



# LA3430M

## PLL FM MPX Stereo Demodulator with Pilot Canceler for Car Stereo Use

### Overview

The LA3430M (MFP-16 package version of LA3430) is an MPX IC for FM car stereo use. It contains the VCO non-adjusting function, skip noise eliminating function, and pilot cancel function.

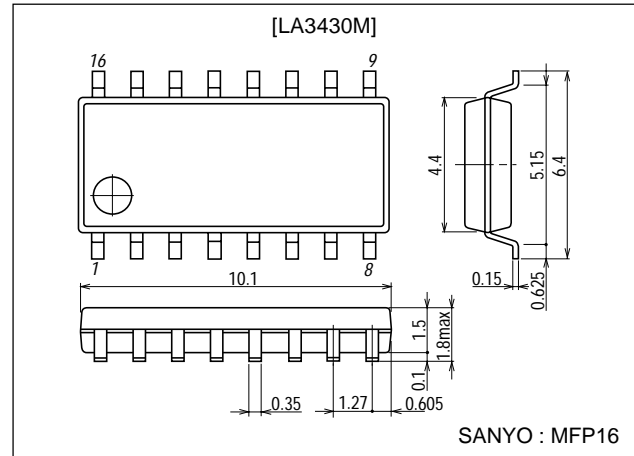
### Functions

- VCO non-adjusting function.
- Pilot cancel function (Level follow-up type).
- Stereo noise control function (SNC function).
- High cut control function (HCC function).
- Stereo - monaural automatic select (Pilot input prioritized).
- VCO oscillation stop function.
- Forced monaural function for reception mode (Stereo lamp unlighted, pilot cancel function and HCC function held). This function is provided by disconnecting pin 14 from  $V_{CC}$ .

### Package Dimensions

unit:mm

3035A-MFP16



How to provide forced monaural mode at stereo reception	Lamp	HCC	Pilot cancel
Pin 12 GND	Lighted	○	○
7.3V or greater applied to pin 11	Unlighted	×	×
Pin 15 GND	Unlighted	○	×
Pin 14 disconnected	Unlighted	○	○

### Features

- Non-adjusting VCO : Eliminates the need to adjust free-running frequency.
- VCO is stable to ambient temperature changes :  $\pm 0.1$  to  $0.15\%$  for  $\pm 50^\circ\text{C}$  change.
- Low distortion ( $0.07\%$  typ./ $300\text{mV}$  input mono).
- Good ripple rejection of power supply ( $35\text{dB}$  typ.).
- Wide operating voltage range ( $V_{CC}=6.5$  to  $12\text{V}$ ).

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## Specifications

### Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

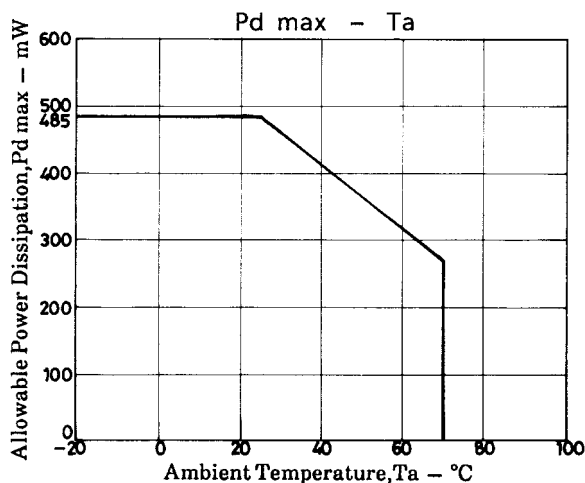
Parameter	Symbol	Conditions	Ratings	Unit
Maximum Supply Voltage	$V_{CC\text{ max}}$		16	V
Lamp Driving Current	$I_L\text{ max}$		30	mA
Allowable Power Dissipation	$P_d\text{ max}$		485	mW
Operating Temperature	$T_{opr}$		-20 to +70	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-40 to +125	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Ratings	Unit
Recommended Supply Voltage	$V_{CC}$		10	V
Operating Voltage Range	$V_{CC\text{ op}}$		6.5 to 12	V
Recommended Input Signal Voltage	$V_i$		200 to 300	mV

