

MV1002SC

IC for LED Lighting

Feature

- Critical conduction mode
- Linear / PWM Dimming
- Deep dimming (1% or less)
- Vcc over voltage protection (latch)
- LED short-circuit protection (auto reset)
- Thermal shutdown (auto reset)
- Pb free
- RoHS:Yes

Outline

House Name: SOP8J



1 絶対最大定格(Ta=25°C)

1 Absolute Maximum Ratings (at Ta=25°C)

1-1 熱規格

1-1 Thermal Ratings

項目 Item	記号 Symbol	規格値 Ratings	単位 Unit
保存温度 Storage temperature	Tstg	-55~150	°C
接合部温度 Junction temperature	Tj	-40~150	°C
許容損失 Total power dissipation	Pt	1.5	W

1-2 電気的規格

1-2 Electrical Ratings

項目 Item	記号 Symbol	規格値 Ratings	単位 Unit
Vcc端子最大印加電圧 Vcc maximum applied voltage	Vcc	22	V
Vcc端子逆バイアス電圧 Vcc reverse bias voltage	-----	-0.5	V
Svin, CS, REF端子最大印加電圧 Svin, CS, REF maximum applied voltage	Vsvin, Vcs, Vref,	5.5	V
Svin, CS, REF端子逆バイアス電圧 Svin, CS, REF reverse bias voltage	-----	-0.5	V
Svout 端子最大流入電流 Svout Into maximum current	Isvout	±2	mA

注意 : 本仕様書に記載されていない項目、使用条件、論理の組み合わせでの使用は保証していません。
記載されている以外の条件で使用する場合は必ず事前に当社担当営業部門までご相談下さい。
記載内容は改良などのためにお断り無しに変更することがあります。

Notes : Using with parameters, condition of use and logic controls that are not specified in the specifications are not assured.
When used with the conditions that are not specified, please consult us in advance.
The contents described herein are subject to change without notice.

2 推奨動作条件

2 Recommended Operation Conditions

項目 Item	記号 Symbol	推奨値 Recommended value			単位 Unit
		min	typ	max	
動作温度 Operating temperature	Top	-30	---	125	°C
Vcc端子印加電圧 Vcc applied voltage	Vcc	9	---	16	V

注意 : 上記の規格範囲内においても、製品寿命に関しましてはお客様の使用環境により異なりますので、長寿命を期待される製品
にご使用される場合には、Tj=100°C以下でご使用頂く事を推奨致します。

Notes : The product life depends on the condition of use even within the above operating conditions.
Using at Tj = 100°C or less is recommended for the equipment where a long life is expected.

3 電氣的・熱的特性 (Ta=25°C)

3 Electrical/Thermal Characteristics (at Ta=25°C)

項目 Item	記号 Symbol	条件 Condition	規格値 Ratings			単位 Unit
			min	typ	max	

Vcc端子 (Vcc Terminal)

動作開始電圧 Start up supply voltage	Vcc_start		6.6	7.2	7.8	V
ヒステリシス電圧 Hysteresis voltage	Vcc_hys		0.8	0.9	1.0	V
Vcc電流 (動作時1) Vcc current (active mode1)	Icc_act1	Vcc=9V、Gate=OPEN	0.6	1.1	1.6	mA
Vcc電流 (動作時2) Vcc current (active mode2)	Icc_act2	Vcc=9V、Gate=1000pF、50kHz	1.2	1.7	2.2	mA
Vcc電流 (起動前) Vcc current (stand-by)	Icc_stby	Vcc=Vcc_start-0.5V	1.6	2.0	2.4	mA
Vcc過電圧保護電圧 Vcc over voltage threshold	VccOVP		19.7	20.7	21.7	V

Gate端子 (Gate Terminal)

Gate High電圧 Gate voltage (high level)	VG_H		Vcc-0.2	---	---	V
Gate Low電圧 Gate voltage (low level)	VG_L		---	---	0.2	V
ソース電流 Sourcing current	IG_source	Vcc=9V、Gate=0V	-50	-40	-30	mA
シンク電流 Sinking current	IG_sink	Vcc=9V、Gate=9V	350	425	500	mA

