

having no form of filtering as you would in a superhet receiver. That is to do some additional filtering at the audio stages, where it is much easier to accomplish.

Even without filtering, the direct conversion receiver is still an extremely popular and efficient way of getting a first receiver going. The lack of selectivity, which as we have said can be improved with an audio filter, isn't such a disadvantage as you might think. The average human ear is an extremely good filter, and the audio image generated by any direct conversion receiver is for all practical purposes filtered out by the ears.

### Diodes and FET oscillators

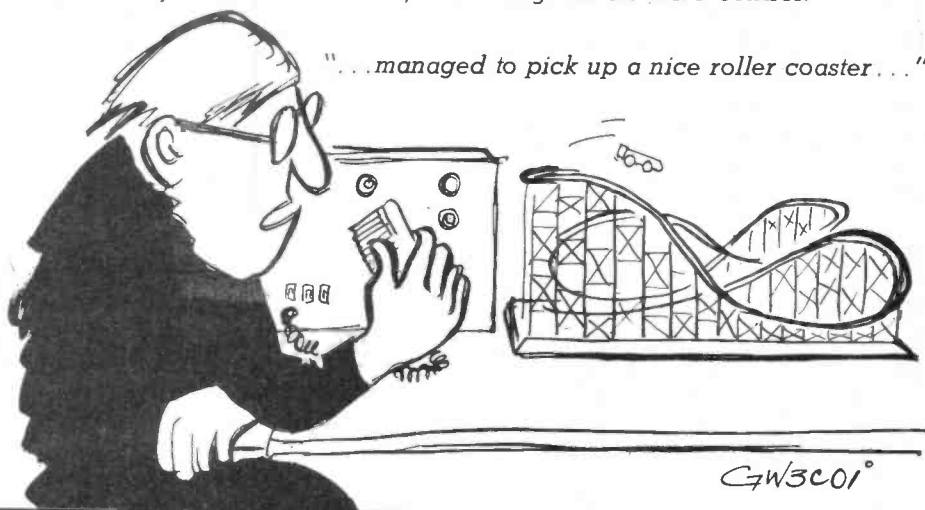
In many of the FET oscillator designs which appear in these pages, there is often a diode connected from the gate of the FET to earth. A couple of people have asked what this is for, and whether it matters which way round it is.

Basically it is there to provide an AGC function. If you think about

any oscillator, the circuit is an infinite loop, with the output being fed back to the input by one means or another. There has to be something which stabilises the output level at a constant point — if there wasn't the oscillation level would build up to infinity eventually which is clearly impossible. There are only two things which can stop this happening — either the oscillator limits, or there is some form of AGC present.

With the diode present, as the RF voltage from the oscillation increases just after switch on, the

voltage on the gate will similarly increase, and be rectified by the diode, in turn causing a DC voltage to build up across the gate capacitor. This will be a negative voltage from the way the diode is connected, and it is this which provides some bias, driving the FET towards cut-off as it gets more negative. The amplitude of the oscillation thus decreases, until a point is reached at which it stabilises — that is when the gain is only just enough to keep the oscillator running. Or an AGC control.



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#### TYPICAL EXAMPLE

Transmitter power: 100 Watts

Cable length: 40 m

Aerial power:	UR 67 & RG 213	H 100	GAIN:
28	72W	82W	+ 14%
144	46W	60W	+ 30%
432	23W	43W	+ 87%
1296	6W	25W	+317%

#### COMPARISON

	H 100	UR 67 & RG 213 (MIL-spec.)
Diameter:		
Overall:	9.8mm	10.3
Central conductor:	solid 2.5mm	7 x 0.75mm (2.3mm)

#### Nom attenuation in dB/100 m:

28MHz	2.2dB	3.6dB
144MHz	5.5dB	8.5dB
432MHz	9.1dB	15.8dB
1296MHz	15.0dB	31.0dB

#### Maximum power: (FM)

28MHz	2100W	1700W
144MHz	1000W	800W
432MHz	530W	400W
1296MHz	300W	220W
Weight:	112 g/m	152 g/m

#### Minimum operating

temperature:	-50°C	-40°C
Bending radius:	150mm	100mm
Rated Velocity		
Ratio:	0.84	0.66
Colour:	black	black
Capacity:	80 pF/m	101 pF/m