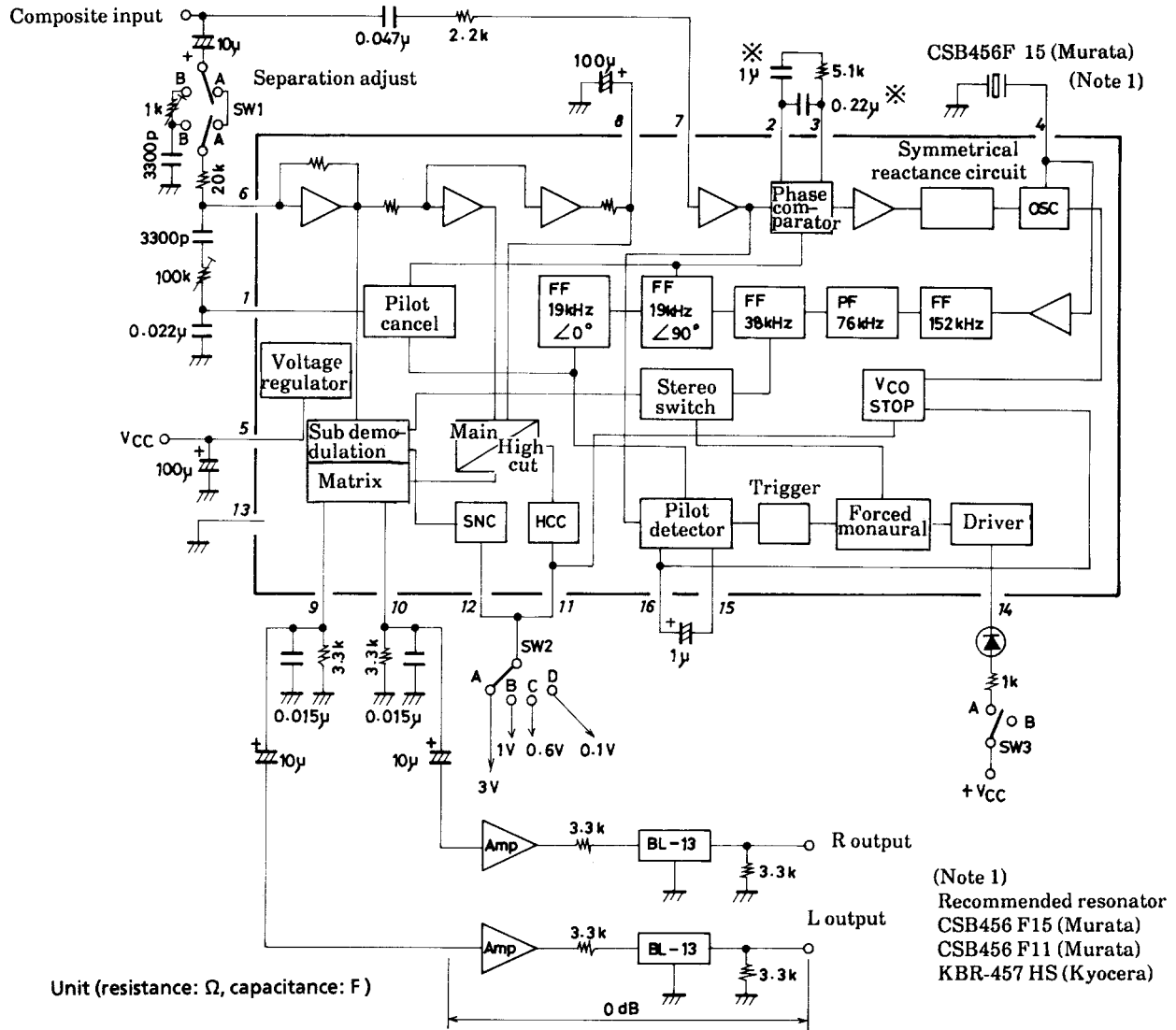
### Operating Characteristics at $T_a = 25^\circ\text{C}$ , $V_{CC}=10\text{V}$ , $V_i=300\text{mV}$ , $f=1\text{kHz}$ , $L+R=90\%$ , $\text{pilot}=10\%$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Quiescent Current	$I_{cco}$	No input		28	38	mA
Channel Separation	Sep		40	50		dB
Total Harmonic Distortion	THD	Monaural		0.07	0.2	%
		Main		0.07	0.2	%
Lamp Lighting Level	$V_L$	$L+R=90\%$ , $\text{pilot}=10\%$	50	85	120	mV
Lamp Hysteresis	hy			2	6	dB
Capture Range	CR			$\pm 1$		%
Output Signal Level	$V_O$	Sub	150	215	300	mV
Signal to Noise Ratio	S/N	$R_g=20\text{k}\Omega$	68	74		dB
		$R_g=10\text{k}\Omega$	70	78		dB
Input Resistance (Pin 6)	$r_i$			20		$\text{k}\Omega$
SCA Rejection	SCA rej			80		dB
Allowable Input Voltage	$V_i$	THD=1%, $R_g=20\text{k}\Omega$	700	900		mV
		THD=1%, $R_g=10\text{k}\Omega$		450		mV
SNC Output Attenuation	Att SNC	$V_{12}=0.6\text{V}$ , $L-R=90\%$ , $\text{pilot}=10\%$	-8.5	-3.0	-0.3	dB
SNC Output Voltage	$V_O\text{ sub}$	$V_{12}=0.1\text{V}$ , $L-R=90\%$ , $\text{pilot}=10\%$			5	mV
HCC Output Attenuation	Att HCC1	$V_{11}=0.6\text{V}$ , $L+R=90\%$ , $\text{pilot}=10\%$	-15.0	-6.0	-0.5	dB
	Att HCC2	$V_{11}=1\text{V}$ , $L+R=90\%$ , $\text{pilot}=10\%$	-2.0		0	dB
Ripple Rejection of Power Supply	Rr			35		dB
VCO Stop Voltage				7.3		V
Channel Balance				0.5	1.5	dB
Pilot Cancel			16	23		dB
Stereo Lamp Current		Minimum stereo operating current	1.0			mA
Saturation Voltage (Pin 14)		$I_L=10\text{mA}$		1.0		V



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## Test Circuit and Internal Equivalent Block Diagram



- \* : When a polarized electrolytic capacitor is used in your application, the positive pole may be connected to either pin 2 or pin 3.
- SW1 : For characteristics other than separation, place in the A position.
- SW2 : For characteristics other than HCC, SNC, place in the A position.
- SW3 : Forced monaural of reception mode.
- Amp : Bandwidth 100kHz or greater, THD=0.01% or less, input impedance 330k $\Omega$  or greater.

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