Svin、Svout端子 (Svin,Svout Terminal)

Svin端子内部プルダウン抵抗 Internal pull-down resistance at Svin	R_Svin		22.5	25.0	27.5	kΩ
Svout端子内部プルダウン抵抗 Internal pull-down resistance at Svout	R_Svout		22.5	25.0	27.5	kΩ
内部プルダウン抵抗相対精度 Relative accuracy of internal pull-down resistance	R_Svratio	R_Svin / R_Svout	0.98	1.00	1.02	-
応答遅れ時間 *1 Delay time from Sv-detection to GATE-on	Td_on	Gate=OPEN	---	100	---	ns

*1 設計保証

*1 This parameter is not tested during production,by design it is guaranteed.

項目 Item	記号 Symbol	条件 Condition	規格値 Ratings			単位 Unit
			min	typ	max	

CS端子 (CS Terminal)

電流検出しきい値(REF=4V) Current sense threshold voltage	Vth_CS	Vcc=9V、REF=4V	0.465	0.495	0.525	V
電流検出しきい値(REF=2.4V) Current sense threshold voltage	Vth_CS_2_4	Vcc=9V、REF=2.4V	0.450	0.480	0.510	V
電流検出しきい値(REF=1.0V) Current sense threshold voltage	Vth_CS_1_0	Vcc=9V、REF=1.0V	0.170	0.200	0.230	V
応答遅れ時間 *1 Delay time from CS-detection to GATE-off	Td _{off}	Gate=OPEN	---	100	---	ns
リーディングエッジブランク時間 *1 Leading Edge Blanking time	T_LEB		---	200	---	ns

REF端子 (REF Terminal)

REF入力電圧(最大出力電流) REF input voltage(maximum output current)	Vref_H		2.6	---	---	V
REF入力電圧(最小出力電流) REF input voltage(minimum output current)	Vref_L		---	---	0.15	V
REF端子プルアップ電流 REF pull-up current	I _{ref}	REF=0V	-42	-32	-22	μA
最大オフ時間 Maximum off time	Toff _{max}	REF=0V	48	60	72	μs
最小オフ時間 Minimum off time	Toff _{min}	REF=4V	1.8	2.4	3.0	μs
最大オン時間 Maximum on time	Ton _{max}		21	27	33	μs
最小オン時間 *1 Minimum on time	Ton _{min}		---	250	500	ns

保護回路 (Protection)

過熱保護 停止温度 *1 Operating stop temperature	TSD		---	150	---	°C
過熱保護 ヒステリシス *1 Hysteresis temperature	TSD_hys		---	50	---	°C

PWM調光入力信号 (PWM Dimming input signal)

PWM信号最大周波数 PWM signal maximum frequency	f _{PWM}		---	---	1	kHz
PWM信号最小ON_DUTY PWM signal minimum On-Duty	Duty _{PWM}		1	---	---	%

