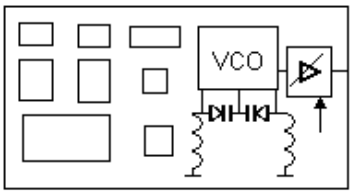
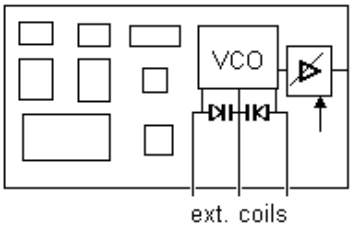
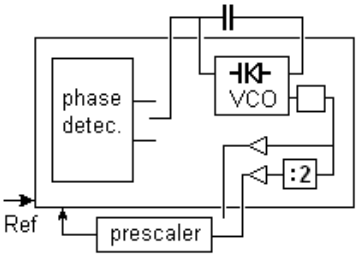
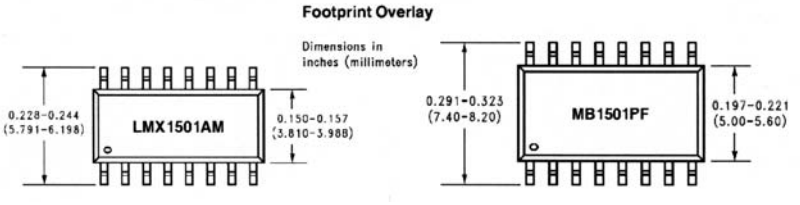
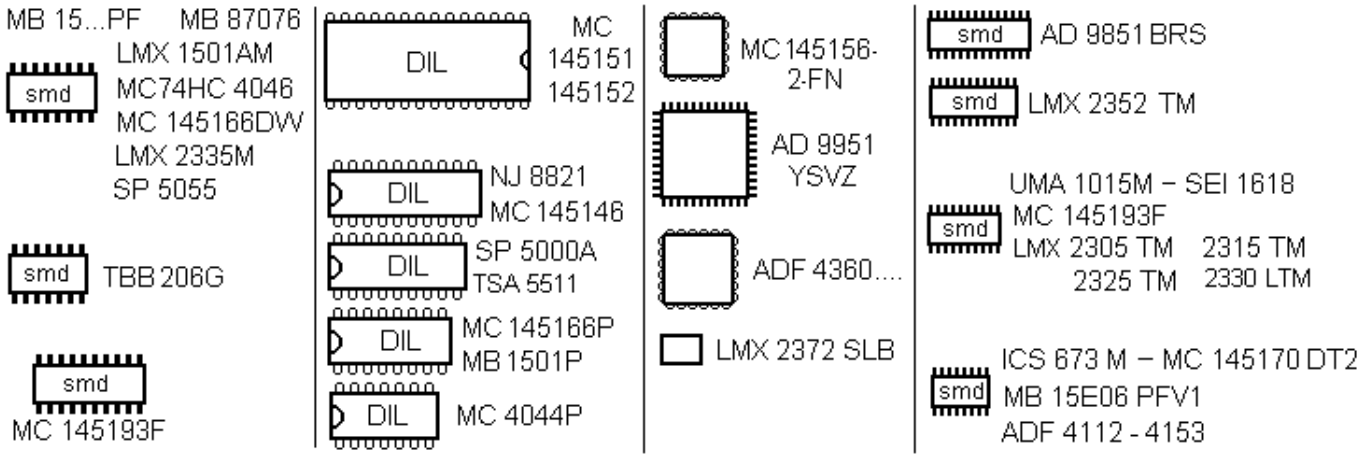
		cod.	price € each 1 - 10 pcs
DDS , similar and compatible with 9850 but with the advantage to have the X6 multiplier of the clock frequency (max 180 MHz) so the reference can be only 30MHz		**AD 9851 BRS**	28,50
DDS , it is a more improved version either in frequency and spectral purity, max clock 400 MHz , X4 ~ X20 clock frequency multiplier		**AD 9951 YSVZ**	30,00
ADF 4112 BRU Analog Devices, RF input up to 3 GHz , with double module prescaler, division 32-33 , 3 wires serial input, low phase noise		**ADF 4112**	4,70
ADF 4153 BRUZ Analog Devices , RF input up to 4 GHz , with fractional prescaler, 3 wires serial interface, pin compatible with ADF 4106, 4110, 4111 , 4112 , 4113		**ADF 4153**	4,40 - 3,90
internal VCO 	ADF 4360-3BCP Analog Devices, with double module, division 8-9 - 16-17 - 32-33 , with internal 1600 - 1950 MHz VCO, (in addition it has an internal X2 divider that if it is enabled it can bring the output to 800 - 975 MHz), due to a narrow band all VCO components are already inserted, the VCO RF output is programmable by steps of 3dB, 3 wires serial interface	**ADF 4360-3**	3,80 - 3,30
internal VCO 	ADF 4360-7BCPZ Analog Devices , with double module prescaler, division 8-9 and 16-17 , with internal 350 - 1800 MHz VCO (in addition it has an internal divider that if it is enabled can bring the output from 175 to 900 MHz), it has to be added 2 external inductances for the VCO to reach the desired frequency, the VCO RF output is programmable by steps of 3dB, 3 wires serial interface	**ADF 4360-7**	3,40 - 2,80
internal VCO 	ICS 673M-01 from IDT former ICS, it is a very particular PLL suitable also for clock generation and synchronization, up to 150 MHz typical, for operation are necessary few external components in fact it includes: -- one phase detector and all the necessary components for a complete PLL circuit -- one VCO with varicap diode -- two buffers for RF outputs -- one x2 divider inserted on one of the 2 outputs so connecting only a clock and a divider a full synthesizer is already done, the VCO operates from 2 to 135 MHz	**ICS 673M**	3,70 - 3,30
SMD version see below		**LMX 1501 AN**	
RF input up to 550 MHz with double module prescaler, division 64-65 / 128-129, 3 wires serial input (Data-En-Clock) particulary suitable for low consumption applications with only 4mA, TSSOP SMD 20 pins miniature case		**LMX 2305 TM** Nat	1-4 pcs 2,50 5 - 10 pcs 2,20 11-25 pcs 1,90 26-100pcs1,60
RF input up to 1.2 GHz with double module prescaler, division 64-65 / 128-129, 3 wires serial input (Data-En-Clock) particulary suitable for low consumption applications with only 6mA, TSSOP SMD 20 pins miniature case		**LMX 2315 TM** Nat	1-4 pcs 2,80 5 - 10 pcs 2,50 11-25 pcs 2,20 26-100pcs1,90
RF input up to 1.2 GHz with double module prescaler, division 32-33 / 64-65, 3 wires serial input (Data-En-Clock) particulary suitable for low consumption applications with only 11 mA, TSSOP SMD 20 pins miniature case		**LMX 2325 TM** Nat	4,30 - 3,90
double synthesizer, one with RF input up to 2.5 GHz, the other up to 510 MHz with double module prescaler, division 32-33 / 64-65 , 3 wires serial input (Data-En-Clock). The double synthesizer is often used as first LO at 2.5 GHz and LO for the second IF for the second 510 MHz PLL, TSSOP SMD 20 pins miniature case		**LMX 2330 LTM** Nat	1-4 pcs 3,00 5 - 10 pcs 2,70 11-25 pcs 2,40 26-100pcs2,10

