

PFC BCM Diode-Bridge-Less $V_{in}=200V$ $I_{in}=2.5A$

Input :

$V_{in}=200V_{ac}$ $I_{in}=2.5A_{ac}$
 $f_{ps}=50Hz$

Output : $V_o=500V_{dc}$

Gate Drive : $V_d=18V$

$R_{source}=5\Omega$

$R_{sink}=2\Omega$

Q1 : SCT2450KE

SiC MOSFET (1200V 10A)

D1 : SCS302AHG

SiC SBD (650V 2A)

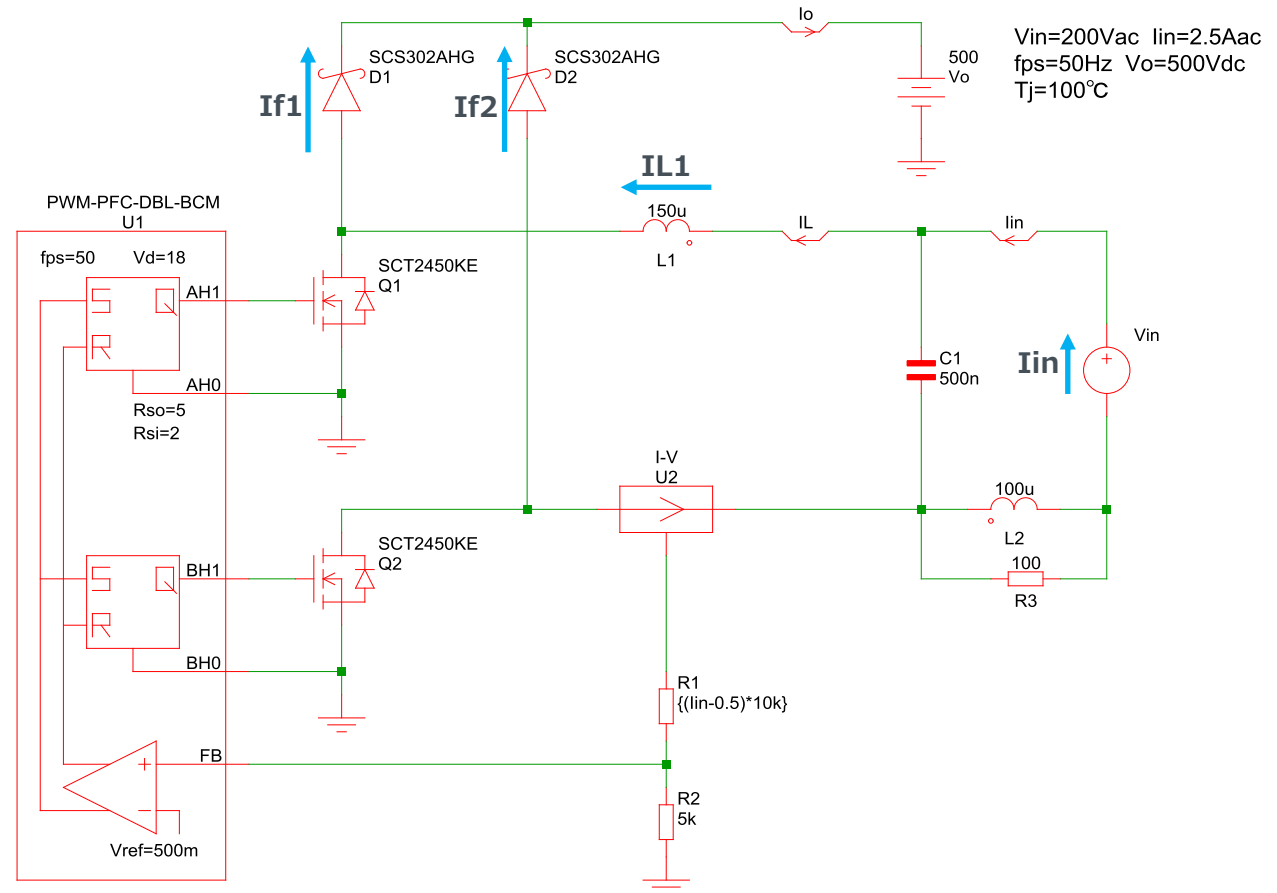
L1 : 150uH , L2 : 100uH

C1 : 500nF

$T_j : 100^\circ C$

PFC Boundary Current Mode

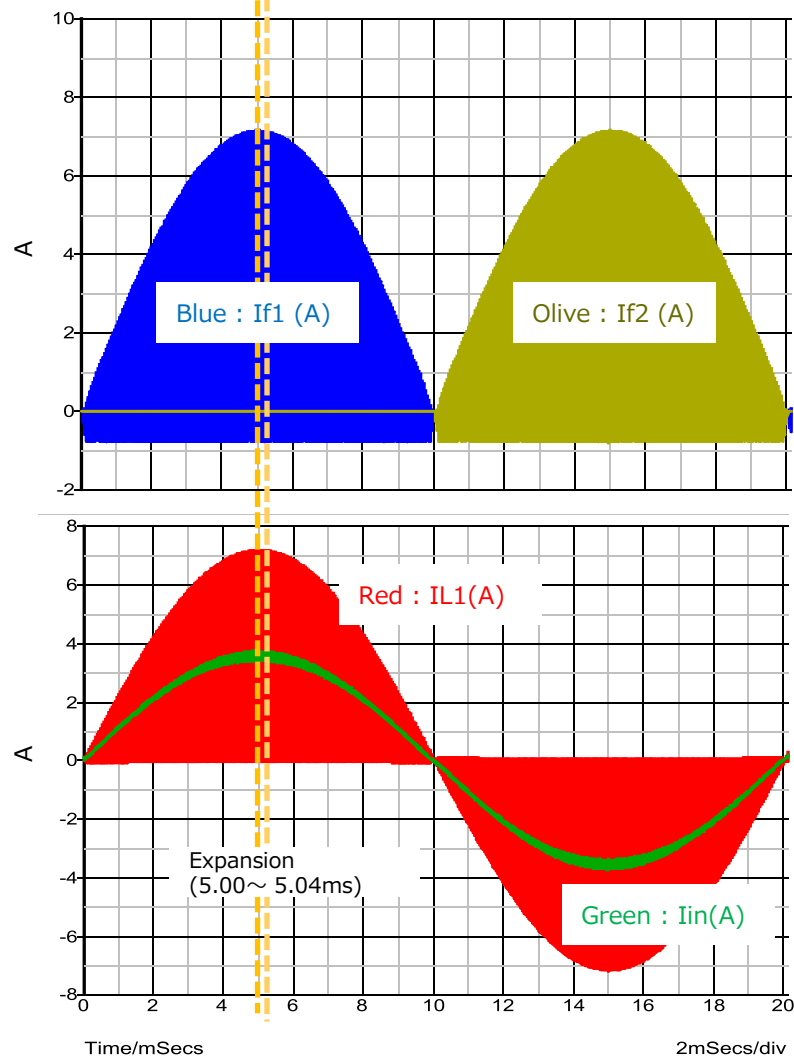
Diode-Bridge-Less $V_{in}=200V$ $I_{in}=2.5A$ Simulation Circuit



