

# The 60W evaluation boards of LED Lighting Driver IC IR3M92N4

SYSTEM DEVICE UNIT  
ELECTRONIC COMPONENTS AND DEVICES DIVISION  
Sharp Corporation

# IR3M92N4 Flyback mode $V_{in}=180V-305V$ / $P_{out}=40V/1.5A$ TYPE.B

## Specification

- 200V system voltage type
- Input Voltage : AC180V~AC305V
- Mode : Isolation (Flyback mode)
- Output Voltage : 40V, 1.5A (60W)
- Operating Temperature :  $-30^{\circ}C \sim 80^{\circ}C$
- Efficiency : 89.8%(typ)
- Power Factor :  $> 0.9$ (typ)
- THD : 13.0%(typ) @  $V_{in}=230V, V_o=40V$
- $I_{out} \pm 2\%$  @  $V_{in}=180-305V, V_o=40V$

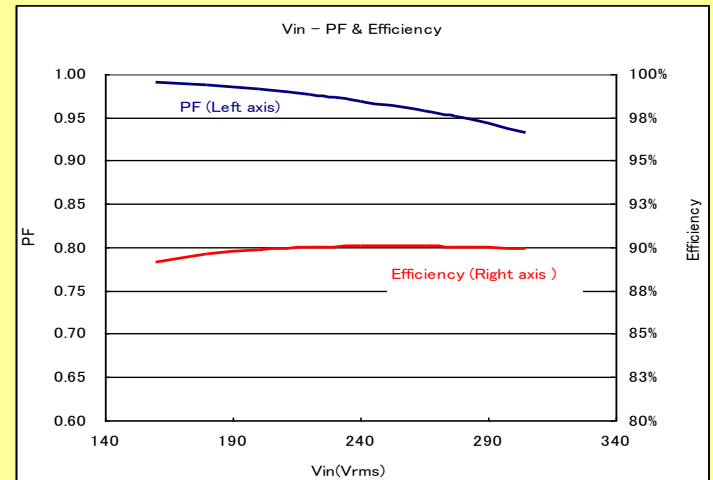
## 60W evaluation board results of the tests

	Units	Preset value	Measured value					
Input Voltage	(Vrms)	-	180	200	220	230	265	305
Power Factor		-	0.99	0.98	0.98	0.97	0.96	0.93
Input Current	(mA)	-	364.1	327.7	298.6	286.1	251.7	224.7
Input Power	(W)	-	64.8	64.5	64.3	64.2	64.0	64.1
Output Voltage	(V)	-	38.5	38.5	38.4	38.4	38.3	38.3
Output Current	(A)	1.5	1.50	1.50	1.50	1.50	1.50	1.50
Output Power	(W)	-	58.1	57.9	57.8	57.8	57.6	57.6
Efficiency	(%)	-	89.6%	89.8%	90.0%	90.0%	90.0%	89.9%
$I_{out}$ Tolerance	(%)	-	0.29%	0.20%	0.12%	0.09%	0.06%	0.19%

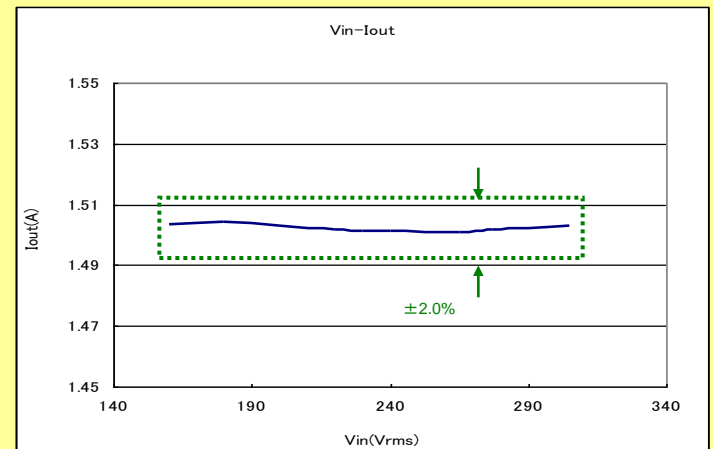
Values written in this sheet are only for your reference.

Please evaluate enough with your products and equipments.

