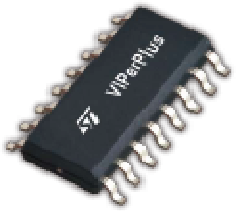
High Voltage Converters

Industrial & Power Conversion Division

Off Line Power Supply Business Unit

High Voltage Converters



HV Power MOSFET
Avalanche Ruggedness
800V.break down voltage
On Resistance from 30Ω to 1Ω
Integrated HV start-up
Integrated thermal shutdown

Off Line Controller
PWM current mode controller with drain current limitation
Easily meet current no-load consumption and efficiency standards
Oscillator with Fixed Frequency with Jittering or Quasi Resonant
Advanced Protection

High efficiency solution for Power Supply with minimized components count

High Coltage Converters

portfolio

30 Ω	18 Ω	5.5 Ω	3 Ω	1 Ω
VIPer12	VIPer22 VIPer20	VIPer50	VIPer100	VIPer53

800V Avalanche Ruggedness

	30 Ω	24 Ω	7 Ω	4.5 Ω	3 Ω	1 Ω	0.5 Ω
Controller x7		VIPer17	VIPer27	VIPer37			
Controller x5		VIPer15	VIPer25	VIPer35			
Controller x8			VIPer28	VIPer38			
Controller x6	VIPer06 Q4/2011	VIPer16	VIPer26				
	4W(1) / 8W(2)	6W(1) / 12W(2)	12W(1) / 24W(2)	15W(1) / 30W(2)			

(1) Open frame, V_{IN} = 85 - 264V_{AC} ,
(2) Open frame, V_{IN} = 230V_{AC} ±15%,
(3) Achievable consumption at no load with Vin 264V_{AC}

under development, SOP planned within Q1 2012

High Voltage Converters

controller differentiations

Common features	Controller x7	Controller x8	Controller x5	Controller x6
PWM operations with settable(1) I_{DLIM} *to limit the maximum power*	**Fixed Frequency (60 or 115kHz) with Jittering**		**Quasi Resonant**	**Fixed Frequency (30(2) or 60 or 115kHz) with Jittering**
Burst Mode *for light load management*	**Brown out**	**Extra Power Timer**	**Brown out**	**Integrated op amp for simplified non Isolated loop**
Hysteretic Over Temperature Protection *improves the reliability*	**Over Voltage**			**No auxiliary**
Current soft start *for limited stress during the start-up phase*	**Delayed Over Load Protection**			**Feedback disconnection detection**
	High OCP (transformer saturation, secondary diode short circuit)			**over load timer (50ms) before protection**
	Automatic auto restart after fault (1 sec. fixed time for VIPer x6)			

(1) I_{DLIM} *settable only on VIPer*
(2) *30kHz available only for VIPer06*

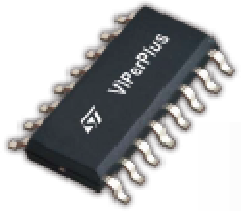
High Voltage Converters

selection by topologies and power

ISOLATED POWER SUPPLY		
Fly Back		
High Features		Basic Features
Fixed Frequency	Quasi Resonant	
Peak Power	Brown out	Brown out
Controller x8	**Controller x7**	**Controller x5**

NON ISOLATED POWER SUPPLY		
Fly Back	Buck	Buck Boost
Controller x6	**Controller x6**	**Controller x6**

V_{IN} = 85-264 V_{AC}	4W	6W	12W	15W
	VIPer06	VIPer15 VIPer16 VIPer17	VIPer25 VIPer26 VIPer27 VIPer28	VIPer35 VIPer37 VIPer38
V_{IN} = 230 V_{AC} ±15%	8W	12W	24W	30W



High Voltage Converters

Tools & support

	Datasheet	Training (slides)	Application Notes	Evaluation Boards	e-Design Studio (design simulator)	Spreadsheet	Spice Model	Competence centers
VIPer17	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
VIPer27	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
VIPer37	Preliminary	Yes	Under development	Under development	Under development	Under development	--	Yes
VIPer06	Preliminary	Yes	Under development	Under development	Under development	Under development	--	Yes
VIPer16	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
VIPer26	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
VIPer15	Yes	Yes	Yes	Yes	Under development	Under development	--	Yes
VIPer25	Yes	Yes	Yes	Yes	Under development	Yes	--	Yes
VIPer28	Yes	Yes	Yes	Yes	Yes	Under development	-- .	Yes

High Voltage Converters

Evaluation boards

VIPer 17	Order code	Topology	Input VAC	Output	Output	Relevant AN	Reference
VIPER17LN	STEVAL-ISA058V1	Isolated Fly-back	85-265	5W	5V / 1A	AN2864	Stand-by PSU
VIPER17HN	STEVAL-ISA060V1	Isolated Fly-back	85-265	6W	12V / 0.5A	AN2753	Stand-by PSU
VIPER17HN	EVLVIP17-5WCHG	Isolated Fly-back	90-265	5W	5V / 1A	AN2840	Cell Phone Battery Charger
VIPER17HN	STEVAL-ILL017V1	Isolated Fly-back	220 ±20%	3.5W	7V / 500mA	AN2811	Led Driver
VIPER17HN	STEVAL-ISA062V1	Isolated Fly-back	85-265	5.5W	5V / 500mA 12V / 250mA	AN2934	General Purpose
VIPER17HN	EVLVIP27-7WLED	Isolated Fly-back	100-264	3.5W	10V / 350mA	AN3212	High Power Factor Led Driver

VIPer 27	Order code	Topology	Input VAC	Output	Output	Relevant AN	Reference
VIPER27LN	EVLVIP27L-12WS	Isolated Fly-back	85-265	12W	5V / 2.4A	AN2929	Auxiliary PSU
VIPER27HN	EVLVIP27H-12SB	Isolated Fly-back	85-265	11W	5V / 2.2A	AN3011	Auxiliary PSU
VIPER27HN	EVLVIP27-7WLED	Isolated Fly-back	100-264	7W	10V / 750mA	AN3212	High Power Factor Led Driver

VIPer 37	Order code	Topology	Input VAC	Output	Output	Relevant AN	Reference
VIPER37LE	EVLVIP37L-5V3A	Isolated Fly-back	85-265	15W	5V / 3A	TBD	ATX, USB charger
VIPER37LE	Under development	Isolated Fly-back	85-265	15W	12V / 1.3A	TBD	Appliances
VIPER37HE	Under development	Isolated Fly-back	85-265	15W	12V / 5V	TBD	Appliances

High Voltage Converters

Evaluation boards

VIPer 06	Order code	Topology	Input VAC	Output	Output	Relevant AN	Reference
VIPER06	Under development	Non isolated Fly-back	85-265		12V / 300mA option (5V /800mA)	TBD	Appliances
VIPER06	Under development	Isolated Fly-back	85-265		5V / 800mA option (12V /300mA)	TBD	Appliances
VIPER06LS	STEVAL-ISA096V1 coming soon	Buck boost converter	85-265	1W	-12V / -5V	TBD	Small appliances, Industrial
VIPER06	Under development	Buck converter	85-265	1W	12V	TBD	Small appliances, Industrial

VIPer 16	Order code	Topology	Input VAC	Output	Output	Relevant AN	Reference
VIPER16LN	STEVAL-ISA010V1	Non isolated buck converter	85-500	1.8W	12V / 5V (post reg.) / 150mA	AN2872	Power Meter
VIPER16LN	EVLVIP16L-4WFN	Non Isolated Fly-back	85-265	4.5W	16V / 280mA	AN3028 draft	Appliances
VIPER16LN	STEVAL-ISA071V1	Non Isolated Fly-back	85-265	4W	- 5V / 400mA, +7V / 160mA	UM0920	Appliances
VIPER16LN	EVLVIP16L-4WFL	Isolated Fly-back	85-265	5W	12 / 350mA	databrief	Appliances Auxilairy PSU
VIPER16LD	EVLVIP16LD-1W5	Non Isolated buck converter	85-265	1.8W	12V / 5V (post reg.) / 150mA	databrief	Small Appliance
VIPER16HN	EVLVIP16H-4WFN	Non Isolated Fly-back	85-265	4.5W	16V / 280mA	databrief	Appliances

VIPer 26	Order code	Topology	Input VAC	Output	Output	Relevant AN	Reference
VIPER26LD	STEVAL-ISA081V1	Primary Regulation Fly-back	85-265	12.5W	12V, 3.3V / 1A	UM0984	Appliances
VIPER26LN	TBD	Non isolated fly-back	85-265	12 W	12V / 1A	TBD	Appliances, Industrial

High Voltage Converters

Evaluation boards

VIPer 15	Order code	Topology	Input VAC	Output	Output	Relevant AN	Reference
VIPER15LN	STEVALVIP15L-6W	Quasi-Resonant Isolated Fly-back	90-265 VAC	6W	12V, 500mA	AN3160 draft	Auxiliary PSU
VIPER15LN	EVLVIP15L-5WSB	Quasi-Resonant Isolated Fly-back	90-265 VAC	5W	5V, 1A	TBD	Auxiliary PSU

VIPer 25	Order code	Topology	Input VAC	Output	Output	Relevant AN	Reference
VIPER25LN	EVLVIP25L-10WSB	Quasi-Resonant Isolated Fly-back	85-265 VAC	10W	5V, 2A	AN3286 draft	Auxiliary PSU STB Power Meter

VIPer 28	Order code	Topology	Input VAC	Output	Output	Relevant AN	Reference
VIPER28LN	EVLVIPER28L-10W	Isolated Fly-back	85-265 VAC	12W	5V, 2.4A	AN2950	Auxiliary PSU Printer

High Voltage Converters

Product selector

Order Code	Package	R_{DSon}	V_{BVDSS}	I_{Dlim}	F_{OSC}
VIPER15LD	SO16N	24 Ohm	800 V	400 mA	Quasi resonant Up to136 kHz
VIPER15HD	SO16N	24 Ohm	800 V	400 mA	Quasi resonant Up to 225kHz
VIPER15LN	DIP7	24 Ohm	800 V	400 mA	Quasi resonant Up to136 kHz
VIPER15HN	DIP7	24 Ohm	800 V	400 mA	Quasi resonant Up to 225kHz
VIPER25LD	SO16N	7 Ohm	800 V	700 mA	Quasi resonant Up to136 kHz
VIPER25HD	SO16N	7 Ohm	800 V	700 mA	Quasi resonant Up to 225kHz
VIPER25LN	DIP7	7 Ohm	800 V	700 mA	Quasi resonant Up to136 kHz
VIPER25HN	DIP7	7 Ohm	800 V	700 mA	Quasi resonant Up to 225kHz
VIPER06XS	SSO10	30 Ohm	800 V	350 mA	30 kHz
VIPER06LS	SSO10	30 Ohm	800 V	350 mA	60 kHz
VIPER06HS	SSO10	30 Ohm	800 V	350 mA	115 kHz
VIPER06XN	DIP7	30 Ohm	800 V	350 mA	30 kHz
VIPER06LN	DIP7	30 Ohm	800 V	350 mA	60 kHz
VIPER06HN	DIP7	30 Ohm	800 V	350 mA	115 kHz
VIPER16LD	SO16N	24 Ohm	800 V	400 mA	60 kHz
VIPER16HD	SO16N	24 Ohm	800 V	400 mA	115 kHz
VIPER16LN	DIP7	24 Ohm	800 V	400 mA	60 kHz
VIPER16HN	DIP7	24 Ohm	800 V	400 mA	115 kHz