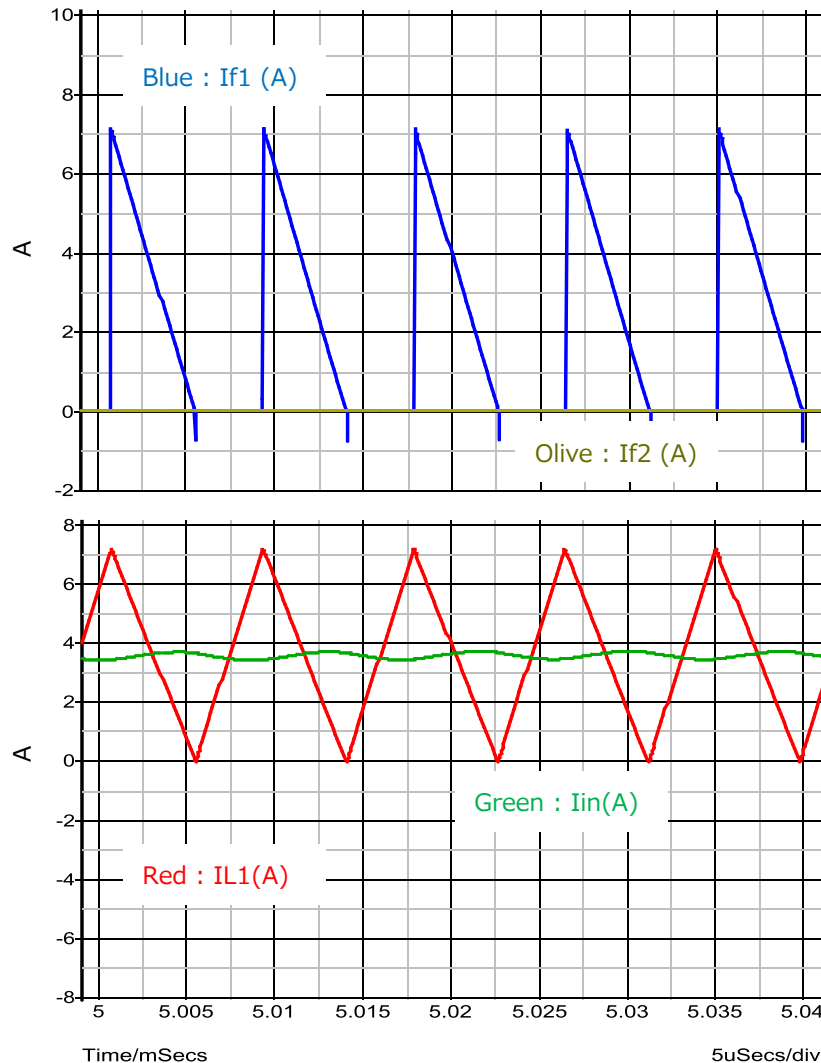
Simulation Waveform

Current Waveform

$V_{in}=200V_{ac}$ $I_{in}=2.5A_{ac}$
 $V_o=500V_{dc}$ $T_j=100^{\circ}C$



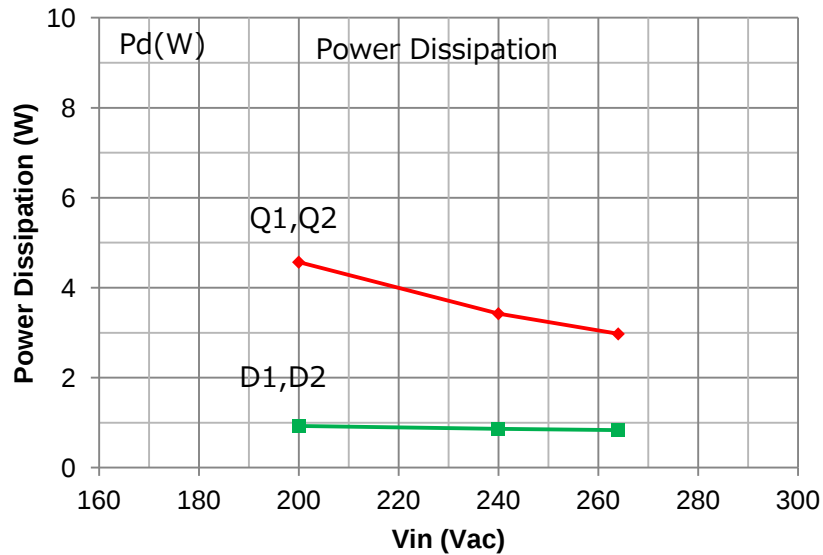
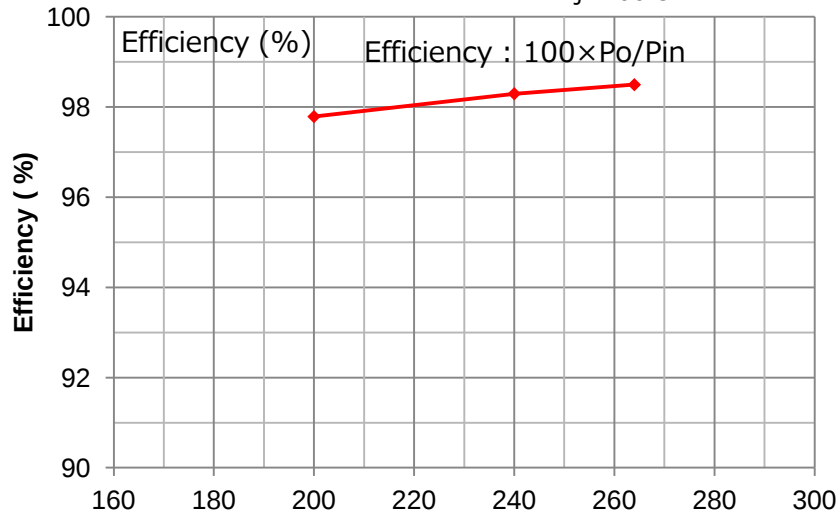
Expansion (5.00~5.04ms)



