



46 Allée de MEGEVIE

33174 GRADIGNAN CEDEX FRANCE

Tel: ( 33 ) 5 56 89 01 53

Fax ( 33 ) 5 56 89 53 44

# **POWER GENERATION AND INTERMODULATION CONTROL IN TLB0184D**

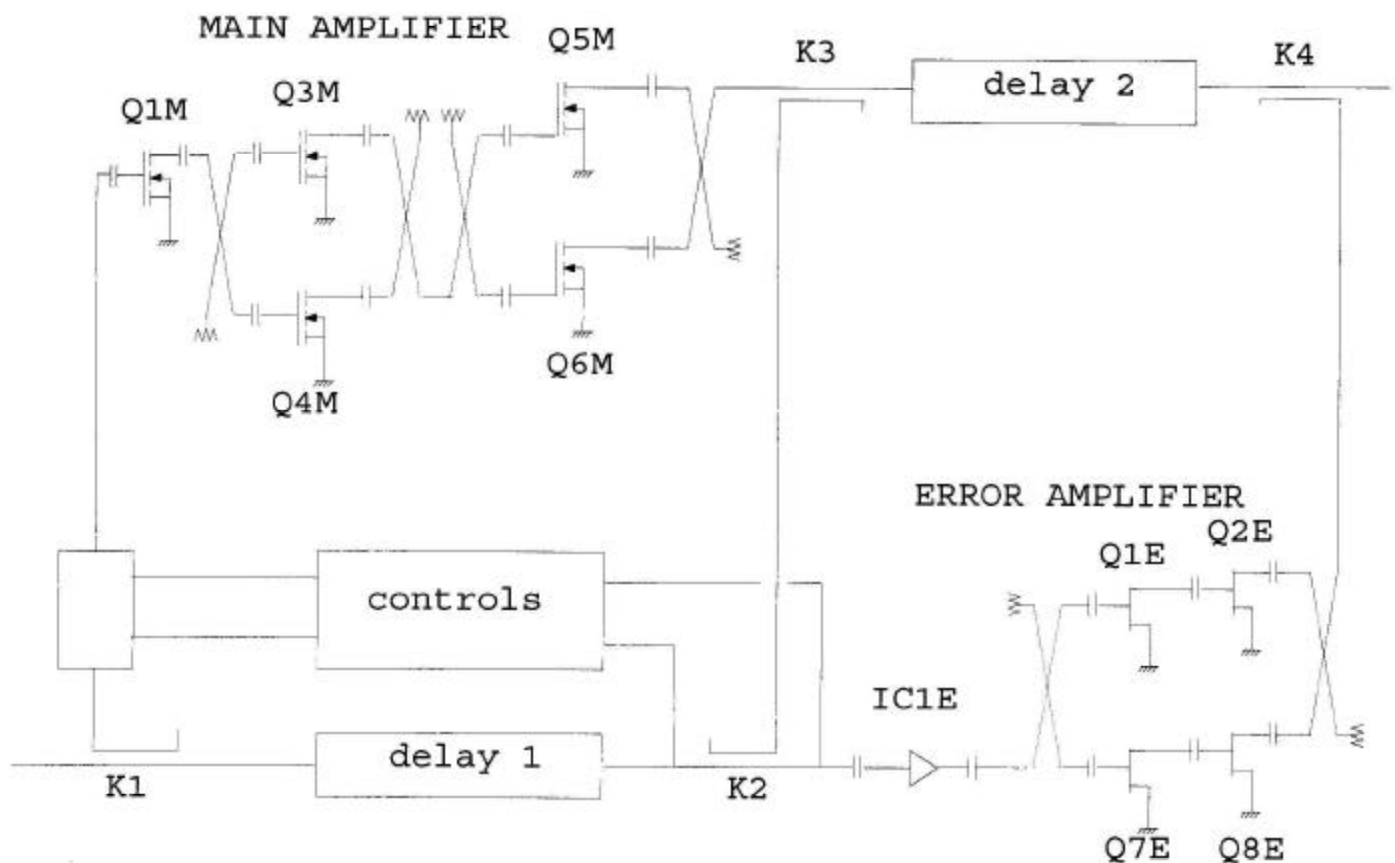
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## 1. GENERAL DESCRIPTION

The TLB0184 is a feedforward amplifier operating in the PCS band (1930-1990mhz). It has 26dB of gain and a maximum intermodulation level of -55dBc when operated with 2 tones at 7.5W each (30W peak) output power.

The signal amplification is done by the main amplifier operating in class AB. The distortion correction is done with the injection of a distortion with opposite polarity at the coupler K4 after amplification in the error amplifier operating in class A. The delay lines 1 and 2 insure a broadband cancellation of the distortion.

The block diagram of this amplifier showing the general organisation and the power transistors is the following :



## 2. POWER GENERATION DEVICES

The RF power amplification is done by the main amplifier. The RF devices used for that amplification and their bias are described in the following table :

Transistor	part #	Type	Peak power class AB	Manufacturer	Class of operation	Bias
Q1M	MRF6522-5	Mosfet	5W	Motorola	A	25V / 0.25A
Q3M	MRF6522-5	Mosfet	5W	Motorola	AB	25V / 0.055A
Q4M	MRF6522-5	Mosfet	5W	Motorola	AB	25V / 0.055A
Q5M	MRF284S	Mosfet	30W	Motorola	AB	26V / 0.2A
Q6M	MRF284S	Mosfet	30W	Motorola	AB	26V / 0.2A

## 3. CORRECTION CIRCUITRY

The main amplifier distortion is extracted from the signal in coupler K2. It is then amplified in the error amplifier before being injected to the output, by coupler K4, 180° out of phase relative to the distortion coming from the main amplifier. This distortion is therefore cancelled and is dissipated in the isolation resistor of coupler K4.

The scaling of the distortion prior to cancellation in K4 is done by the error amplifier. The RF devices used in the error amplifier are the following :

Transistor	part #	Type	Peak power class A	Manufacturer	Class of operation	Bias
IC1E	ERA4-SM	HBT	0.05W	MCL	A	4.9V / 0.065A
Q1E	CLY02	GaAs	0.2W	Siemens	A	5V / 0.10A
Q7E	CLY02	GaAs	0.2W	Siemens	A	5V / 0.10A
Q2E	FLU17XM	GaAs	1.8W	Fujitsu	A	9V / 0.36A
Q8E	FLU17XM	GaAs	1.8W	Fujitsu	A	9V / 0.36A

## 4. OUTPUT POWER LIMITATION

The current consumption is limited to 6.0A (5.0A typ), insuring that the output power will never exceed 30W. An input overdrive, an oscillation or any signal at higher level will therefore trigger a shut down.