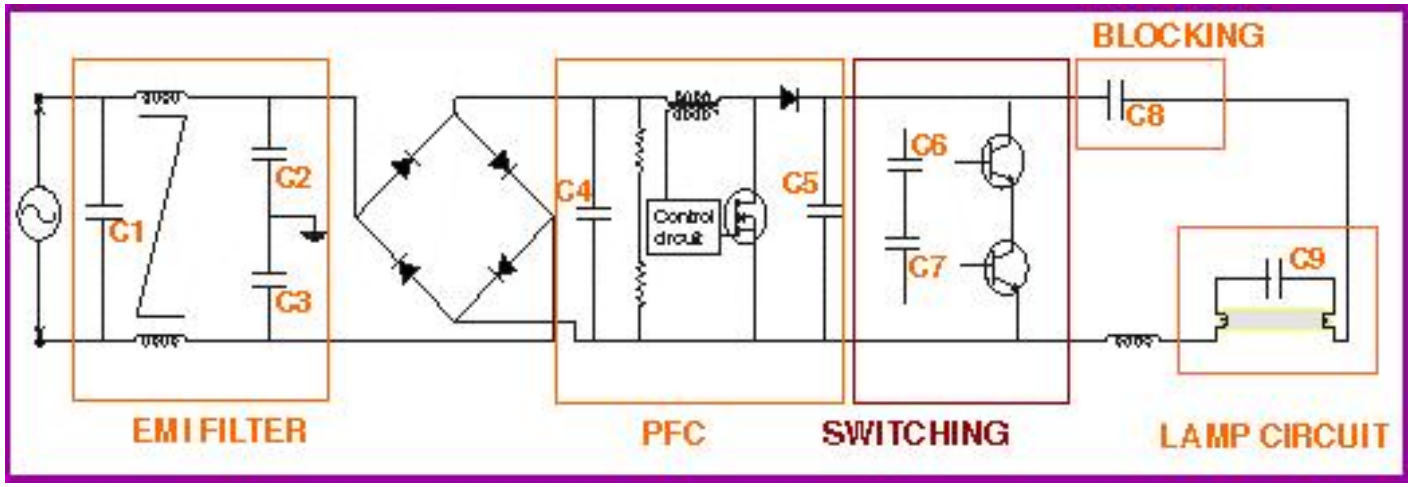
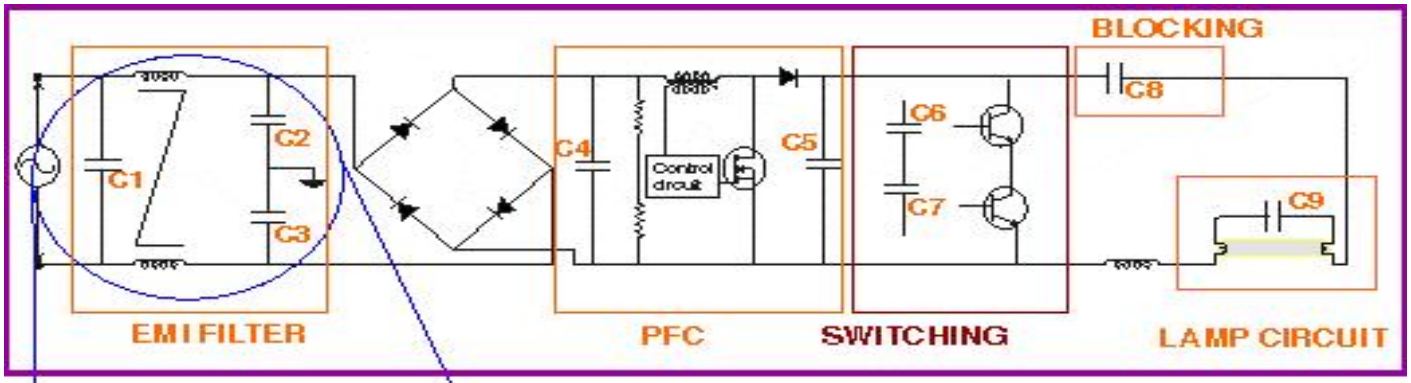
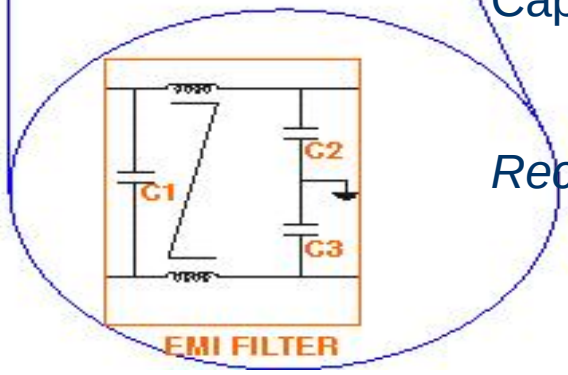
ELECTRONIC BALLAST

