# RCS1K-868

Sub 1GHz Multichannel Radio Transceiver with SMA connector

It is a low cost sub 1GHz multichannels transceiver designed for low-consumption wireless applications. The hardware is based on a Silicon Labs Si1000 component. The main features of this device are: Output power up to +20 dBm (100mWatt) Integrated Microcontroller (8051core), selectable modulation (OOK, FSK, GFSK), low power consumption.
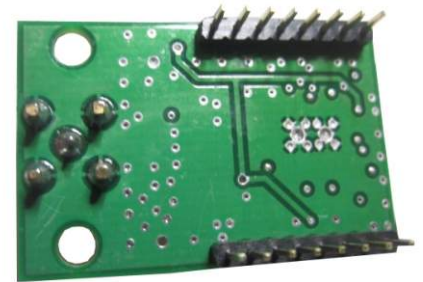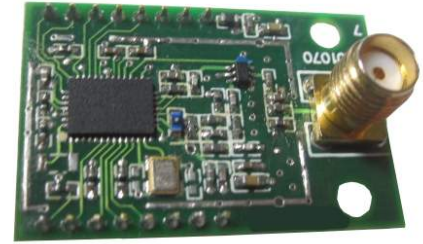
Technical Characteristics

Characteristics		MIN	TYP	MAX	UNIT
V_{CC}	Supply Voltage	2.2	3	3.6	VDC
I_S	Supply Current (RX mode / TX mode)		20/34		mA
I_s	Supply Corrente (TX mode / +20dBm)		85.0		mA
I_S	Supply Corrente (TX mode / 0 dBm)		10		mA
I_S	Supply Corrente sleep mode		< 0.1		µA
T	StartUp Time (Sleep to RX/TX mode)		< 2		µS
P_O	RF Output Power	- 3.0		+20	dBm
T_{OP}	Operating Temperature Range	-10		+55	°C
	RF Sensitivity (1.2 Kb/sec Data Rate)		-112		dBm
	Max Data Rate		500		Kbit/s

For more informations and details, please refer to Si1000 Silicon Labs datasheet.

Applications :

- Wireless security systems

- Internet of Things

- Home and building automation

- Automatic Measure Reading

- Industrial Control and Monitoring

- Wireless Sensor Network

Feature :

- Bidirectional multichannel Link

- RF Power until +20dBm (100mW)
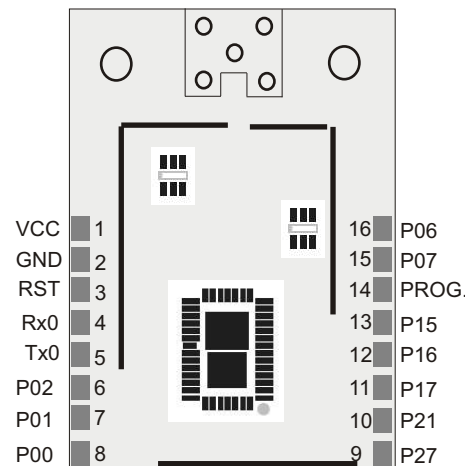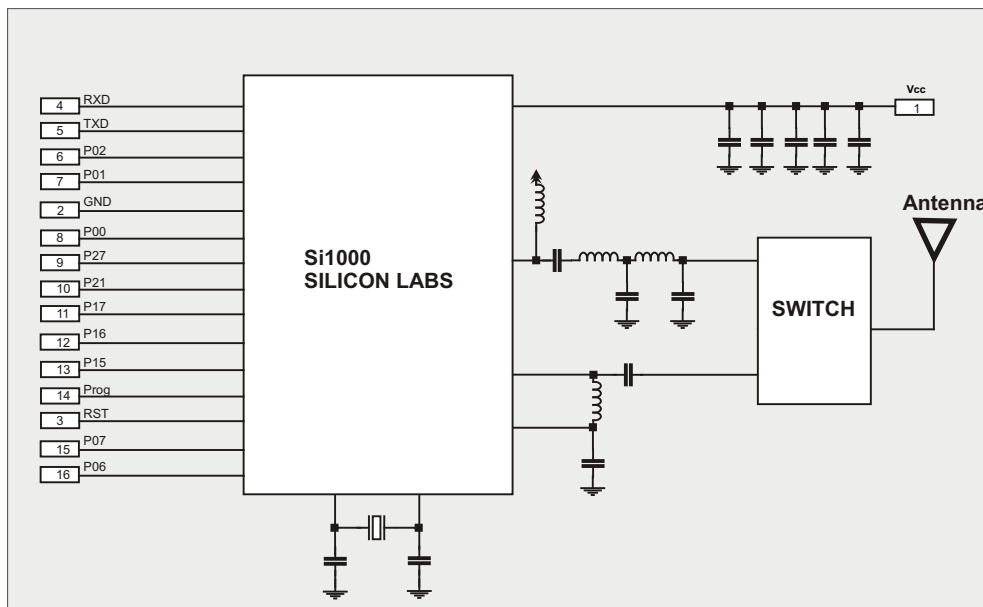
- Low consumption technology

