

USE OF TRANSILS AS RECTIFIER DIODES

Transils are diodes especially designed to dissipate high peak power in avalanche operation. In direct conduction they have the properties of very good conventional diodes (with the possibility of handling very high surge currents) and perform as well as rectifiers.

In general, there could be a voltage surge due either to the power supply or to the load. Power supply overvoltages can be clamped by means of a Transil on the ac side : see fig.1.

Wherever possible, it is more attractive to use Transils directly as rectifiers instead of protecting separate rectifiers with Transils since the number of components is reduced : see fig.2. The characteristics given in the data-sheets (I_{FSM} , forward voltage drop characteristic) enable calculations to be made in this mode of operation.

The following table gives the equivalence between Transils and common rectifiers.

TRANSIL	P6KE	1N5635A to 1N5665A	1.5KE	BZW50
Case	CB-417	DO 13	CB-429	AG
Rating of Equivalent Diode (A)	1	1.2	3	6

Neither of these two methods protects against overvoltages originating from the load. Fortunately, a study of bridge rectifier operation shows that it is sufficient to limit the voltage on

the dc side to protect the bridge whatever the origin of the overvoltage : see fig.3. In all cases, a single Transil is sufficient to protect a single phase or a 3-phase bridge rectifier.

Figure 1 : The diodes are not protected from overvoltages due to the load

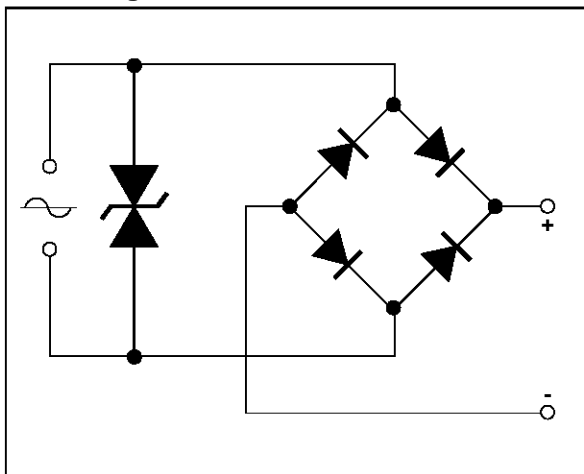


Figure 2 : Mixed Solution which reduces the component count. The 2 Transils work as rectifiers

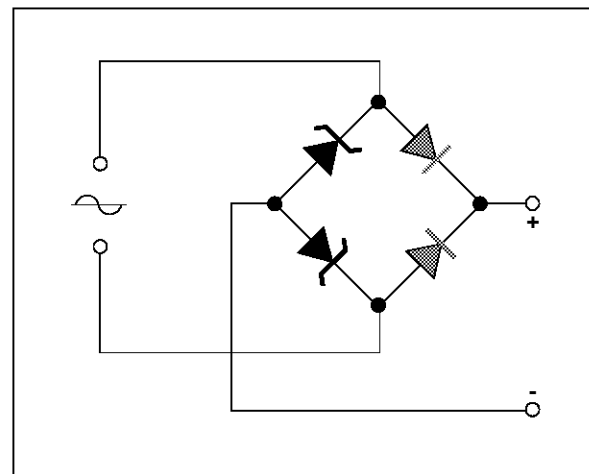
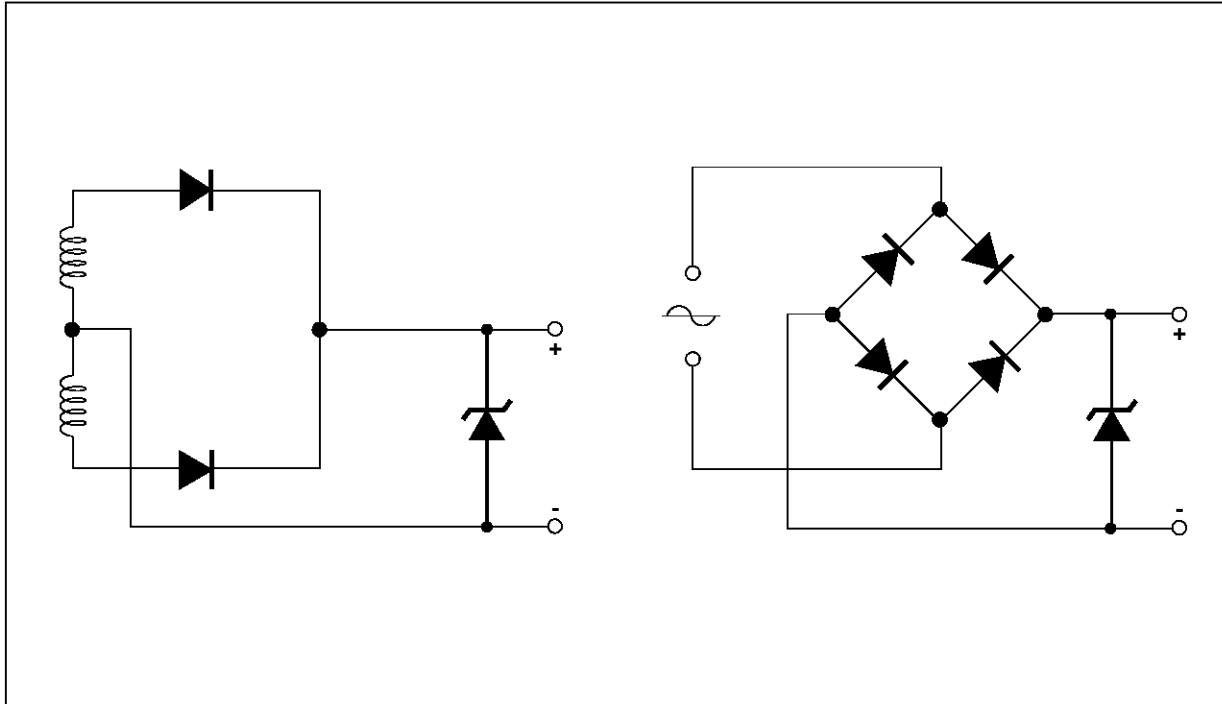


Figure 3 : A single Transil protects the rectifying components whatever the origin (power supply or load) of the overvoltages



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