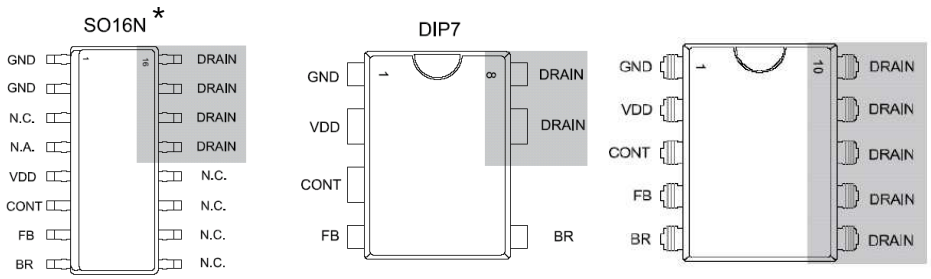
Order Code	Package	R_{DSon}	V_{BVDSS}	I_{Dlim}	F_{OSC}
VIPER26LD	SO16N	7 Ohm	800 V	700 mA	60 kHz
VIPER26HD	SO16N	7 Ohm	800 V	700 mA	115 kHz
VIPER26LN	DIP7	7 Ohm	800 V	700 mA	60 kHz
VIPER26HN	DIP7	7 Ohm	800 V	700 mA	115 kHz
VIPER17LD	SO16N	24 Ohm	800 V	400 mA	60 kHz
VIPER17HD	SO16N	24 Ohm	800 V	400 mA	115 kHz
VIPER17LN	DIP7	24 Ohm	800 V	400 mA	60 kHz
VIPER17HN	DIP7	24 Ohm	800 V	400 mA	115 kHz
VIPER27LD	SO16N	7 Ohm	800 V	700 mA	60 kHz
VIPER27HD	SO16N	7 Ohm	800 V	700 mA	115 kHz
VIPER27LN	DIP7	7 Ohm	800 V	700 mA	60 kHz
VIPER27HN	DIP7	7 Ohm	800 V	700 mA	115 kHz
VIPER37LE	SDIP10	4.5 Ohm	800 V	1000 mA	60 kHz
VIPER37HE	SDIP10	4.5 Ohm	800 V	1000 mA	115 kHz
VIPER28LD	SO16N	7 Ohm	800 V	800 mA	60 kHz
VIPER28HD	SO16N	7 Ohm	800 V	800 mA	115 kHz
VIPER28LN	DIP7	7 Ohm	800 V	800 mA	60 kHz
VIPER28HN	DIP7	7 Ohm	800 V	800 mA	115 kHz

VIPer17 / 27 / 37

Main Features

- 800V, avalanche rugged power MOSFET
- PWM controller with drain current limit, I_{Dlim}.
- Adjustable current limit, I_{Dlim}
- Fixed Frequency with Jittering
- High performance for stand-by & efficiency
- Integrated protections: OVP, OLP, high OCP
- Automatic auto restart after fault
- Hysteretic thermal shutdown
- Brown-out: minimum input voltage is settable

Pin description



MAIN PARAMETERS	**Power MOSFET** (SuperMESH)	**CONTROLLER** (BCD6S)
Break down voltage [V]	800	
R_{DSon} [Ohm]	24 / 7 / 4.5	
V_{DD} [V]		9 ÷ 23
F_{OSC} [KHz]		60 or 115
Max I_{Dlim} [mA]		420 / 740 / 1050
R_{THJ-A} [°C/W] (1)	50	
P_{OUT} [W] @ 85-265V_{AC}	6 / 12 / 15	

(1) Package SO16N and 100mm² of Cu

(2) Open Frame

- **GND**
  controller ground / power MOSFET Source
- **VDD**
  controller supply voltage / I_{CHARGE} output current
- **CONT**
  OVP set-up, I_{DLIM} set-up.
- **FB**
  current loop feedback
- **BR***
  brown out set-up
- **N.A.**
  Not Available for user. (It can be connected to GND)
- **N.C.**
  Not Connected

* BR pin has the position 10 for VIPER17LD/HD (SO16N package)

VIPer28

Main Features

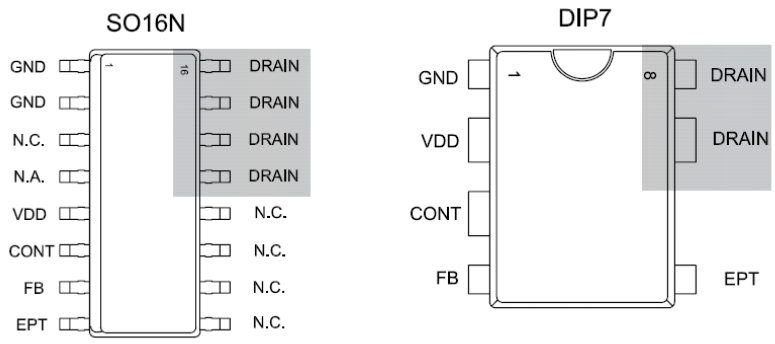
- 800V, avalanche rugged power MOSFET
- PWM controller with drain current limit, I_{Dlim}.
- Adjustable current limit, I_{Dlim}
- Fixed Frequency with Jittering
- High performance for stand-by & efficiency
- Integrated protections: OVP, OLP, high OCP
- Automatic auto restart after fault
- Hysteretic thermal shutdown
- Extra Power Management

MAIN PARAMETERS	Power MOSFET (SuperMESH)	CONTROLLER (BCD6S)
Break down voltage [V]	800	
R_{DSon} [Ohm]	7	
V_{DD} [V]		9 ÷ 23
F_{OSC} [KHz]		60 or 115
Max I_{Dlim} [mA]		850
R_{THJ-A} [°C/W] (1)	50	
P_{OUT} [W] @ 85-265V_{AC}	12	

(1) Package SO16N and 100mm² of Cu

(2) Open Frame

Pin description



- **GND**
  controller ground / power MOSFET Source
- **VDD**
  controller supply voltage / I_{CHARGE} output current
- **COMP**
  OVP set-up, I_{DLIM} set-up.
- **FB**
  current loop feedback
- **EPT**
  Extra Power Time set-up
- **N.A.**
  Not Available for user. (It can be connected to GND)
- **N.C.**
  Not Connected

VIPer06 / 16 /26

Main Features

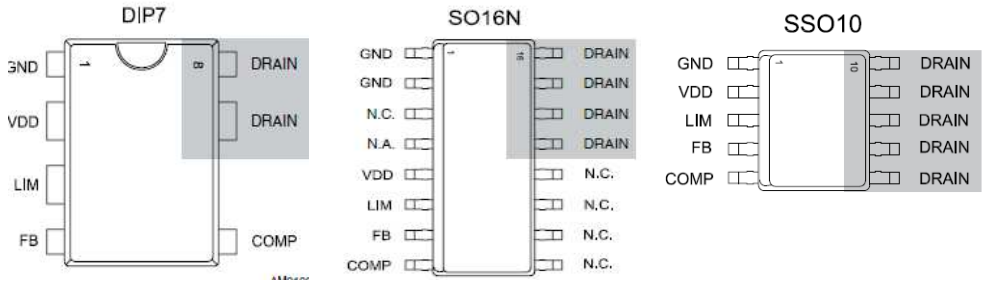
- 800V, avalanche rugged power MOSFET
- PWM controller with drain current limit I_{Dlim}
- Adjustable current limit,I_{Dlim}
- Fixed frequency with Jittering
- high performance for stand-by & efficiency
- No need of auxiliary winding
- Automatic auto restart after faults
- Hysteretic thermal shutdown
- Direct feedback for non isolated SMPS
- Replacement of capacitive power supply
- Open loop protection

MAIN PARAMETERS	Power MOSFET (SuperMESH)	CONTROLLER (BCD6S)
Break down voltage [V]	800	
R_{DSon} [Ohm]	30 /24 / 7	
V_{DD} [V]		9 ÷ 23
F_{OSC} [KHz]		30 or 60 or 115
Max I_{Dlim} [mA]		420 / 740
R_{THJ-A} [°C/W] (1)	80	
P_{OUT} [W] @ 85-265 V_{AC}	4 / 6 / 12	

(1) Package SO16N, 100mm^2 of Cu

(2) Open Frame

Pin description



- **GND**
  controller ground / power MOSFET Source
- **VDD**
  controller supply voltage / I_{CHARGE} output current
- **LIM**
  Current limit set-up, I_{Dlim} .
- **FB**
  direct voltage feedback (in case of non isolated SMPS)
- **COMP**
  Compensation network.
  Current loop feedback in case of isolated SMPS
- **N.A.**
  Not Available for user. (It can be connected to GND)
- **N.C.**
  Not Connected

VIPer15 / 25

Main Features

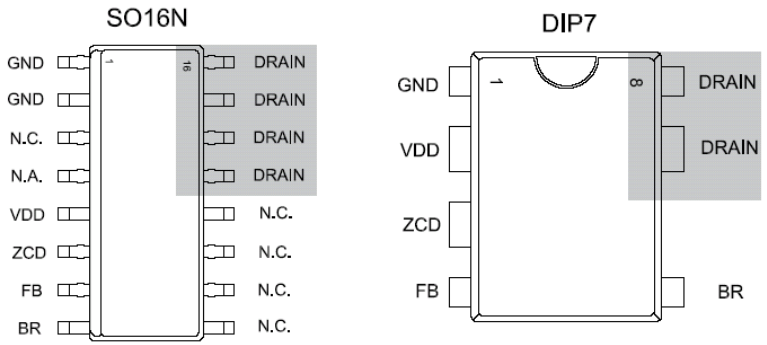
- 800V, avalanche rugged power MOSFET
- Quasi-Resonant PWM controller with drain current limit, I_{Dlim}.
- Adjustable current limit, I_{Dlim}
- Feed-Forward compensation
- High performance for stand-by & efficiency
- Integrated protections: OVP, OLP, high OCP
- Automatic auto restart after fault
- Hysteretic thermal shutdown
- Brown-out: minimum input voltage is settable

MAIN PARAMETERS	**Power MOSFET** (SuperMESH)	**CONTROLLER** (BCD6S)
Break down voltage [V]	800	
R_{DSon} [Ohm]	24 / 7	
V_{DD} [V]		9 ÷ 23
F_{OSClim} [KHz]		up to 150 (L type) up to 225 (H type)
Max I_{Dlim} [mA]		420 / 740
R_{THJ-A} [°C/W] (1)	80	
P_{OUT} [W] @ 85-26 V_{AC}	6 / 12	