		cod.	price € each 1 - 10 pcs
double synthesizer, both with RF input up to 1.1 GHz , with double module prescaler, division 64-65 / 128-129 , 3 wires serial input (Data-En-Clock) . The double synthesizer is often used as first LO and LO for the second IF for the second PLL, So16 SMD case		**LMX 2335 M** Nat	1-4 pcs 2,70 5-10 pcs 2,40 11-25 pcs 2,10 26-100pcs 1,80
double synthesizer, one with RF input up to 1.2 GHz , the other up to 500 MHz with double module prescaler, 3 wires serial input (Data-Le-Clock) , TSSOP SMD 24 pins		**LMX 2352 TM** Nat	6,00
double synthesizer, both with RF input up to 1.2 GHz, with double module prescaler division 16-17 / 8-9, 3 wires serial input (Data-En-Clock). The double synthesizer is often used as first LO and LO for the second IF for the second PLL, particulary suitable for low consumption applications with only 4 mA, CSP SMD 24 pins miniature case		**LMX 2372 SLB** Nat	1-4 pcs 2,20 5-10 pcs 2,00 11-25 pcs 1,80 26-100pcs 1,60
double module (div 64-65-128-129) prescaler up to 1.1GHz serial input (Data-Le-Clock) oscillator up to 20 MHz	 **MB 1501 and LMX 1501 are similar, only a little difference in the footprint**	**MB 1501 PF** Fuji	1 - 4 pcs 3,50 5 - 10 pcs 3,20 11-25 pcs 2,90 26-100pcs 2,60
		LMX 1501AM Nat	1-4 pcs 3,70 5-10 pcs 3,40 11-25 pcs 3,20
double module (div 64-65-128-129) prescaler up to 1.1GHz serial input (Data-Le-Clock) oscillator up to 20 MHz		**MB 1502 PF** Fuji	1 - 4 pcs 3,60 5 - 10 pcs 3,35 11-25 pcs 3,00
SSOP16 SMD case, RF input up to 2.5 GHz (max 3 GHz) , with double module prescaler, division 64-65 / 128-128, serial input		**MB 15E06PFV1**	5,30
SMD, double module prescaler up to 2 GHz (128 - 129 - 256 - 257), 3 wires serial input (Data-Le-Clock) and oscillator up to 20 MHz		**MB 1507 PF** Fuji	3,90 - 3,50
SMD, 3 wires serial input (Data-Le-Clock)		**MB 87076** Fuji	3,20 - 2,90
SMD IC made of a VCO and a PLL up to 15-20MHz it is an improved version of old types 4046 or MC14046, if a prescaler comes before, for example a U893, it becomes a good PLL for 1 GHz and above syntesizers, very good also for FSK or as FM discriminator in IFs		**MC74HC 4046ADR** (MC 14046) (HEF4046)	1,00 - 0,80
programmable to 4 bit , DIL		**MC 145146** Mot	5,80 - 5,20
single module parallel input, max input 20 MHz		**MC 145151** Mot	5,90 - 5,50
doble module parallel input, max input 20 MHz		**MC 145152** Mot	7,80
PLCC SMD case, serial type and interface also for double module prescaler, it is the improved and pin compatible version of type "-1"		**MC145156-2FN** Mot	1-4 pcs 2,90 5-10 pcs 2,60 11-25 pcs 2,30 26-100pcs 2,00
parallel input, double PLL for full-duplex applications example simultaneous cordless Tx Rx etc.., max input frequency 60 MHz, it has a bus for 10 frequecy couples, from 3 to 5 V low consumption 3 mA power supply	DIL	**MC 145166P** Mot	4,00
	SMD	**MC 145166DW**	4,00
TSSOP-16 SMD case, improved version of type "-1", max input 100 or 185 MHz serial input, very wide band from few Hertz to VHF (Motorola AN1207)		**MC145170-DT2** finishing	4,50
SMD, double module prescaler up to 1.1 GHz, serial input SPI compatible		**MC 145193 F** Mot	3,90
DIL		**MC 4044 P** Mot	5,00
DIL		**NJ 8821** Ples	5,50

continue

	cod.	price € each 1 - 10 pcs
SEI 1618 PG Sciteq, with fractional prescaler from 1 to 64	**SEI 1618**	3,30 - 2,90
serial with prescaler 40 - 1300 MHz , 10 mV sensitivity, DIL	**SP 5000A** Ples	5,00
great success PLL and largely used in TV field consumer and professional, SMD case, with prescaler from 120 MHz to 2,6 GHz max 3 GHz , standard input format I^2C, low consumption 65mA at +5V, this is the original Plessey version with better performances than Philips TSA 5055	**SP 5055** Plessey (=TSA 5055) Ph	3,90 - 3,50
SMD Siemens, double module 3 wires serial, input frequency 0.1 - 90MHz with single module or 0.1 - 30 MHz with double module, reference frequency max 30 MHz , reference prescaler from 3 to 65.535, RF frequency divider from 3 to 4.095 or from 0 to 127 if double module	**TBB 206G**	1-4 pcs 2,50 5-10 pcs 2,20 11-25 pcs 1,90 26-100pcs1,60
see Plessey SP 5055	**TSA 5055** Ph	--
standard input format I^2C , internal prescaler up to 1.3 GHz, DIL case	**TSA 5511** Ph (= SDA 3202)	2,50
SMD miniature, double synthesizer both up to 1.1 GHz, 3 wires serial input	**UMA 1015 M** Ph	5,00



WARNINGS AND ADVICES FOR PRESCALER REPLACEMENTS

Very often we have request on the possibility to replace some obsolete or hard to find prescalers, this need is felt by the repairers of equipments such as instruments, measurement receivers, or other professional equipment in general, but also by those who want to make a circuit with obsolete components.

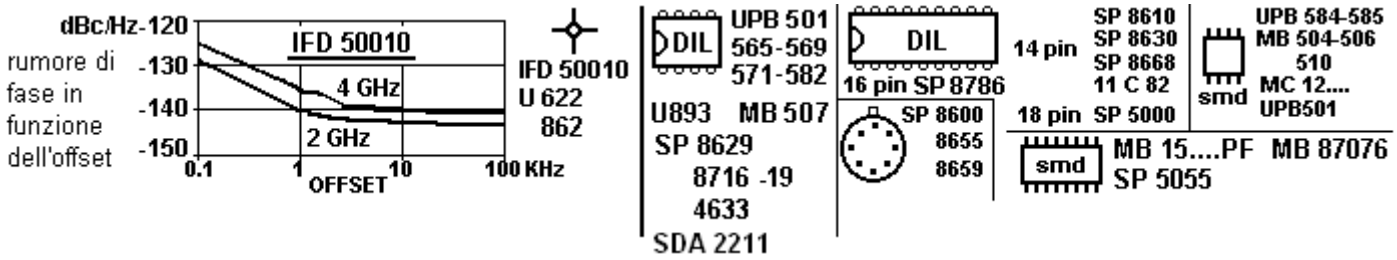
For this reason we listed the following simple advices (some simple suggestions on how to behave) because a prescaler can be used as replacements but sometimes is not known.
Who is in this need please read these advices before contact us, making sure that a prescaler is available and if it can replace the one you want.

-- Some prescalers may result exactly the same but they can differ, for example, in power supply eg. 3.5V instead of 5 V, so a simple modification in power supply is enough.
-- Other types may have some missing division factors, so the replacements is possible only if the missing factors are not used eg. MB 506 (div. 64-128-256), can be replaced by MC12032 (div. 64-65-128-129) electrically very similar but the 256 division is not usable.
-- Some other prescalers unlike the case above, have only one division factor, so they can be safely replaced with a type that has more than one division factor even though it will be used only one, in this case it will be only enough to set the switching pins of the division factor on the desired division value (see SP 4633 replaced by U 893).
-- Others may have lower frequency, in this case only the customer can evaluate the possible replacement.
-- Some other may have the same performances and same divisions but they are not pin compatible with a differet case than the original type, in this case the changes concern the p.c. board tracks.

Dividers and Prescalers up to 14 GHz

DIVISION	FREQUENCY		cod.	price € each
4	0.7 - 5 (6) GHz	static type, 10V power supply, hermetic ceramic case	**UPG 501 B** Nec	38,00
8	8 - 14 GHz	dynamic type, Phase noise - 140dBc/Hz offset 10 KHz	**UPG 506 B** Nec	47,00
4	50 MHz - 5 GHz	static type low phase noise -140dBc/Hz offset 1KHz hermetic HI-REL gold plated ceramic case -55 / +125°C sensitivity from -30 to - 10 dBm	**IFD 50010** hp-Avantek	41,00
8	2 - 6.5 (7) GHz	ceramic case, temperature range -55 / +85 °C , out +4dBm with input +5 dBm see article on Dubus 2 – 93	**FMM 106HG** Fuji	37,00
8	2 - 10 GHz 1 - 12 GHz at -3dB		**FMM 110HG** Fuji	63,00

The pictures below are referred to prescalers on this page and the following page



