Ordering number : EN7961

SANYO Semiconductors
DATA SHEET

LA75525VA — Monolithic Linear IC For TV Sets and VCRs VIF/SIF Signal-Processing IC

Overview

The LA75525VA is a completely adjustment-free NTSC VIF/SIF signal-processing IC for TV sets and VCRs. It supports IF frequencies of 45.75 and 58.75MHz. It integrates an automatic adjustment circuit for the VCO, an AFT circuit, and an audio carrier trap circuit on the same chip and requires the input of either a 4MHz or 3.58MHz reference signal.

Features

- Automatic adjustment VCO (no external VCO coil is required).
- Built-in audio carrier trap; an external circuit may be used if desired.
- Digital AFT adopted.
- FM radio receiver function.

Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{CC} max		6	V
Circuit voltage	V12 V16		V_{CC}	V
Circuit current	I5		-3	mA
	I9		-7	mA
	I24		-2	mA
Allowable power dissipation	Pd max	Ta ≤ 75°C, Mounted on a circuit board *	500	mW
Operating temperature	Topr		-20 to +75	°C
Storage temperature	Tstg		-55 to +150	°C

* Specified substrate: 65mm×72mm×1.6mm, glass epoxy.

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Recommended Operating Conditions at Ta = 25°C

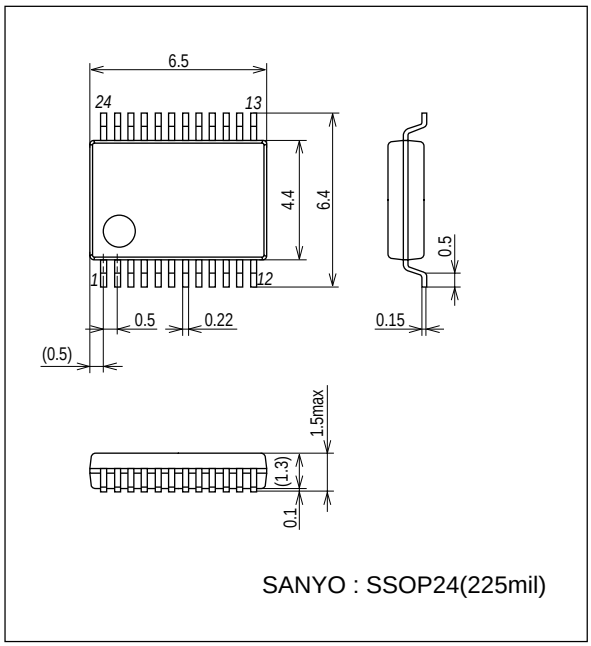
Parameter	Symbol	Conditions	Ratings	Unit
Recommended supply voltage	V_{CC}		5	V
Operation supply voltage	V_{CC} op		4.5 to 5.5	V