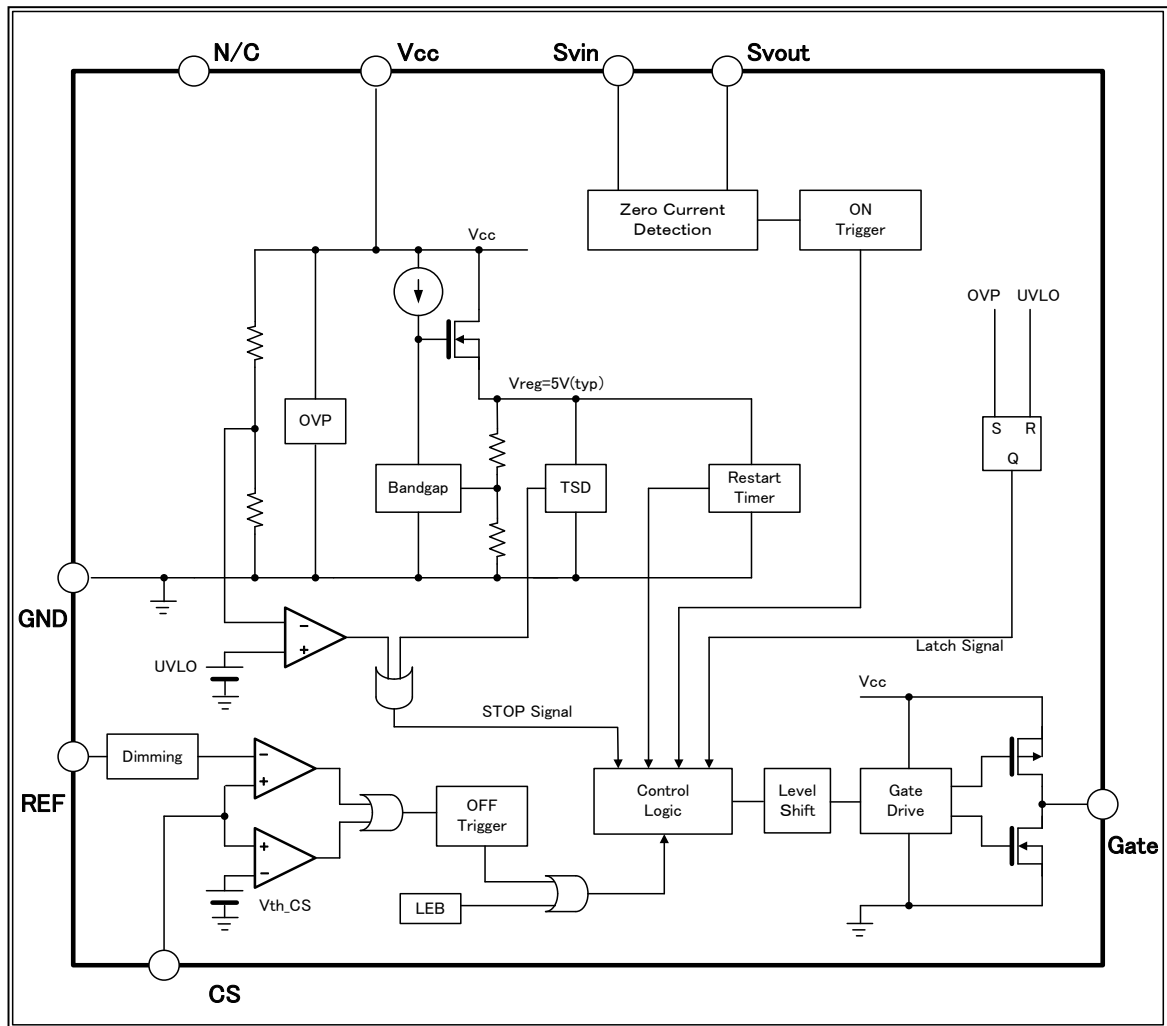
*1 設計保証

*1 This parameter is not tested during production, by design it is guaranteed.

その他 (others)

