JW1796

Non-isolated

Buck LED Driver

Parameters Subject to Change Without Notice

DESCRIPTION

JW®1796 is a non-isolated, constant output current step-down LED driver with 500V MOSFET integrated. Operating in the boundary mode makes it high efficiency and low radiation. Patented algorithms ensure good current accuracy and excellent line/load regulations with lowest BOM cost.

JW1796 is supplied from the MOSFET drain directly, so the auxiliary winding is eliminated, which can light up the LED within 100mS.

With unique sampling techniques, JW1796 has multi-protection functions which can largely enhance the safety and reliability of the system, including VDD UVLO, inductor short protection, LED short protection and over-temperature protection.

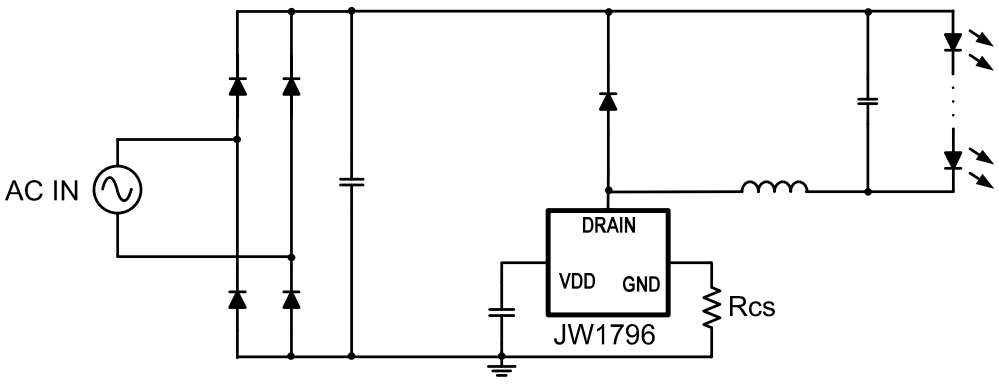
FEATURES

- Integrate 500V, Low R_{dson} MOSFET
- Integrated HV Power Supply Circuit
- No Auxiliary Detecting Winding
- Boundary mode operation
- Excellent line/load regulation
- Universal Input Application
- LED SCP
- VDD UVLO
- Over-temperature protection
- SOP8 packages

APPLICATIONS

- LED Lighting

TYPICAL APPLICATION



ORDER INFORMATION

LEAD FREE FINISH	TAPE AND REEL	PACKAGE	TOP MARKING
JW1796SOPB#PBF	JW1796SOPB#TRPBF	SOP8	JW1796

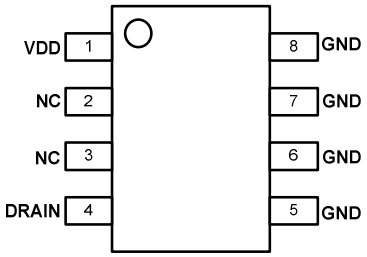
Note:

JWXXXXPPPP#TPBF
- Pb Free
- Tape
- Package Code
- Part Number

JWXXXXPPPP#TRPBF
- Pb Free
- Tape and Reel (If "TR" is not shown, it means Tube)
- Package Code
- Part Number

PIN CONFIGURATION

TOP VIEW



SOP8

ABSOLUTE MAXIMUM RATING[1)]

DRAIN Voltage.....-0.3V to 550V
DRAIN MAX Current@Tj=100℃.....300mA
VDD Voltage.....-0.3 to 8.5V
Junction Temperature.....-40ºC to +150ºC
P_{DMAX}[2)].(SOP8).....0.45W
Storage Temperature.....-40ºC to +150ºC
ESD[3)]..... 2KV

RECOMMENDED OPERATING CONDITIONS

Junction Temp(T_J).....-40ºC to 125ºC

THERMAL PERFORMANCE

	θ_{JA}	θ_{JC}
SOP8	96	45ºC/W

Note:

1) Exceeding these ratings may damage the device. Recommended range of work means that in this range, device function is normal, but not fully guaranteed to meet individual performance indictors. The electrical parameters define the DC and AC parameter specifications of the device within the operation range and under test conditions guaranteed specific performance. For the parameters that have not given the upper and lower limit, the specification does not guarantee its accuracy, but it's typical value reflect the device performance reasonably.

2) The maximum power dissipation will decrease when the temperature raised, which is also determined by T_{JMAX}, θ_{JA}, and ambient temperature T_A. The maximum allowable power dissipation is $P_{DMAX}=(T_{JMAX}-T_A)/\theta_{JA}$, or the lower figure given in the limit range.

3) Body mode, 100pF capacitor discharges through the 1.5K resistor.

ELECTRICAL CHARACTERISTICS[4)5]

V_{DD}=7V, T_A=25 ℃, unless otherwise stated						
Item	**Symbol**	**Condition**	**Min.**	**Typ.**	**Max.**	**Units**
Power Supply Voltage						
V_{DD} Regulation Voltage	V_{DD}	DRAIN=100V		7.3		V
V_{DD} Start Up threshold	V_{DD_ON}	V_{DD} rising		6.6		V
V_{DD} Under Voltage Lockout	V_{DD_UVLO}	V_{DD} falling		5.7		V
V_{DD} Start up Current	I_{ST}	V_{DD}= V_{DD_ON} -1V		1	2	μA
V_{DD} Operation Current	I_{CC}			180	300	μA
Current Sample						
Current Detection Threshold	V_{CS_TH}		580	600	620	mV
CS Blanking Time	T_{LEB}			500		ns
Turn Off Delay	T_{DELAY}			200		ns
Internal Time Control						
MOS Min OFF Time	T_{OFF_MIN}			2.5		μs
MOS Max OFF Time	T_{OFF_MAX}			300		μs
MOS Max ON Time	T_{ON_MAX}			45		μs
Power MOS						
MOS R_{dson}	R_{DS_ON}	V_{GS}=7V/ I_{DS}=0.1A		7		Ω
MOS BV Voltage	BV_{DSS}	V_{GS}=0V/ I_{DS}=250uA	500			V
Over Temperature Regulation						
Thermal Protection Threshold[5)]	T_{REG}			140		℃

Notes:

4) Typical value is measured under 25 ℃ *for standard value*..

5) the minimum and maximum specifications of the specification are guaranteed by testing. Typical values are guaranteed by design, test, or statistical analysis

PIN DESCRIPTION

Pin TO-92	Name	Description
1	VDD	This pin supplies current to the internal start-up circuitry. This pin must be locally bypassed with a capacitor
2,3	NC	
4	DRAIN	The Drain of MOSFET
5,6,7,8	GND	Chip ground

BLOCK DIAGRAM