TENTATIVE

LV5026M 『DATA SHEET』

1. Overview

LV5026M is a High Voltage LED drive controller which drives LED current up to 3A with external MOS FET. LV5026M is realized simple LED circuits with a few external parts. It corresponds to various wide dimming controls including the TRIAC dimming control.

2. Functions

.High Voltage LED Controller
.Various Dimming Control
  -TRIAC & Analog Input & PWM Input
.Selectable Switching frequency [50 kHz or 100 kHz, open: 50 kHz]
.Low noise switching system
  -5 stages skip mode Freqency
  -Step drive
.Selectable Refarence Voltage
  -Internal 0.6V & External Voltage
.Short Protection Circuit
.External Input Synclonous & non-External Input synclonous function adopted
.Soft Start function

3. Specifications

Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	unit
Maximum Input voltage	VINmax		42	V
Allowable power dissipation	Pd max		1.0	W
Junction temperature	Tj		150	℃
Operating temperature	Topr		−30～+125	℃
Storage temperature	Tstg		−40～+150	℃

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Recommended Operating Conditions at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	unit
Input voltage	VIN		8.5～24	V

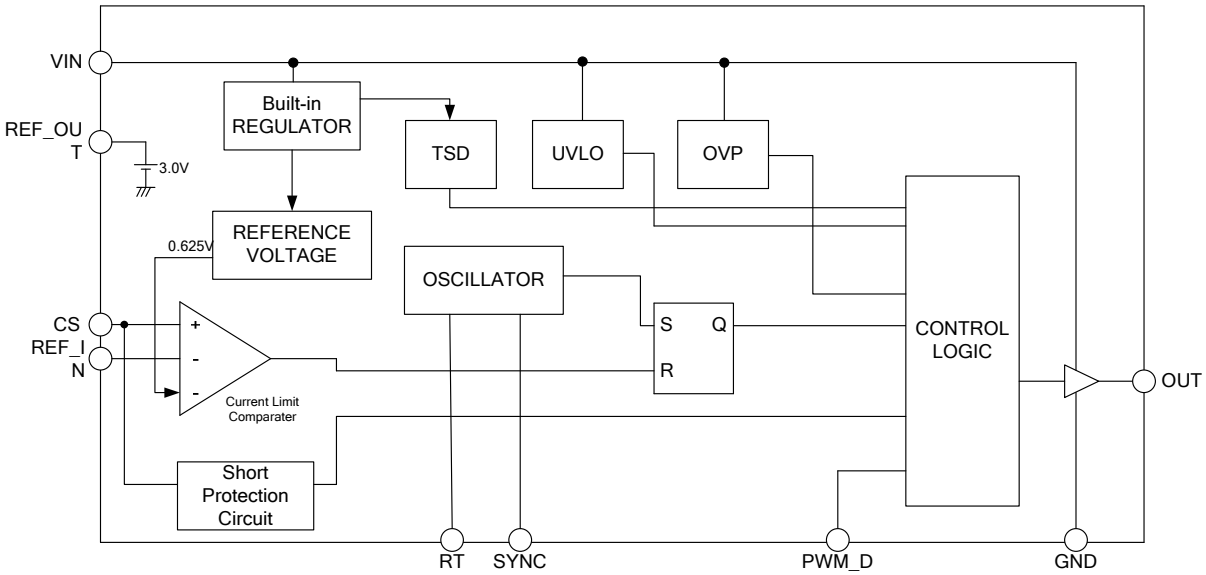
Electrical Characteristics at Ta = 25°C, V_{IN} = 12V, unless otherwise specified.

Parameter	Symbol	Conditions	Ratings			unit
			min	typ	max	
【Reference Voltage block】						
Built-in Reference Voltage	VREF		0.600	0.625	6.50	V
VREF Vin regulation	VREF_LN	VIN=8.5～24V		±0.5		%
Reference Output Voltage	REFOUT			3.0		V
－Maximum load	REFOUT_MAX		2			mA
－equivalent output impedance	REFOUT_RO			40		ohm
【Under Voltage Lockout 】						
Operation Start Input Voltage	UVLOON		8.5	9.5	10.5	V
Operation Stop Input Voltage	UVLOOFF		6.5	7.5	8.5	V
Hysterisys Voltage	UVLOH			2		V
【Oscillation】						
Freqency	FOSC	RT=OPEN		25		kHz
Skip Freqency range	FSKIP	5 Stages		±3.5% ±7%× FOSC		kHz
Maximum Duty	MAXDuty			65		%
【Comparator】						
Input offset Voltage (Between CS and VREF)	VIO_VR			1	10	mV