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Dividers and Prescalers up to 3 GHz

division factor	frequency specific	frequency max		cod.	price € 1 - 10 pcs
64-65-128-129	1.1 GHz		double module see MC12022 pin compatible	**MB 501 L** smd	not available
32 - 33 - 64 - 65	520MHz		SMD double module, LV = low consumption 6 mA	**MB 504 LV** Fuji	3,70
128-129-256-257	1.6 GHz	1.8 GHz	DIL double module	**MB 507 P** Fuji	on request
64 - 128 - 256	2.4 GHz		SMD, pin compatible and replaceable with MC12032A if not interested in 256 division	**MB 506**	not available
128-144-256-272	2.5 GHz		quite pin compatible with MC12022	**MB 510** Fuji	
4	1 GHz		DIL, see UPB565C not pin compatible	**MC 1697** Mot	
40 - 41	225MHz	300MHz	SMD double module, low consumption 8 mA	**MC 12016 D** Mot	1-4 pcs 2,20 5 - 10pcs 1,90 11-25pcs 1,70
128 - 129	520MHz		SMD double module, low consumption 8 mA	**MC 12018 D** Mot	4,50
20 - 21	225MHz	300MHz	SMD double module, low consumption 8 mA	**MC 12019 D** Mot	1-4 pcs 2,40 5 -10pcs 2,10 11-25pcs 1,90
64-65-128-129	1.1 GHz	1.3 GHz	SMD double module, low consumption 4 mA	**MC 12022 SLBD**	3,30 - 2,90
8 - 9 - 16 - 17	1.2 GHz	1.5 GHz	SMD double module, low consumption 4 mA	**MC 12026AD** Mot	2,90 - 2,60
32 - 33 - 64 - 65	2.3 GHz	2.5 GHz	SMD double module	**MC 12034AD** Mot	4,50
2	1.2 GHz	1.4 GHz	SMD with stand-by feature, low consumption 5 mA	**MC 12083 D** Mot	1-4 pcs 2,20 5 -10pcs 1,90 11-25pcs 1,70
64	1.3 GHz	1.5 GHz	very wide band 50 - 1300 MHz	**SDA 2211** Siem	3,00
64	1 GHz	1.3 GHz	6 pins DIL	**SO 436** Siem	3,00
64	1 GHz	1.2 GHz	DIL, not self oscillating, with internal high sensitivity preamplifier 1.5 - 3 mV typical	**SP 4633** Ples	3,80 - 3,50
64 - 256	1.3 GHz		DIL, see U 893 or SP4633	**SP 4666** Ples	not available
4	250MHz	300MHz	metallic case	**SP 8600 D** Ples	8,50
4	1 GHz	1.1 GHz		**SP 8610 B** Ples	7,00
10	600MHz	700MHz	range -55 +125°C	**SP 8630 A** Ples	on request
32	200MHz	250MHz	HI-REL metallic case (-30 +70 °C)	**SP 8655 B** Ples	8,00
16	200MHz	250MHz	HI-REL metallic case (-30 +70 °C)	**SP 8659 BCM** Ples	special offer 5,00
10	1.5 GHz	1.6GHz		**SP 8668 B** Ples	su rich
10 - 11	200MHz	250MHz	pin compatible and quite replaceable with SP8695	**SP 8690 A or B**	not available
	200MHz	250MHz	range -30 + 70 °C, min freq. 2 MHz, dc - ac coupler	**SP 8695 B** Ples	18,00
	200MHz	250MHz	like SP 8695B but with -55 / +125°C range	**SP 8695 A** Ples	22,00
40 - 41	520MHz			**SP 8716** Ples	8,00
64 - 65	520MHz		replaceable with UPB569 or 571 but with 2 different pins	**SP 8718** Ples	not available
80 - 81	520MHz		double module	**SP 8719** Ples	7,00
40 - 41	225 MHz		quite pin compatible with SP 8716	**SP 8793** Ples	not available
220	2 GHz	2.4 GHz	50 - 80 mV sensitivity, 300 mV RMS output, +5 V	**U 622 - special**	2,50 - 2,30
64	1 GHz		replaceable with U 893 using only x64 division	**U 664**	see U 893
256	1 GHz		replaceable with U 893 using only x256 division	**U 666 B**	see U 893
			replaceable with U 893 100% pin compatible	**U 813 BS**	see U 893
2	2.4 GHz	2.5 GHz	compatible with U622 and 822	**U 862 BS** Tfk (U622 - U822)	3,00 - 2,80
64-128-256	1.3 GHz	1.5 GHz	high sensitivity 10mV 70 to 1.100 MHz , 20 mV at 1.3 GHz pin compatible with U626-664-666-891-833 and similar to U810-11 , +5V, 8 pin DIL case	**U 893 BSE** Tfk (= U 664)	3,10 - 2,80
2 - 4 - 8 - 64	1 GHz	1.1 GHz	DIL, 60 mV sensitivity, RF output 600 mV	**UPB 565 C** Nec	4,50
32 - 33 / 64 - 65	500MHz		double module, 3 to 5.5 V power supply	**UPB 569 C** Nec	2,20
16-17-32-33-64-65	500 M	600MHz	DIL, double module	**UPB 571 C** Nec	3,20 - 2,90
2	2.5 GHz	3 GHz	SMD, +5 V power supply	**UPB 584 G** Nec	on request
4	2.2 GHz	2.7 GHz	DIL	**UPB 582 C** Nec	on request
				UPB 585 B Nec	
	2.5 GHz	3 GHz	SMD	**UPB 585 G** Nec	5,50 - 5,10
			SMD, quite replaceable with MC 12032	**UPB 1502 GR**	not available
			SMD, quite replaceable with MC 12022	**UPB 1504 GR**	
				UPB 1508 GV	
4	1.1 GHz			**11C05DC** Fair	9,00
	750MHz		special case gold plated ceramic thick film microchip	**11C06**	on request
248 - 256	1 GHz			**11C82** (= 11C83)	7,50
			similar to SP 8695B but not pin compatible	**95H90**	not available

Transmitters, receivers, IF amplifiers, single or double conversion complete audio or video demodulation. They are suitable for the classic conversion of AM-SSB receivers - narrow FM band, wide and very wide FM band, TVSAT and for FSK data transmissions. Due to their characteristics they are used in instrumentation, IF for microwave conversion and microwave radio links, video, etc...

	cod.	price € 1 - 10 pcs
2 channels double amplifier, variable gain -10 dB / +30 dB and independent for each channel, group delay ± 2 nS, single power supply +5V, for IF applications, high audio and video performances, dc- 35 MHz bandwidth at -3dB, low noise 1.4 nV / √Hz , SMD 16 pins case	**AD 602 JR** 	23,00
professional low noise amplifier, mainly used when a precise IF variable attenuation system is needed, for use in RF and IF with AGC, it contains a complete set of resistive attenuators with a range of 42 dB, the variable gain can be regulated (for example with 90 MHz bandwidth) from -11dBG to +31dBG, it is suitable both for professional receivers and measurement intruments, attenuator precision ± 0.5 dB , low noise 1.3 nV / √Hz, IF applications, audio and video , SMD So8 case. On VHF Communications magazine 3-2007 is reported a very exaustive explanation about how a IF circuit works with 80 dB of dynamic range and AGC.	**AD 603 AR** 	1-4 pcs 7,30 € 5-9 pcs 6,90 € 10+ pcs 6,30 €
famous Motorola IC often used in AM , SSB , TV, etc.. receivers as IF amplifier from 455 KHz to 60 MHz, very good for AGC control up to and above 60 dB of dynamic range, high gain 62dB at 455 KHz and 48 dB at 58 MHz, it is easy to use with few external components, DIL 8 pin case	**MC 1350P** 	4,70
it can be replaced by MC 3359 (that is the improved version with a limiter stage in addition) but it is not pin compatible	**MC 3357**	---
1° and 2° IF amplifier, 10.7 or 45 MHz input, 2 µV sensitivity, second conversion mixer, second IF LO, second IF amplifier eg. 455KHz , NBFM , quadrature discriminator, similar to MC3357, improved version with a limiter stage in addition but not pin compatible, AFC output, etc...	**MC 3359 DW** 	2,70 - 2,30
this IC is slightly different from the others because it can be used as typical IF amplifier + demodulator for VHF-UHF receivers (making the 1st and the 2nd IF) and also as complete receivers up to about 75MHz due to its sensitivity (0,6 µV typical). The demodulation is followed by a double buffer, one for audio and the other for data FSK comparator included, it is suitable also for low consumption and low volatage usage, the same of MC3374 but not pin compatible, SMD 28 pins case	**MC 3367 DW** 	3,20 - 2,90
see MC 3372D	**MC 3371**	---
typical input 10,7 or 45 MHz, second conversion mixer, second IF OL, second IF amplifier (tipico 455 KHz), NBFM quadrature discriminator, SQL, it has also the RSSI output > 60 dB more than MC3361 and 3357 (see RSSI graph), low consumption only 4 mA. Similar to MC3371 but instead it can use the LC and ceramic discriminator (see our discriminator code DFM-455-B), SMD 16 pins case	**MC 3372 D** 	2,90 - 2,50

It is possible to use the RSSI circuit available in the MC 3372D as a very good logaritmic indicator for field measurements etc..., see below the response curve provided by Motorola

