $\rightarrow$  48 dB) and its dependence on free-running frequency (Refer to the separate catalog of the LA1805.)
- FM main distortion (0.8%  $\rightarrow$  0.45%)
- $^{ullet}$  AM detection output (approximately 5 dB increased) The constants on five external parts are changed as LA1811

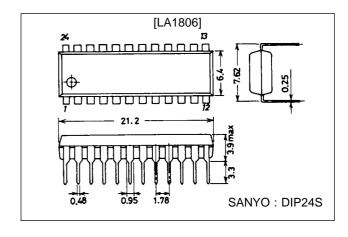
### **Functions**

- 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

## **Package Dimensions**

unit: mm

#### 3067-DIP24S



### **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 <sub>CC</sub> max	Pins 3, 7, 8, 11, 20, 21	9	V
Maximum supply current	I <sub>CC</sub> max	Pins 3 + 20 + 21	50	mA
Flow-in current (Indicator drive current)	I <sub>LED</sub>	Pins 7, 8	20	mA
Flow-out current	I <sub>23</sub>	Pin 23	0.1	mA
Allowable power dissipation	Pd max	Ta≦70°C	500	mW
Operating temperature	Topr		-20 to +70	°C
Storage temperature	Tstg		-40 to +125	°C

# Opearating Conditions at $Ta = 25^{\circ}C$

Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V <sub>CC</sub>		4.5	V
Operating voltage range	V <sub>CC</sub> op		3.0 to 8.0	V

<sup>\*</sup> The FM output level forms an N curve (LA1805) and an S curve (LA1806).

LA1805: N curve (for US band)

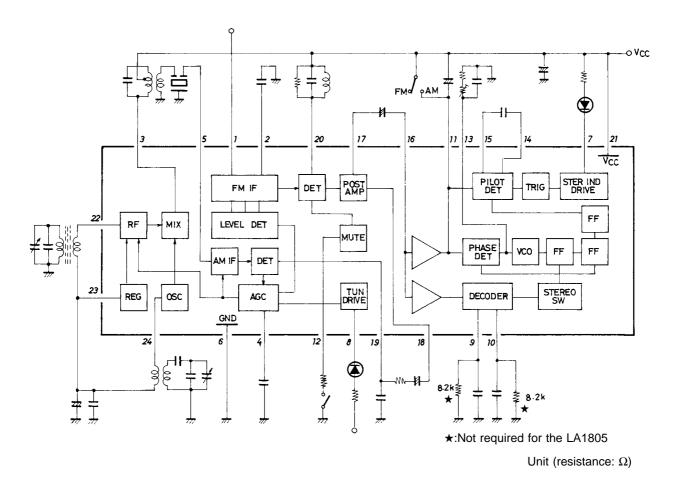
LA1806: S curve (for Japanese band). Since an output load resistor is connected to pins 9, 10 externally, your desired output level can be set by varrying the output resistance.

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

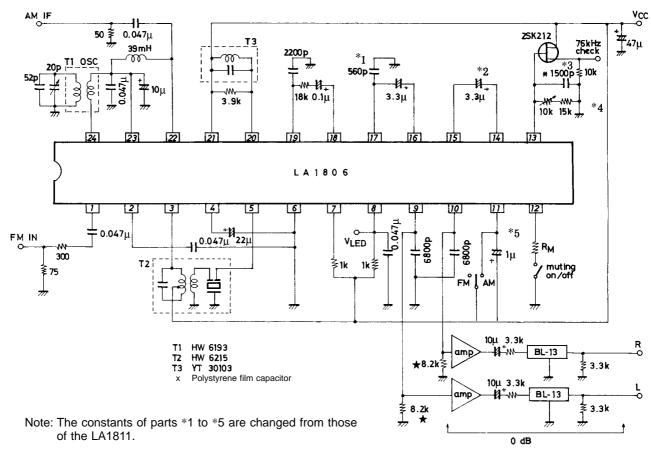
Parameter	Symbol	Conditions	min	typ	max	Unit		
FM characteristics (Mono): f <sub>c</sub> =	10.7 MHz, f <sub>m</sub> =	1 kHz	•			•		
Quiescent current	Icco	No input		13	20	mA		
-3 dB sensitivity	-3dBL.S.	Referenced to V <sub>IN</sub> = 100 dBµ, 100%, down 3 dB		28	35	dΒμ		
Demodulation output	V <sub>0</sub>	$V_{IN} = 100 \text{ dB}\mu$ , 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 <sub>LED</sub>	I <sub>L</sub> = 1 mA	23	33	43	dΒμ		
FM Characteristics (Stereo) : fc	FM Characteristics (Stereo) : $f_c$ = 10.7 MHz, $f_m$ = 1 kHz, L + R = 90%, pilot = 10%, $V_{IN}$ = 100 dB $\mu$							
Separation	Sep		32	48		dB		
Stereo distortion	THD (MAIN)			0.45	1.2	%		
LED ON level	V <sub>LED</sub> -on		2.4	3.9	5.4	%		
LED OFF level	V <sub>LED</sub> -off			2.7		%		
AM Characteristics: f <sub>c</sub> = 1000 kH	lz, f <sub>m</sub> = 1 kHz							
Quiescent current	Icco	No input		9.5	14.5	mA		
Detection output	V <sub>O</sub> 1	$V_{IN} = 23 \text{ dB}\mu, 30\% \text{ mod.}$	29	54	97	mV		
	V <sub>O</sub> 2	$V_{IN} = 80 \text{ dB}\mu$ , 30% mod.	78	126	193	mV		
Signal to noise ratio	S/N1	$V_{IN} = 23 \text{ dB}\mu, 30\% \text{ mod.}$	17	21		dB		
	S/N2	$V_{IN} = 80 \text{ dB}\mu$ , 30% mod.	50	55		dB		
Total harmonic distortion	THD1	$V_{IN} = 80 \text{ dB}\mu, 30\% \text{ mod.}$		0.45	1.2	%		
	THD2	$V_{IN} = 100 \text{ dB}\mu$ , 30% mod.		0.6	1.5	%		
LED ON sensitivity	V <sub>LED</sub>	I <sub>L</sub> = 1 mA Note : Be fully careful of dielectric breakdown.	16	24	32	dΒμ		

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

# **Equivalent Circuit Block Diagram**



### **Test Circuit**



★ :Not required for the LA1805

Unit (resistance:  $\Omega$ , capacitance: F)

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