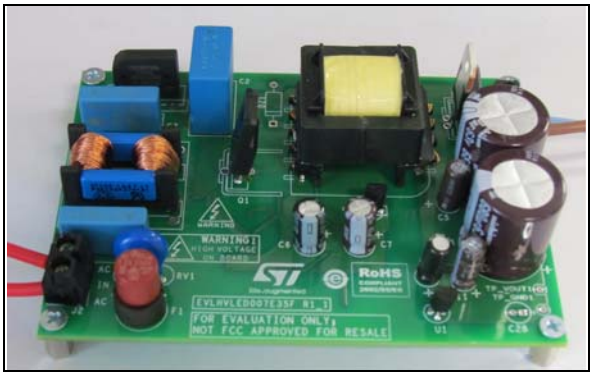
EVLHVLED007W35F

35W LED driver with very low THD, based on HVLED007 transition mode flyback controller

Data brief



Features

- AC input voltage from 90 V to 265 V (frequency range 45 - 66 Hz)
- Isolated DC bus voltage (Flyback topology): 48 V / 730 mA max.
- High Power Factor Flyback with very low THD:
  100 AC: PF>0.99, THD<3% @ full load
  230 AC: PF>0.98, THD<5% @ full load
- Efficiency: >89 % @ full load
- Mains harmonics: meets EN61000-3-2 and JEITA-MITI Class-C
- EMI: according to EN55022 Class-B
- RoHS compliant

Description

The EVLHVLED007W35F supplies a stable and isolated 48 V voltage bus suitable for secondary side circuitry (e.g., LED current generators) for a total output power of 35 W when a wide range of input voltages is applied at its input. An auxiliary 12 V output is also present to supply small circuits which absorb a maximum current of 15 mA.

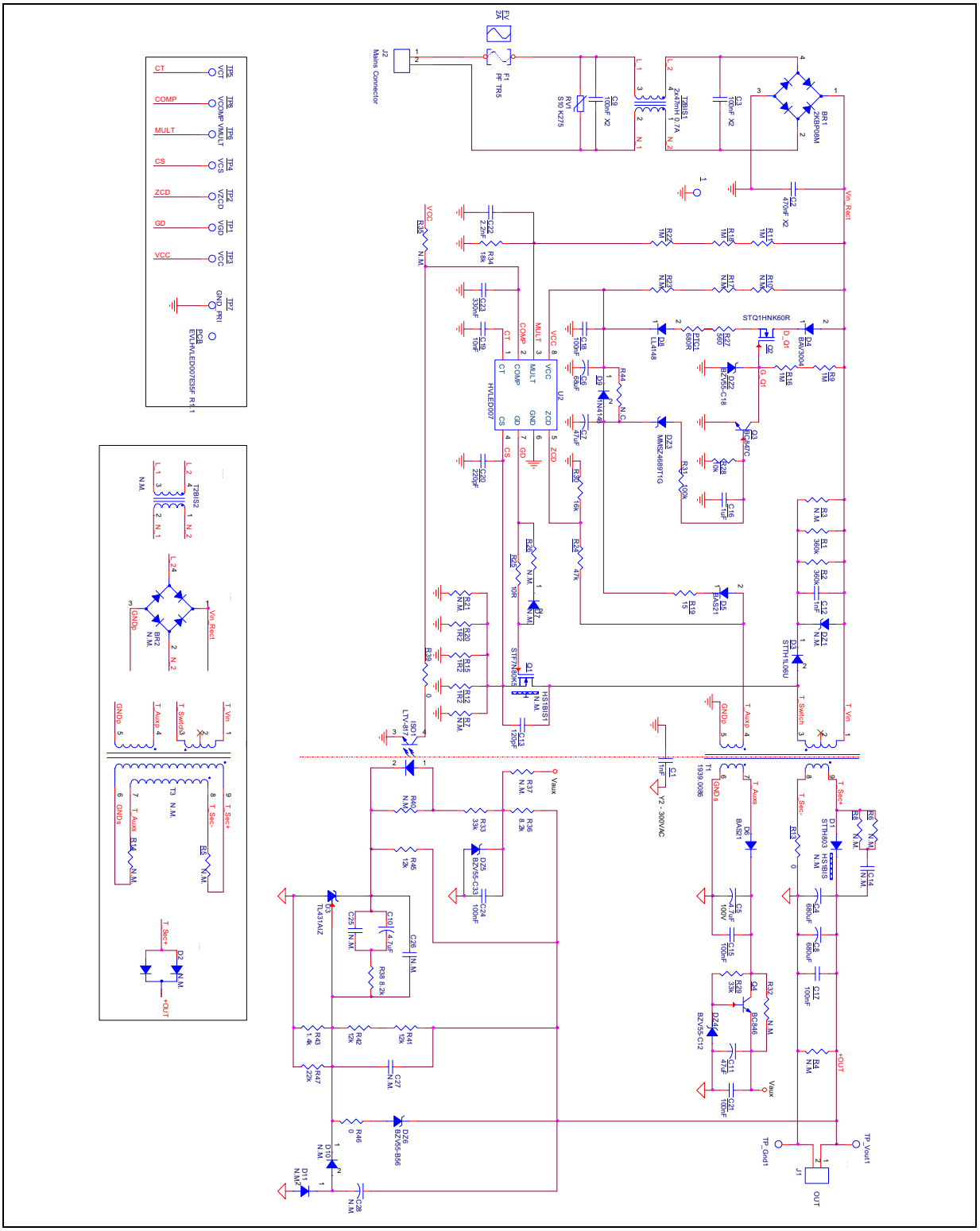
Thanks to an STMicroelectronics patented control embedded on HVLED007, the main feature of this design is the very low input current distortion (THD) in flyback converter operating in Transition mode (Quasi-Resonant).