(1) Package SO16N, 100mm^2 of Cu

(2) Open Frame

Pin description

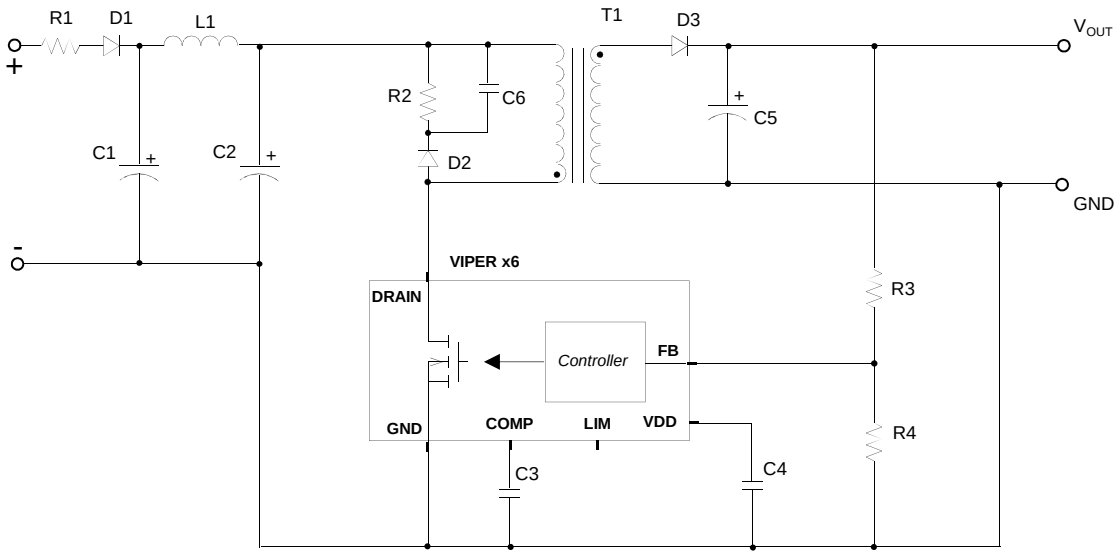


- **GND**
  controller ground / power MOSFET Source
- **VDD**
  controller supply voltage / I_{CHARGE} output current
- **ZCD**
  Zero Current Detection, Feed-Forward set-up, OVP set-up, I_{Dlim} set point.
- **FB**
  Current loop feedback
- **BR**
  Brown out set-up
- **N.A.**
  Not Available for user. (It can be connected to GND)
- **N.C.**
  Not Connected

Schematics with VIPerx6

VIPer06 / 16 / 26

FLY-BACK / **Fixed Freq.**
NON ISOLATED



Simplified feedback loop
R3, R4

No Need auxiliary winding
C4

Low cost EMI filter
C1, C2, L1

Low cost clamp components
R2,D2,C6

Short circuit protection
(automatic restart)

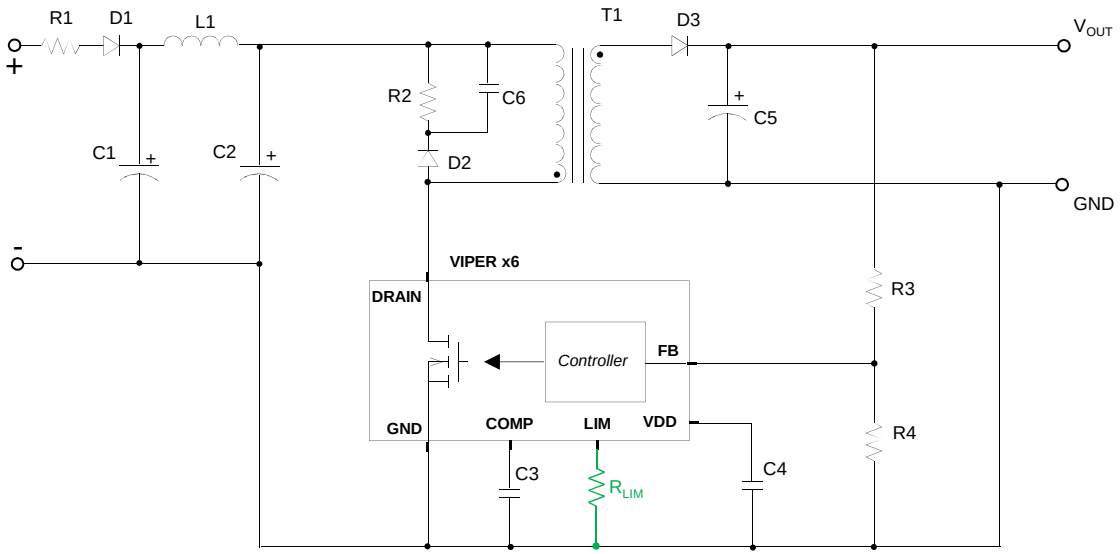
Default current limit
400mA / 700mA

Stand-by, 300 mW

Schematics with VIPerx6

VIPer06 / 16 / 26

FLY-BACK / FF
NON ISOLATED



Simplified feedback loop
R3, R4

No Need auxiliary winding
C4

Low cost EMI filter
C1, C2, L1

Low cost clamp components
R2,D2,C6

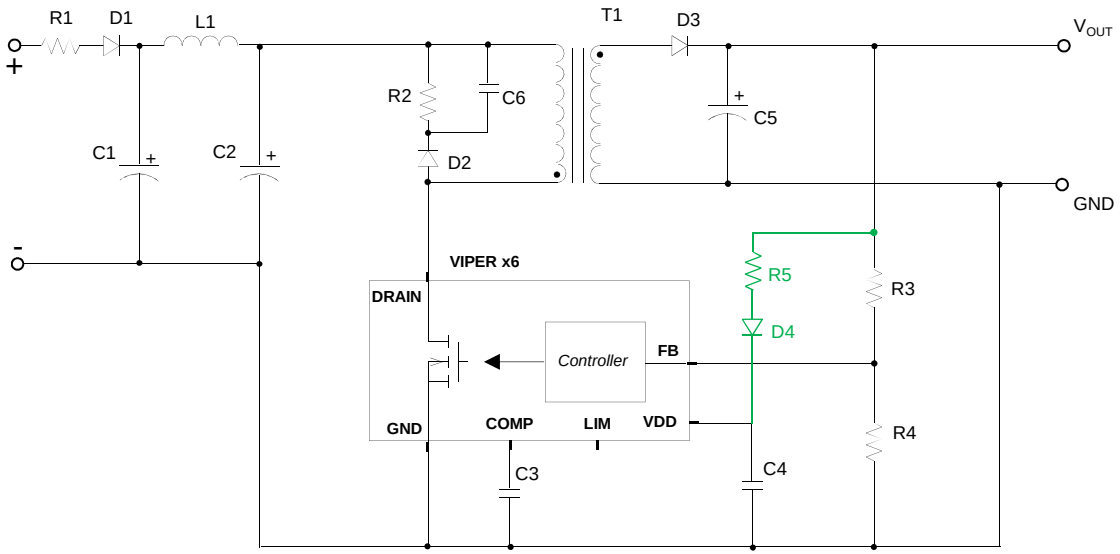
Short circuit protection
(automatic restart)

Current limit set-up - R_{LIM}
<400mA or <700mA

Schematics with VIPerx6

VIPer06 / 16 / 26

FLY-BACK / FF
NON ISOLATED



Simplified feedback loop
R3, R4

No Need auxiliary winding
C4

Low cost EMI filter
C1, C2, L1

Low cost clamp components
R2,D2,C6

Short circuit protection
(automatic restart)

Feedback disconnection
(automatic restart)

Default current limit
400mA / 700mA

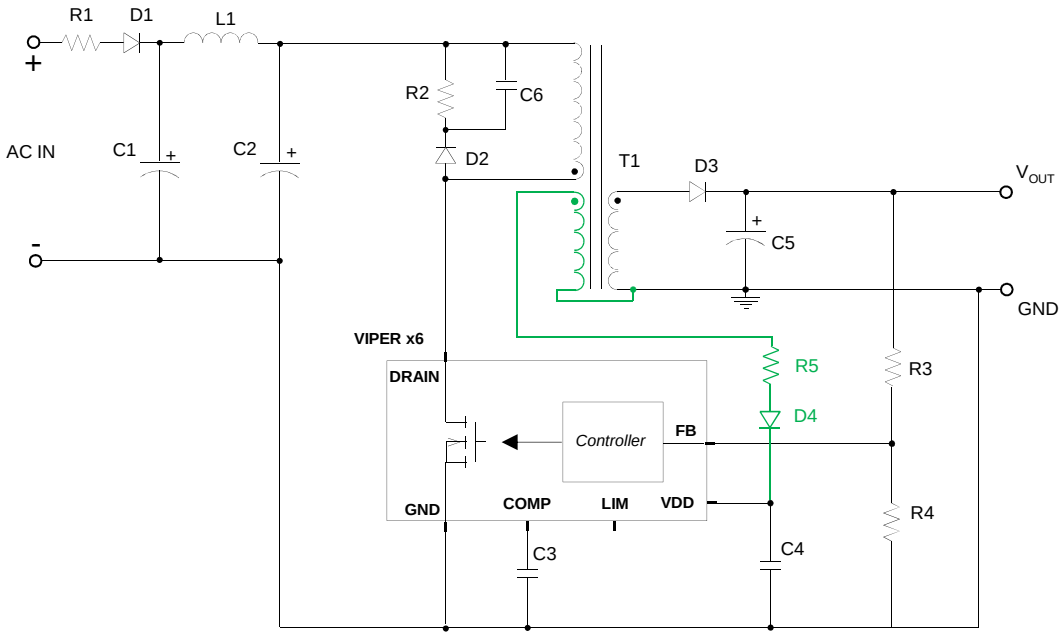
VOUT ≥ 12 V

Stand-by optimization , 30 mW
D4, R5

Schematics with VIPerx6

VIPer06 / 16 / 26

FLY-BACK / FF
NON ISOLATED



Simplified feedback loop
R3, R4

Need auxiliary winding
C4 + AUX

Low cost EMI filter
C1, C2, L1

Low cost clamp components
R2,D2,C6

Short circuit protection
(automatic restart)