PIN OUT RCS1K-868

Pads	Name	Type	Description
1	VCC	Power	Power Supply Voltage
2	GND	Ground	Ground
3	RST	D I/O	Device Reset
4	RXD	UART	UART TXD
5	TXD	UART	UART RXD
6	P02	D I/O or A I	Digital I/O or Analog I
7	P01	D I/O or A I	Digital I/O or Analog I
8	P00	D I/O or A I	Digital I/O or Analog I
9	P27	D I/O or A I	Digital I/O or Analog I
10	P21	D I/O or A I	Digital I/O or Analog I
11	P17	D I/O or A I	Digital I/O or Analog I
12	P16	D I/O or A I	Digital I/O or Analog I
13	P15	D I/O or A I	Digital I/O or Analog I
14	PROG	Control	Programming
15	P07	D I/O or AI	Digital I/O or Analog I
16	P06	D I/O or A I	Digital I/O or Analog I

Mechanical Dimension
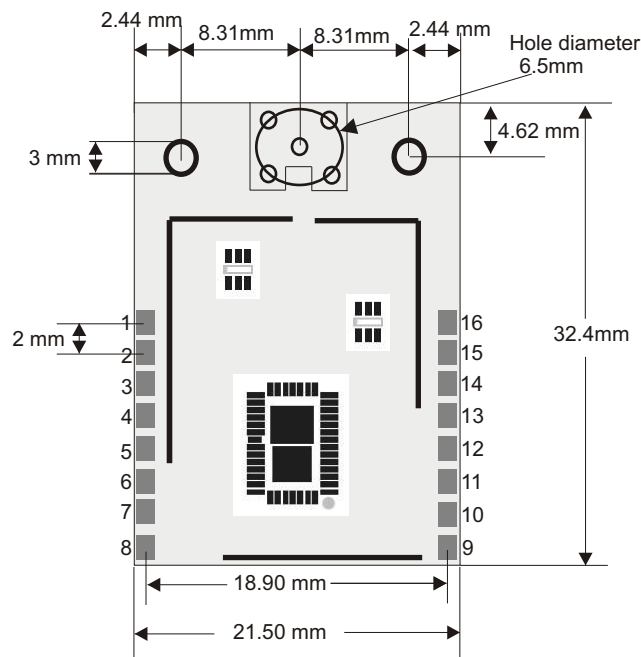
SCHEMATIC CIRCUIT BLOCK

The information contained in this document may be changed without notice.

RCS1K-868 configured as Bidirectional remote control

PIN OUT

Pads	Name	Type	Description
1	VCC	Power	Power Supply Voltage
2	GND	Ground	Ground
3	RST	D I/O	Device Reset
4	CONF	CONTROL	Parameter configuration
5	INFO	CONTROL	System status function
6	DIN3	D I/O	Activating Pushbuttons
7	DIN2	D I/O	Activating Pushbuttons
8	DIN1	D I/O	Activating Pushbuttons
9	OUT1	D I/O	Control and managing RX Unit
10	OUT2	D I/O.	Control and managing RX Unit
11	DIN4	D I/O	Activating Pushbuttons
12	C_OK	D I/O	LED_OK
13	C_KO	D I/O	LED_ ERROR
14	N.U.	N.U.	Not used
15	N.U.	N.U.	Not Used
16	N.U.	N.U.	Not Used

Pinout diagram:
Pin	Name		Name	Pin
1	VCC		N.U.	16
2	GND		N.U	15
3	RST		N.U.	14
4	CONF		C_KO	13
5	INFO		C_OK	12
6	DIN3		DIN4	11
7	DIN2		OUT2	10
8	DIN1		OUT1	9
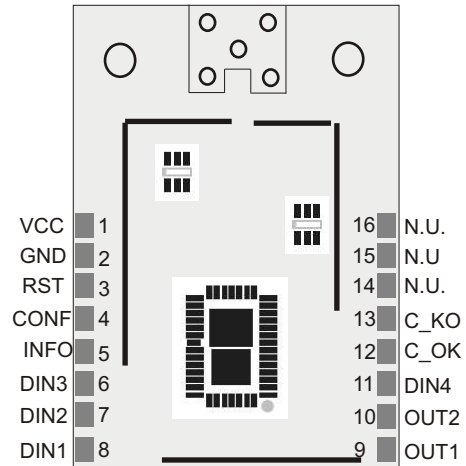
Features :

- N. 4 channels
- Confermation of the command sent (return receipt)
- Possibility to check the status of the 4 output channels.
- Modulation GFSK 19.2 Kb/s   Frequency 869.5 Mhz
- Progressive increase of the power output until the reception of the signal or up to the maximum power 20dBm (100mW)
- Number of remote control to be combined with receiver control unit : until to 65.000
- Stand-by consumption : < $0.1\mu A$ -   TXMode consumption : 10mA (0 dBm)   80mA (20dBm)
- Distance : up to 500 meter in open field with maximum transmission power 20dBm (100mW)
- SENSONET compatible.
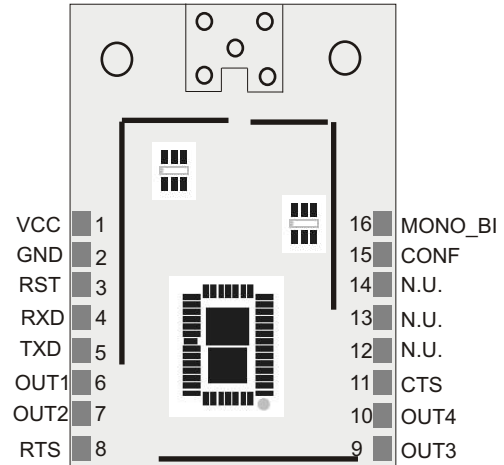- Configurable system via RS-232 interface .