Fast startup and protections with auto-restart are available for safe operation in lighting environments.

For further information contact your local STMicroelectronics sales office. www.st.com

1 Evaluation board schematic

Figure 1. EVLHVLED007W35F evaluation board schematic



2 Bill of material

Table 1. EVLHVLED007W35F evaluation board BOM

Reference	Part no.	Case	Description	Supplier
BR1	2KBP08M	KBPM	Bridge rectifier - 800V / 2A	VISHAY
BR2	N.M.	GBU	-	-
C1	1nF	RAD 5x7 p10	Y2 - 300Vac	VISHAY
C2	470nF X2	9x18 p15	X2 / 305Vac	TDK
C3	100nF X2	5x18 p15	X2 / 305Vac	TDK
C4	680uF	RAD d18 p7.5	Electrolitic 105°C - 63V	Nichicon
C5	4.7uF	RAD d5 p2	Electrolitic 105°C - 100V	United Chemi-Con
C6	68uF	RAD d6.3 p2.5	Electrolitic 105°C - 35V	Panasonic
C7	47uF	RAD d6.3 p2.5	Electrolitic 105°C - 35V	Nichicon
C8	680uF	RAD d18 p7.5	Electrolitic 105°C - 63V	Nichicon
C9	100nF X2	5x18 p15	X2 / 305Vac	TDK
C10	4.7uF	RAD d5 p2	Electrolitic 105°C - 50V	Panasonic
C11	47uF	RAD d5 p2	Electrolitic 105°C - 35V	Nippon Ch.
C12	1nF	SMD 1206	Ceramic X7R - 630V	TDK
C13	120pF	SMD 1206	Ceramic COG - 1kV	-
C14	N.M.	SMD 1206	Ceramic X7R - 50V	-
C15	100nF	SMD 1206	Ceramic X7R - 100V	-
C16	1uF	SMD 0805	Ceramic X7R - 50V	-
C17	100nF	SMD 1206	Ceramic X7R - 100V	-
C18	100nF	SMD 0805	Ceramic X7R - 50V	-
C19	10nF	SMD 0805	Ceramic X7R - 50V	-
C20	220pF	SMD 0805	Ceramic X7R - 50V	-
C21	100nF	SMD 0805	Ceramic X7R - 50V	-
C22	2.2nF	SMD 0805	Ceramic X7R - 50V	-
C23	330nF	SMD 0805	Ceramic X7R - 50V	-
C24	100nF	SMD 0805	Ceramic X7R - 50V	-
C25	N.M.	SMD 1206	Ceramic X7R - 50V	-
C26	N.M.	SMD 0805	Ceramic X7R - 50V	-
C27	N.M.	SMD 0805	Ceramic X7R - 50V	-
C28	N.M.	RAD d5 p2	Electrolitic 105°C - 100V	-
DZ1	N.M.	DO-15	Transil 300V / 600W	-
DZ2	BZV55C18	SMD mini-melf	Zener diode 18V / 500mW - +/-5%	Taiwan S.

