

AN ISOLATION CIRCUIT FOR CONTROL ROOM POWER SUPPLIES

U. Vogel

October 1968

Collider Accelerator Department
Brookhaven National Laboratory

U.S. Department of Energy

USDOE Office of Science (SC)

Notice: This technical note has been authored by employees of Brookhaven Science Associates, LLC under Contract No.AT-30-2-GEN-16 with the U.S. Department of Energy. The publisher by accepting the technical note for publication acknowledges that the United States Government retains a non-exclusive, paid-up, irrevocable, world-wide license to publish or reproduce the published form of this technical note, or allow others to do so, for United States Government purposes.

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors, or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the results of such use of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

Accelerator Department
BROOKHAVEN NATIONAL LABORATORY
Associated Universities, Inc.
Upton, L.I., N.Y.

AGS DIVISION TECHNICAL NOTE

No. 56

U. Vogel
October 31, 1968

AN ISOLATION CIRCUIT FOR CONTROL ROOM POWER SUPPLIES

The need occasionally arises for an isolation circuit between low power Control Room Power Supplies (CRPS) that feed low field compensating currents to various correction elements in the AGS ring. This can normally be achieved by putting diodes in series with the CRPS output. However, it becomes sometimes necessary to protect the CRPS from high oscillating voltage transients that result from high power pulsing of the correction elements.

This was the case when the skew quadrupole at E-15 was to be pulsed to 900 A. The transients are then of the order of a few hundred volts and of either polarity. A more involved combination of diodes than just a single one in series had to be considered. Since in this case some care has to be taken in the selection of diodes and their ratings and also consideration be made of the transient loads presented to the CRPS, an alternative solution shown in Fig. 1 was arrived at.

Q1 presents a constant load impedance to the CRPS. The diode D, across points A and B, shorts out any inverse transients from the correction element. The voltage ratings of D are relatively low and are independent of the load voltages. These voltages are effectively isolated by the

impedance of the high power resistor R. Transistor Q2 shorts out points A and B whenever a positive transient appears at the output terminals.

The circuit of Fig. 1 was introduced in May 1968, and has since proved entirely satisfactory whenever it was used.

Distr: Department Administration
AGS Division Staff
Main Control Room Operators
Conversion Division Staff

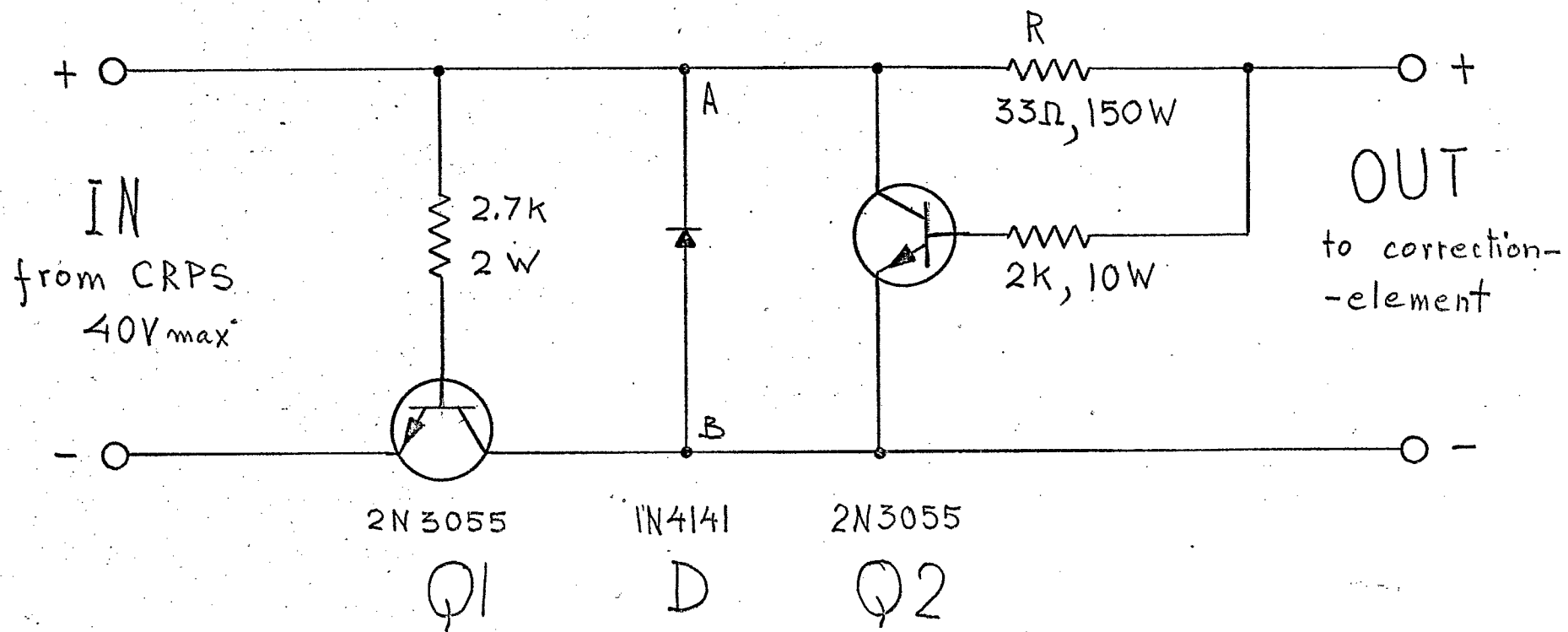


Figure 1