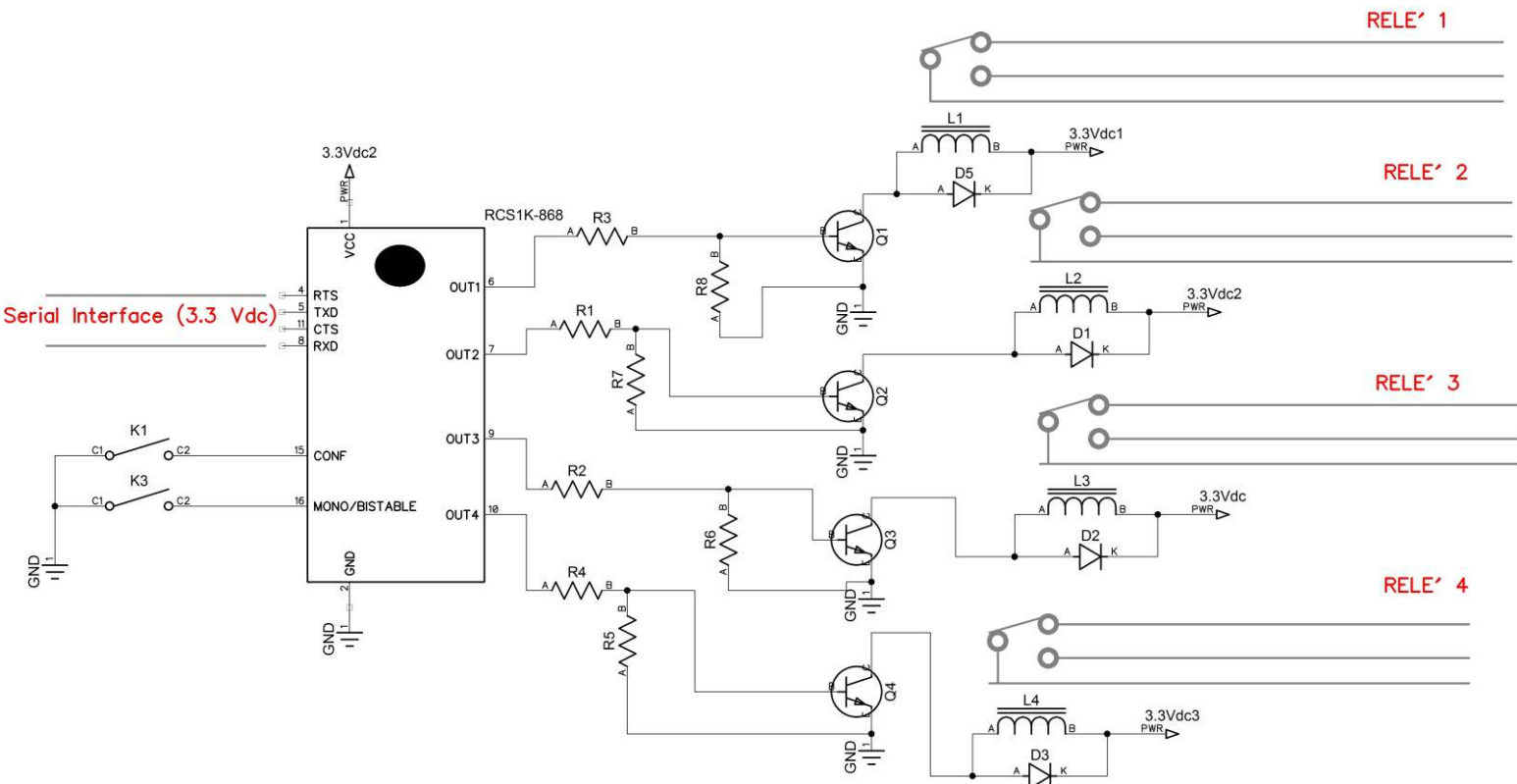### Bidirectional Remote Control Application Note
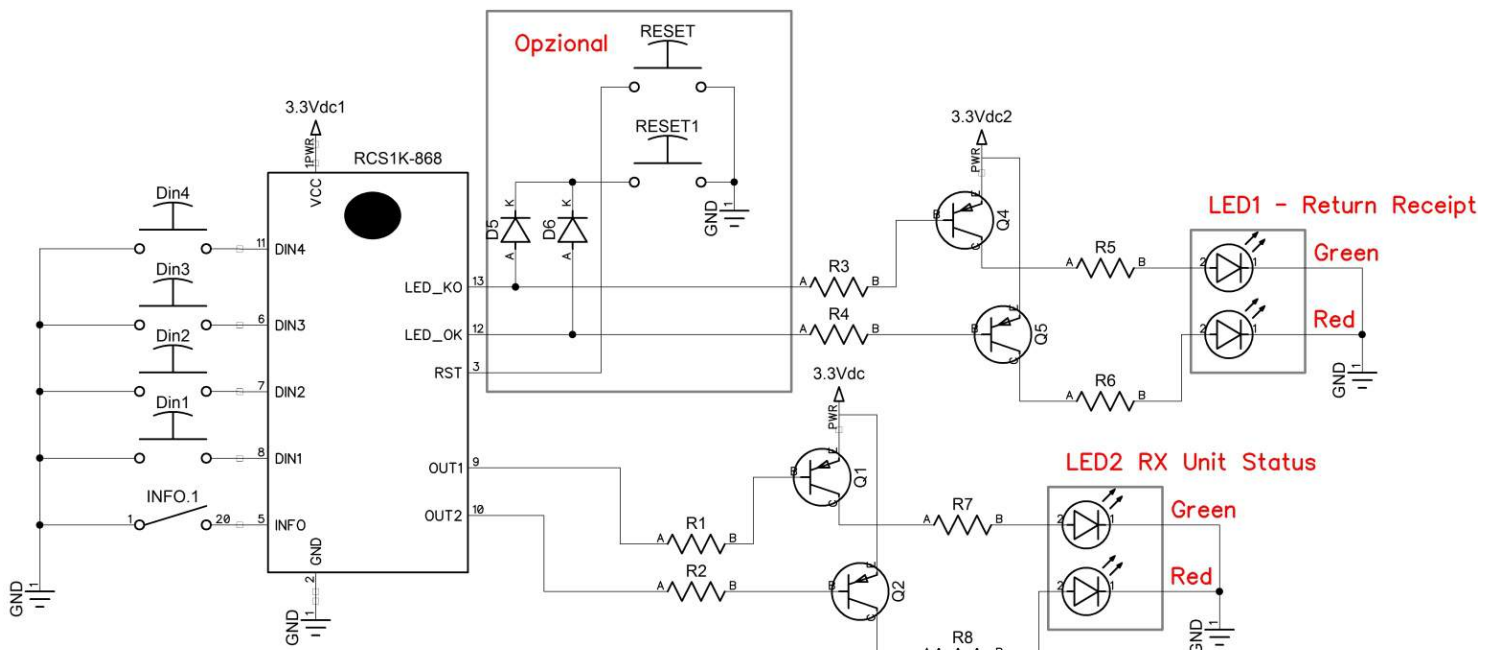
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RCS1K-868 configured as RX Unit (Bidirectional remote control)