ELECTRONIC BALLAST- CIRCUIT



EMI FILTER CAPACITOR





EMI Filter-C1,C2 & C3:

Capacitance value : 22nf to 470nf (for C1)

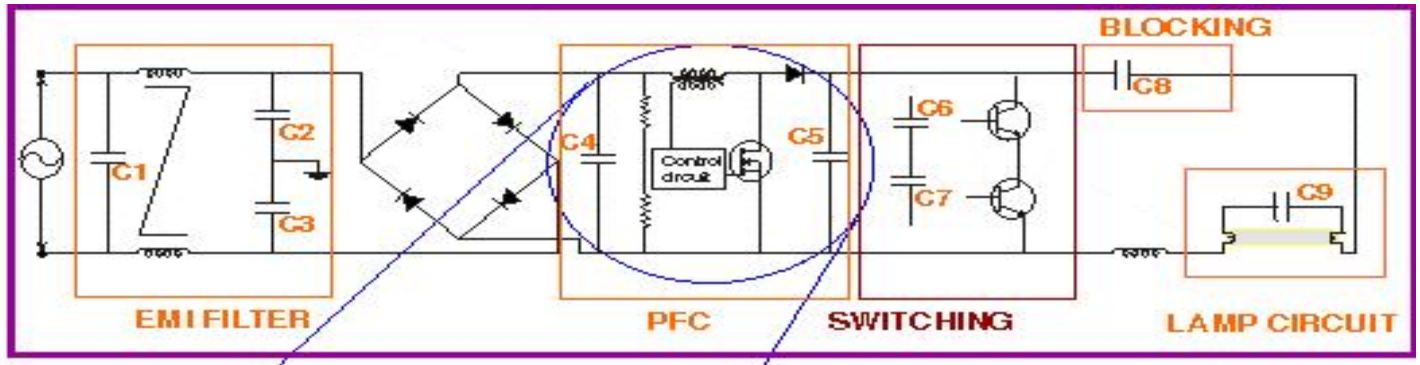
1nf to 3.3 nf (for C2,C3)

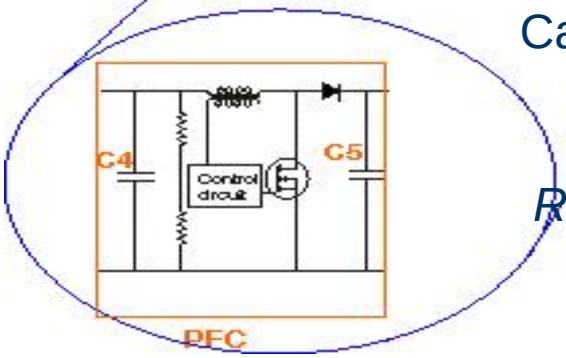
Recommended capacitors

C1 - X2 Class (275VAC)

C2, C3 - Y2Class (250VAC)

POWER FACTOR CORRECTION





Power factor correctionC4 :