MC 3372 RSSI circuit linearity

FIGURE 13 — RSSI OUTPUT versus RF INPUT

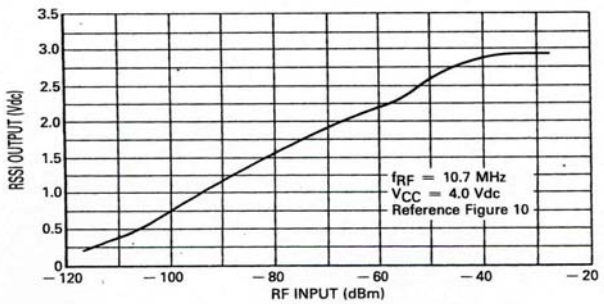
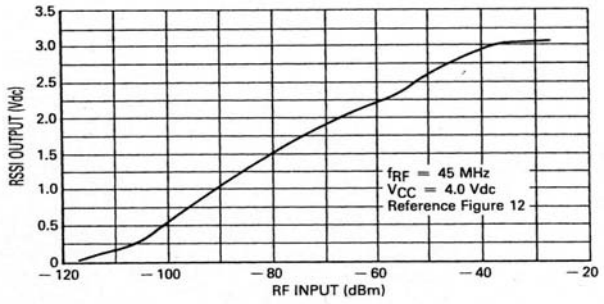
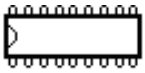
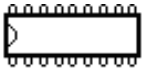


FIGURE 14 — RSSI OUTPUT versus RF INPUT



MOTOROLA COMMUNICATIONS DEVICE DATA MC3371•MC3372

continue

		cod.	price € each
similar to MC 3367 but not pin compatible		**MC 3374**	---
SMD 16 pins case, I.F. amplifier and demodulator up to 300 MHz, FSK demodulator up to 10 Mbit/s with 12 MHz max. band, it is often used in microwave radio base stations as demodulator in I.F.s at 70 or 140 MHz for data TX, 46 dBG RSSI indicator circuit with a precise dynamic of 35 dB and variation of 2.1 µA / dB, I.F. limiter circuit and FM demodulator. In radio base stations 2 cascaded circuits configuration is used to improve the I.F. amplification and the the RSSI dynamic range up to 70dB and on the entire band up to 300 MHz.		**MC 13155 D** 	3,50 - 2,90
high performances IF with amplifier without any conversion, so it is the last IF for example at 455KHz or up to 25 MHz with the audio demodulator, it is complete with a high gain amplifier, muted and not muted double audio output, very good temperature compensated logarithmic RSSI amplifier with dynamic in excess of 90 dB, double IF limiter stage, it is suitable also for instrumentation.		**SA 604 AD** 	5,50
Direct front-end up to 150 MHz or complete IF with input up to 150 MHz and 2 MHz max. BW, so it is suitable for medium-narrow bandwidth, first IF with sensitivity 0,31µV, conversion mixel and LO, second IF amplifier (eg 455 KHz) limiter and temperature compensated logarithmic RSSI amplifier with 90 dB dynamic, 102 dB of IF amp - limiter gain, audio preamplifier output, suggested also for low power applications with only 3.5 mA at 3V		**SA 606 DK** 	4,50
Direct front-end up to 150 MHz or complete IF with input up to 150 MHz and 2 MHz max. BW, so it is suitable for medium-narrow bandwidth, first IF with sensitivity 0,31µV, conversion mixel and LO, second IF amplifier (eg 455 KHz) limiter and temperature compensated logarithmic RSSI amplifier with 80 dB dynamic, 102 dB of IF amp - limiter gain, audio preamplifier output, suggested also for low power applications with only 3.5 mA at 3V		**SA 616 DK** 	1-4 pcs 3,00 € 5-10 pcs 2,70 €
Suitable for medium-wide bandwidth up to 25 MHz as FM broad band or RX, FSK data etc..., it is used as classic double conversion IF up to 500 MHz: -- 25 MHz wideband IF -- Vcc 2.7 - 5.5V low absorpition 8.6 mA -- First IF input and LO up to 500 MHz with 92 dBG -- Very fast logarithmic typical 2 µS with 80 of dynamic and ±1.5 dB -- Sensitivity 2,2 µV at 110 MHz -- Quadrature demodulator and post-detector amplifier stage, it is usable for example as low pass filter (post-detector filter) -- Power down pin to limit stand-by consumption to only 150µA Due to the input up to 500 MHz and the good sensitivity it can be also used directly as RX or even better with a LNA preamplifier at the input, SMD 24 pins case		**SA 639 DH** (Philips) 	1-4 pcs 2,70 € 5-10 pcs 2,50 € 11-25 pcs 2,20 € 26-100pcs 1,90 €
round metallic case, audio RX amplifier typically for earphones or for TX microphone, up to 250 mW output, balanced and unbalaced input, 100 dBG, the audio gain function with 100dB regulation can work also as AGC, range -55/+125°C		**SL 630 C** 	3,80
These Plessey ICs are considered the best IF amplifiers for SSB or CW receivers, they have the following characteristics: **high AGC dynamic** , 50dB , it means that the gain can vary from +26dB to -24dB, it can even become an attenuator. **low cross-modulation** = 1% with 250mV input (AGC all included) **low noise** = 4 dBNF **temperature**, wide thermal range for professional usage, MIL specs SL611 = SL1611 : 26dBG - B-3dB = 80MHz - 50dB AGC - 4dBNF	metallic case -55° / +125°C	**SL 611 C** 	12,30
	plastic DIL case -30° / +70°C	**SL 1611 C** 	not available see SL 611 C
DIL case, double conversion IF where the second IF is the PLL FM demodulator (usually 100 KHz) to improve the S/N ratio up to 50 dB, max. input 50 MHz and 2 µV of sensitivity, with SQL, low absorpition 2 - 3 mA at 7V		**SL 6601C** 	4,20
single conversion typical input 4 - 22 MHz, mixer, IF amplifier, quadrature demodulator because it doesn't need the second IF, audio control, SQL, direct audio 250mW output for speaker, DIL case		**SL 6640C** 	5,00

continue

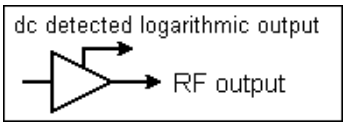
Transmitter ICs - Receivers - IF Amplifiers - Demodulators for : AM - FM - SSB, for panoramic and TV receivers, instrumentation , etc...

	cod.	price € each
IF amplifier on usual values from 455 KHz to 30 MHz , FM limiter and dempdulator with audio output, very good 60dB AM suppression, metallic case	**SO 41 E** 	3,50
available only with metallic case, see above SO41E	**SO 41 P**	see SO41E
for video signals B-3dB = 8MHz , complete with ON-OFF activator for the amplifier 8 pin DIL case	**U 252B** 	1,90
single conversion IF amplifier, typical input from 400KHz to 12MHz with FM limiter, FM demodulator, either NBFM and WBFM, audio control. TBA120U is similar to TBA120T but optimized for LC discriminator — TBA120T is optimized for ceramic discriminator	**TBA 120T** 	2,50
TBA120S is optimized for LC disciminator	**TBA 120S**	3,00
first conversion amplifier, input up to 50 MHz 42dBG, second conversion mixer and oscillator, limiter , discriminator, audio, indicator of field strenght, etc... 20 pin SMD case	**TBB 2469 G** 	4,00

AD 831 + AD 8342 + CMY 210 + HPMX 2005 e 2006 + IAM 81008 , 81018 , 82018 + LMX 2216 + MC1496 + NE 602 / 612 + PMB 2330 + SA 601 + SO 42 + SL 1641C + TDA 1062 + TDA 8010 + RF 2411 they are active mixers, see mixer section

LOGARITMIC integrated circuits – RF and IF for : logaritmic indicators , wattmeters , field measurement , spectrum analyzer

IF-RF amplifiers with logarithmic response for spectrum analyzer IFs, receivers with field strenght indicator dB scale, voltmeters or wattmeters, radar applications, etc..., they have also a dc detected logarithmic output to drive a meter.