Table 1. EVLHVLED007W35F evaluation board BOM (continued)

Reference	Part no.	Case	Description	Supplier
DZ3	MMSZ4689T1G	SMD mini-melf	Zener diode 5.1V / 500mW - +/-5%	On Semiconductor
DZ4	BZV55C12	SMD mini-melf	Zener diode 12V / 500mW - +/-5%	Taiwan S.
DZ5	BZV55C33	SMD mini-melf	Zener diode 33V / 500mW - +/-5%	Taiwan S.
DZ6	BZV55B56	SMD mini-melf	Zener diode 56V / 500mW - +/-2%	Taiwan S.
D1	STTH803	TO-220AC	Ultrafast rectifier 300V / 8A	STMicroelectronics
D2	N.M.	TO-220AB	-	-
D3	STTH1L06U	SMD SMA	Ultrafast rectifier 600V / 1A	STMicroelectronics
D4	BAV3004	SMD SOD 323	Small signal diode 300V / 225mA	Diode
D5	BAS21	SMD SOD 323	Fast rectifier 250V / 200mA	ON-SEMI
D6	BAS21	SMD SOD 323	Fast rectifier 250V / 200mA	ON-SEMI
D7	N.M.	SMD mini-melf	-	-
D8	LL4148	SMD mini-melf	Fast rectifier 75V / 150mA	FAIRCHILD
D9	LL4148	SMD mini-melf	Fast rectifier 75V / 150mA	FAIRCHILD
D10	N.M.	SMD mini-melf	-	-
D11	N.M.	SMD mini-melf	-	-
FV	2A	TR5	TR5 Fuse - 250Vac	Littlefuse
F1	PF TR5	TR5	TR5 Fuse Holder -250Vac	Littlefuse
ISO1	LTV-817	DIL 4PIN	Optocoupler	Lite-ON
J1	LED out	SIP 2P p5.08	PCB screw terminal -10A	Weidmuller
J2	Mains connector	SIP 2P p5.08	PCB screw terminal -10A	Weidmuller
Q1	STF7N80K5	TO-220FP	N-MOSFET 800V / 6A	STMicroelectronics
Q2	STQ1HNK60R	TO-92	N-MOSFET 600V / 400mA	STMicroelectronics
Q3	BC847C	SMD SOT-23	NPN BJT 50V / 100mA	Nexperia
Q4	BC846	SMD SOT-23	NPN BJT 65V/100mA	Nexperia
RV1	S10 K275	RAD 5x12 p15	Varistor 275Vac	EPCOS
R1	360k	SMD1206	Resistor - 1/4W +/-1%	-
R2	360k	SMD1206	Resistor - 1/4W +/-1%	-
R3	N.M.	SMD1206	-	-
R4	N.M.	SMD1210	-	-
R5	N.M.	SMD 0805	-	-
R6	N.M.	SMD1206	-	-
R7	N.M.	SMD1206	-	-
R8	N.M.	SMD1206	-	-
R9	1M	SMD1206	Resistor - 1/4W +/-1%	-
R10	N.M.	SMD1206	-	-

