

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

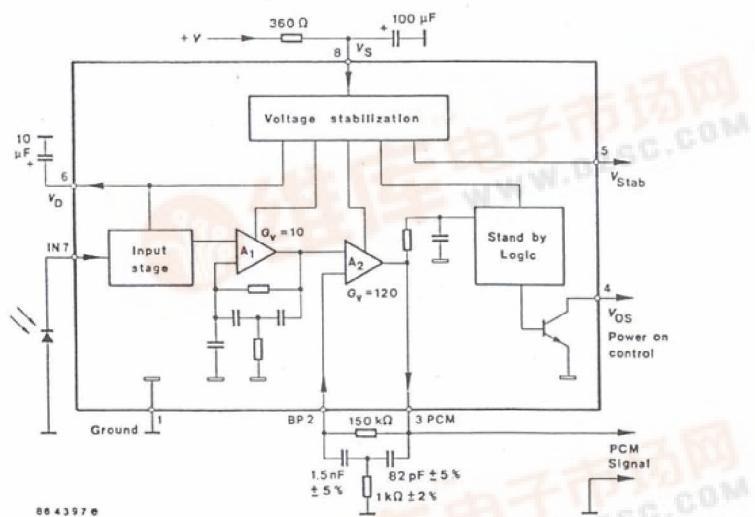


Fig. 1 Block diagram

Absolute maximum ratings

Reference point Pin 1, unless otherwise specified

Supply voltage range	Pin 8	V_S	- 0.3 ... 14	V
Supply currents	Pin 8	I_S	- 10	mA
Input voltages	Pin 2,7	V_I	- 0.3 ... 6	V
	Pin 4	V_I	- 0.3 ... 16	V
Output currents	Pin 3,4,5,6	I_O	± 5	mA
Power dissipation				
$T_{amb} = 105^\circ C$		P_{tot}	180	mW
Junction temperature		T_j	125	°C
Storage temperature range		T_{stg}	- 20 ... 125	°C
Ambient temperature range		T_{amb}	0 ... 70	°C

		Min.	Typ.	Max.
Junction ambient	R_{thJA}		110	K/W

Electrical characteristics

$V_S = 7 V$ to $14 V$, $T_{amb} = 0 \dots 70^\circ C$, reference point pin 1, unless otherwise specified

Supply currents	Pin 8	I_S	0.65	1.1	1.55	mA
$V_S = 8 V$, Pin 5 n.c., $T_{amb} = 25^\circ C$						
Output voltage, regulated	Pin 5	V_{stab}	5.5	6.5	7	V
Repetitive photodiode current, Pin 6	Pin 6	V_D	5.0	5.7	6	V
Output current, Pin 7	Pin 7	I_O	0.5	1.5	2	mA
AC output impedance	Pin 3	r	300	500	1000	Ω

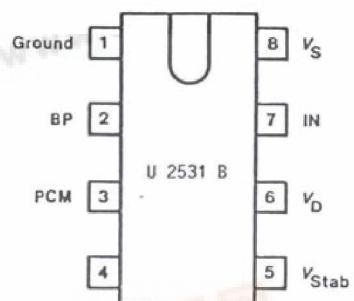


Fig. 2 Pin configuration

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	V_{stab}	Regulated voltage output (typ. 6 V)
6	V_D	A capacitor at the V_D 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	V_S	Supply voltage connection.

Fig. 3 Test circuit for amplifier 1

Fig. 4 Test circuit for amplifier 2

	Min.	Typ.	Max.
Amplifier 1			
Voltage gain			
$T_{amb} = 25^\circ C$, $f_{IN} = 36$ kHz	G_{V1}	6.0	14
Attenuation at			
$f_a = 30$ kHz	$-\Delta G_{V2}$	3	120
$f_m = 36$ kHz	$-\Delta G_{V2}$	0	dB
$f_b = 42$ kHz	$-\Delta G_{V2}$	3	dB

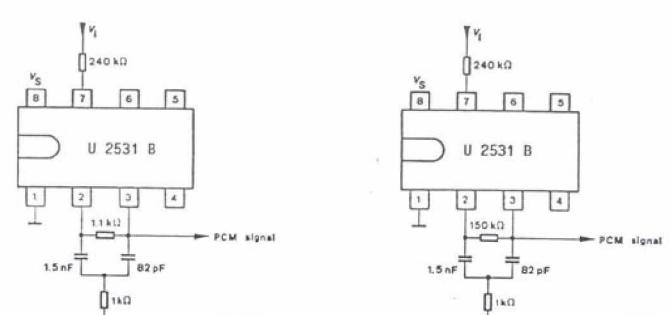


Fig. 3 Test circuit for amplifier 1

Fig. 4 Test circuit for amplifier 2