PIN OUT

Pads	Name	Type	Description
1	VCC	Power	Power Supply Voltage
2	GND	Ground	Ground
3	RST	D I/O	Device Reset
4	RXD	UART	UART TX
5	TXD	UART	UART RX
6	OUT1	D I/O	Digital Output
7	OUT2	D I/O	Digital Output
8	RTS	UART	UART Request to Send
9	OUT3	D I/O	Digital Output
10	OUT4	D I/O.	Digital Outputt
11	CTS	UART	UART Clear to Send
12	N.U.	N.U.	Not Used
13	N.U.	N.U.	Not Used
14	N.U.	N.U.	Not used
15	CONF	Control	Configuration Parameters
16	MONO_BI	Control	Monostable/Bistable function

Left			Right	
VCC	1		16	MONO_BI
GND	2		15	CONF
RST	3		14	N.U.
RXD	4		13	N.U.
TXD	5		12	N.U.
OUT1	6		11	CTS
OUT2	7		10	OUT4
RTS	8		9	OUT3

RX Unit (Bidirectional remote control) Application Note

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RCS1K-868 configured as PWM bidirectional remote control

PIN OUT

| Pads	Name	Type	Description
1	VCC	Power	Power Supply Voltage
2	GND	Ground	Ground
3	RST	D I/O	Device Reset
4	CONF	CONTROL	Parameter configuration
5	INFO	CONTROL	System status function
6	DIN3	D I/O	Activating Pushbuttons
7	DIN2	D I/O	Activating Pushbuttons
8	DIN1	D I/O	Activating Pushbuttons
9	OUT1	D I/O	Control and managing RX Unit
10	OUT2	D I/O.	Control and managing RX Unit
11	DIN4	D I/O	Activating Pushbuttons
12	C_OK	D I/O	LED_OK
13	C_KO	D I/O	LED_ ERROR
14	N.U.	N.U.	Not used
15	PWM-	Control.	PWM Control
16	PWM+	Control.	PWM Control
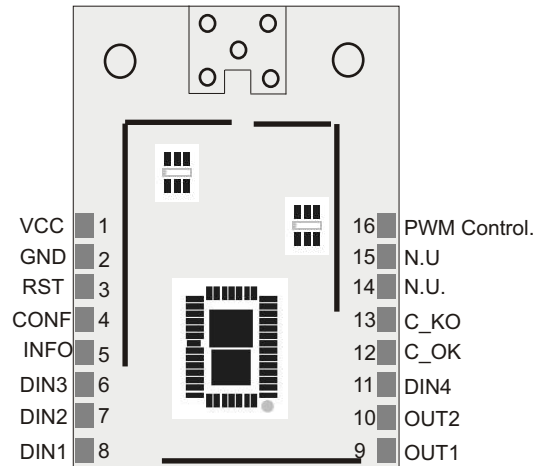
PWM Bidirectional remote control Application note
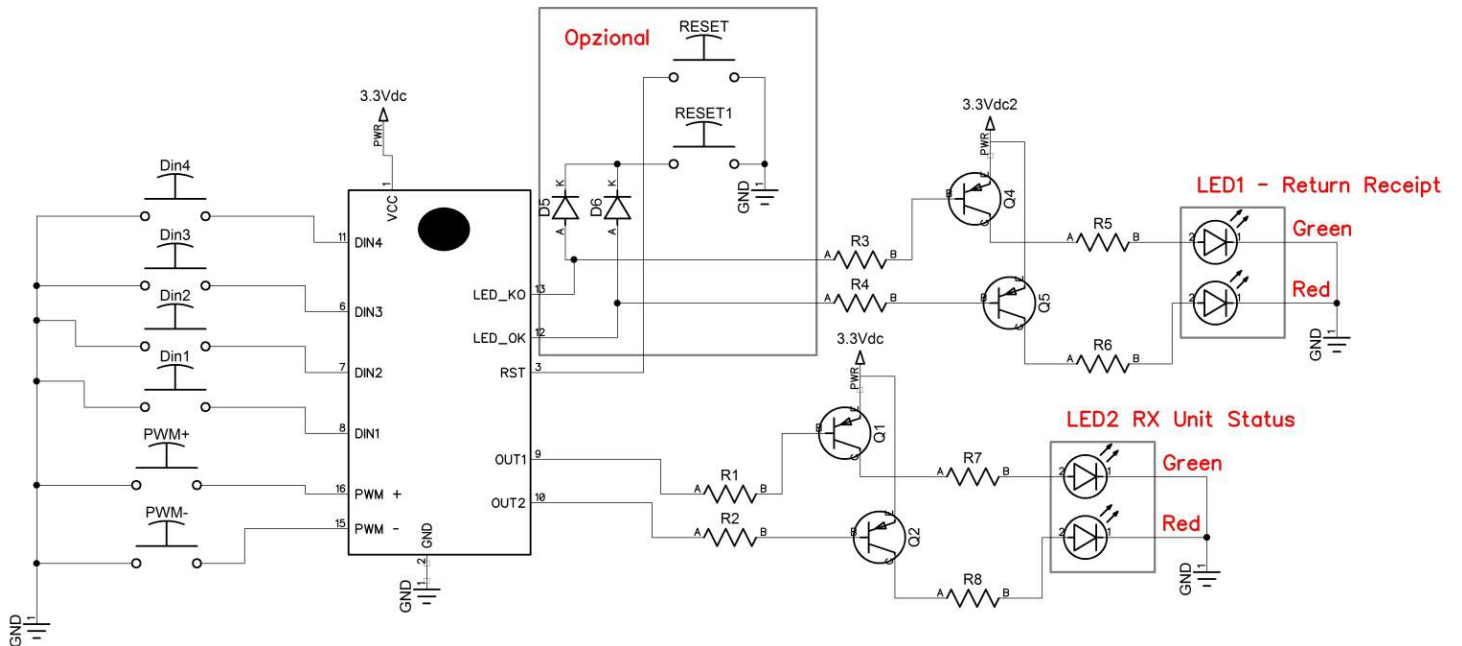(N.1 Potenziomter to adjust PWM output)
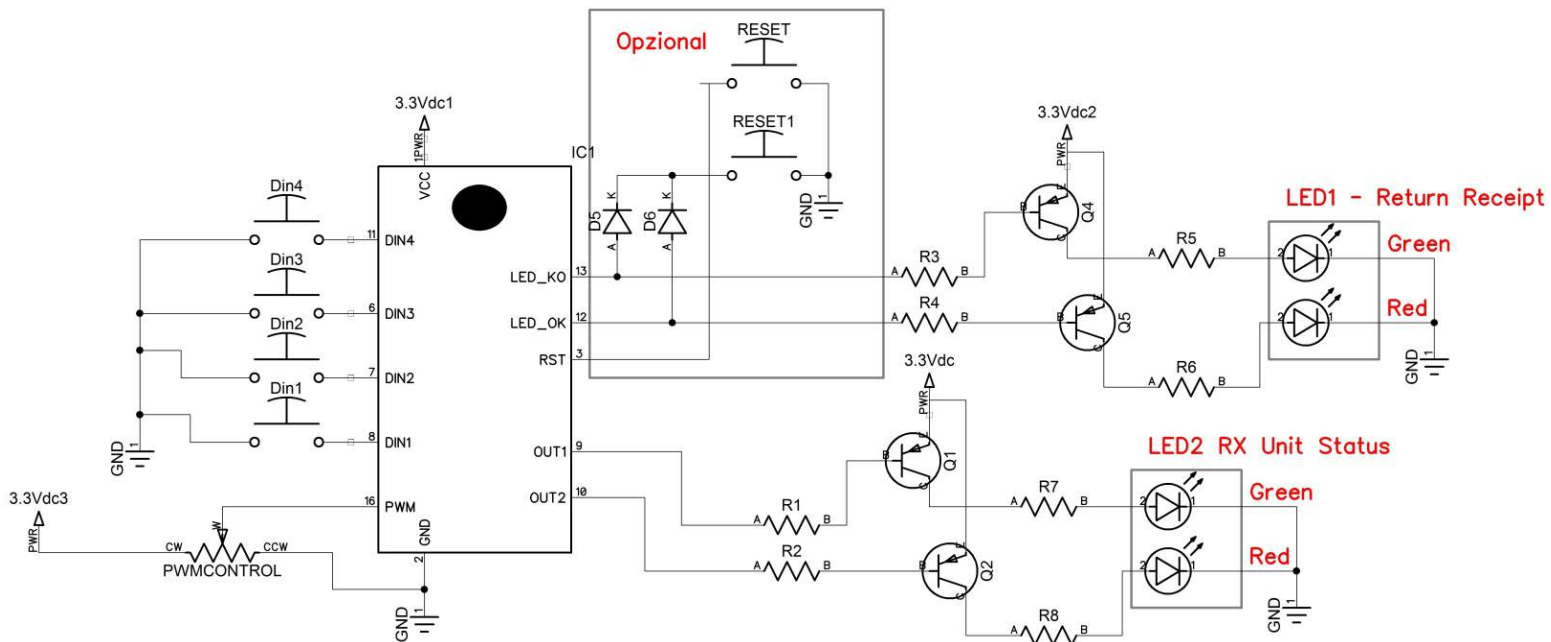
RCS1K-868 configured as PWM Bidirectional Remote Control