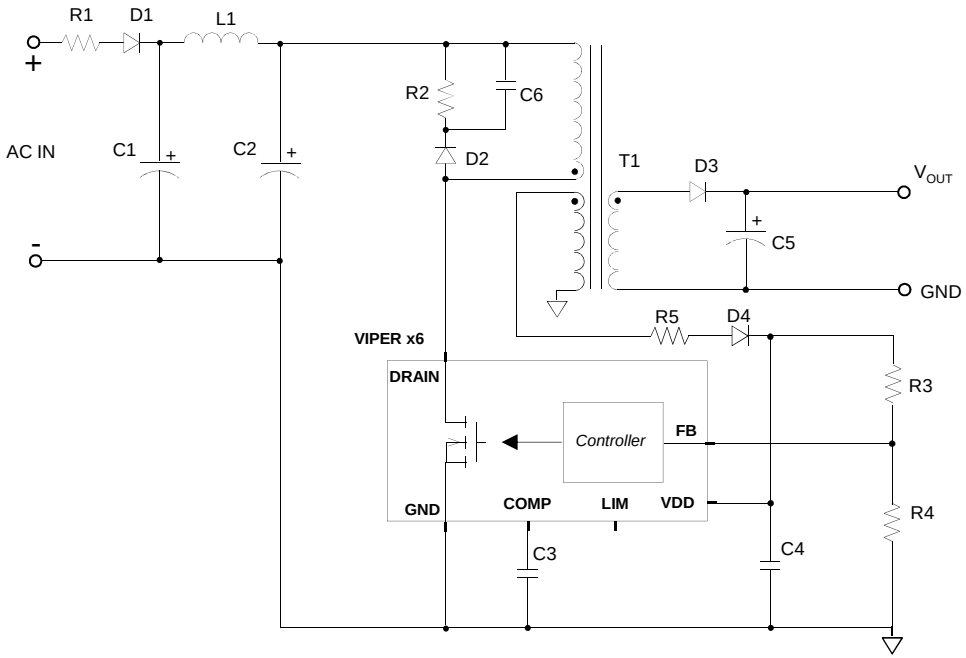
Feedback disconnection
(automatic restart)

Default current limit
400mA / 700mA

VOUT < 12 V

Stand-by optimization , 30 mW
D4, R5

Schematics with VIPerx6



VIPer06 / 16 / 26

FLY-BACK / FF isolated
PRIMARY REGULATION

Simplified feedback loop
R3, R4

Need auxiliary winding
C4 + AUX

Low cost EMI filter
C1, C2, L1

Low cost clamp components
R2,D2,C6

Short circuit protection
(automatic restart)

Feedback disconnection
(automatic restart)

Default current limit
400mA / 700mA

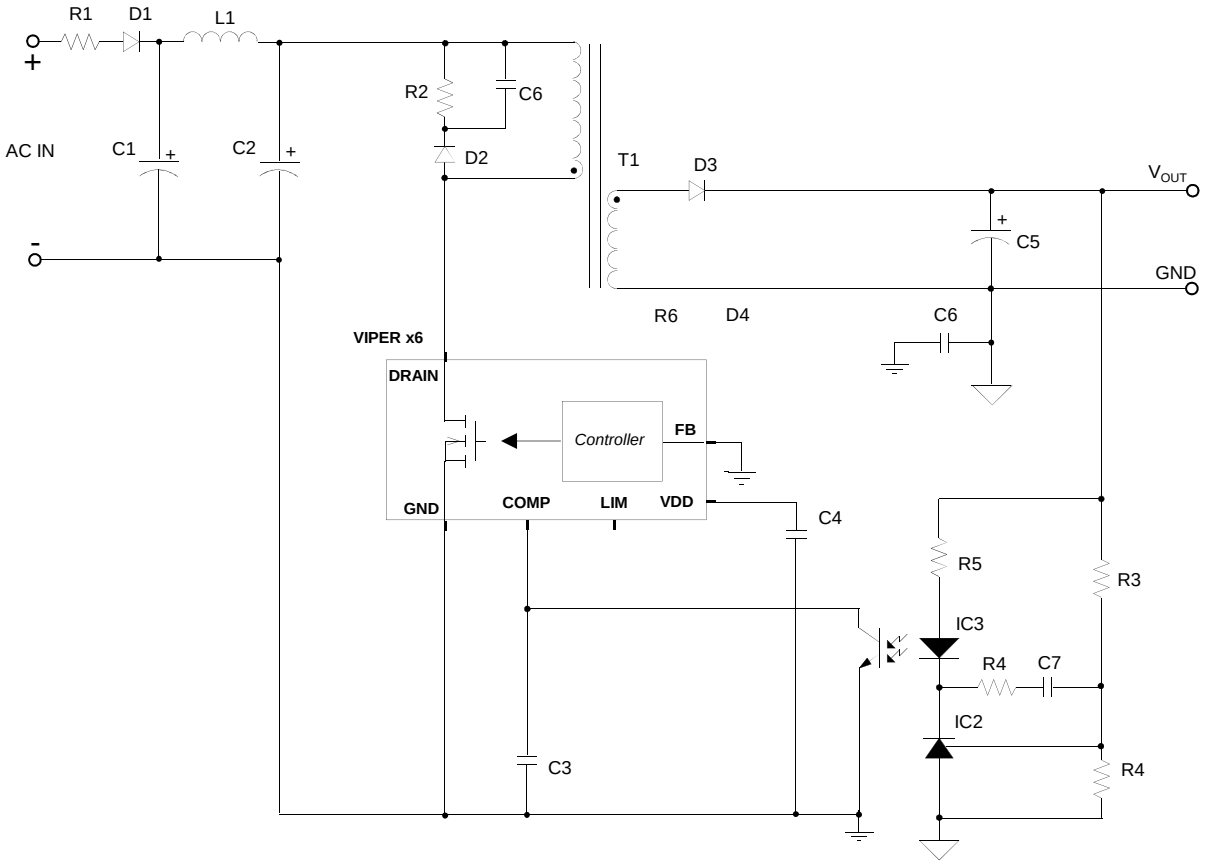
No need the optocoupler

Stand-by optimization , 30 mW
D4, R5

Schematics with VIPerx6

VIPer06 / 16 / 26

FLY-BACK / FF
ISOLATED



Minimum components count

No Need auxiliary winding
C4

Low cost EMI filter
C1, C2, L1

Low cost clamp components
R2,D2,C6

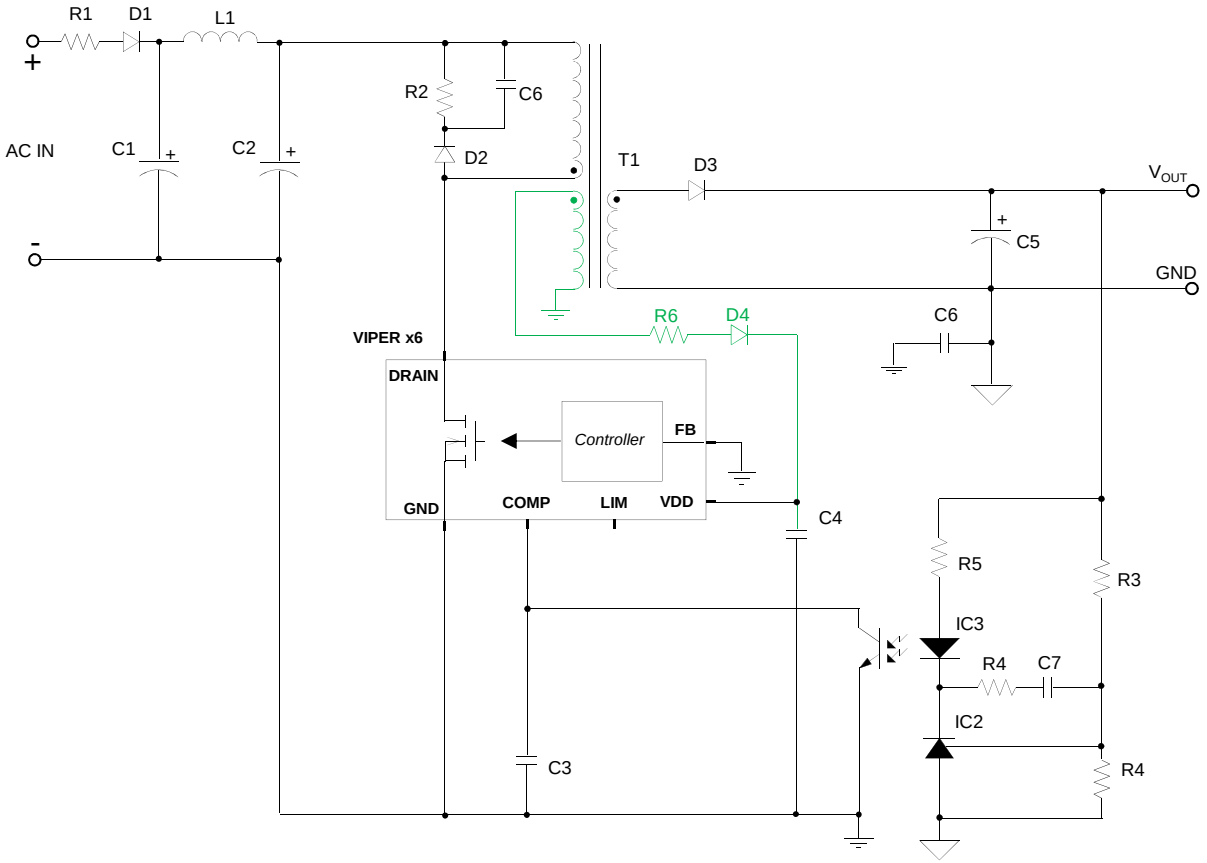
Short circuit protection
(automatic restart)