Input offset Voltage (Between CS and REFOUT)				1	10	mV
Input current	IIOCS			120		nA
	IIOREF			60		nA
CS terminal max voltage	VOM				1	V
malfunction prevention mask time	TMSK			150		ns
【PWM_Dimming Input】						
PWM_D OFF Voltage	VOFF		2		5	V
PWM_D ON Voltage	VON		0		0.6	V
【Thermal protection Circuit】						
Thermal shutdown Temprature	TSD	*Design guarantee		165		℃
Thermal shutdown hysterisys	ΔTSD	*Design guarantee		30		℃
【Drive Circuit】						
OUTPUT sink current	IOI		500	1000		mA
OUTPUT source currnet	IOO			120		mA
Minimum On time	TMIN			200	300	ns
【ﾃﾞﾊﾞｲｽ全体】						
UVLO mode VIN current	ICCOFF	VIN<UVLOON		80	120	uA
Normal mode VIN current	ICCON	VIN>UVLOON OUT=OPEN		0.6		mA
【VIN Over Voltage protection Circuit】						
VIN Over Voltage protection Voltage	VINOVP		24	27	30	V
【CS terminal abnormal sencing Circuit】						
Abnormal sencing Voltage	CSOCP			1.9		V

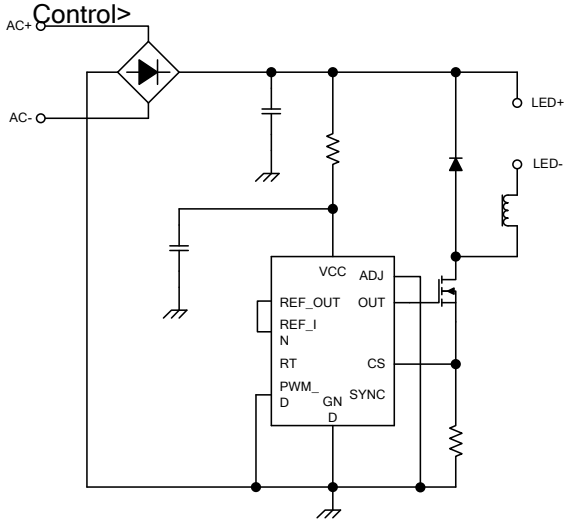
*: Design guarantee (value guaranteed by design and not tested before shipment)

4. Block Diagram

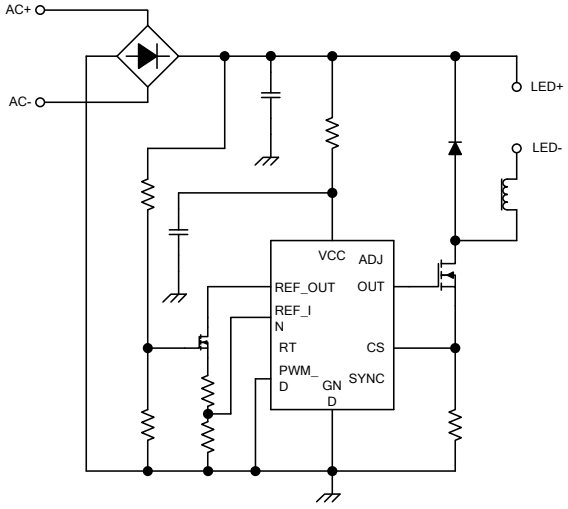


5. Sample Application Circuit

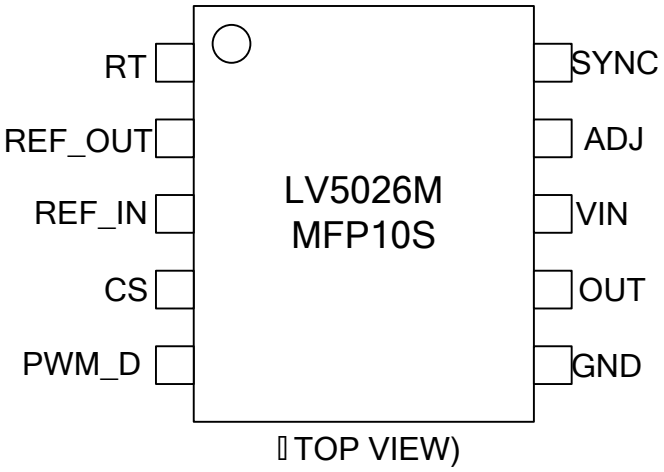
<No Dimming Control>



<Dimming Control>



6. Pin Assignment



7.Pin Function

Pin No.	Pin name	Function
1	RT	Switching Freqency selection Pin. [L or Open : 50kHz Switching / H(2V – 5V) : 100 kHz Switching]
2	REF_OUT	Built-in 3V Regulate out Pin.
3	REF_IN	External LED current Limit Setting Pin. If less than VREF (0.625V) voltage is input, Peak current value is used at the input voltage. If more than Vref voltage is input, it is done at VREF voltage.
4	CS	LED current sencing Pin. If this terminal voltage exceeds VREF (or REF_IN), external FET is OFF. The switching is stopped until falling below 0.9V when the voltage of the terminal exceeds 1.2V. And if the voltage of the terminal exceeds 1.9V, LV5026M turns to latch-off mode.
5	PWM_D	PWM DIMMING pin. [L:normal operation, H:Stop operation, OPEN:forbidden]
6	GND	GND pin.
7	OUT	Driving the external FET Gate Pin.
8	VIN	Power supply Pin. Operation : VIN＞UVLOON Stop: VIN＜UVLOOFF Switching Stop : VIN>VINOVP
9	ADJ	LED current adjusting pin
10	SYNC	External synchronized pin.

8. CS terminal abnormal sencing function

If the voltage of the terminal exceeds 1.9V, LV5026M turns to latch-off mode and swithing is stopping.

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