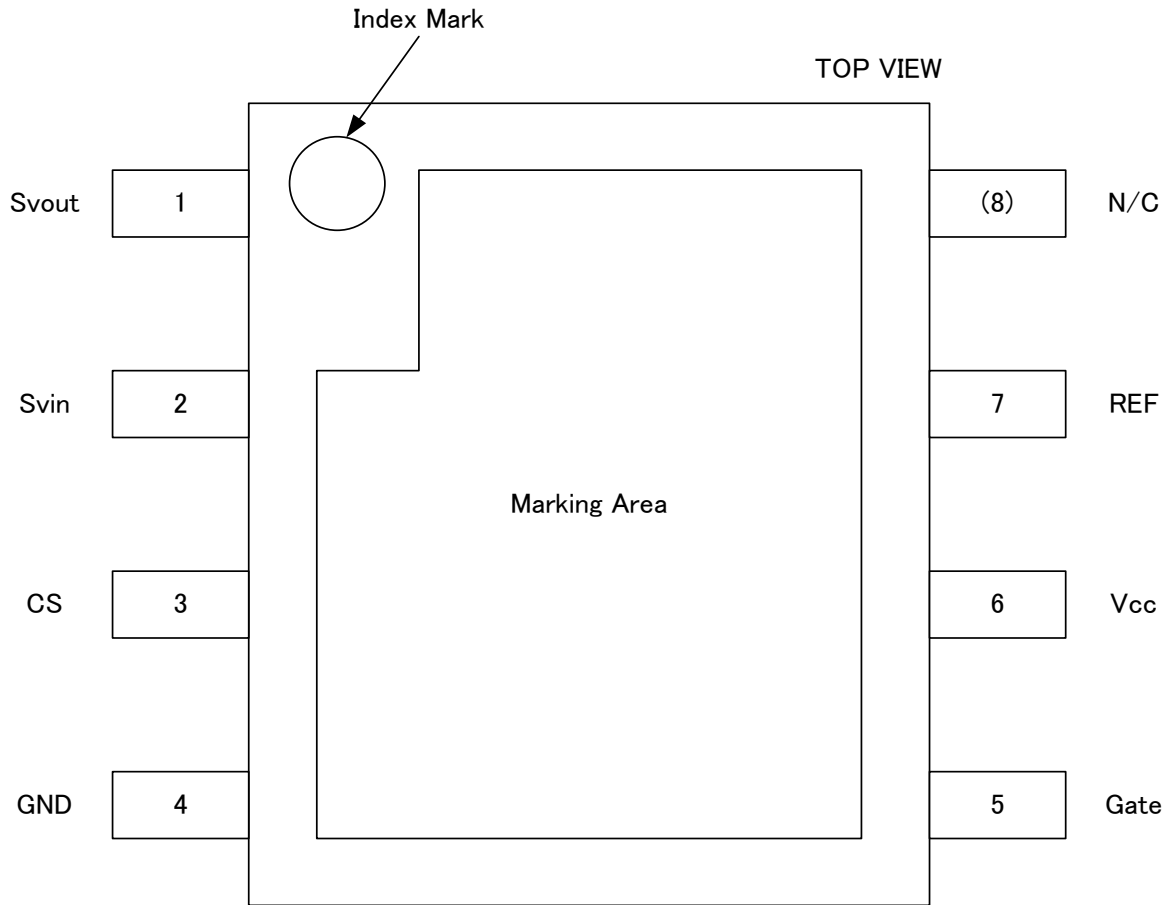
熱抵抗 Thermal resistance	θ _{jc}	ガラスエポキシ基板: 114.3mm × 76.2mm, 厚さ: 1.6mm, 内面銅箔サイズ 74.2mm × 74.2mm, 厚さ: 35μm	---	---	13	°C/W
	θ _{ja}	Glass-Epoxy Board: 114.3mm × 76.2mm, Thickness: 1.6mm inside copper foil 74.2mm × 74.2mm, Thickness: 35μm	---	---	83.3	°C/W