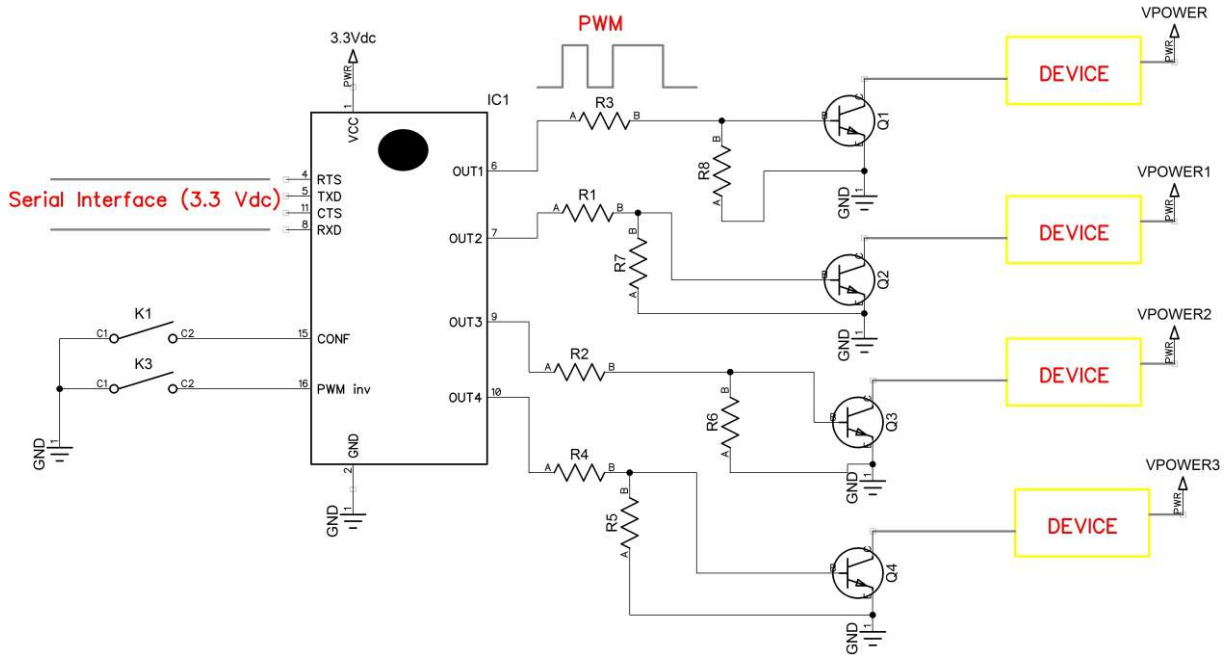PWM Bidirectional remote control Application Note (N.4 Potenziometers to adjust PWM output)
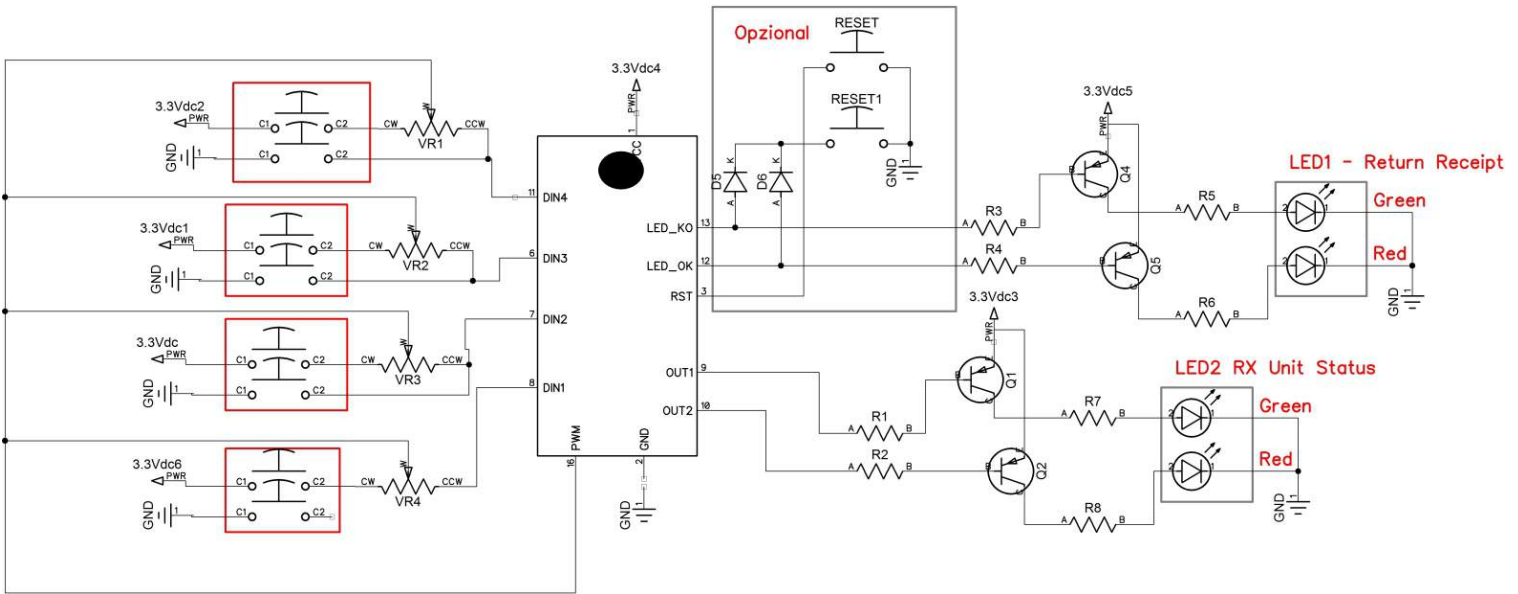
PWM Bidirectional remote control Application Note (PWM output digital adjust)

