Transformer Data

When a transformer is used in a power supply circuit, the available output voltage and current produced is dependant on the type of rectification used. The following is a close approximation of the expected figures not taking into account any losses.

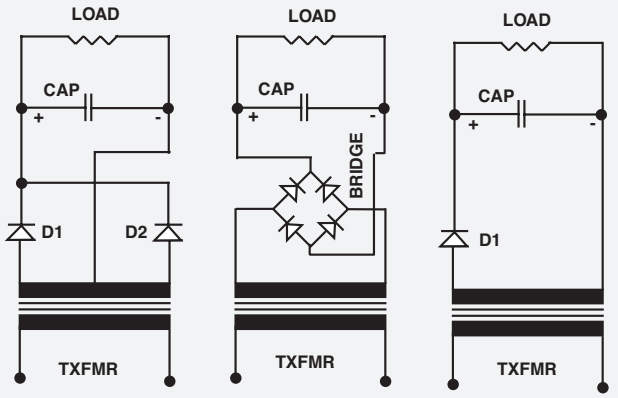

Fig.1 Full wave rectifier
Volts DC = 0.71 x Volts AC
Amps DC = 0.71 x Amps AC

Fig.2 Bridge rectifier
Volts DC = 1.41 x Volts AC
Amps DC = 0.71 x Amps AC

Fig.3 Half wave rectifier
Volts DC = 1.41 x Volts AC
Amps DC = 0.35 x Amps AC

Volts AC = Transformer secondary voltage, Volts DC = Supply output voltage, Amps AC = Transformer max secondary current, Amps DC = Maximum supply output current

Calculating transformer temperature rise

To calculate the temperature rise of a power transformer use the following formula. The transformer should be left at full load for at least 4 hours to reach and stabilise at its maximum temperature.

$$\Delta t = [R_2 / R_1 (k + t_1)] - (k - t_2)$$

K = 234.5° for copper
225° for aluminium

Δt = Temperature Rise

R1 = Primary resistance before test. i.e. cold

R2 = Primary resistance after test. i.e. hot

t1 = Ambient temperature before test.

t2 = Ambient temperature after test.

Insulation Temperature Class	
Winding type	Temp Rise (Max)
Class 105(A)	75
Class 120(E)	90
Class 130(B)	95
Class 155(F)	115
Class 180(H)	140
Class 200	160
Class 220	180
Class 250	210

