

Hyperband television tuners**KS-H-93**

FEATURES

- * Member of the KS-H-90 family VHF/Hyperband/UHF tuners
- * Systems CCIR: B/G, H, L/L', I/I' OIRT: D/K
- * Off-air channels, S-cable channels and Hyperband
- * Voltage synthesised tuning (VST)
- * Compact size
- * Comply to "CENELEC EN55020" and "EN55013"

MARKING

The following items of information are printed on a sticker that is on the top cover of the tuner or printed directly on the top cover:

- * Company logo
- * Type number
- * Year and month code
- * Quality inspection print

DESCRIPTION

The KS-H-93 tuners belong to the KS-H-90 family of tuners, which are designed to meet a wide range of applications. It is a combined VHF / Hyperband / UHF tuner suitable for CCIR systems B/G, H, L/L', or OIRT systems D/K. The low IF output impedance has been designed for direct drive of a wide variety of saw filters with sufficient suppression of triple transient.

The tuners comply with the requirements of radiation, signal handling capability and immunity conforming with:

- * CISPR 13 (1990) including amendment 1 (1992) and amendment 2 (1993)
- * European standards CENELEC EN55013, EN 55020

ORDERING INFORMATION

TYPE	SYSTEM	DESCRIPTION
KS-H-93 E	CCIR	symmetrical IF output; IEC connector (14.5 mm)
KS-H-93 O	OIRT	symmetrical IF output; IEC connector (14.5 mm)
KS-H-93 EL	CCIR	symmetrical IF output; IEC connector (32.2 mm)
KS-H-93 OL	OIRT	symmetrical IF output; IEC connector (32.2 mm)

Hyperband television tuners

KS-H-93

INTERMEDIATE FREQUENCIES

SIGNAL	FREQUENCY (MHz)	
	SYSTEM B/G, H	SYSTEM D/K
Picture carrier	38.90	38.00
Colour	34.47	33.594, 33.75
Sound	33.40	31.5

Note

1. The oscillator frequency is above the input signal frequency.

CHANNEL COVERAGE

TYPE	BAND	OFF-AIR CHANNELS		CABLE CHANNELS	
		CHANNELS	FREQUENCY RANGE (MHz)	CHANNELS	FREQUENCY RANGE (MHz)
KS-H-93 E	Low band	E2 to C	48.25 to 82.25 ⁽¹⁾	S01 to S10	69.25 to 168.25
	Mid band	E5 to E12	175.25 to 224.25	S11 to S41	231.25 to 463.25
	High band	E21 to E69	471.25 to 855.25 ⁽²⁾		
KS-H-93 O	Low band	1 to 5	49.75 to 93.25 ⁽¹⁾	SK1 to SK8	111.25 to 167.25
	Mid band	6 to 12	175.25 to 223.25	SK11 to SK40	231.25 to 463.25
	High band	21 to 69	471.25 to 855.25 ⁽²⁾		