Electrical Characteristics at Ta = 25°C, V_{CC}=5V, S7, S9: Short

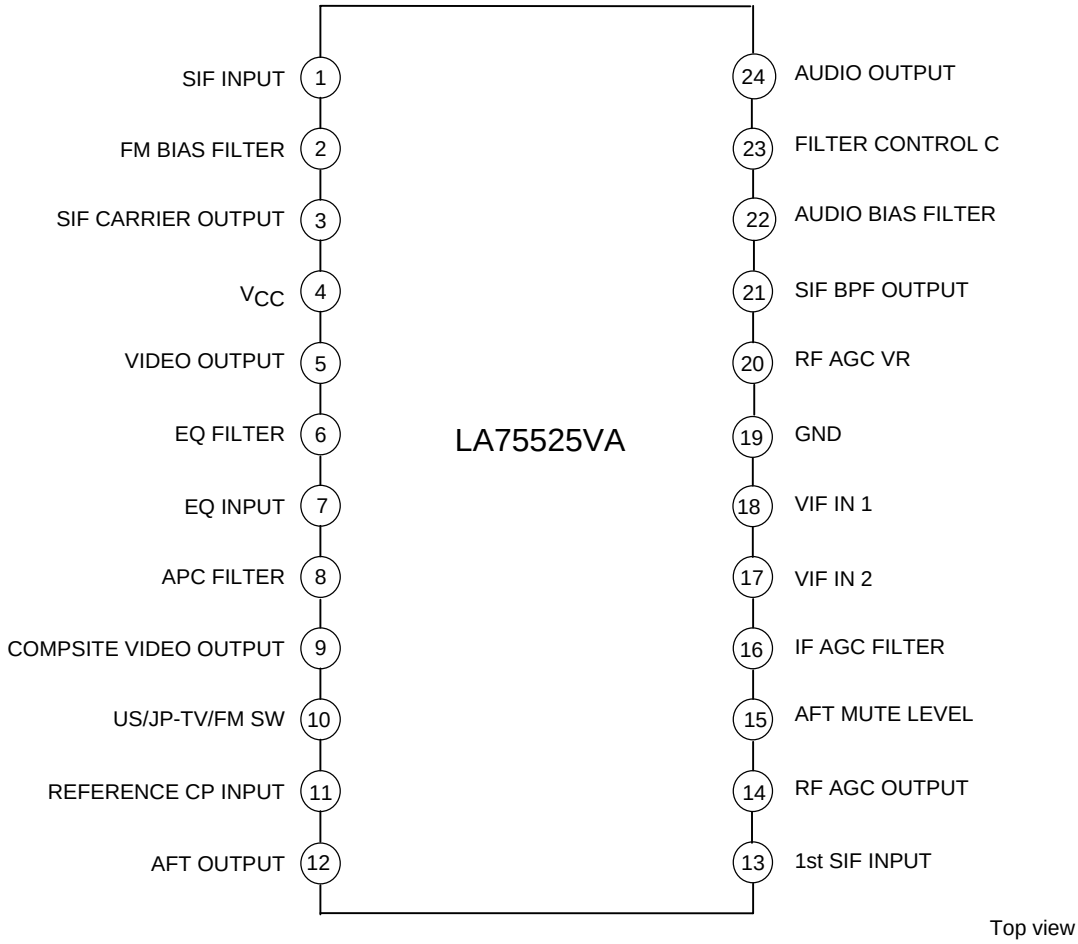
Parameter	Symbol	Conditions	Ratings			unit
			min	typ	max	
VIF Block						
Circuit current (external trap)	I4 (EXT)	External Trap	53	63	73	mA
Max RFAGC voltage	V_{14}H		V_{CC}-0.5	V_{CC}		V
Min RFAGC voltage	V_{14}L			0	0.5	V
Input sensitivity	Vi	Video out2	34	40	46	dBμV
AGC range	GR		58	63		dB
Max allowable input	Vi max		95	100		dBμV
Quiescent video output voltage	V_5		2.2	2.5	2.8	V
Sync signal edge voltage	V_5tip		0.8	1.0	1.2	V
Video output level	V_O	S7, S9: OPEN	1.1	1.3	1.5	Vp-p
Video output level (external trap)	V_Ot		0.89	1.05	1.21	Vp-p
Black noise threshold voltage	VBTH		0.40	0.65	0.90	V
Black noise clamp voltage	VBCL		1.2	1.5	1.8	V
Video S/N (external trap)	S/N (EXT)	External Trap	50	54		dB
C-S beat	ICS	P/C=P/S=10dB	38	43		dB
Frequency characteristics	Fc	6MHz	-3	-1.5		dB
Differential gain	DG			3	6.5	%
Differential phase	DP			3	5	deg
VIF input resistance	Ri			1.0		kΩ
VIF input capacity	Ci			3		pF
APC pull-in range (U)	Fpu		1.0	1.5		MHz
APC pull-in range (L)	Fpl			-2.0	-1.5	MHz
VCO1 maximum variable range (U)	Dfu		1.0	1.5		MHz
VCO1 maximum variable range (L)	Dfl			-2.0	-1.5	MHz
VCO control sensitivity	B		2	2.5	3	kHz/mV
1st SIF Block / 13Pin 41.25MHz input						
Conversion gain	VG	S=40dBμ	37	43	49	dB
SIF carrier output level	S_O	S=80dBμ	94	104	114	dBμV
SIF output gain	Gbpf	Reference to SIF input (Pin1)	0	3	6	dB
1st SIF max input	Si max		100	110		dBμV
1st SIF input resistance	Ri (SIF)	41.25MHz		2		kΩ
1st SIF input capacity	Ci (SIF)	41.25MHz		3		pF
SIF Block / 1Pin 4.5MHz input						
Limiting sensitivity	Vli (TV)		50	56	62	dBμV
FM detection output voltage	V_O (TV)	+/-25kHz	420	600	780	mVrms
AMR	AMRTV		50	60		dB
Distortion factor	THDTV			0.3	0.8	%
SIF S/N	S/NTV		59	65		dB
Control Block						
FM/TV threshold level in US	V_{10}usfmtv		0.7	1.0	1.3	V
US/JP changeover threshold	V_{10}usjp		2.2	2.5	2.8	V
FM/TV threshold level in JPN	V_{10}jpfmtv		3.7	4.0	4.3	V
Inter carrier control voltage	V_{13}				0.3	V

