Output Overvoltage Protection with Latching Function

Design Note 012

Flex Power Modules

Output Overvoltage Protection with Latching Function

The following example shows how to use the Remote Control (RC) pin of an Flex DC/DC power module to stop the operation when there is an over voltage condition. The circuit is latching and power needs to be cycled off/ on to reset.

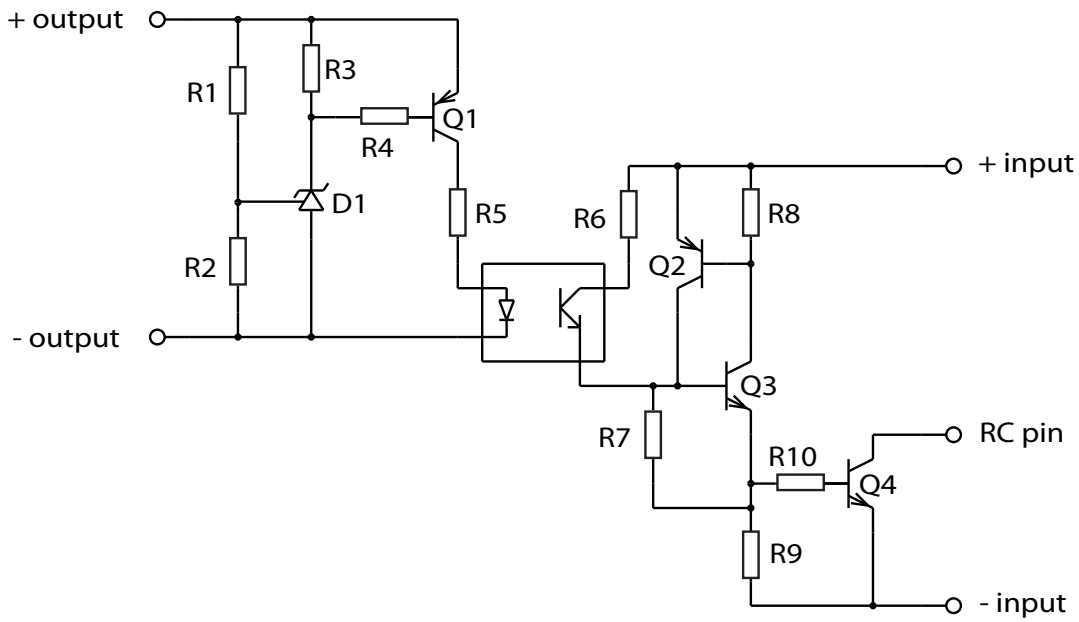
When designing an over-voltage protection circuit it is important to consider the desired function. If the main concern is rapid transients it is important to select a fast acting optocoupler. On the other hand, with over-voltages of longer duration you need to select a slower optocoupler in order to avoid triggering on the fast transients or asymmetrical disturbances.

$$Vtrip = 2.495 \times \frac{(R1 + R2)}{R2}$$

Component values for a 5 V output with the voltage limit set to 6.25V and 36-72 Vdc input:

R1	15 kΩ
R2	10 kΩ
R3, R4	1 kΩ
R5	270 Ω
R6, R10	100 kΩ
R7, R8	4.7 Ω
R9	27 µF
Q1, Q2	2N5401 or similar
Q3, Q4	2N5551 or similar

D1 reference diode is TL 431 or similar
Optocoupler is Toshiba TLP or similar



Formed in the late seventies, Flex Power Modules is a division of Flex that primarily designs and manufactures isolated DC/DC converters and non-isolated voltage regulators such as point-of-load units ranging in output power from 1 W to 700 W. The products are aimed at (but not limited to) the new generation of ICT (information and communication technology) equipment where systems' architects are designing boards for optimized control and reduced power consumption.

Flex Power Modules
Torshamnsgatan 28 A
164 94 Kista, Sweden
Email: pm.info@flex.com

Flex Power Modules - Americas
600 Shiloh Road
Plano, Texas 75074, USA
Telephone: +1-469-229-1000

Flex Power Modules - Asia/Pacific
Flex Electronics Shanghai Co., Ltd
33 Fuhua Road, Jiading District
Shanghai 201818, China
Telephone: +86 21 5990 3258-26093