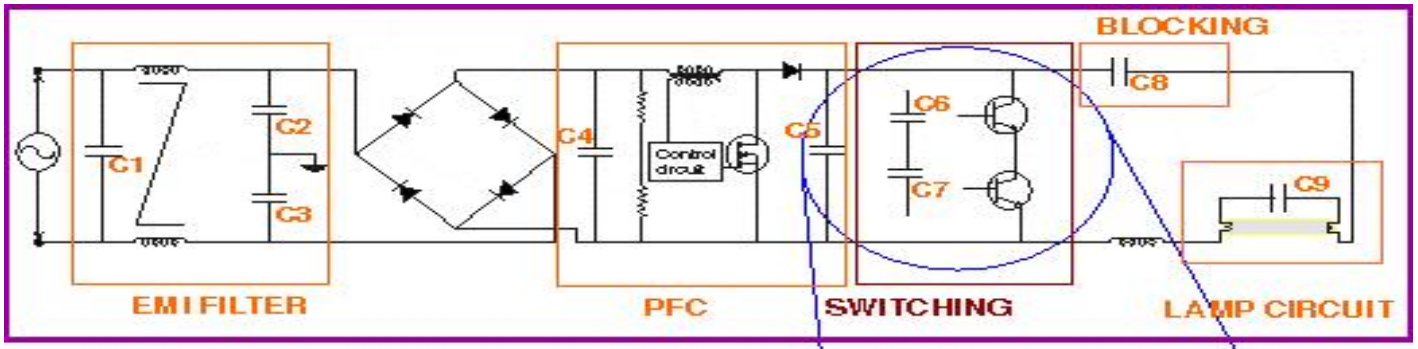
Capacitance value : 0.1μf to 4.7μf

(250VDC - 400VDC)

Recommended capacitors

C4 - MPET and MPP Series

SNUBBER



Snubber –C6 & C7:

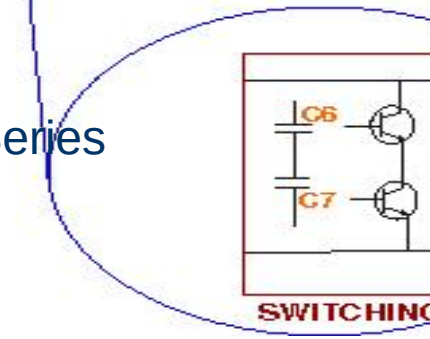
Capacitance value : 1nf to 0.015µf (630VDC - 2000VDC)

Recommended capacitors

C6&C7 - MPP/MPP DC-Series

- MMPP-Series

- PP/MPP -Series



WHY POLYPROPYLENE CAPACITOR FOR SWITCHING

Polypropylene capacitor is ideal choice for high frequency applications because of its low loss factor. For striking, the capacitor should have high dv/dt rating and low loss factor .low loss factor is preferred because

$$P = 2.\pi.\ f.C.\tan\delta\ .V_{RMS}^{2} \quad \text{--------(1)}$$

$$\Delta T = P\ .\ R_{TH} \quad ^{\circ}C \quad \text{--------(2)}$$

P = power dissipation in capacitor. ΔT = Temperature Rise

R_{TH} = Thermal resistance of the capacitor

From above eq. we can tell power dissipation is directly proportional to the frequency, loss factor and V_{RMS} .Heat generated in the capacitor is proportional to the power dissipation. But temperature rise is not allowed more than 10°C at its category temperature. For polypropylene capacitors loss factor is low at high frequency .so the temperature rise considerable less than other capacitor.

POLYPROPYLENE CAPACITOR - DEKI RANGE

MPP/MPP D.C Series preferred (for good dv/dt)

2000vdc/700vac: 1000pf to 0.047Mf , 1600vdc/700vac: 5600pf to 0.068 Mf

1600vdc / 500vac: 2200pf to 0.22 Mf ,1250vdc/500vac:8200pf to 0.15Mf

PP/MPP capacitors (for very high dv/dt with good current carrying capability)