Package Dimensions

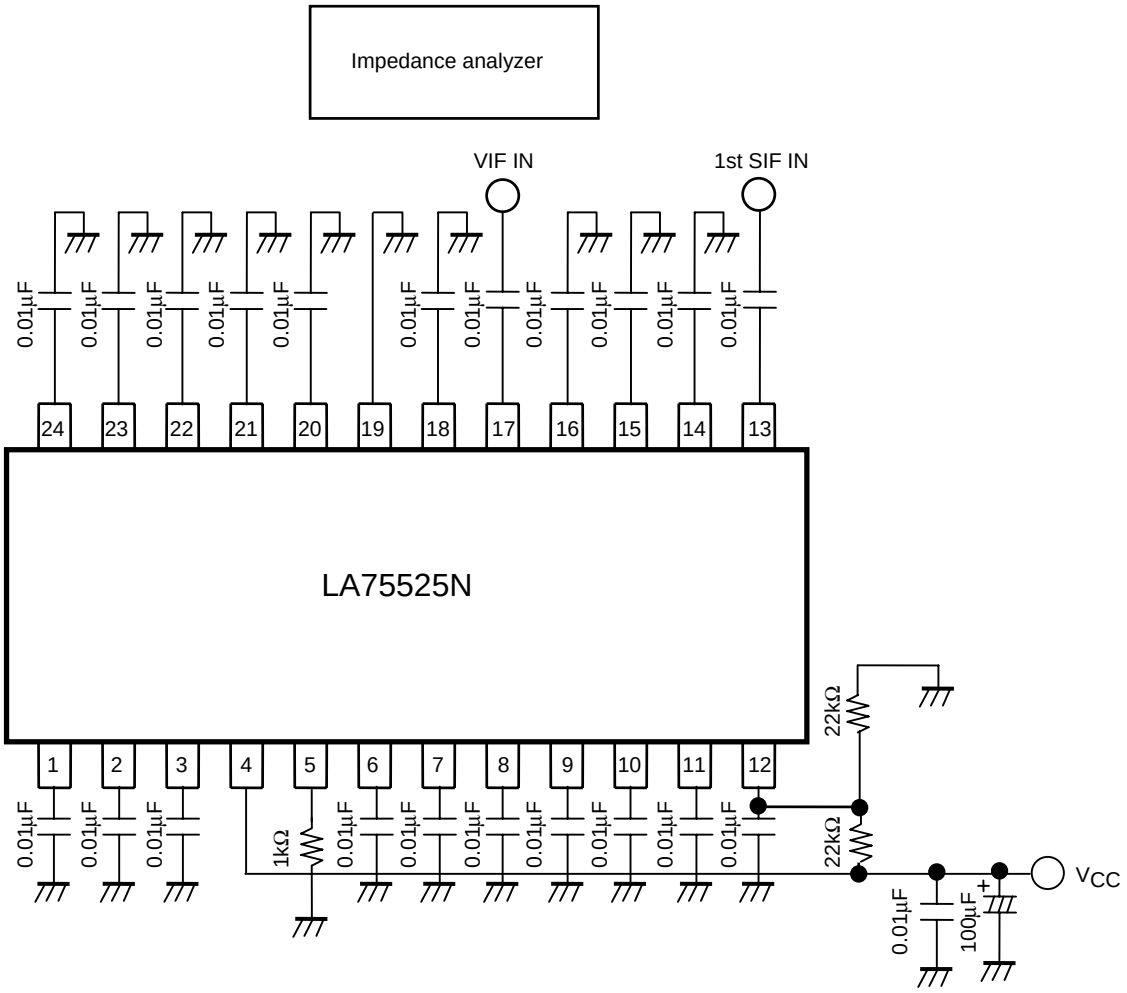
unit : mm (typ)
3287



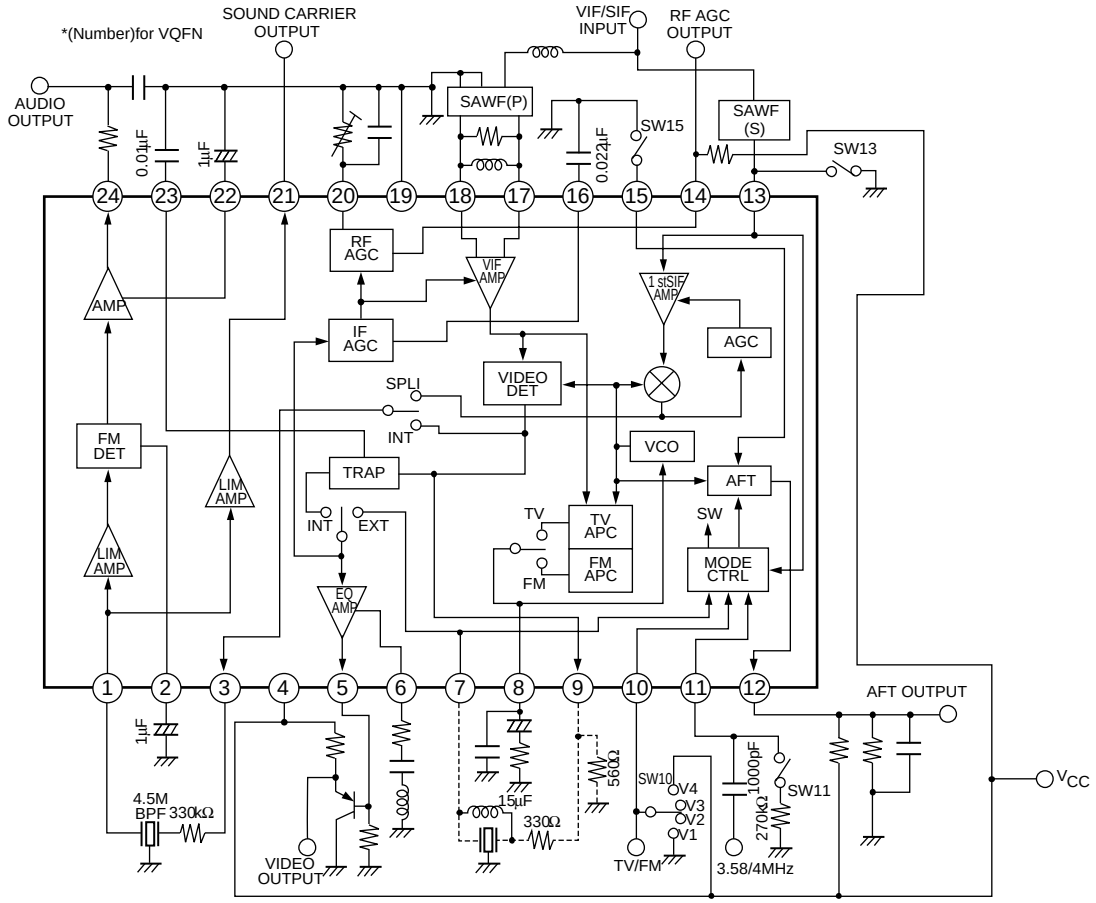
Pin Assignment



Input Impedance Test Circuit (VIF, 1st SIF input impedance)



Block Diagram



A: IF system SW

The IF frequency becomes 45.75MHz when pin 10 is open.

The IF frequency becomes 58.75MHz when pin 10 is set to V_{CC}.

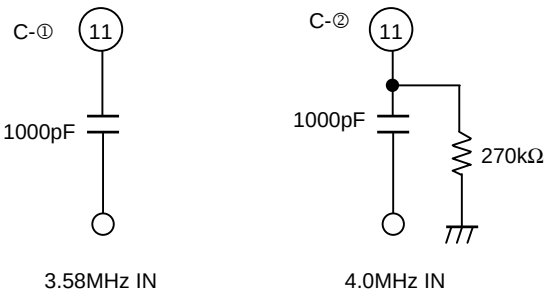
B: Split / Inter carrier SW

Inter-carrier is selected by setting the 1st SIF input (pin 13) to GND.

C: Reference frequency changeover SW

The reference frequency becomes 3.58MHz when pin 11 is set to "C-①."

This frequency becomes 4.0MHz when this pin is set to "C-②."



3.58MHz IN 4.0MHz IN