

U 2531 B

Monolithic Integrated Circuit

Application: Frontend amplifier for infrared remote control systems with carrier frequencies between 20 and 50 kHz

Features:

- o Low power consumption, typ. 1 mA
- o Supply voltage range: 7 V ... 14 V
- o On-chip voltage stabilisation
- o A signal detector activates a 6 V supply voltage output to power external components
- o Filter characteristics and gain are specified by few external components
- o Compensation of the photodiode capacitance
- o Specially selected AC and DC impedance makes the circuit insensitive against constant light levels

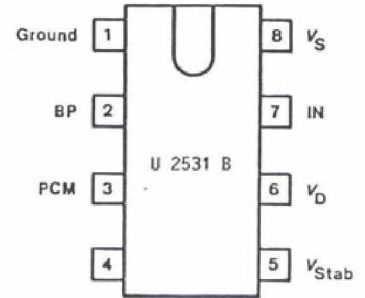
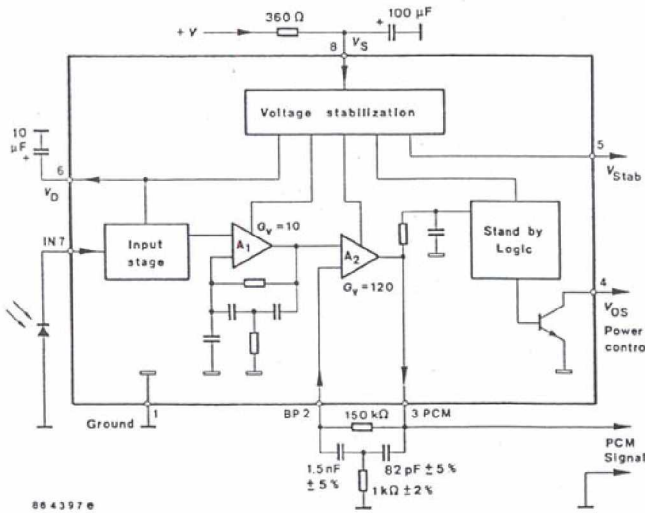


Fig. 2 Pin configuration



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Fig. 1 Block diagramm

Pin	Function	Description
1	GND	Circuit GND potential
2	BP	Inverting input of amplifier 2. In conjunction with the PCM pin and a feedback network, it allows the gain adjustment and implementation of the filter function
3	PCM	Output of amplifier 2. The signal at the PCM pin is the regenerated PCM signal which can be fed to the remote control decoder.
4	TEST	
5	VStab	Regulated voltage output (typ. 6 V)
6	VD	A capacitor at the VD pin removes the ripple from the photo diodes bias voltage
7	IN	PCM signal input. This pin is connected to the photo diode. The voltage swing across the diode is kept small to avoid high charging currents of the junction capacitance. This allows the IC to receive 4 usec pulses! The selected ac input impedance (300 kΩ) and dc input impedance (8 kΩ) feature a high immunity against constant light levels at the diode.
8	VS	Supply voltage connection.

Absolute maximum ratings

Reference point Pin 1, unless otherwise specified

Supply voltage range	Pin 8	VS	- 0.3 ... 14	V
Supply currents	Pin 8	IS	10	mA
Input voltages	Pin 2,7	VI	- 0.3 ... 6	V
	Pin 4	VI	- 0.3 ... 16	V
Output currents	Pin 3,4,5,6	IO	± 5	mA
Power dissipation		Ptot	180	mW
Tamb = 105 °C			125	°C
Junction temperature		Tj	- 20 ... 125	°C
Storage temperature range		Tstg	0 ... 70	°C
Ambient temperature range		Tamb		

Thermal resistance

	Min.	Typ.	Max.
Junction ambient		RthJA	110 K/W

Electrical characteristics

VS = 7 V to 14 V, Tamb = 0 ... 70 °C, reference point pin 1, unless otherwise specified

Supply currents	Pin 8	IS	0.65	1.1	1.55	mA
Output voltage, regulated	Pin 5	Vstab	5.5		6.5	V
Regulated photodiode supply voltage	Pin 6	VD	5.0		5.7	V
Output current	Pin 7	IO	0.5		1.5	mA
AC output impedance	Pin 3	r		300		Ω

	Min.	Typ.	Max.
Amplifier 1			
Voltage gain		GV1	14
Tamb = 25 °C, fIN = 36 kHz			
Amplifier 2			
Voltage gain		GV2	120
Tamb = 25 °C, fIN = 36 kHz			
Attenuation at			
fa = 30 kHz	3		dB
fm = 36 kHz		0	dB
fb = 42 kHz	3		dB

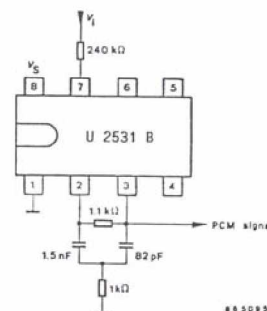


Fig. 3 Test circuit for amplifier 1

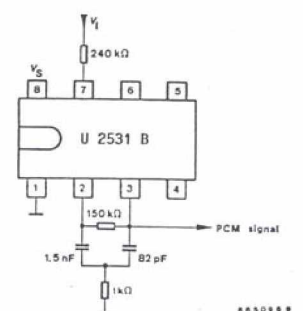


Fig. 4: Test circuit for amplifier