	cod.	price € each
GAIN and PHASE DETECTOR it is different from other logarithmic circuits, it is a double logarithmic detector capable to measure the relationship between two signals in amplitude and in phase up to 2.7 GHz with 60 dB of dynamic, amplitude 30 mV / dB linearity <0.5 dB, phase 10 mV / dB linearity <1°, it is a small vector-network analyzer, many possible applications, see Analog Device web site	**AD 8302 ARU**	24,70
dc - 500MHz (900MHz -3dB) dynamic 92dB +17 / -75dBm , high linearity 0.3dB at 100MHz and 0.5dB at 500MHz, dc detected output to drive a meter, it is usable as voltmeter or RF wattmeter, N.F. meter, logarithmic indicator for sweep, etc... DIL case VHF Comm 2-2002 , RK 2-2003	**AD 8307 AN**	13,90
up to 2.5 GHz, usable up to 3.5 GHz with -3 dB, dynamic 65 dB (0 dBm / -70dBm) typical 20mV / dB, error 1 dB / 65 dB, response time only 45 nS so it is suitable also for GSM modulations	**AD 8313 ARM**	25,50
1 MHz - 10 GHz , dynamic range 50 - 40 dB	**AD 8317 ACPZ**	9,90
up to 2.7 GHz RMS power detector, 30 dB high precision dynamic range, particulary suitable as dc - 2.5 GHz POWER METER with dc detected output, 8 pins SMD case	**AD 8361 ARM**	9,50
50 Hz - 2.7 GHz , dynamic 60 dB (-52 dBm / +8 dBm) error ± 0.5 dB independent from digital modulations as GSM-CDMA-TDMA see VHF Communications 3-05 + 3-06	**AD 8362 ARUZ**	14,50
improved and pin compatible version of SL521, B-3dB 6 - 350 MHz , metallic case -55/+125°C , **"A"** in the code means the high gain precision version within 5% (0,5dB), noise figure 3dBNF, propagation delay 0.6nS	**SL 1521 A** Ples	13,00 11,50 (10 + pcs)
as above, cheaper version with -3dB = 5-120 MHz band, DIL 8 plastic case, -30/+80°C	**SL 1613 C** Ples	7,00

Attention please, it is possible to use the RSSI circuit available in may ICs used for FM reception if it is combied to a receivers or an instrument for field strenght measurement, see integrated circuit demodulators or MC3372

NOTE: due to the big quantity of not univocal and not standardized codes for voltage regulators made by each manufacturer it is very important to quote our entire codes.

Voltage regulators - positive FIXED VOLTAGE

V out	I max	for ordering purposes please quote our entire product code →	case	cod.	price € each 1+ pcs	4+ pcs	10+ pcs
+ 1.8	150 mA	low dropout and with ON / OFF enable pin	Sot 23-5	**LP 2985-1.8**	0,60	0,55	0,50
+ 2.5	20 mA	precision voltage reference ±1.5% thermal stability 30ppm/°C, the input voltage can change at will because it has 2 terminals (zener-like) depending on limitation resistance, LM 285MX-2.5	So8	**LM 285-2.5** (ideal for HEMT)	0,70	0,65	0,60
	50 mA	precision reference 0.5% , ultra low dropout 120mV at 50mA, enable command (ON-OFF) LP 2980AIM5X-2.5	Sot 23-5	**LP 2980-2.5** (ideal for HEMT)	0,45	0,38	0,33
+ 2.7	50 mA	ultra low dropout 120 mV at 50 mA with enable pin (ON-OFF) precision 0,5% LP2980AIM5X-2.7	Sot 23-5	**LP 2980-2.7**	0,45	0,38	0,33
	200 mA 500 mA peak	precision voltage reference 1%, low noise and low dropout with enable pin (ON-OFF) , Micrel MIC 5219-2.7 BM5	Sot 23-5	**MIC 5219-2.7**	0,55	0,48	0,43
+ 2.8	50 mA	ultra low dropout max 150 mV at 50 mA, precision reference ± 0.5%, enable pin (ON-OFF) LP2982AIM5X-2.8	Sot 23-5	**LP 2982-2.8**	0,45	0,38	0,33
	100 mA	ultra low drop-out 200 mV at 100 mA, enable pin (ON-OFF)	Sot 23-5	**LP 2981-2.8**	0,50	0,42	0,35
	200 mA	precision reference ± 0.5% ultra low dropout 180 mV at 200 mA with enable pin (ON-OFF) LP2988AIMMX-2.8, low noise version of 2987	Mini So8	**LP 2988-2.8**	0,55	0,48	0,40
+ 3	50 mA	ultra low dropout 120 mV at 50 mA + enable pin (ON-OFF) , precision 0,5% LP2980AIM5X-3	Sot 23-5	**LP 2980-3.0**	0,45	0,38	0,33
	100 mA	precision reference ±0.5% LP 2951CM-3.0 low drop-out 0,45V max at 100 mA	So8	**LP 2951-3.0**	0,60	0,55	0,50
	200 mA	ultra low dropout with enable pin (ON-OFF) LP2987AIMX-3.0	So8	**LP 2987-3.0**	0,55	0,45	0.38
+ 3.3	50 mA	ultra low dropout max 150 mV at 50 mA , with enable pin (ON-OFF) LP2982AIM5X-3.3	Sot 23-5	**LP 2982-3.3**	0,65	0,55	0,45
	50 mA	precision reference 0.5% , ultra low dropout 120mV at 50 mA, with enable pin (ON-OFF) LP 2980AIM5X-3.3	Sot 23-5	**LP 2980-3.3**	0,55	0,45	0,35
	200 mA	low dropout typical 0,3V with enable pin (ON-OFF)	So8	**MAX 882 CSA**	2,20	1,90	1,70
+ 3,6	50 mA	ultra low dropout max 150 mV at 50 mA , with enable pin (ON-OFF) , LP2982AIM5X-3.6	Sot 23-5	**LP 2982-3.6**	0,55	0,45	0,35
	150 mA	ultra low dropout max 350 mV at 150 mA , with enable pin (ON-OFF) LP2985AIM5X-3.6	Sot 23-5	**LP 2985-3.6**	0,80	0,72	0,65
+ 5	50 mA	LP2980-IM5-5.0 ultra low drop only 120 mV at 50 mA , with command pin ON-OFF for sleep mode function	Sot 23-5	**LP 2980-5.0**	0,70	0,60	0,50
	100 mA	SMD SO8 case LM78L05ACM	So8	**7805 - SO8**	0,40	0,36	0,32
	100 mA	To92 plastic case 78L05AC	To92	**7805 - TO92**	0,40	0,36	0,32
	100 mA	To39 lowered metallic case 78L05HC	To39	**7805 - TO39**	0,40	0,36	0,32
	500 mA	low dropout 0.4 V, professional regulator with power reset, dc and temperature protection	To220 5 pins	**L 4947 R**	2,00	1,85	1,70
	1.5 A	To220 case L7805CV	To220	**7805 - TO220**	0,50	0,46	0,42
+ 6	100 mA	To92 plastic case 78L06AC	To92	**7806 - TO92**	0,40	0,36	0,32
	1 A	To220 case UA7806	To220	**7806 - TO220**	0,50	0,46	0,42

continue

NOTE: due to the big quantity of not univocal and not standardized codes for voltage regulators made by each manufacturer it is very important to quote our entire code.

Voltage regulators - positive FIXED VOLTAGE

V out	I max	for ordering purposes please quote our entire product code	case	cod.	price € each 1+ pcs	4+ pcs	10+ pcs
+ 8	100 mA	So8 SMD case	So8	7808 - SO8	0,40	0,37	0,34
	100 mA	To92 plastic case	To92	7808 - TO92	0,40	0,37	0,34
	150 mA	Sot 89 SMD case TA78L08F	Sot89	7808 - SOT89	0,40	0,37	0,34
	1 A	To220 case, MC7808CT	To220	7808 - TO220	0,50	0,46	0,42
	1 A	low drop max 0.2 V at 100mA and 1V at 1 A, 3 pins TO263 SMD case (similar to To220) , LM 2940S-8.0	To263	LM2940 S-8	0,90	0,80	0,70
	1 A	low drop max 0.2 V at 100mA and 1V at 1 A, TO220 case LM 2940T-8.0	To220	LM 2940 T-8	1,00	0,90	0,80
+ 9	100 mA	So8 SMD case	So8	7809 - SO8	0,40	0,37	0,34
	100 mA	To92 plastic case 78L09	To92	7809 - TO92	0,40	0,37	0,34
	1.5 A	To220 case L7809CV	To220	7809 - TO220	0,50	0,46	0,42
+ 10	1.3 A	ultra low drop-out only 0.5 V at 1 A , LM 2940-T10 input max 26V, TO220 case	To220	LM 2940-T10	1,30	1,15	1,00
+ 12	100 mA	SMD So8 case 78L12	So8	7812 - SO8		0,40	
	100 mA	To92 plastic case	To92	7812 - TO92	0,40	0,37	0,34
	1 A	To220 case L7812CV	To220	7812 - TO220	0,50	0,46	0,42
	3 A	input from +15V to + 40V, it needs only 4 external components, high efficiency 88% with Vin +15V	To220 5 pins	LM 2576T-12	1,10	1,00	0,90
+ 24	2 A	To220 case L78S24CV	To220	7824 - TO220	0,60	055	0,50
	2 A	as above but with more dissipation L78S24CT	To 3	7824 - TO3	0,95	0,90	0,85