Notes

1. Enough margin is available to tune down to 45.25 MHz.
2. Enough margin is available to tune up to 863.25 MHz.

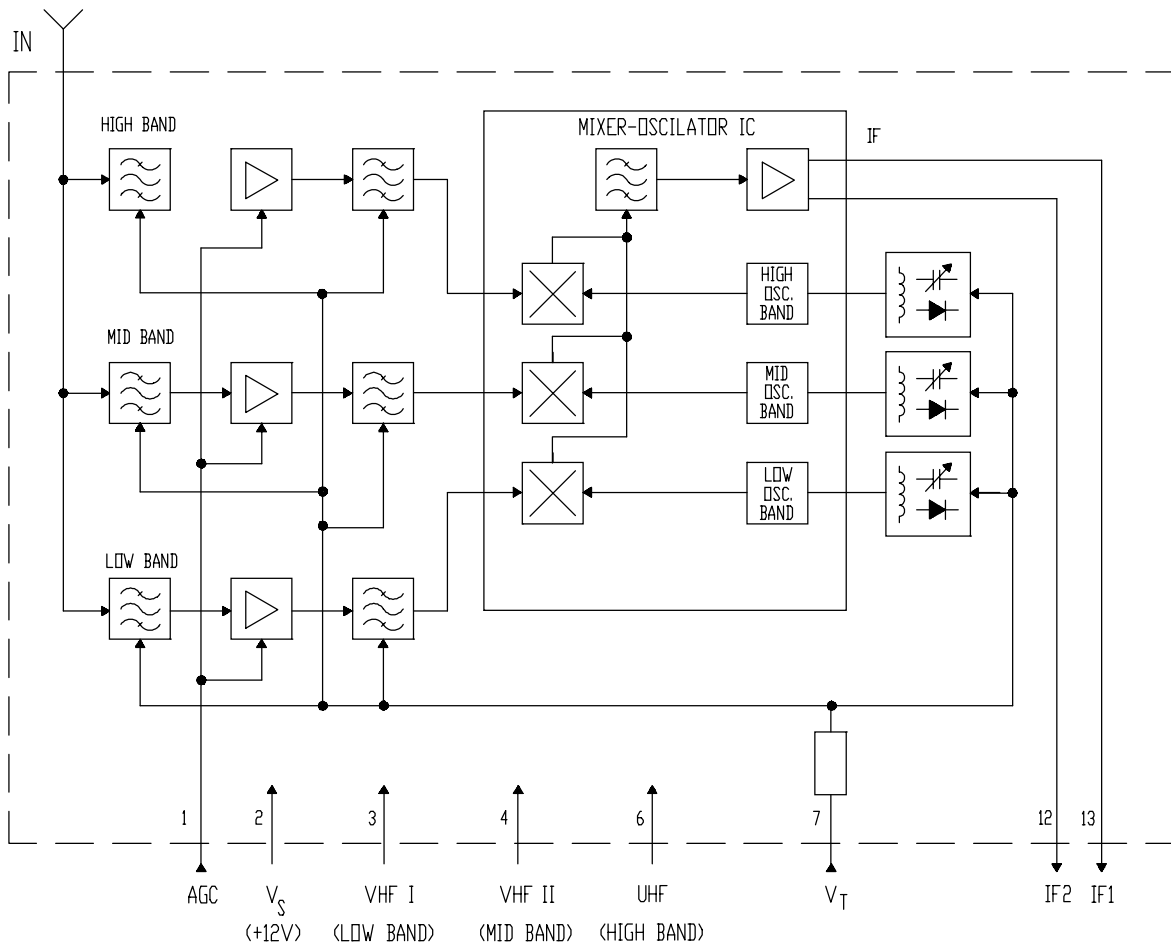


Fig.1 Electrical block diagram

Hyperband television tuners

KS-H-93

PINNING

SYMBOL	PIN	DESCRIPTION
AGC	1	gain control voltage
B+	2	supply voltage
+ 12 V	3	Low band switch
+ 12 V	4	Mid band switch
+ 12 V	6	High band switch
V _s	7	Tuning voltage 0.7 to 28 V
IF2	12	symmetrical IF output
IF1	13	symmetrical IF output
GND	MT1, MT2	mounting tags (ground)
	IN	aerial input connector IEC (14.5 mm for KS-H-93, 32.2 mm for KS-H-93 L)

LIMITING VALUES

Environmental conditions

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
Non-operational conditions					
T _{amb}	ambient temperature		-40	+60	°C
RH	relative humidity			85	%
Operational conditions					
T _{amb}	ambient temperature		+15	+60	°C
RH	relative humidity			93	%

Hyperband television tuners

KS-H-93

Limiting values under operational conditions

The tuner can be guaranteed to function properly under the following conditions.

SYMBOL	PARAMETER	PIN	MIN.	TYP.	MAX.	UNIT
V_S I_S	supply voltage supply current	2	11.4	12.0	12.6 65	V mA
V_{BS} I_{BS}	bandswitching voltage bandswitching current	3, 4 and 6	11.4	12.0	12.6 20	V mA
V_{AGC} ΔV_{AGC} I_{AGC}	AGC input voltage AGC input voltage range AGC input current	1	0.85	9.2	9.7 9.2 30	V V μ A

ELECTRICAL DATA

Conditional data

Unless otherwise specified, all electrical values for Chapter "Electrical data" apply at the following conditions and the electrical performance is related both to systems B,G,H and D,K.