Efficiency, Power Dissipation 1

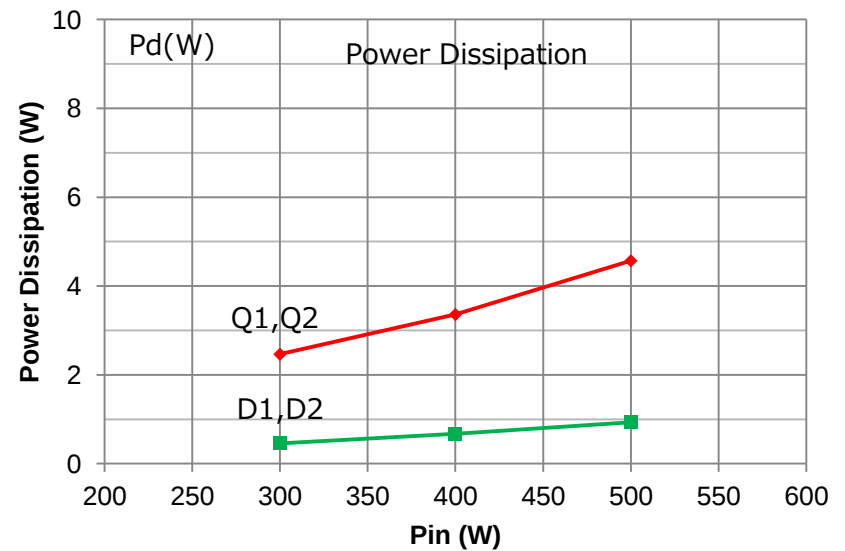
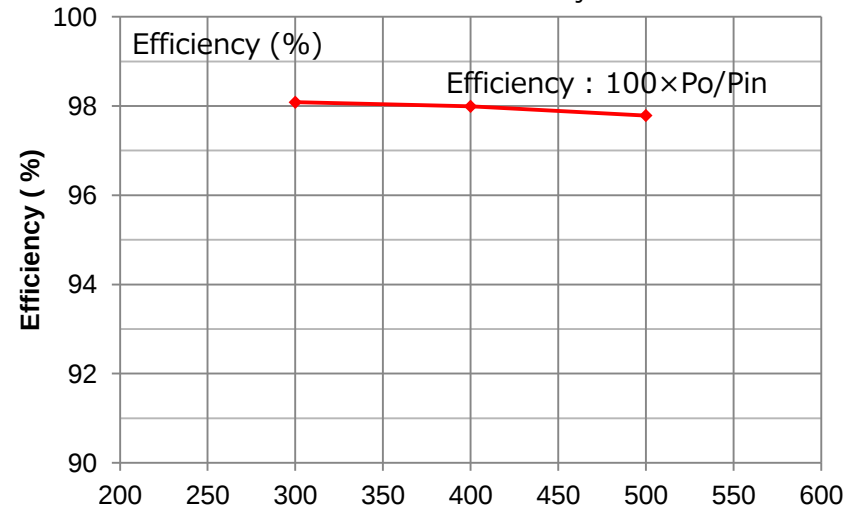
Vin : 200Vac~264Vac

Pin=500W Vo=500Vdc
Tj=100°C



Pin : 300W~500W

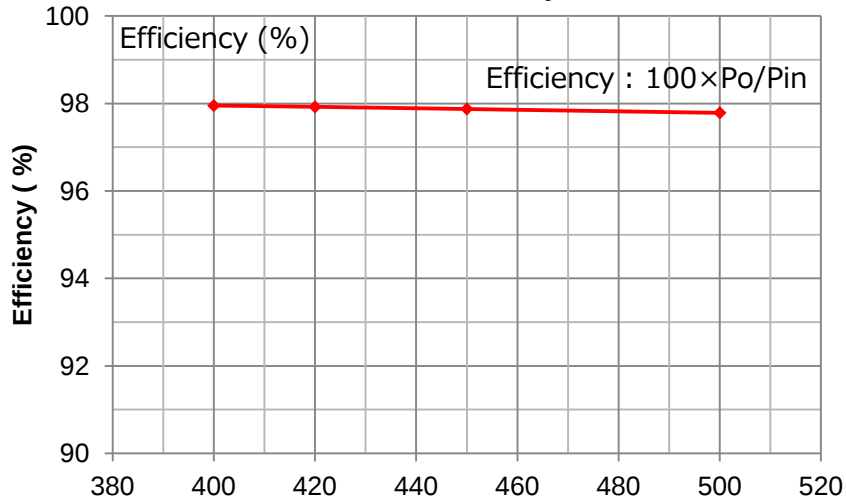
Vin=200Vac Vo=500Vdc
Tj=100°C



Efficiency, Power Dissipation 2

V_o : 400Vdc~500Vdc

$V_{in}=200V_{ac}$ $I_{in}=2.5A_{ac}$
 $T_j=100^{\circ}C$



T_j : $-25^{\circ}C \sim 125^{\circ}C$

$V_{in}=200V_{ac}$ $I_{in}=2.5A_{ac}$
 $V_o=500V_{dc}$