4 ブロック図
4 Block Diagram

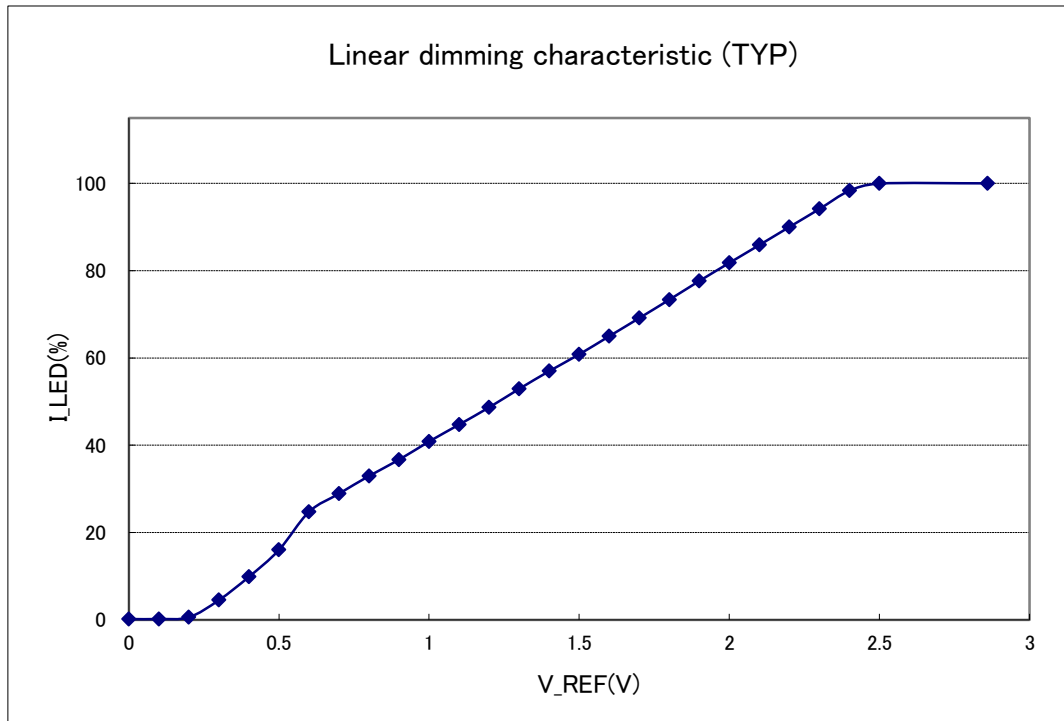


端子番号 No.	記号 symbol	端子名 terminal name
1	Svout	ゼロ電流検出端子 zero current detection terminal
2	Svin	ゼロ電流基準端子 zero current reference terminal
3	CS	電流検出端子 current sense terminal
4	GND	グラウンド端子 GND terminal
5	Gate	主スイッチ用MOSFET駆動端子 the output terminal for a MOSFET drive
6	Vcc	IC電源端子 power supply terminal
7	REF	調光端子 dimming terminal
8	N/C	N/C端子 no connection terminal

5 端子配列
5 Pin Assignment



■ REF電圧-出力電流特性 (Ta=25°C)
REF voltage-Output current characteristic (at Ta=25°C)
Vin=250Vdc
Vo=140V

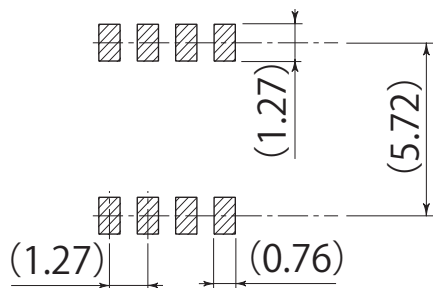
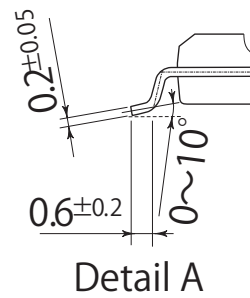
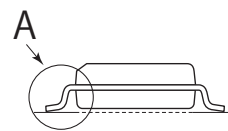
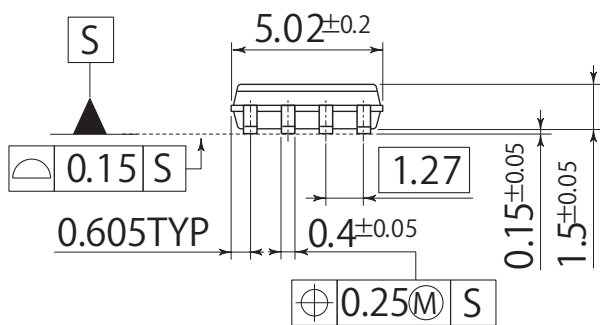
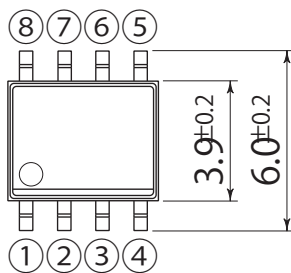


Package Outline-Dimensions

unit : mm
scale: 4/1

L2

JEDEC Code	-
JEITA Code	-
House Name	SOP8J



Referential Soldering Pad

- 量産時には、適正化を図って下さい
- Optimize soldering pad to the board design and soldering condition.

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