A proper function is guaranteed within the specified operational conditions but a certain deterioration of performance parameters may occur at the limits of operational conditions.

SYMBOL	PARAMETER	VALUE	UNIT
T_{amb}	ambient temperature	25 +/- 5	$^{\circ}$ C
RH	relative humidity	60 +/- 15	%
V_S	supply voltage	12.0 +/- 0.1	V
V_{AGC}	AGC input voltage	9.2 +/- 0.1	V
V_T	tuning voltage	28 +/- 0.2	V
t_{pr}	pre-heating time (+5 V at pin 7)	10	minute
$Z_{S(AE)}$	aerial source impedance (unbalanced)	75	Ω

Aerial input characteristics

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
WSWR V_{ant}	reflection coefficient antenna connection disturbance voltage	referred to 75 Ω impedance < 1.75 GHz; comply to "EN55013 section 3.3"		4 46	dB μ V

Hyperband television tuners

KS-H-93

General characteristics

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
f_b	frequency range, KS-H-93 E: low band mid band high band KS-H-93 O: low band mid band high band		48.25 175.25 471.25	168.25 463.25 855.25	MHz MHz MHz
G_v	voltage gain: all channels gain taper		38	7	dB dB
F	noise: low band mid band high band			9 10 11	dB dB dB
ΔV_{AGC}	AGC input voltage range: low and mid band high band		40 30		dB dB
α_i	image rejection: low band mid band high band		70 66 53		dB dB dB
α_{IF}	IF rejection (picture) low and mid band high band		60 70		
Δf	oscillator drift Ambient temperature change low band mid band high band Supply voltage change low band mid and high bands	$\Delta T=25^{\circ}\text{C} \pm 2^{\circ}\text{C}$ (25°C to $50^{\circ}\text{C} \pm 2^{\circ}\text{C}$) $\pm 5\%$		± 500 ± 750 ± 1000 ± 250 ± 500	kHz kHz kHz kHz kHz

Visibility test

The tuners meet the requirements of the European norm "EN55020", when measured in an adequate television receiver.

Radiation

The tuners meet the requirements of the European norm "EN55013" and "CISPR13" (1990), when measured in an adequate television receiver.

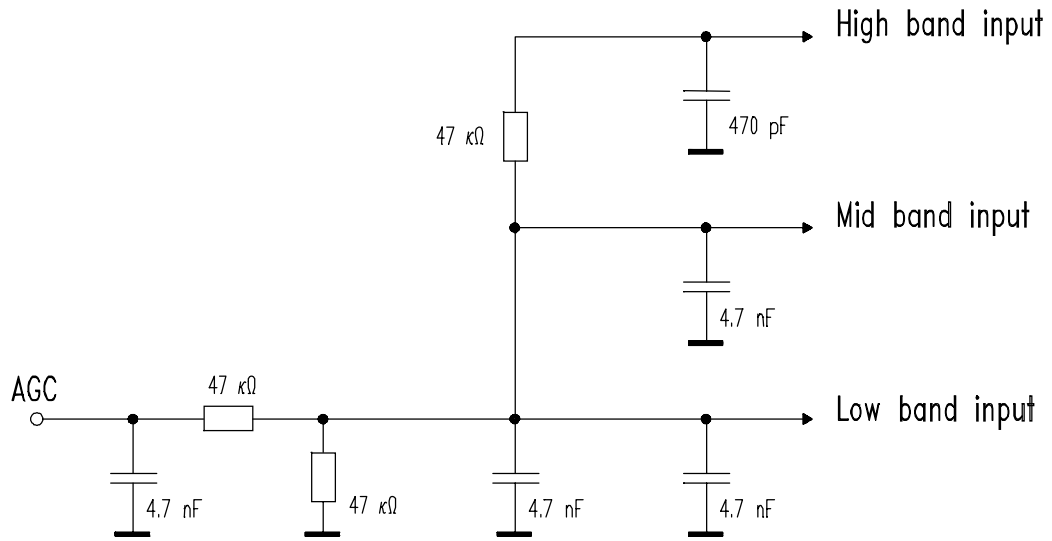


Fig.2 Internal AGC circuit.

