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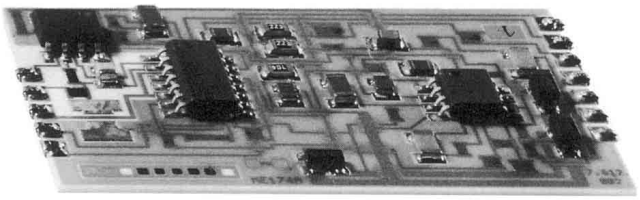
Hybrid Charge Amplifier

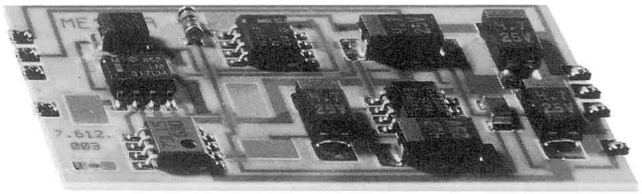
with Voltage Power Supply Converter

Type 5042Q, 5755Q

The described hybrid charge amplifier and the pertaining hybrid power supply are mainly used in industrial measuring systems. Thanks to their ruggedness and miniaturization, hybrid circuits are especially well suited for application in rotating or vibrating objects.
However, this hybrid charge amplifier is not sold as componentry for extraneous applications.



Charge Amplifier Type 5042Q



Power Supply Type 5755Q

Technical Data

Charge Amplifier Hybrid		
Measuring range for ±5 V output according to range capacitor Cg	pC	±50 ... ±100'000
Voltage gain [V = 100kΩ + 12Ω Rg] adjustable by means of additional resistance Rg		x1 ... x100
Upper cutoff frequency, amplitude –5 % for 5 V_{pp} output and gain x1 / x10 / x100	kHz	11 / 9,6 / 4,4
Drift 25 °C	pC/s	<0,05
–20 ... 60 °C	pC/s	<0,2
Reset/Operate transition	pC	≤1
Power supply, stabilized	V	±7,1 ... ±7,9
Current consumption, unloaded output	mA	±3,5
Operating temperature range	°C	–20 ... 85
Storage temperature min./max.	°C	–40 ... 85
Weight	g	6
Dimensions	mm	45 x 26 x 3

Power Supply Hybrid		
Input voltage range for powering 4 hybrid charge amplifiers, –20 ... 60 °C	V DC	13,5 ... 30
Max input voltage ≤1 s	V	+50
Input reverse battery protection, continuous	V	–250
Own current consumption	mA	< 8
Additional current per charge amplifier	mA	<10
Operating temperature (2 connected charge amplifiers and 24 V input voltage)	°C	–20 ... 85
Storage temperature	°C	–40 ... 125
Weight	g	4,5
Dimensions	mm	45 x 26 x 3,5

Ordering Code		**5042Q** □
Measuring range	5'000pC	1
Measuring range	50'000pC	2
Measuring range	100'000pC	3

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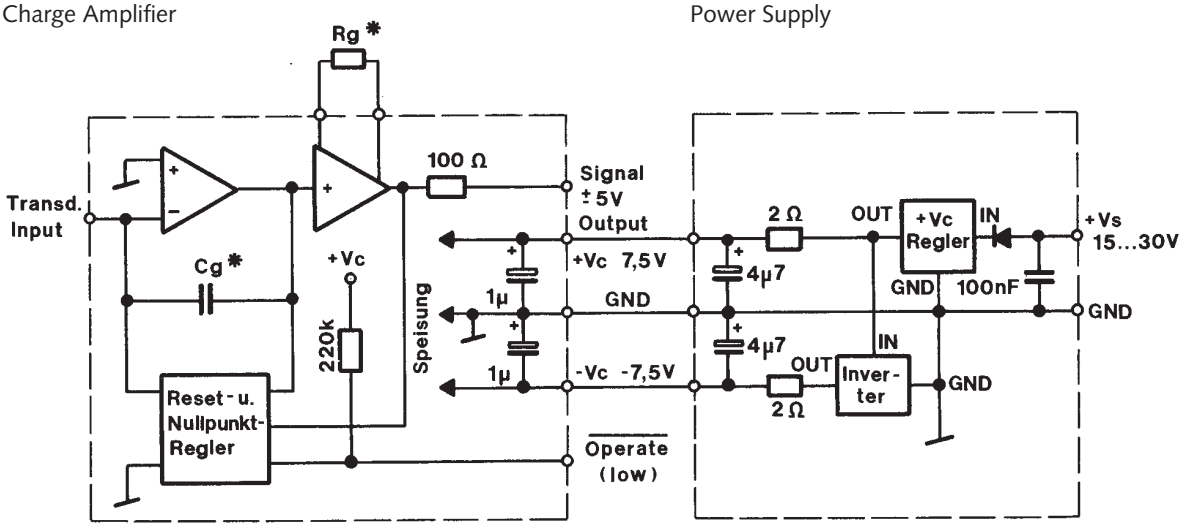
Basic Circuit Diagram

Charge Amplifier

Power Supply



* Sensitivity = Cg $\frac{Rg+12\Omega}{100\ k\Omega}$; Rg 1 k ... 100 k

Description

The hybrid charge amplifier is suited for quasistatic as well as for dynamic measurements. With fixed range capacitor Cg, the sensitivity can be adjusted in the range Cg ... Cg/100 by means of an additional resistor Rg. The low-noise MOSFET input stage is protected against electrostatic discharges. Despite the semiconductor Reset circuit, the input drift is very low even at higher temperatures.

With an output voltage range of ±5V the charge amplifier needs a power supply of ±7,5V. A further hybrid circuit with same dimensions and short circuit proof, current and power limited stabilized output (±7,5V) serves as supply from an external unipolar, unregulated DC voltage between 15V and 30V. This allows to operate several hybrid charge amplifiers simultaneously.

Charge amplifier and power supply can be stacked without interfering mutually, whereby the power supply hybrid occupies the lowest level. The space-saving assembly in hybrid technique on ceramic substrate renders these units accelertion-proof and lightweight and increases their reliability.

Both these hybrid circuits are assembly modules for piezo-electric sensors or supplementary instruments; they are not sold individually.

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