NEGATIVE VOLTAGE generators , for GaAsFet bias

V out	I max	for ordering purposes please quote our entire product code	Case	cod.	price € each 1 + pcs	4 + pcs	10 + pcs
0.5V dropout on Vin	20 mA	these ICs generate a negative variable voltage (not regulated) depending on input voltage, they are often used for GaAs-FETs bias ICL7662 input max up to 20V	8 pins DIL	ICL7660-DIL	1,20	1,15	1,10
	20 mA		So8 8 pins SMD	ICL7660-SO8	0,90	0,85	0,80
	20 mA		metallic similar to To39 Mil -55 / +125°C	ICL7660-TO30		3,50	
	30 mA		So14 14 pins SMD	ICL7662-CBD		3,30	
	20 mA		compatible with ICL..	LTC-1044		see ICL7660….	
-5V	260 mA	MAX 764 ESA , dc - dc converter it can provide -5V regulated with 260mA, input from +3V to +15V	So8 8 pins SMD	MAX 764		4,70	
-5V	ved. nota	MAX 774 ESA , dc - dc converter if combined with a medium power P Mosfet it can provide -5V regulated with 1A, input from +3V to +15V , 85% of efficiency and with current limiter	So8 8 pins SMD	MAX 774		4,80	
- 4.1V fixed or -0.5 / -9V variable	5 mA	compared to various ICL…. the volage is always regulated, fixed or variable, the internal oscillator has a higher frequency of about 100 KHz so it is out of audio band, max. ripple 2mVpp	So8 8 pins SMD	MAX850ESA	0,90	0,85	0,80

continue

NOTE: due to the big quantity of not univocal and not standardized codes for voltage regulators made by each manufacturer it is very important to quote our entire code.

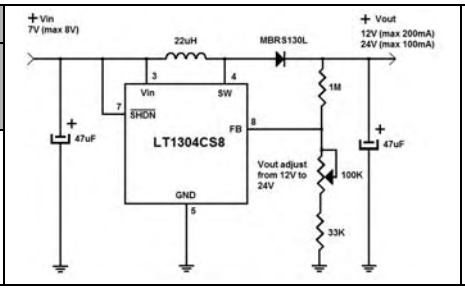
Voltage regulators - positive VARIABLE VOLTAGE

V out	I max	for ordering purposes please quote our entire product code	case	cod.	price € each 1 + pcs	4 + pcs	10 + pcs
+ 1.24 + 5.3	20 mA	precision voltage reference ±10mV, the input voltage can change at will depending on limitation resistance (= AMS 385 A)	SMD So 8	**LM 385 MX**	0,80	0,70	0,60
+ 1.2 + 11	200 mA	low drop regulator typical 0,3 - 0,5V , with command pin On-Off	So8	**MAX 882 CSA**	2,20	1,90	1,70
+ 3.3 + 14	3 A	ultra-protected series regulator, see detailed description on next page	To220 5 pins	**LT 1528 CT**	3,40	3,10	2,80
+ 3 + 15	4.5 A	500 KHz step-down, miniature case, it needs only few external components	To263 7 pins	**LT 1374 CR**	3,50	3,20	2,90
+ 1.2 + 20	400 mA	low drop regulator typical 0.2V, max. 0.4V	DIL 8 pins	**L 4921**	1,80		
+ 3 + 24	100 mA	low drop regulator with 100 mA typical 0.16V, max 0,6 V, So8 SMD case	SMD So8	**LM 2931 CD**	0,90	0,80	0,70
+ 5 + 24	100 200 mA	step-up regulator(dc-dc converter) positive voltage elevator, for example it is possible to have +24V output (max 100mA) with +7V input or have +12V output (max 200mA) with +5V input, max. input +8V, see application outline	SMD So 8	**LT 1304 CS8**	1,90	1,75	1,60
+ 1.3 + 29	100 mA	precision series voltage regulator, low drop 40mV, max 0,38V with 100mA	SMD So8	**LP 2951 CM**	0,90	0,80	0,70
			DIL 8 pins	**LP 2951 CAN**	1,50		
+ 2.5 + 36	100 mA	3 pins precision shunt regulator, output impedance 0.2 Ω , low noise and high thermal stability	SMD So 8	**TL 431 CD**	0,35	0,32	0,29
+ 1.2 + 37	1.5 A	voltage regulator with dc protection Thomson TDB0117SP (= LM 317T)	To220	**LM 317-To220**	0.75	0.70	0.65
+ 1.23 + 37	1 A	52 KHz step-down, SMD case	SMD So 24	**LM 2575M-ADJ**	2,00	2,00	2,00
+ 1.2 + 37	3 A	step-down regulator	To220 5 pins	**LM 2576-ADJ**	3,90	3,90	3,90
± 1,2 ± 40 (inverting type)	150 mA 1.5A peak	inverting type regulator (DC - DC converter) it permits to raise the positive or negative voltage because it is insulated from the input, for example to supply voltage up to 24V with only 12V available	DIL 16 pins	**LM 78S40 CN**	1,80		

cod. + price

LT 1304 CS8

price each
1 - 4 pcs 1,90 €
5 - 9 pcs 1,75 €
10 - 29 pcs 1,60 €
30 - 99 pcs 1,50 €



Booster step-up converter (dc - dc converter) with Vin +5V , Vout +12V with Vin +7V , Vout +24V

Output variable voltage range + 5 V to + 24 V

Max current 200 mA out +5 or +12V
100 mA out +24V

Max input voltage + 8 V

Special price

NOTE: due to the big quantity of not univocal and not standardized codes for voltage regulators made by each manufacturer it is very important to quote our entire code.

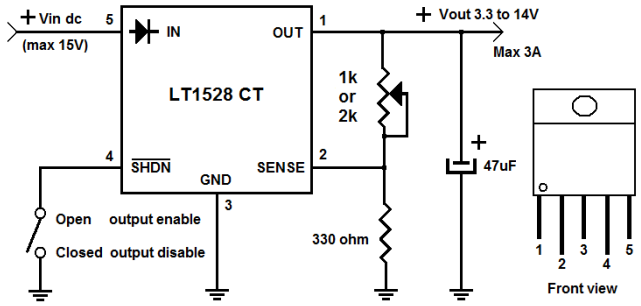
cod. + price

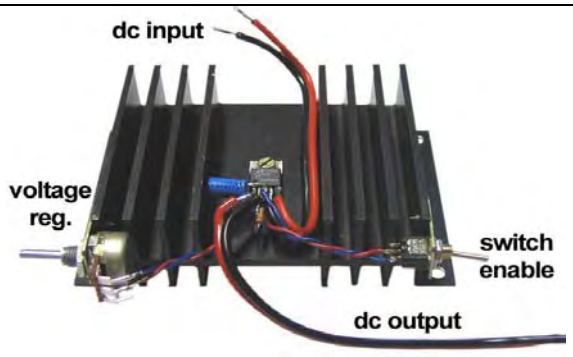
LT 1528 CT

price each
1 - 4 pcs 3,40 €
5 - 9 pcs 3,10 €
10 - 29 pcs 2,80 €
30 - 99 pcs 2,60 €

A very simple power supply

This is a very simple regulator that needs only three external components to complete the circuit.
It has very interesting features



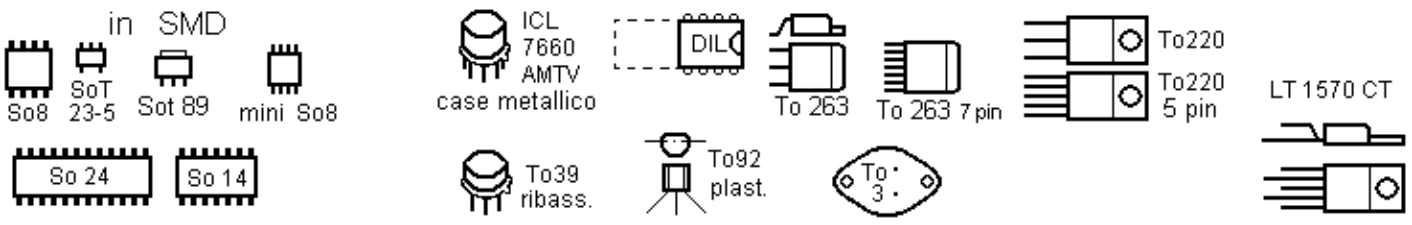


example

Output voltage range of +3.3 V to +14 V , max 3 A
Low dropout 0.3 V at 1 A , 0.6 V at 3 A
Fully protected , against reverse polarity , thermal limiting , short circuit
Linear regulator , no noise
Shutdown feature , it can be used as an output ON-OFF with low current switch (also at 3 A output current) , this avoid dangerous spikes
Special price