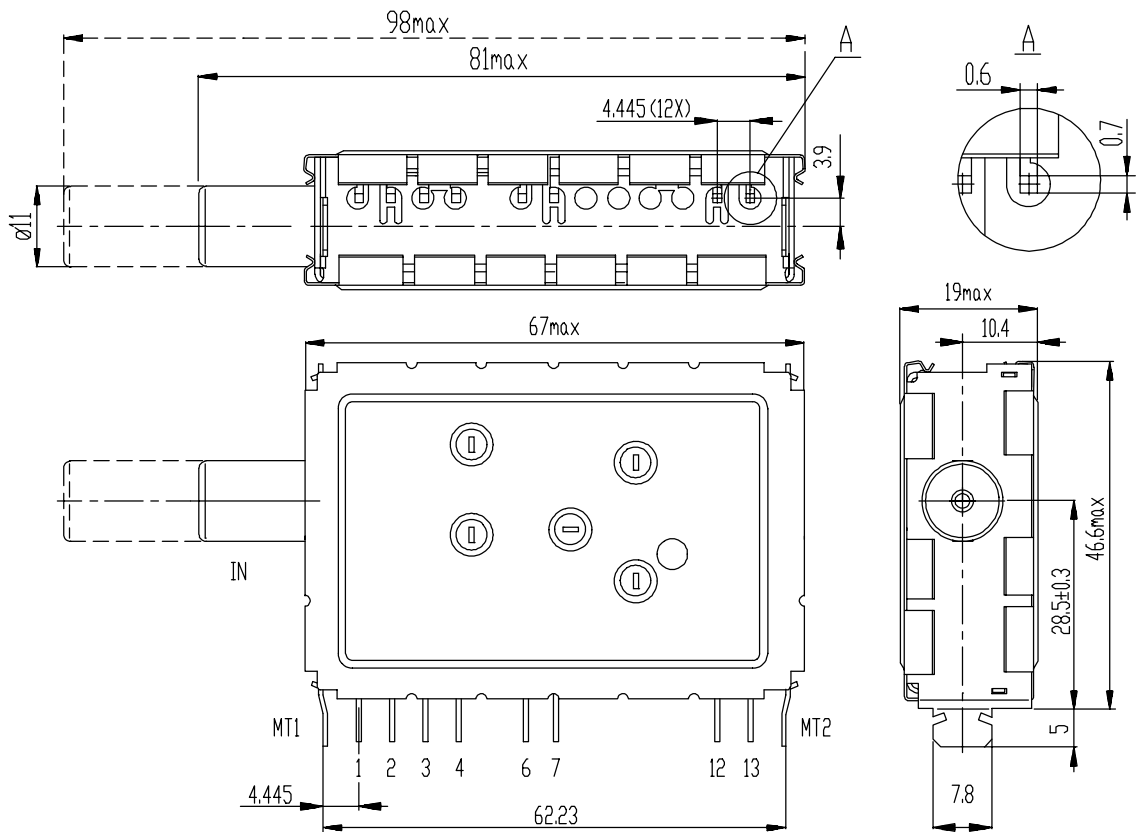


Fig.3 Mechanical outline

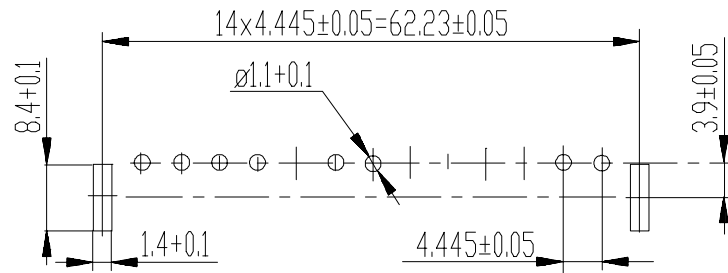


Fig.4 Punching pattern seen from solder side

Aerial connections

Standard IEC socket female 75 Ω .

LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Selteka customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Selteka for any damages resulting from such improper use or sale.