Default current limit
400mA / 700mA

Schematics with VIPerx6

VIPer06 / 16 / 26

FLY-BACK / FF
ISOLATED



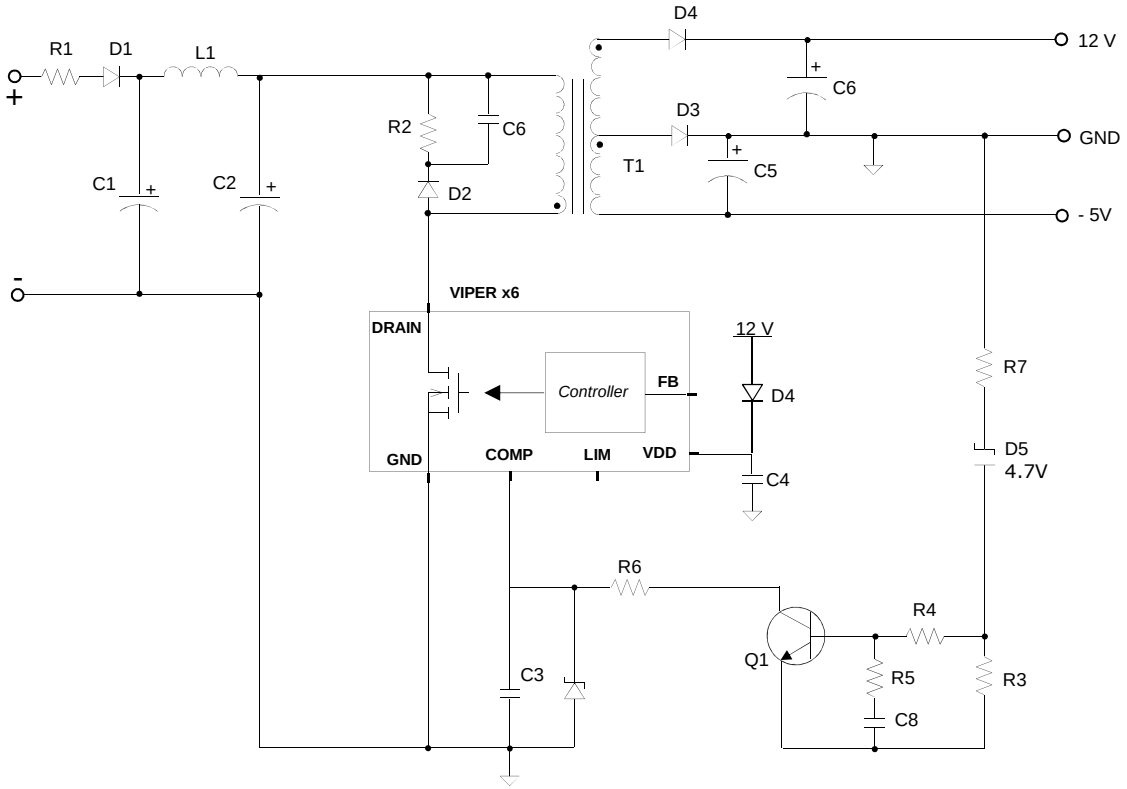
- **Minimum components count**
- **Need auxiliary winding**
  C4 + AUX
- **Low cost EMI filter**
  C1, C2, L1
- **Low cost clamp components**
  R2,D2,C6
- **Short circuit protection**
  (automatic restart)
- **Feedback disconnection**
  (automatic restart)
- **Default current limit**
  400mA / 700mA
- **Stand-by optimization , 30 mW**
  AUX + D4, R5

Schematics with VIPerx6

Negative voltage

VIPer06 / 16 / 26

FLY-BACK / FF
NON ISOLATED



Simplified feedback loop
R3, R4

No Need auxiliary winding
C4

Low cost EMI filter
C1, C2, L1

Low cost clamp components
R2,D2,C6

Short circuit protection
(automatic restart)

Feedback disconnection
(automatic restart)

Default current limit
400mA / 700mA

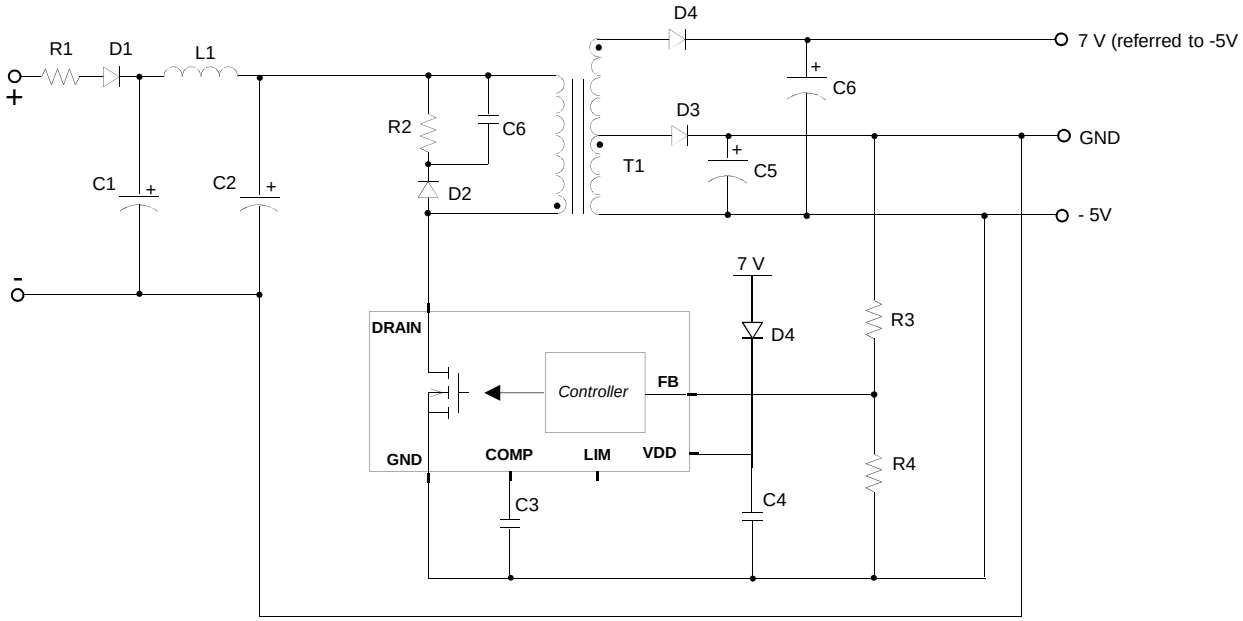
VOUT ≥ 12 V

Stand-by optimization , 30 mW
D4, R5

Schematics with VIPerx6

Negative voltage

VIPer06 / 16 / 26



FLY-BACK / FF
NON ISOLATED

Simplified feedback loop
R3, R4

No Need auxiliary winding
C4

Low cost EMI filter
C1, C2, L1

Low cost clamp components
R2,D2,C6

Short circuit protection
(automatic restart)

Feedback disconnection
(automatic restart)