Voltage regulators - NEGATIVE VOLTAGE - fixed or variable

V out	I max	for ordering purposes please quote our entire product code	case	cod.	price € each 1 + pcs	4 + pcs	10 + pcs
± 1,2 **± 40** (inverting type)	150mA 1.5A peak	inverting type regulator (DC - DC converter) it permits to raise the positive or negative voltage because it is insulted from the input, for example to supply voltage up to 24V with only 12V available	DIL 16 pins	**LM 78S40 CN**	1,80		
-1.2 **- 37**	1.5 A	3 pins variable regulator, it is the negative complementary of LM 317 (= LM 337 T)	To 220	**LM 337 SP**	0,70	0,65	0,60
- 5	100 mA	fixed regulator 79L05A or LM79L05 ACMX	So8	**7905-SO8**	0,40	0,32	0,25
- 8	1.5 A	fixed regulator MC7908CK	To3	**7908-TO3**	0,70		
- 12	100mA	fixed regulator MC79L12ACP	To92	**7912-TO92**	0,40		



other POWER SUPPLY components

Darlington NPN - 30 A - 120 V, TO3 case for big power suppliers and audio amplifiers	**MJ 11016**	3,00 €
SMD Schottky diode 60V 3A, typically used in switching power suppliers, step down, inverter, etc... where is needed a fast switching and low capacitance	**MBRD 360**	0,80 €

DC - DC converter cod. 5SWR 1D12 price 7,00 €

Input	5 V	Protection	complete short circuit protection
Output	dual + 12 V / 0 / - 12 V	Size	31.8 x 20.3 x 10.2 mm
Current	50 mA ± 0.4 % 60 mA ± 1 %	Case	metallic shielded

24V power IC switching regulators

These ICs are switching regulators suitable for medium power stabilized power suppliers with 24V output, the small model up to 6 A and the bigger one up to 12 A.
To use them simply a rectified DC source is enough, some by-pass capacitors and a choke filter, it is necessary also a medium size heatsink because the efficiency is around 90% so with a limited heating, both ICs are protected by a current limiter.

1:1 scale

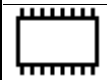
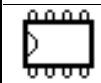
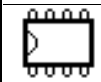
1 : 1 scale

cod. SI-82406Z	price 8,50 €	**cod. SI-82412Z**	price 14,00 €

aluminium heath sink for TO220 case

Black anodized aluminum heat sink for TO220 case devices, it has two terminals so it can be soldered to the printed circuit board to improve the mechanical fastening, Rth = 21.2 K / W
The TO220 case slips in a retention snap into the heat sink, the screw fixing is therefore unnecessary.

cod. **DT 220**	price each 1 - 4 pcs 0,70 € 5 - 9 pcs 0,60 € 10+ pcs 0,50 €	

case	sing or dual	GBP (BW) MHz	Slew Rate V/µS	**fast wide band operational amplifiers + Rail-to-Rail**		**cod.**	price € each 1 - 10 pcs
 So16	dual A.D.	35 MHz a -3dB	275	This is not an operational amplifier but a wide band amplifier with variable gain -10 / +30 dB each channel is independent, group delay ± 2 nS, +5V single power supply, high performances RF and audio applications with 35 MHz bandwith at -3dB, low noise 1.4 nV / $\sqrt{Hz}$		**AD 602 JR**	23,00
 So 8	sing A.D.	90 MHz a -3dB	275	This is not an operational amplifier but a wide band amplifier with variable gain -11 / +31 dB with 90MHz BW or +9 / +51 dB with 9 MHz BW, group delay ± 2 nS, +5V single power supply, RF, IF and video applications low noise 1.3 nV / $\sqrt{Hz}$		**AD 603 AR**	1 - 4pcs 7,30 5 - 9pcs 6,90 10+pcs 6,30
 So16	sing A.D.	140	2500	AD 811AR-16 is ideal for high performances video applications also for HDTV, low distortion -74dB at 10MHz extended temperature range -40/+85°C		**AD 811 AR**	4,30 - 3,90
 DIL 8	sing A.D.	50	350	ideal for high performances video applications, extended temperature range -40/+85°C	8 pins DIL	**AD 817 AN**	2,50 - 2,20
 So 8					So8 SMD	**AD 817 AR**	2,30 - 1,90
 DIL 8	dual A.D.	50	300	AD 827-SQ-883B high speed for video band, 120 nS settling time, 0.04 % diff. gain and 0.2° diff. phase error at 4.4 MHz, SQ-883B is the HiRel precision version -55 / + 125°C in metallic case		**AD 827**	on request
 So 8	dual A.D.	160	200	AD 8042 AR Rail-to-Rail, high speed video band, 39 nS settling time, +5V single power supply		**AD 8042**	4,50
 MSOP10	dual A.D.	2.2	3.5	AD 8592 ARM Rail-to-Rail CMos, high output current up to 250 mA, shutdown current 0.1µA, min. 2.5V single power supply		**AD 8592**	0,70 - 0,55
 SoT23-5	sing	1GHz -3dB	2800	Intersil - Elantec, for fast or high frequency applications, thermal range -40/+85°C	5 pins Sot23-5	**EL 5191 CW**	1,90 - 1,70
 So 8					8 pins SMD So8	**EL 5191 CS**	3,30 - 2,95
	sing Nat	20	50	JFet input, Settling time 1.5 µS, TO5 metallic case -55 / +125 °C		**LF 157H**	5,50
	quad			Motorola LM 2902D quadruple general purpose for low frequencies, 3 to 32 V single power supply, -40/+105°C		**LM 2902D**	0,40 - 0,25
 So 8	dual Nat.	17	25	LM 6142 AIMX Rail-to-Rail, CMRR 107dB, THD 0.003 %, min. +1.8V single power supply, the version “A” is with improved input offset to 1 mV		**LM 6142**	2,20 - 1,95
 SoT23-5	sing Nat.	70	120	LM 7131 ACM5X, the version “A” is with narrower input offset, high speed for video band and min +3V single power supply, on 50Ω output it can supply up to 40mA, 90MHz -3dB BW		**LM 7131**	1,10 - 0,90
 DIL 8	dual Nat.	1.5	1.3	Rail-to-Rail Cmos within 20mV of Vcc supply, high impedance, THD 0.01 %, +3V single power supply. AIMX is the precision professional version with temperature range -55 / +125°C and with narrower input offset to 0.75mV, low input current, bias only 4pA	Dil 8	**LMC 6482 IN**	1,30
 So 8					SMD So8	**LMC 6482 AIMX**	1,05 - 0,80 30 pcs 0,70 100 pcs 0,60
 SoT23-5	sing Nat.	50 KHz	0.03	Rail-to-Rail within 20 mV of Vcc , Cmos for low frequencies and low consumption, LMC 7111-BIM5		**LMC 7111**	min 5 pcs 0,80 each 10 pcs 0,70 30 pcs 0,60

Rail-to-Rail versions can supply a peak to peak voltage near to power supply voltage

continue

case	sing or dual	GBP (BW) MHz	Slew Rate V/µS	**fast wide band operational amplifiers + Rail-to-Rail**		**cod.**	price € each 1 - 10 pcs
 So 8	sing Max	625 -3dB	400	MAX 4104 ESA, low noise 2.1 nV / $\sqrt{Hz}$, -40/+85°C		**MAX 4104**	2,30 - 1,90
 So 8	dual Mot.	37	11	low noise 4.4 nV / $\sqrt{Hz}$, low input offset 0.2 mV THD 0.007 %, separation between 2 channels 120 dB		**MC 33077 D**	1,50 - 1,15
 So 8	dual Mot	16	7	low noise 4.5 nV / $\sqrt{Hz}$, low input offset 0.15 mV THD 0.002 % , separation between 2 channels 120 dB		**MC 33078D**	1,50
 DIL 8	dual TI	4	16	JFet , 1000 GΩ input resistance, channels separation 120dB, distortion 0.01 % at 1 KHz	DIL version	**TL 072 CP**	1,50
 So 8	dual TI	4	16		SMD version	**TL 082 CD**	1,00 - 0,80
 So 8	sing TI	10	35	JFet input		**TLE 2071**	1,00 - 0,80

Rail-to-Rail versions can supply a peak to peak voltage near to power supply voltage

These thick film ICs are a semi-custom products and then made widely commercial by Murata, they are used to simplify the construction of telecommunication RTX devices. Each of these components do a particular function with more repeatability and reliability than discrete components with the minimum waste of space.

