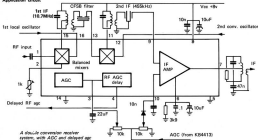


Two new communications ICs from TOKO KB4412 - two mixers/IF amp, KB4413 detector system

"Available" communications ICs are scarce things, but these devices offer much for the AM/SSB designer with most of the features programmable by external coupling and value devices. Supplied in plastic DIP

Application circuit

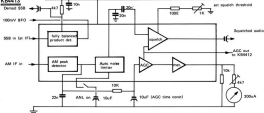


General

The KB4412 is a high performance communications system, utilizing two double balanced mixers for exceptional overload capability. The local oscillator injection levels are only 100mV at full gain.

The system is primarily designed for applications in CB case transceiver applications - although it is well suited to a large number of other communications applications in AM, FM and SSB modes. A complementary device, the KB4413, is available to perform all detection, noise limiting and squish functions, to provide a complete double conversion receiver system in just two main signal processing devices.

KB4413



General

The KB4413 is multifunction AM and SSB demodulator, AGC amplifier, noise driver, squashed ANL, and carrier operated squish.

The internal blocks are largely separately internally accessible, and programmable by values that may be chosen to suit the nature of the application. The KB4413 is ideally suited to applications in CB, private trans, broadcast and general communications receivers - and may be added to existing designs to provide extended functions (eg Freq) etc.

When used with the KB4412, the AGC voltage is directly composite, and with certain devices in the 11400 range. Since this AGC is positive going, a simple transistor inverter will be required to drive AGC for M80PFTs, although PN diode attenuation may be driven directly through carrier between buffers.

The product detector is designed in the form of a fully balanced mixer (as in the KB4412), and may be used to SSBs - making use of the KB4412 at higher IFs than the 455kHz described above. The AM input detector is suitable to use SSBs - the remainder of the functions being largely determined by DC characteristic only.

MAXIMUM RATINGS

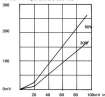
Supply voltage	16V	Operating voltage by DC				
Power dissipation	500mW	125-128 mW in package				
Operating temperature	-25° ~ +85°C	designed to operate under portable and mobile extremes				
Storage temperature	-55° ~ +125°C					
KB4412	symbol	min	typ	max	unit	conditions
Current drain	I _q	15	15	20	mA	no signal, 100 kHz at 25°C
Gain of 1st mixer	G ₁	15	20	dB		50kHz input, 10kHz p-p I/O at 10kHz
Gain of second mixer	G ₂	15	20	dB		110kHz input, 10kHz p-p I/O at 10.5MHz
IF amplifier gain	G ₃	50	60	dB		455kHz input, at full gain
40°C output for max. 0 dB AGC range	V _{AGC}	0.7	1.2	4.5	V	with most bipolar/MOSFET stages
KB4413						
Current drain	I _q	15	20	mA		no signal, 100 kHz at 25°C
AGC detector output	V _{AGC}	50	110	mV		100kHz input, 10% mod. (100mV) at 10kHz
Signal-to-noise ratio	T _{NO}	60		dB		110kHz input, 10% mod. (100mV) at 10kHz
Product detector output	V _{pd}	0.5V	1.0V	200mV		110kHz input, 10% mod. (100mV) at 10kHz
			200	1000	mV	500kHz input span 10V, 100kHz into pin 9

The above detector outputs applicable from 100kHz to 50MHz min.



KB4413 Characteristics

AGC out = IF input 30% and 50% mod :



Relative detector output (50k load) 100mV