## Vin vs. PF & Eff.

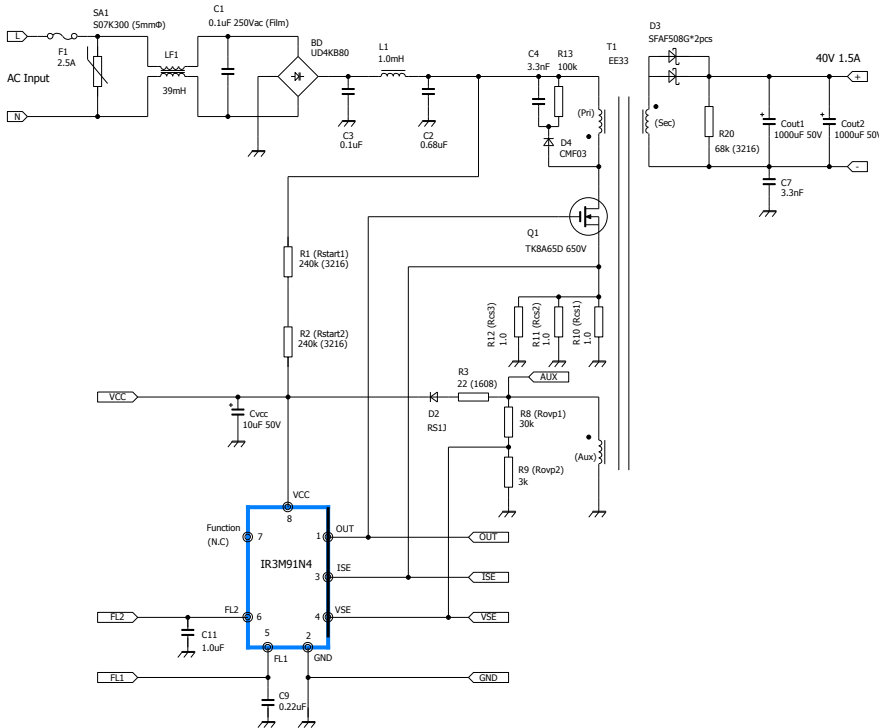


## Vin vs. Iout



# IR3M92N4 Reference Design & BOM (50W)

## Application circuit



## BOM

$V_{in} = 180V \sim 305VAC$  /  $P_{out} = 60W(40V/1.5A)$  BOM

Ref. No.	Description	Model number	Manufacturer	Qty	Remarks
T1	Trans coil	EE33	Tokyo Parts	1	Np: 38T (L=0.48mH), Ns: 10T, Na: 5T
L1	Choking coil 1.0mH	RCP1317NP-102L	Sumida	1	※Check mains terminal interface voltage
F1	Fuse AC250V 2.5A	AC250V 2.5A	Littelfuse	1	8.5 * 4mm, pitch5.08mm, $\phi$ d=0.6
SA1	Varistor 300V 7mm $\phi$	S07K300	EPCOS	1	
LF1	Line Filter 39mH	0R8A393TLN	Tokyo Parts	1	
BD1	Diode bridge rectifier	UD4KB80	Shindengen	1	
C1	X-capacitor (0.1uF 250Vac)	250MMA104	Rubycon	1	
C2	Film capacitor (0.68uF 450Vdc)	630MPK684	Rubycon	1	
C3	Film capacitor (0.1uF 450Vdc)	630MPK104	Rubycon	1	
C4	3.3nF	RDER72J332	Murata	1	
C7	Y capacitor 3.3nF	DE1E3KX332M	Murata	1	
C9	Capacitor 0.1uF (1608)	0.1uF (1608)		1	
C11	Capacitor 1.0uF (2125)	1.0uF (2125)		1	
CVCC	Electrolytic Capacitor 10uF 50V	YXF, 10uF, 50V	Rubycon	1	
COUT1	Electrolytic Capacitor 1000uF 50V	YXF, 1000uF, 50V	Rubycon	1	
COUT2	Electrolytic Capacitor 1000uF 50V	YXF, 1000uF, 50V	Rubycon	1	
D2	Switching diode	RS1J	Taiwan semiconductor	1	
D3	Fast recovery diode	SFAF508G	Taiwan semiconductor	2	
D4	Fast recovery diode	CMF03	Toshiba	1	
R1 (RSTART-1)	Resistor 240k (3216)	240k (3216)		1	RSTART = (RSTART-1+RSTART-2)
R2 (RSTART-2)	Resistor 240k (3216)	240k (3216)		1	RSTART = (RSTART-1+RSTART-2)
R3	Resistor 22 (1608)	22 (1608)		1	
R8 (ROVP1)	Resistor 30k(1608)	30k (1608)		1	
R9 (ROVP2)	Resistor 3k(1608)	3k (1608)		1	
R10 (RCS1)	Resistor 1.0 (3216)	1.0 (3216)		1	
R11 (RCS2)	Resistor 1.0 (3216)	1.0 (3216)		1	
R12 (RCS3)	Resistor 1.0 (3216)	1.0 (3216)		1	
R13	Resistor 100k 1W (Axial)	MO (100k 1W)	KOA	1	
R20	Resistor 68k (3216)	68k (3216)		1	
Q1	FET	TK8A65DF	Toshiba	1	
IC1	SOP-8	IR3M92N4	SHARP	1	
PCB	1.2mm thickness double-side board	FR-4,U194V-0		1	
Total				32	

**SHARP**