for Telecommunications and Audio	cod.	price € each
high pass filters respectively 300-350-400Hz at -3dB, they have the purpose to eliminate low frequenciy components eg. 50 or 100Hz before the audio amplification on a speaker. They are used also on VHF - UHF transceivers to eliminate the sub-audio tone.	**AFH 24F 300B1**	7,00
	AFH 24F 350B1	7,50
	AFH 24F 400B1	7,50
low pass filter 3500Hz at -3dB, slope 24dB/octave, 18x11mm, +12V	**AFL 24F 3500A2**	10,00
low pass filter 3500Hz at -3dB, slope 13dB/octave, 16x11mm, +12V	**AFL 13F 3500B1**	8,50
IF amplifier for 455 KHz with FM limiter and RF output for field meter	**H8D 1152 E**	6,00
IF amplifier for 455 KHz with FM limiter and RF output for field meter	**H8D 1216**	6,00
IF amplifier eg. 10.7 MHz with 2nd conversion mixer and crystal oscillator	**H8D 1217**	5,00
squelch circuit, it is made of a double noise amplifier, rectifier and switch	**H8D 1218**	9,00
microphone amplifier + audio limiter stage (clipper and splatter limiter)	**H8D 1219**	9,00
	H8D 1222	
sub-audio tones encoder / decoder, it is supplied without the RC circuit that determine the operating frequency	**H8D 1223**	5,50
300 Hz low pass filter and limiter for sub-audio signals filtering before the decoding	**H8D 1224**	9,00
microphone amplifier + limiter stage for FM AM SSB modulators (clipper and splatter limiter)	**H8D 1412**	9,00
0.6 W audio amplifier, 2.7 to 5.5 V power supply with shut-down command (squelch), SO8 SMD case	**LM 4862 MX**	Min 3 pz 0,90 cad 10+ pcs 0,80 30+ pcs 0,70
very good Plessey 60dB audio amplifier, with mute and logarithmic regulation of amplification, it is often used on military professional RX	**SL 630C**	3,80

CML and AMI Integrated circuits for SCRAMBLERS , encoder - decoder for subtones , FSK , selective calls

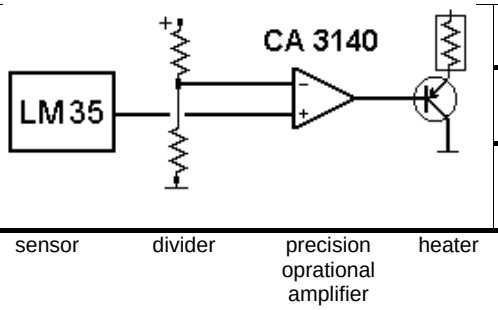
	cod.	price € each
SCRAMBLER improved version of the obsolete FX118, it is a band inverter for audio scramblers, full duplex it can be used in TX and RX simultaneously,16 pins DIL plastic case, it is connected between the microphone and the TX and the audio output in RX, it is usable also in SSB receivers to invert the audio band from USB to LSB and viceversa	**FX 128 P3** (FX118) cml	on request
selective tones decoder with small S/N ratio up to -9dB, built in VCO and PLL, frequency, delay and bandwidth can be set up, decoding time 10 signal periods	**FX 101L** cml	on request
	FX 105 cml	
respectively encoder + decoder multi tone sequential	**FX 207** cml	on request
	FX 307 cml	
CTCSS, sub audio encoder decoder compatible with serial or parallel µP + audio filters etc...	**FX 365 J** cml	on request
	FX 403	on request
full duplex FFSK modem at 1.200 Baud, 900 - 2.100 Hz inserted band pass filter	**FX 419 J** cml	on request
selective call encoder, it is programmable up to 16 sequential tones, TX delay, auto repeat, etc... +5V, "C " = CCIR standard	**FX 503 C** cml	on request
PLL decoder with 512 selections for tones decoding	**S 2742** ami	on request
DIL, this PLL is often used as tone demodulator - FSK etc... 0.01Hz - 300 KHz band	**XR 2211 CP**	3,00

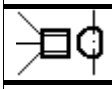
LM 35 Temperature Sensor for precision oscillators

LM35 is a precise and economical analog temperature sensor, the output voltage is ***linearly proportional to the temperature*** in celsius degrees (°C) giving an output of 10 mV per degree centigrade. It requires neither calibration nor a precise reference voltage, very low absorption with a very low self-heating (only 0,1 °C).
The power supply ranges from 4 to 30V with an intrinsic accuracy of 0.6 °C. The output (at 20 °C = 20 (°C) x 10 (mV) = 200 mV) is easy to handle for any calculations. The advantages compared to thermocouples are: more accuracy, no aging, higher output level, no need of complicated amplifiers.

In addition to trivial applications such as thermometer, protections on electronic circuits, etc..., what is really interesting in RF is the realization of sophisticated thermoregulation of OVEN oscillators, OCXO and TCXO, in fact it is possible to make precise oscillators at low cost. Another application, much more sophisticated, is compensation circuit for noise generators, where the sensor is needed to indicate the temperature change to compensate the variations of the noise diode ENR.

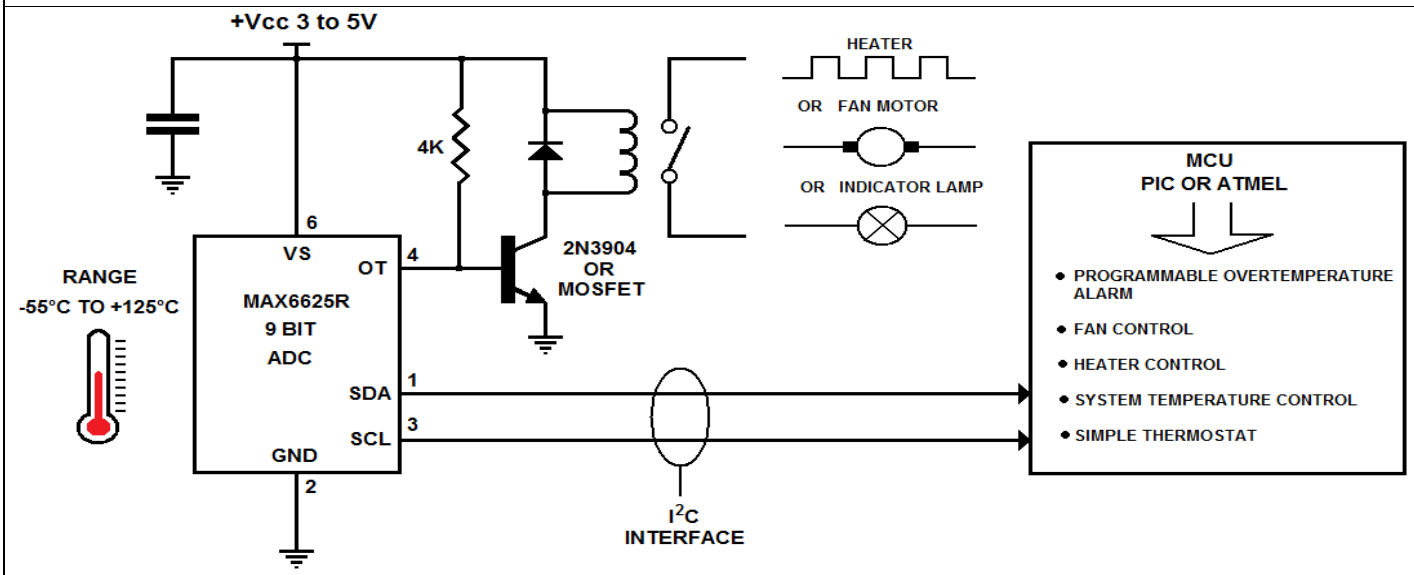
See on Internet many available applications, the external circuitry is very low cost, we can report that in some cases the results obtained were very similar to industrial professional products.



case		temperature range	cod.	price € 1 - 10 pcs
	TO-92	0 / +100°C	LM 35 DZ	1,90 - 1,70
		-40 / +110°C	LM 35 CZ	4,80
	smd SO-8	0 /+100°C	LM 35 DM	2,20

MAX 6625 Temperature Sensor with I²C bus

The Max 6625 is a temperature sensor circuit with I²C serial interface, it can read a range of temperature between -55°C and +125°C, the conversion is made by a 9-bit ADC. It is built in miniature SOT23-6 package.
This product can be considered a valid substitute of LM75 in most applications.
The temperature read, converted into a digital value, is always readable via the serial interface while there is a dedicated output for OT alarm whose action threshold is programmable in the high-temperature register. The OT output can be programmed as polarity, as operational mode and as hysteresis, it can drive MOSFETs or transistors that will then drive power loads. This small device temperature sensor / thermostat is Low-Power with power supply voltage from 3 to 5V and the conversion time is 133ms.



simplified schematic diagram

Max 6625RMUT	cod MAX6625	price : 1 - 9 pcs = 2,30 € each -- 10+ pcs = 1,90 € each