Table 1. EVLHVLED007W35F evaluation board BOM (continued)

Reference	Part no.	Case	Description	Supplier
R11	1M	SMD1206	Resistor - 1/4W +/-1%	-
R12	1R2	SMD1206	Resistor - 1/4W +/-1%	-
R13	0	SMD1206	Resistor - 1/4W +/-1%	-
R14	N.M.	SMD 0805	-	-
R15	1R2	SMD1206	Resistor - 1/4W +/-1%	-
R16	1M	SMD1206	Resistor - 1/4W +/-1%	-
R17	N.M.	SMD1206	-	-
R18	1M	SMD1206	Resistor - 1/4W +/-1%	-
R19	15	SMD1206	Resistor - 1/4W +/-1%	-
R20	1R2	SMD1206	Resistor - 1/4W +/-1%	-
R21	N.M.	SMD1206	-	-
R22	1M	SMD1206	Resistor - 1/4W +/-1%	-
R23	N.M.	SMD1206	-	-
R24	47k	SMD 0805	Resistor - 1/8W +/-1%	-
R25	10	SMD 0805	Resistor - 1/8W +/-1%	-
R26	N.M.	SMD 0805	-	-
R27	560	SMD 0805	Resistor - 1/8W +/-1%	-
R28	10k	SMD 0805	Resistor - 1/8W +/-1%	-
R29	33k	SMD 0805	Resistor - 1/8W +/-1%	-
R30	16k	SMD 0805	Resistor - 1/8W +/-1%	-
R31	100k	SMD 0805	Resistor - 1/8W +/-1%	-
R32	N.M.	SMD 0805	-	-
R33	33k	SMD 0805	Resistor - 1/8W +/-1%	-
R34	18k	SMD 0805	Resistor - 1/8W +/-1%	-
R35	N.M.	SMD 0805	-	-
R36	8.2k	SMD 0805	Resistor - 1/8W +/-1%	-
R37	N.M.	SMD 0805	Resistor - 1/8W +/-1%	-
R38	8.2k	SMD 0805	Resistor - 1/8W +/-1%	-
R39	0	SMD 0805	Resistor - 1/8W +/-1%	-
R40	N.M.	SMD 0805	-	-
R41	12k	SMD 0805	Resistor - 1/8W +/-1%	-
R42	12k	SMD 0805	Resistor - 1/8W +/-1%	-
R43	1.4k	SMD 0805	Resistor - 1/8W +/-1%	-
R44	N.M.	SMD 0805	-	-
R45	12k	SMD 0805	Resistor - 1/8W +/-1%	-

Table 1. EVLHVLED007W35F evaluation board BOM (continued)

Reference	Part no.	Case	Description	Supplier
R46	0	SMD 0805	Resistor - 1/8W +/-1%	-
R47	22k	SMD 0805	Resistor - 1/8W +/-1%	-
PTC1	680ohm - 90deg	SMD 0805	PTC resistor	TDK
T1	1939.0086	TRAFO DIL 9P 26x32	35W flyback transformer	MAGNETICA
T3	N.M.	TRAFO DIL 9P 30x33	-	-
T2BIS1	2x47mH	DIL 4P 24x15	Current compensated choke - 0.7A	TDK
T2BIS2	N.M.	DIL 4P 26x25	-	-
U2	HVLED007	SMD SO-8	Hi-PF flyback controller	STMicroelectronics
U3	TL431 1% 105deg	TO-92	Reference voltage	STMicroelectronics
HS1BIS	N.M.	Heatsink TO-220	-	-
HS1BIS1	N.M.	Heatsink TO-220	-	-

3 Revision history

Table 2. Document revision history

Date	Revision	Changes
21-Jan-2019	1	Initial release

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