Default current limit
400mA / 700mA

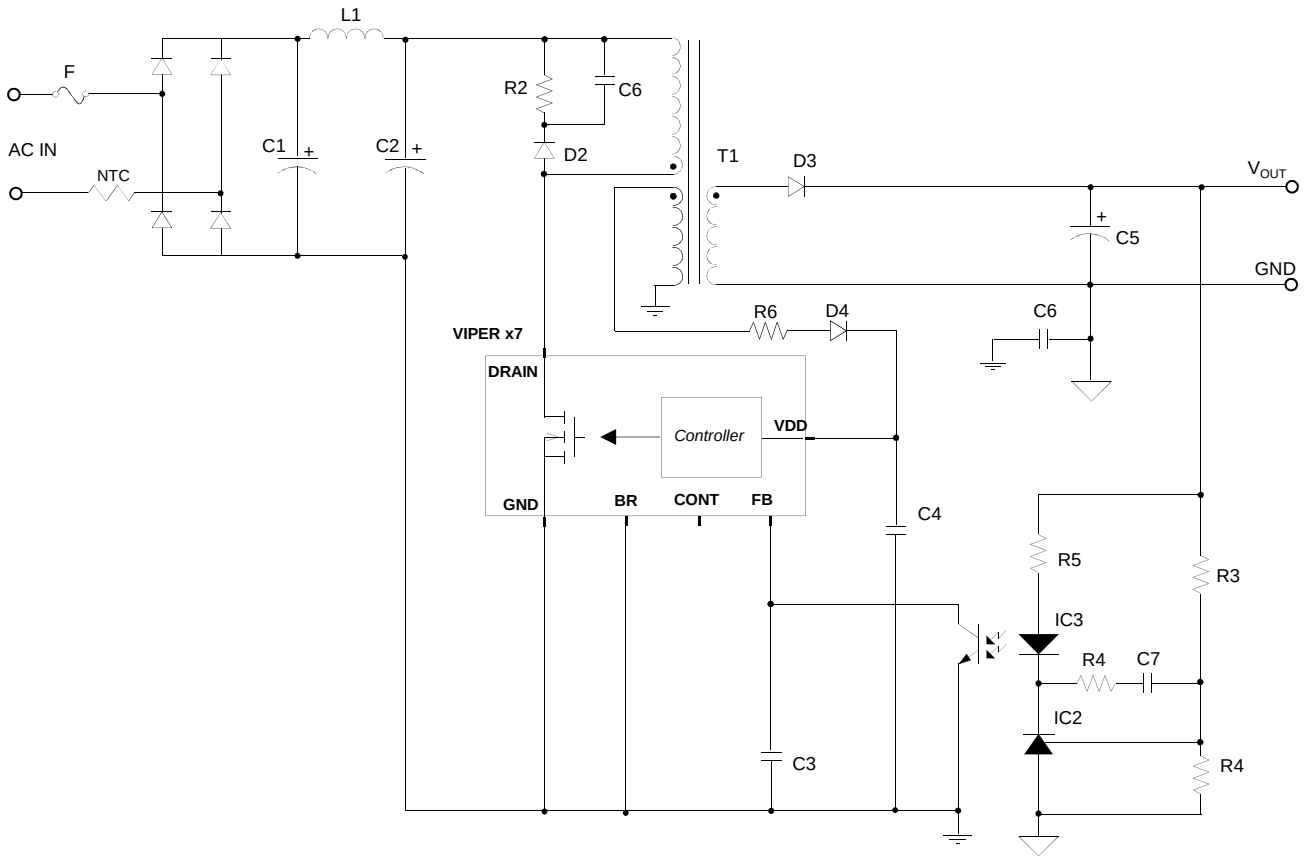
VOUT ≥ 12 V

Stand-by optimization , 30 mW
D4, R5

Schematics with VIPerx7

VIPer17 / 27 / 37

FLY-BACK / FF
ISOLATED



30mW Stand-by

Minimum components count

Low cost EMI filter
C1,C2, L1

Low cost clamp components
R2,C6,D2

Default current limit
400mA / 700mA / 1000mA

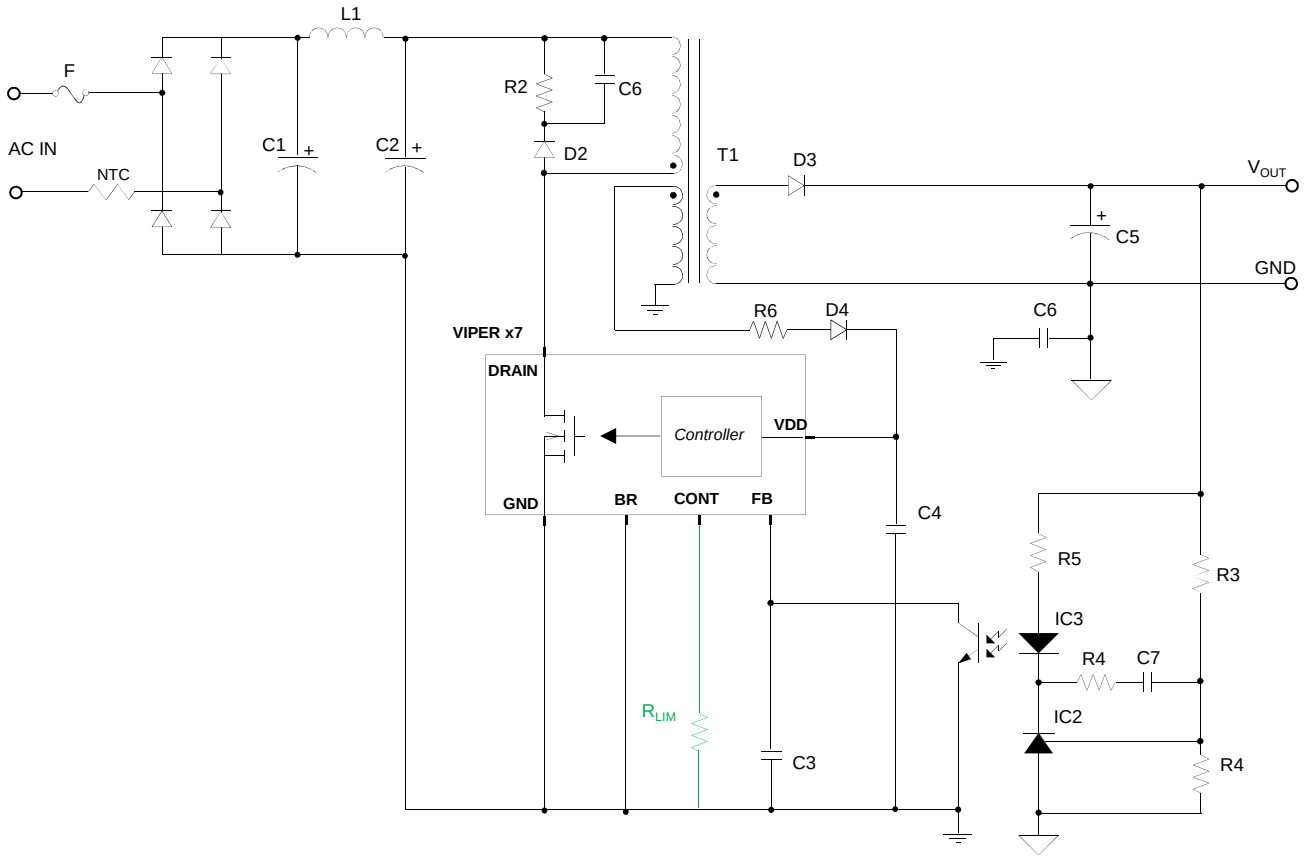
Short circuit protection
No need ext components

2nd Over Current protection
No need ext components

Schematics with VIPerx7

VIPer17 / 27 / 37

FLY-BACK / FF
ISOLATED



30mW Stand-by

Minimum components count

Low cost EMI filter
C1,C2, L1

Low cost clamp components
R2,C6,D2

Current limit set-up - R_{LIM}
<400mA or <700mA or <1000mA

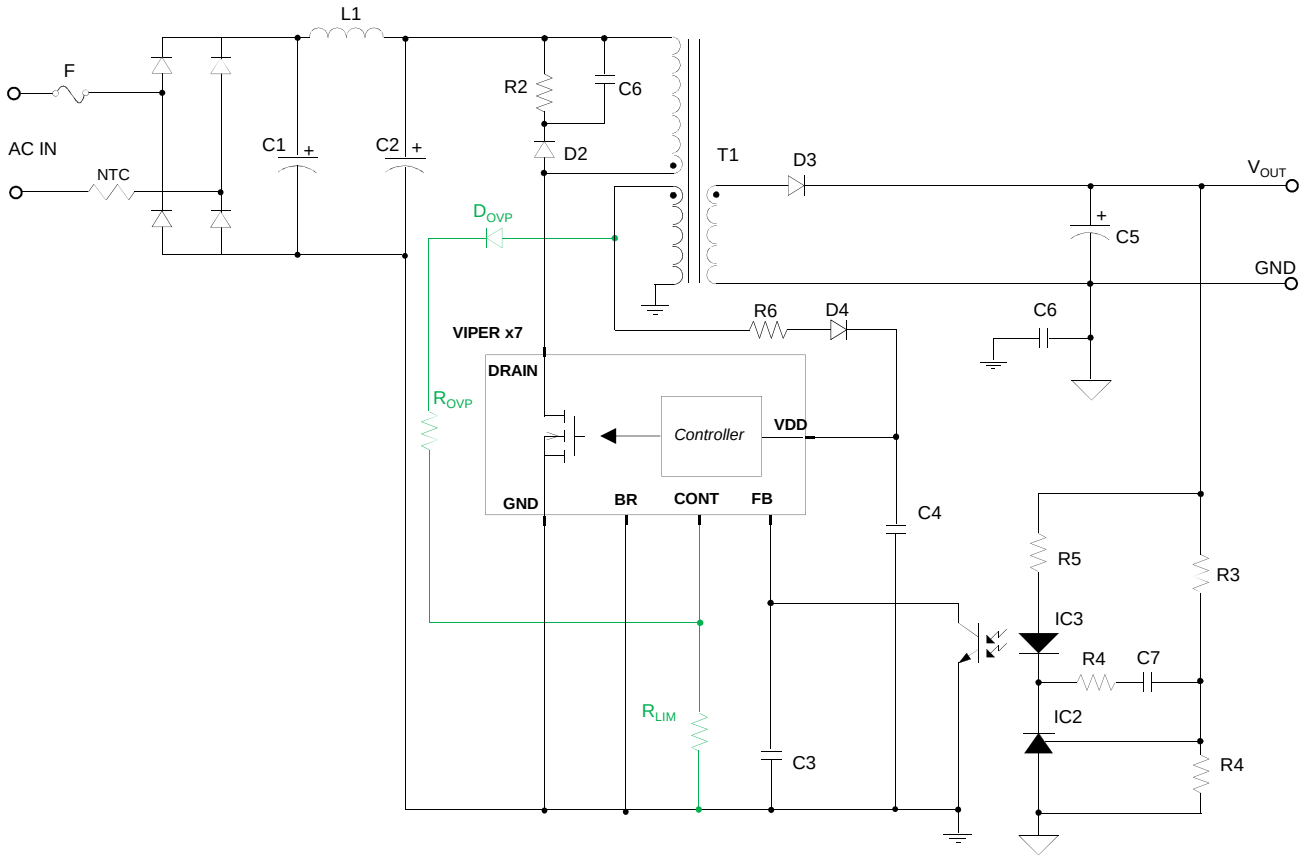
Short circuit protection
No need ext components

2nd Over Current protection
No need ext components

Schematics with VIPerx7

VIPer17 / 27 / 37

FLY-BACK / FF
ISOLATED



30mW Stand-by

Minimum components count

Low cost EMI filter
C1,C2, L1

Low cost clamp components
R2,C6,D2

Current limit set-up - R_{LIM}
<400mA or <700mA or <1000mA

Short circuit protection
No need ext components

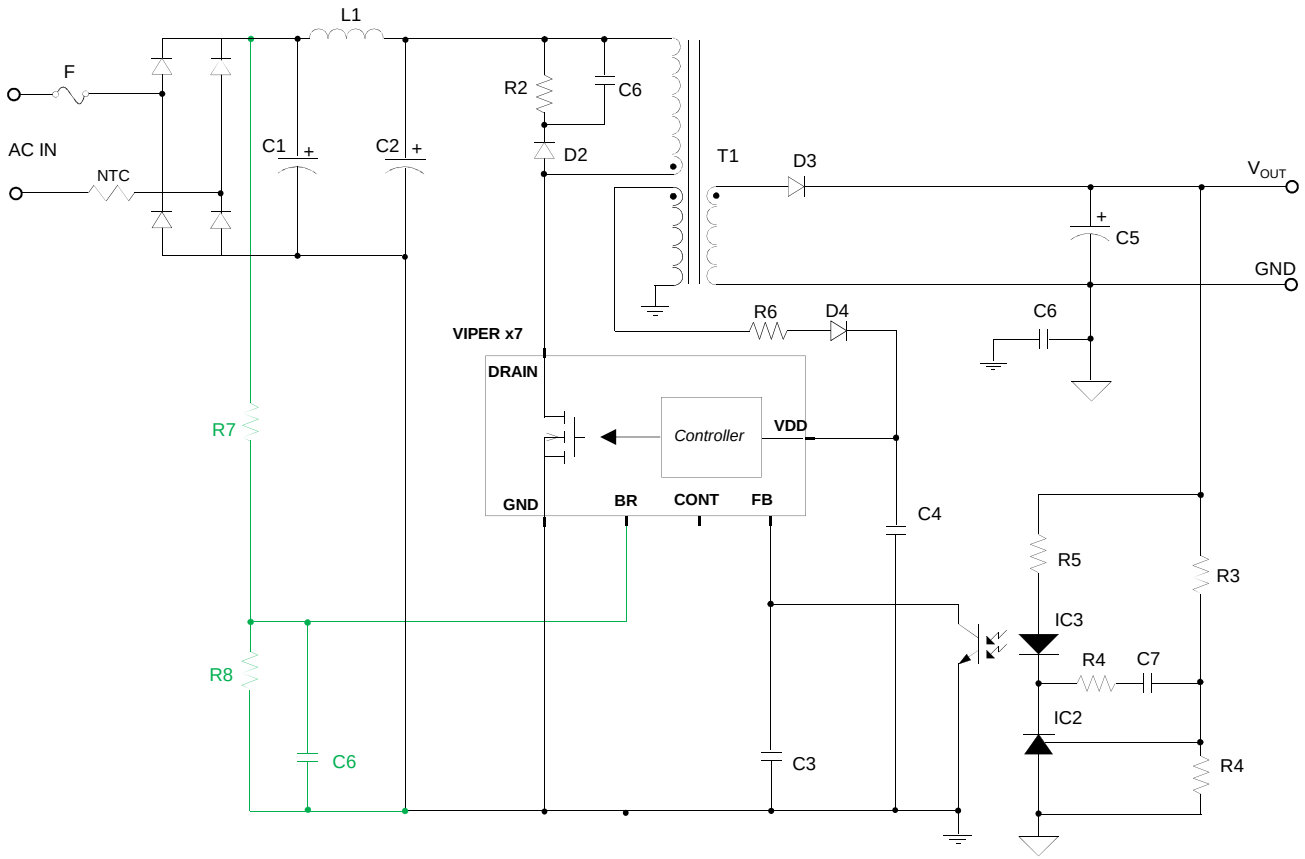
2nd Over Current protection
No need ext components