![RadioControlli logo]

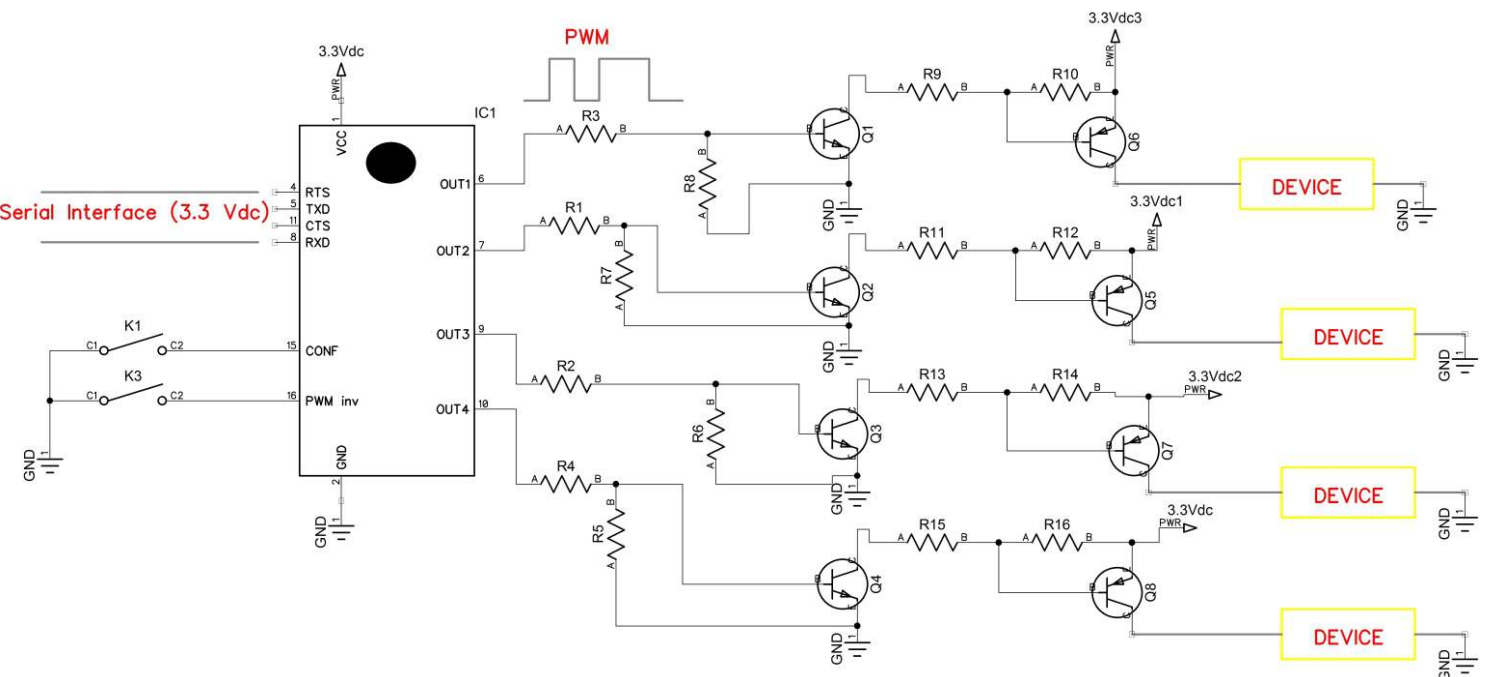## RCS1K-868 configured as PWM Bidirectional Remote Control

