9-Channel Telemetry Transmitter

Custom made integrated circuit (BICMOS technology 0.8 µm) with die size of 2 x 2.6 mm. Programmable for each channel, including an integrated rf-oscillator.
Fairly linear conversion of sensor resistance to pulse interval time.
After successful programming the lower part of the hybrid circuit is cut off.

Technical data

Channel 1: connection of SG (R = 260 - 420 Ohm) or NTC (R = 900 - 1100 Ohm)
Channel 2: connection of SG (R = 260 - 420 Ohm) or NTC (R = 900 - 1100 Ohm)
Channel 3: connection of SG (R = 260 - 420 Ohm) or NTC (R = 900 - 1100 Ohm)
Channel 4: connection of SG (R = 260 - 420 Ohm) or NTC (R = 900 - 1100 Ohm)
Channel 5: connection of SG (R = 260 - 420 Ohm) or NTC (R = 900 - 1100 Ohm)
Channel 6: connection of SG (R = 260 - 420 Ohm) or NTC (R = 900 - 1100 Ohm)
Channel 7: hybrid temperature measurement (NTC, R = 900 - 1100 Ohm)
Channel 8: supplied power (DC voltage)
Channel 9: synchronisation (t < 200 µs)

Power supply: AC inductive
Magnetic field frequency: 4 kHz
Modulation: puls-interval-modulation (PIM)
Pulse duration: 10 µs
Mean pulse interval: 1000 µs
Transfer behaviour: linear
Radio frequency transmitter: 120 MHz - 170 MHz (ASK)
DC supply voltage: 4.0 V - 6.0 V
Average power consumption: 5 mW

Technology: thick-film hybrid technology, chip and wire, double-sided
Active components: 1 Custom IC (BICMOS 0.8µm) 2,0 mm x 2,6 mm
Passive components: 6 SMD, 2 thin film resistors
Connections (solder points): 6 x SG / NTC, 2 x ground, 2 x energy coil, 2 x RF-antenna
Programming connections (solder points): 8 x data
Hybrid size: 12,5 mm x 6 mm (with program connections)
Hybrid size: 9,5 mm x 6 mm (without program connections)
Case: 10 mm x 7 mm in diameter (metal cylinder)

Manufactured since 2004 for instrumented vertebral body replacements, instrumented shoulder endoprostheses, instrumented knee endoprostheses and instrumented hip endoprostheses.