Over Voltage Protection (V_{OUT})
R_{LIM} , R_{OVP} , D_{OVP}

Schematics with VIPerx7

VIPer17 / 27 / 37

FLY-BACK / FF
ISOLATED



30mW Stand-by

Minimum components count

Low cost EMI filter
C1,C2, L1

Low cost clamp components
R2,C6,D2

Default current limit
400mA / 700mA / 1000mA

Short circuit protection
No need ext components

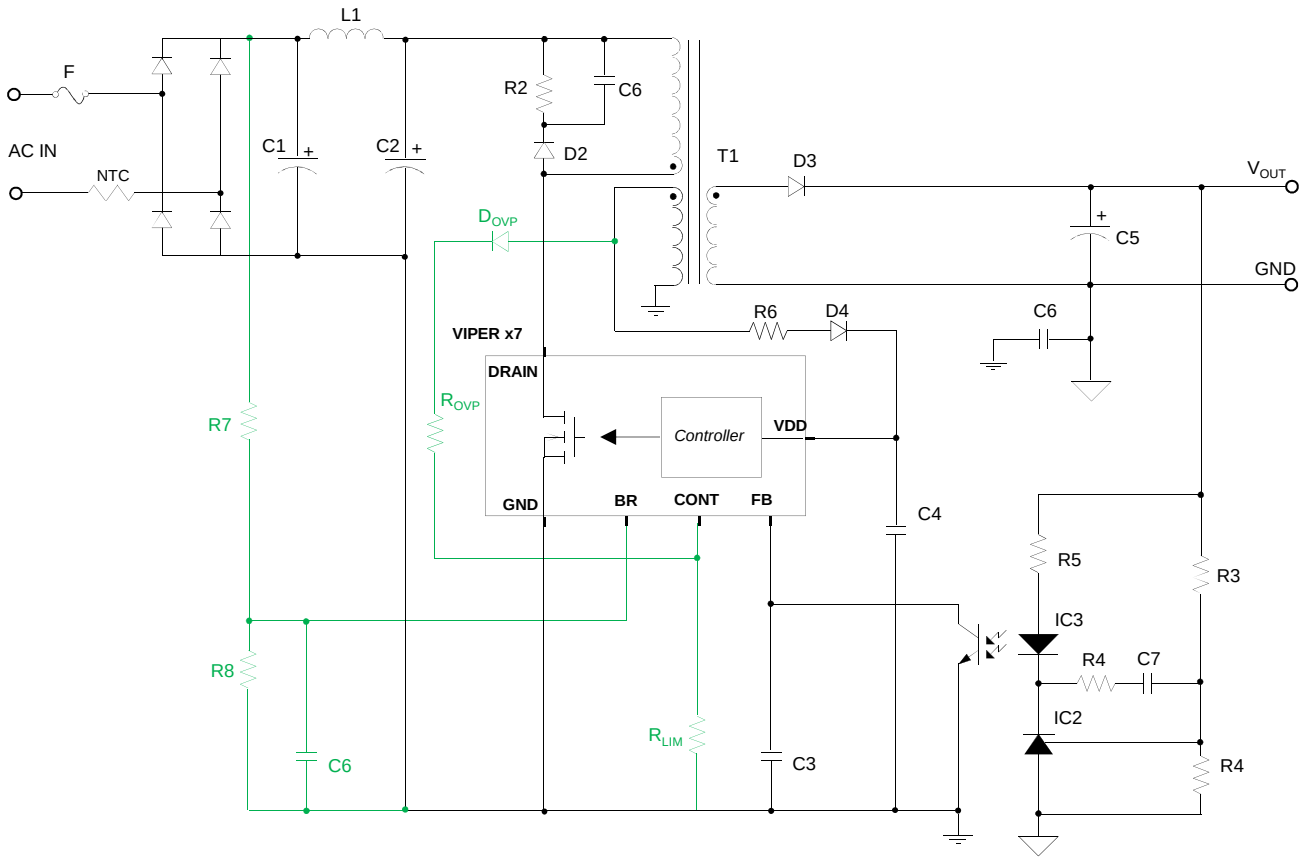
2nd Over Current protection
No need ext components

Brown out set-up (V_{INDC})
R7,R8, C6

Schematics with VIPerx7

VIPer17 / 27 / 37

FLY-BACK / FF
ISOLATED



30mW Stand-by

Minimum components count

Low cost EMI filter
C1,C2, L1

Low cost clamp components
R2,C6,D2

Current limit set-up - R_{LIM}
<400mA or <700mA or <1000mA

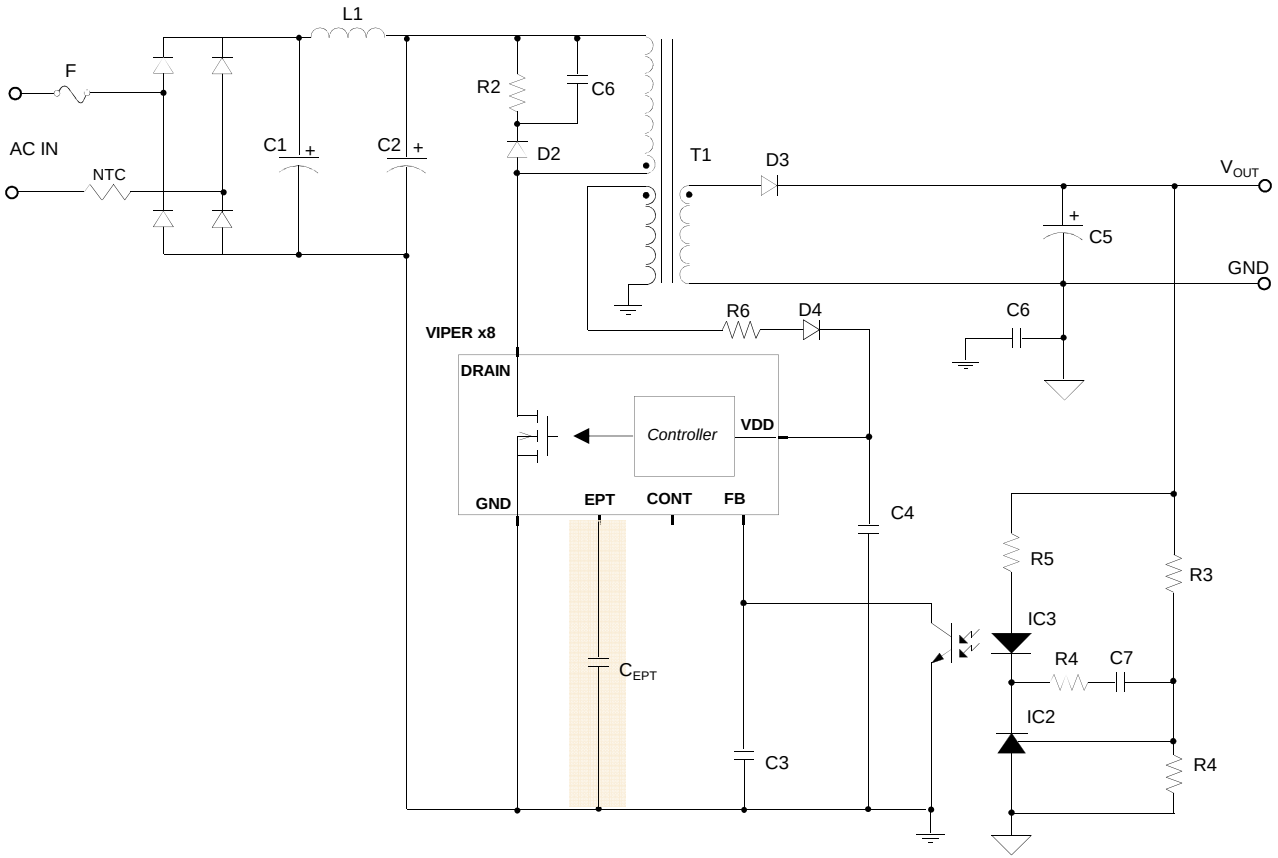
Short circuit protection
No need ext components

2nd Over Current protection
No need ext components

Over Voltage Protection (V_{OUT})
R_{LIM} , R_{OVP} , D_{OVP}

Brown out set-up (V_{INDC})
R7,R8, C6

Schematics with VIPer28



VIPer28

FLY-BACK / FF
ISOLATED

30mW Stand-by

Minimum components count

Low cost EMI filter
C1,C2, L1

Low cost clamp components
R2,C6,D2

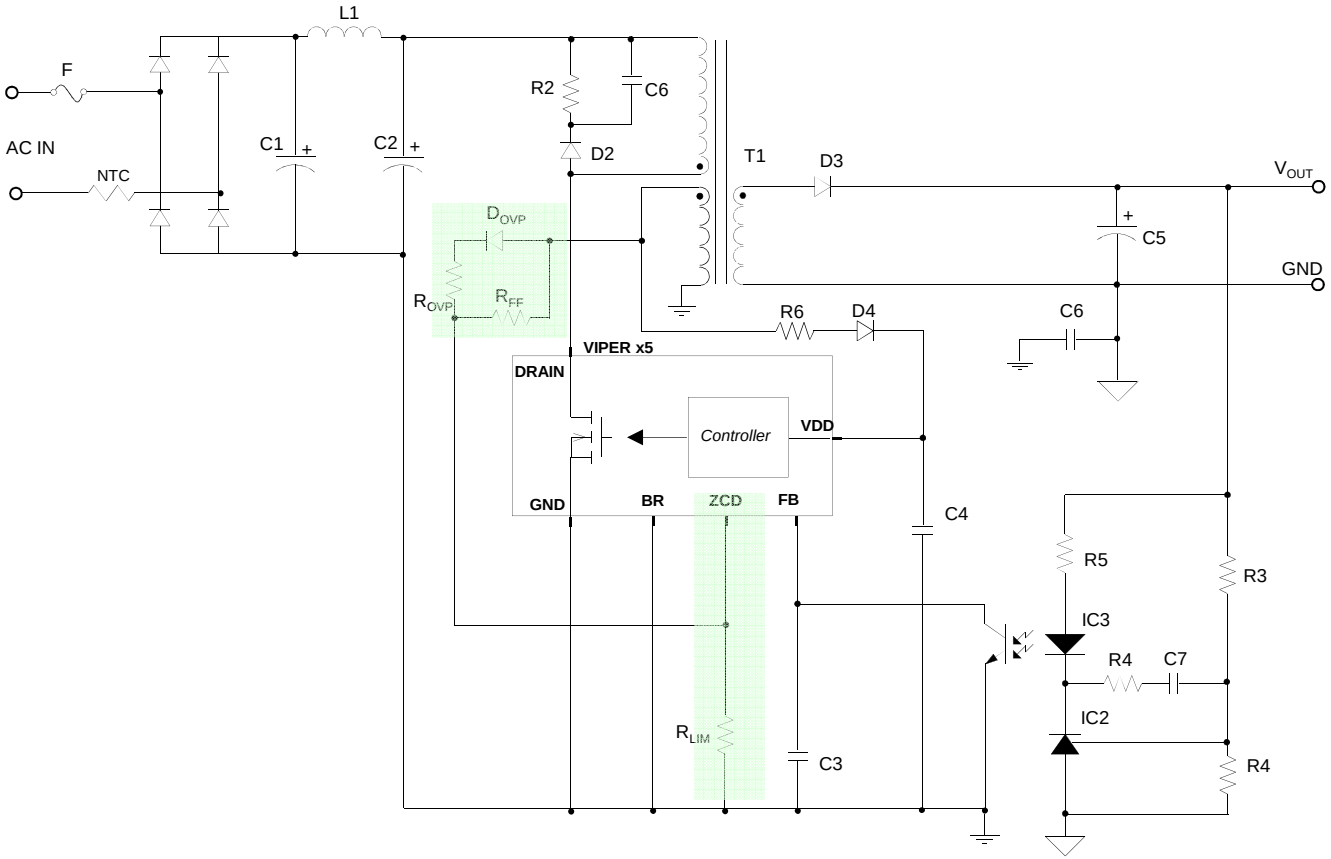
Default current limit
400mA / 700mA / 1000mA