RX Unit Application Note
PWM positive power stage with NPN transistor (PWM inv. OPEN)
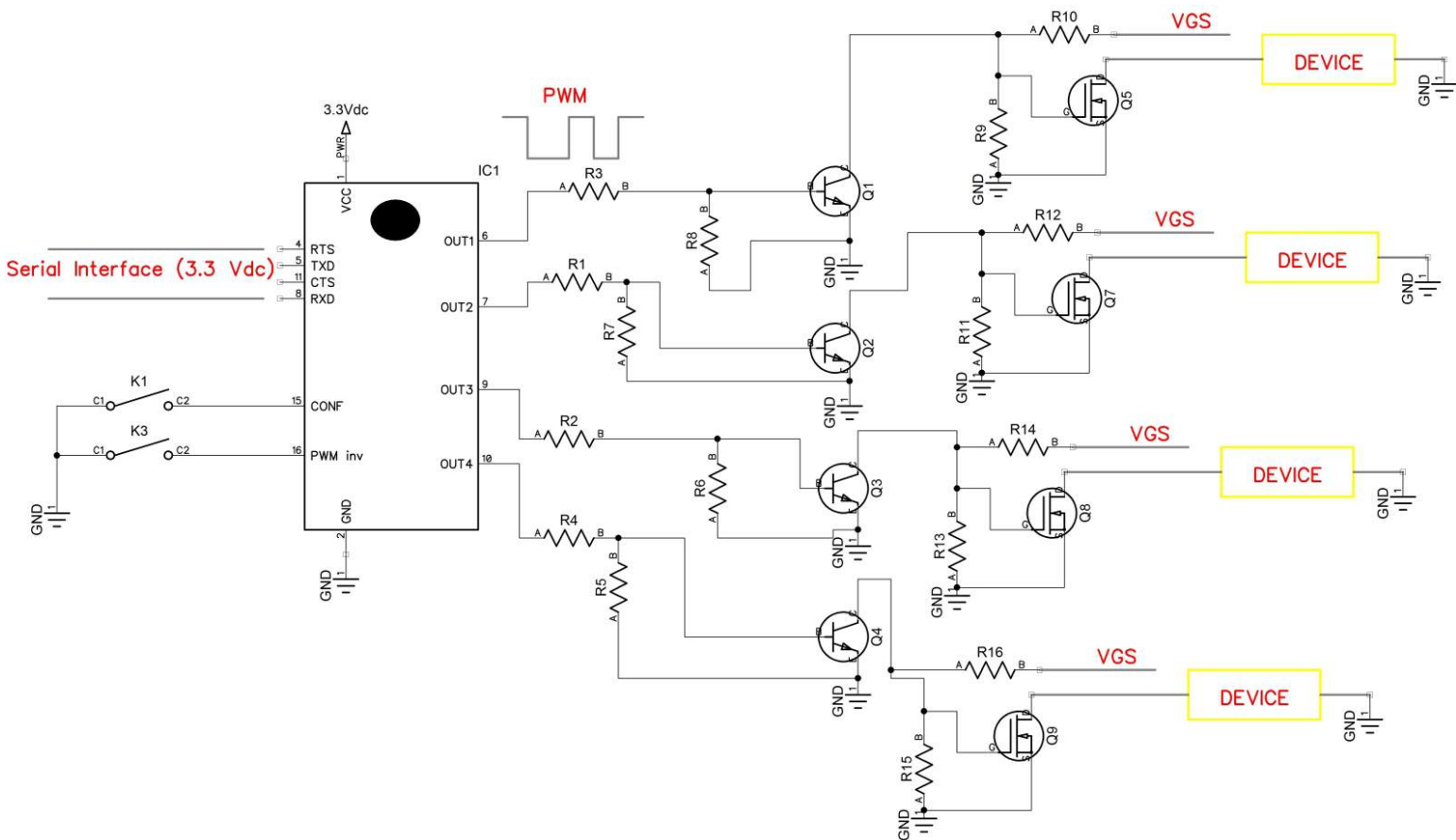

RX Unit Application Note
PWM positive power stage with PNP transistor (PWM inv. OPEN)

RCS1K-868 configured as RX Unit (Bidirectional Remote Control)

RXUnit Application Note
PWM negative power stage with FET NPN (PWM inv. CLOSE)

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