2000vdc/500vac: 0.0001Mf to 0.01Mf , 1600vdc/450vac: 0.001Mf to 0.022 Mf

1250vdc/450vac:0.0022Mf to 0.033Mf ,1000vdc/400vac:0.0033Mf to 0.056Mf

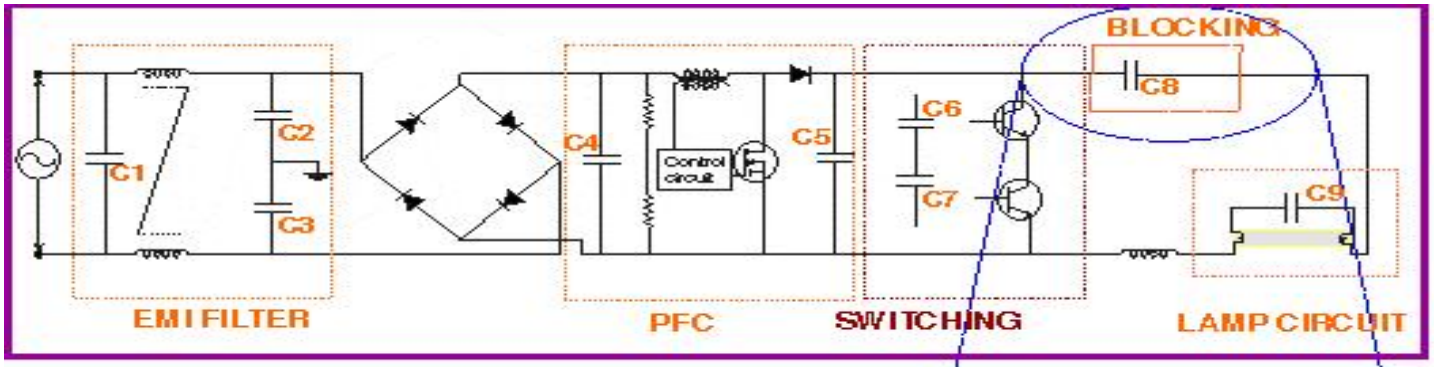
MMPP(Double side metallised pp film construction)

2000vdc/700vac: 220pf to 0.027Mf

1600vdc/500vac: 3300pf to 0.056 Mf

1250vdc/500vac:8200pf to 0.068Mf

BLOCKING CIRCUIT

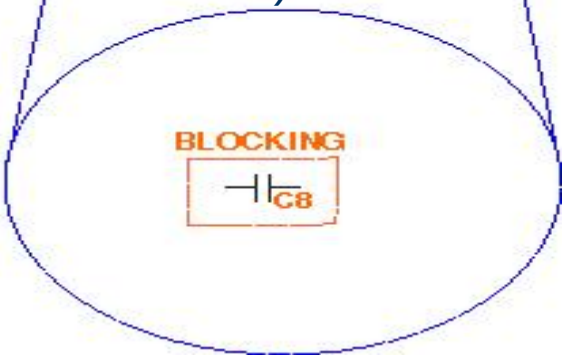


Blocking –C6 & C7:

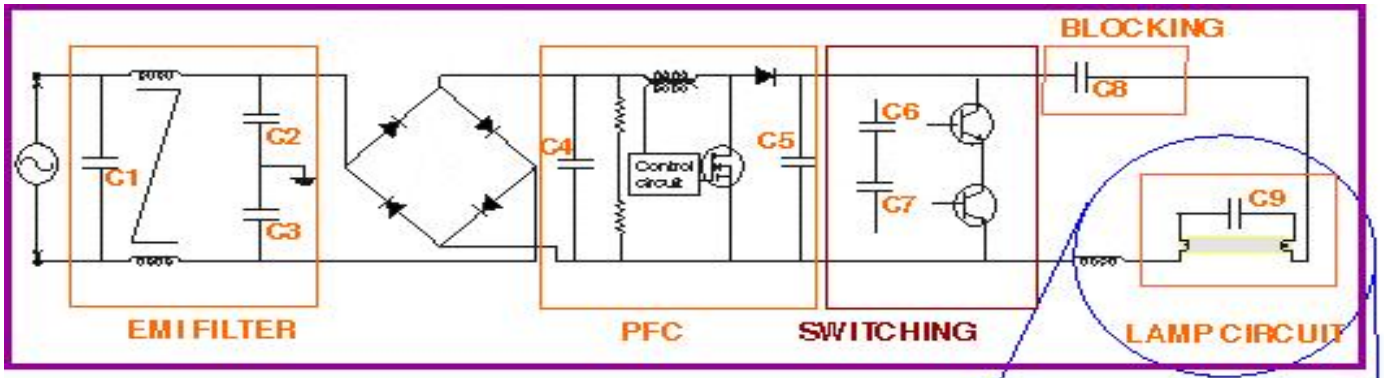
Capacitance value : 15nf to 220nf (400VDC - 630VDC)