Short circuit protection
No need ext components

2nd Over Current protection
No need ext components

Extra Power Timer
C_{EPT}

Schematics with VIPerx5



VIPer15 / 25

FLY-BACK / Quasi Res.
ISOLATED

30mW Stand-by

Minimum components count

Low cost EMI filter
C1,C2, L1

Low cost clamp components
R2,C6,D2

Short circuit protection
No need ext components

2nd Over Current protection
No need ext components

Zero current Detection (QR)
R_{LIM} , R_{OVP} , D_{OVP}, R_{FF}

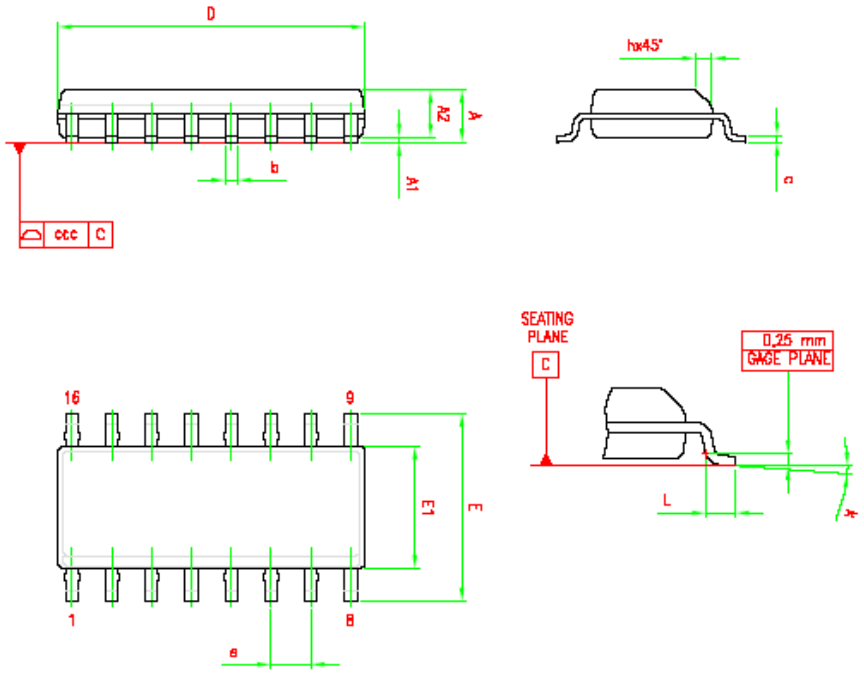
Current limit set-up - R_{LIM}
≤400mA or ≤700mA or ≤1000mA

Over Voltage Protection (V_{OUT})
R_{LIM} , R_{OVP} , D_{OVP}

Feed-Forward
R_{FF}

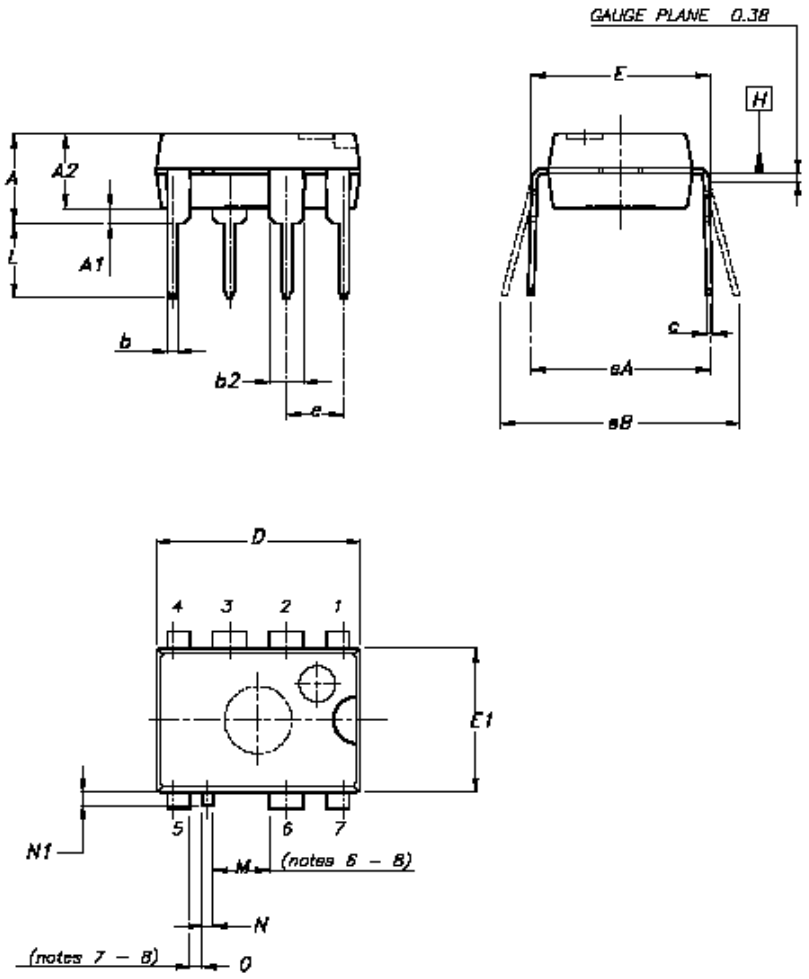
HV Converters Packages data

SO16N (VIPer16/26, VIPer17/27, VIPer28, VIPer15/25, Altair)



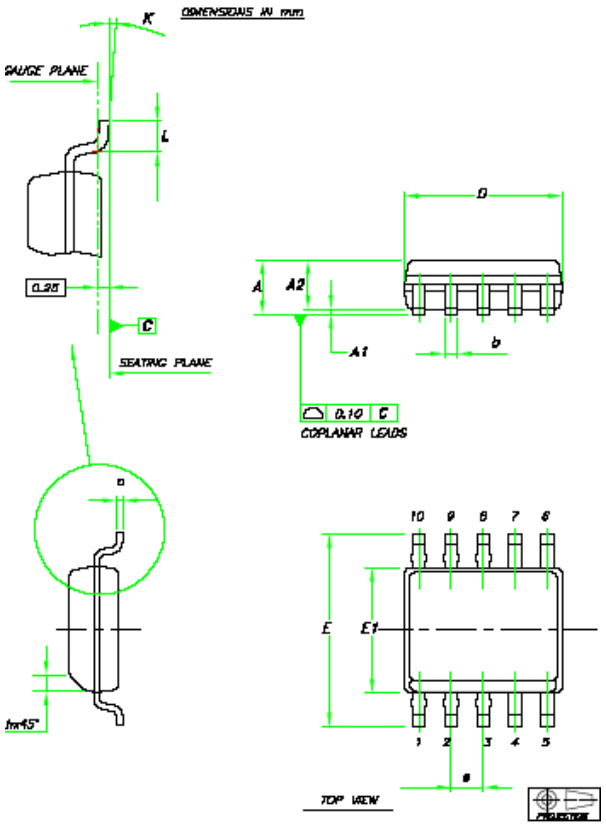
Dim.	mm		
	Min	Typ	Max
A			1.75
A1	0.1		0.25
A2	1.25		
b	0.31		0.51
c	0.17		0.25
D	9.8	9.9	10
E	5.8	6	6.2
E1	3.8	3.9	4
e		1.27	
h	0.25		0.5
L	0.4		1.27
k	0		8
ccc			0.1

DIP7 (VIPer06/16/26, VIPer17/27, VIPer28, VIPer15/25)



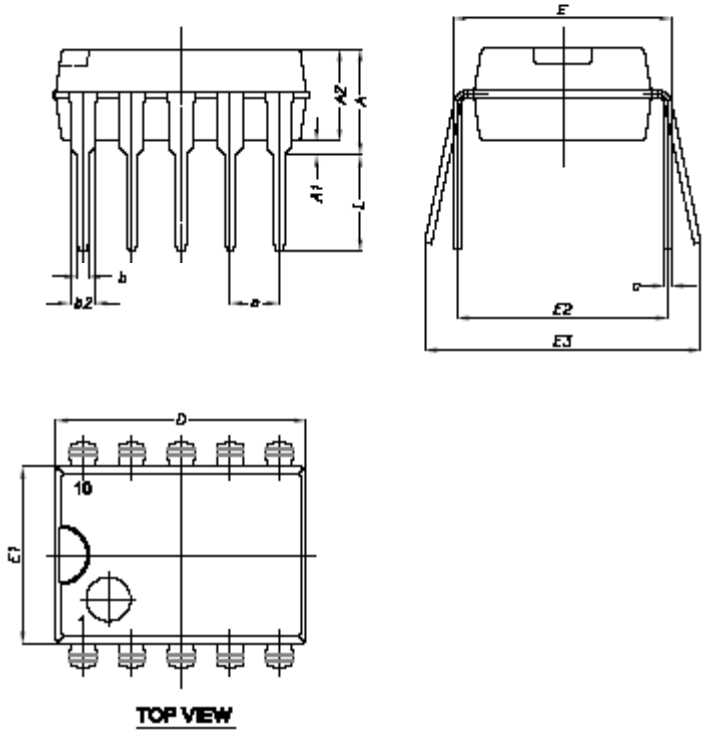
Dim.	mm		
	Typ	Min	Max
A			5.33
A1		0.38	
A2	3.30	2.92	4.95
b	0.46	0.36	0.56
b2	1.52	1.14	1.78
c	0.25	0.20	0.36
D	9.27	9.02	10.16
E	7.87	7.62	8.26
E1	6.35	6.10	7.11
e	2.54		
eA	7.62		
eB			10.92
L	3.30	2.92	3.81
M	2.508		
N	0.50	0.40	0.60
N1			0.60
O	0.548		

SSO10 (VIPer06)



Dim.	Databook (mm.)		
	Min	Typ.	Max
A			1.75
A1		0.10	0.25
A2		1.25	
b		0.31	0.51
c		0.17	0.25
D	4.90	4.80	5
E	6	5.80	6.20
E1	3.90	3.80	4
e	1		
h		0.25	0.50
L		0.40	0.90
K		0°	8°

SDIP10 (VIPer37, VIPer28)



Dim.	mm		
	Min.	Typ.	Max.
A			5.33
A1	0.38		
A2	2.92		4.95
b	0.36		0.56
b2	0.51		1.15
c	0.2		0.36
D	9.02		10.16
E	7.62		8.26
E1	6.1		7.11
E2		7.62	
E3			10.92
e		1.77	
L	2.92		3.81