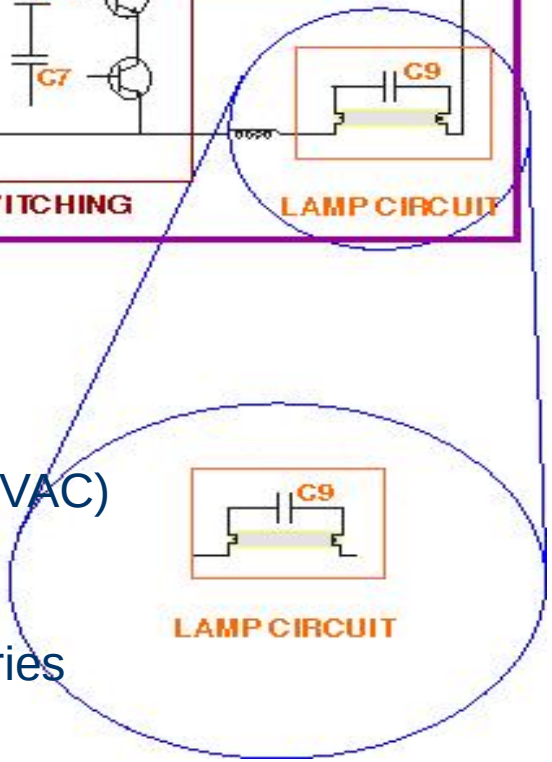
Recommended capacitors

C6 - MPET



LAMP CIRCUIT





Striking –C9:

Capacitance value : 4.7nf to 15nf

(500VAC - 900VAC)

Recommended capacitors

C9 - MPP/MPP AC-Series

MPP/MPP A.C series –DEKI RANGE

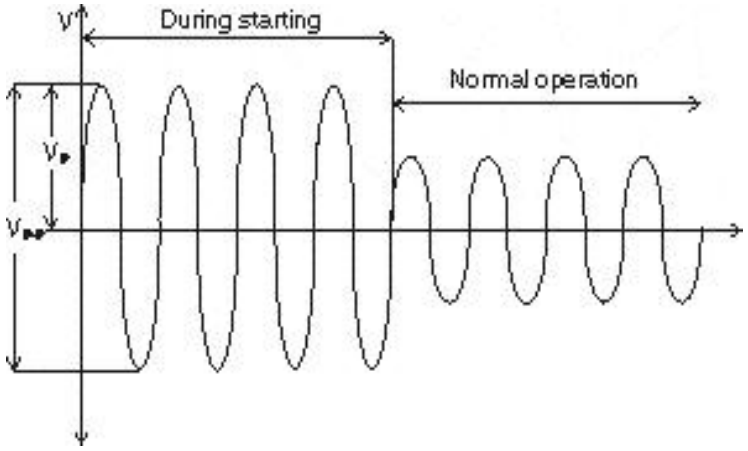
- 500vac(1600VDC) : 1000pf to 0.056Mf
- 700vac(2000VDC) : 1000pf to 0.039 Mf
- 900vac(2000VDC) :1000pf to 0.018Mf

NEW

This is the capacitor which is specially designed for striking application in electronic ballast with good dv/dt.

The above series available in box as well as Dip.We can guarantee less capacitance loss after 10000 ignitions say 3%.

CAPACITOR SELECTION FOR STRIKING



Following condition should be satisfied when selecting capacitor for striking application

1. V_P should be less than D.C rated voltage.
2. V_{P-P} should be less than $2x1.414xV_{RMS}$
3. dv/dt rating should be fullfilled
4. Peak current should be less than C(dv/dt)
5. Temperature rise should be less than 10°C

CAPACITOR SELECTION FOR STRIKING

During striking

V_{P-P} ≈ 1500 Vac

V_P ≈ 750 Vac

So V_{RMS} = 530Vac

Frequency is above 20KHz

During Normal operation

V_{P-P} ≈ 300 Vac

V_P ≈ 150 Vac

So V_{RMS} = 106Vac

Frequency is above 30KHz to 56KHz

For the above data we can use 700Vac (2000Vdc) MPP/MPP A.C series .