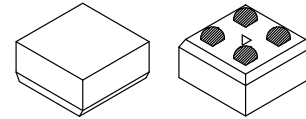


超小型リニア出力照度センサIC

LA0151CS



ODCSP4 1.01x1.01
CASE 570AC

概要

LA0151CSは人の視感度に近い分光特性を持った超小型の照度センサICです。小型薄型形状により、基板の実装面積が少ない携帯電話やモバイル機器に最適です。

特長

- リニア電流出力
- ローゲインモード機能[ローゲイン-35 dB]

アプリケーション / 最終製品

- 携帯電話とタブレット
- デジタルスティルカメラ
- 防犯カメラ

絶対最大定格 (Ta = 25°C)

項目	記号	条件	定格値	Unit
最大電源電圧	V _{CC}		6	V
動作周囲温度	Topr		-30 to +85	°C
保存周囲温度	Tstg		-40 to +100	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

(参考訳)

最大定格を超えるストレスは、デバイスにダメージを与える危険性があります。これらの定格値を超えた場合は、デバイスの機能性を損ない、ダメージが生じ、信頼性に影響を及ぼす危険性があります。

推奨動作条件 (Ta = 25°C)

項目	記号	条件	定格値			Unit
			Min	Typ	Max	
推奨電源電圧	V _{CC}		2.2	3.3	5.5	V
SW端子ロー電圧	VI	ノーマルゲインモード	0	-	0.4	V
SW端子ハイ電圧	Vh	ローゲインモード	2.1	-	-	V

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended Operating Ranges limits may affect device reliability.

(参考訳)

推奨動作範囲を超えるストレスでは推奨動作機能を得られません。推奨動作範囲を超えるストレスの印加は、デバイスの信頼性に影響を与える危険性があります。

ORDERING INFORMATION

Ordering Code	Package	Shipping [†]
LA0151CS-TLM-E	ODCSP4 (Pb-Free / Halogen Free)	5000 / Tape & Reel

†テープ & リール仕様 (製品配置方向、テープサイズ含む)に関する情報については、Tape and Reel Packaging Specificationsパンフレット(BRD8011/D)をご参照ください。
http://www.onsemi.com/pub_link/Collateral/BRD8011-D.PDF

LA0151CS

電気・光学的特性 ($T_a = 25^\circ\text{C}$, $V_{CC} = 3.3\text{ V}$)

項目	記号	条件	定格値			Unit
			Min	Typ	Max	
消費電流 (1) (Note 2, 4)	I_{CC}	$E_v = 1000\text{ lx}$, $R_L = 5\text{ k}\Omega$, Nモード	90	150	210	μA
消費電流 (2) (Note 2, 4)	I_{CC}	$E_v = 1000\text{ lx}$, $R_L = 5\text{ k}\Omega$, Lモード	42	70	98	μA
出力電流 (1) (Note 2, 4)	I_{O1}	$E_v = 100\text{ lx}$, Nモード	6	8	10	μA
出力電流 (2) (Note 2, 4)	I_{O2}	$E_v = 1000\text{ lx}$, Nモード	60	80	100	μA
出力電流 (3) (Note 2, 4)	I_{O3}	$E_v = 100\text{ lx}$, Lモード	0.12	0.16	0.2	μA
出力電流 (4) (Note 2, 4)	I_{O4}	$E_v = 1000\text{ lx}$, Lモード	1.2	1.6	2.0	μA
暗電流	I_{leak}	$E_v = 0\text{ lx}$, Nモード, Lモード	–	–	0.1	μA
温度係数 (Note 3)	I_{tc}	$E_v = 100\text{ lx}$, Nモード, Lモード, $T_a = -20\sim 60^\circ\text{C}$	–	0.34	–	$\%/^\circ\text{C}$
立ち上がり時間 (1) (Note 3)	$Tr1$	$E_v = 1000\text{ lx}$, $R_L = 5\text{ k}\Omega$, Nモード	–	15	40	μs
立ち上がり時間 (2) (Note 5)	$Tr2$	$E_v = 1000\text{ lx}$, $R_L = 500\text{ k}\Omega$, Lモード	–	20	50	μs
立ち下がり時間 (1) (Note 5)	$Tf1$	$E_v = 1000\text{ lx}$, $R_L = 5\text{ k}\Omega$, Nモード	–	150	500	μs
立ち下がり時間 (2) (Note 5)	$Tf2$	$E_v = 1000\text{ lx}$, $R_L = 500\text{ k}\Omega$, Lモード	–	150	500	μs
ピーク感度波長 (Note 3)	λ_p		–	550	–	nm
飽和出力電圧 (Note 6)	V_O	$E_v = 1000\text{ lx}$, $R_L = 150\text{ k}\Omega$, Nモード	3.0	3.2	–	V

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

(参考訳)

製品パラメータは、特別な記述が無い限り、記載されたテスト条件に対する電気的特性で示しています。異なる条件下で製品動作を行った時には、電気的特性で示している特性を得られない場合があります。

1. Nモード：ノーマルゲインモード、Lモード：ローゲインモード

2. 標準A光源にて測定。ただし量産工程では白色LEDで代用。

3. 設計保証項目

4. 消費電流、出力電流測定回路

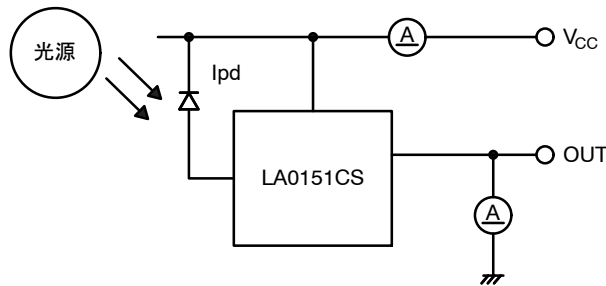


Figure 1.

5. Tr , Tf 測定方法

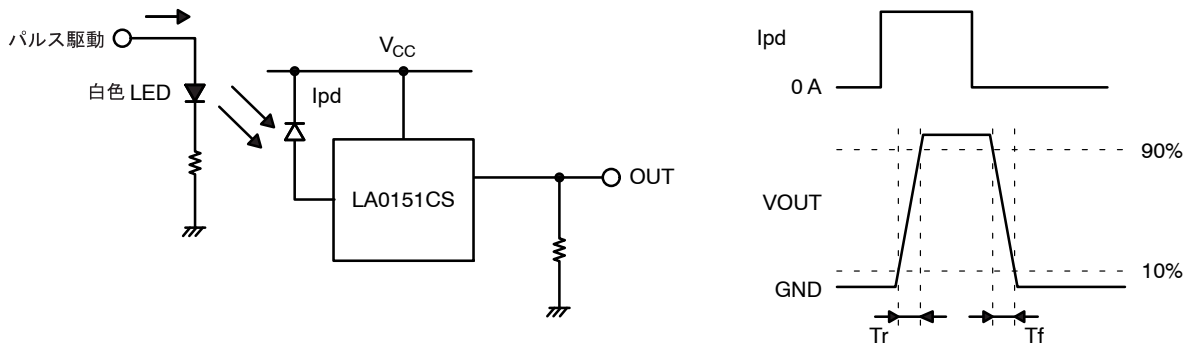


Figure 2.

6. 参考値： $V_{CC} = 2.9\text{ V}$ の場合、min = 2.6 V、typ = 2.8 V

LA0151CS

パッド配置図

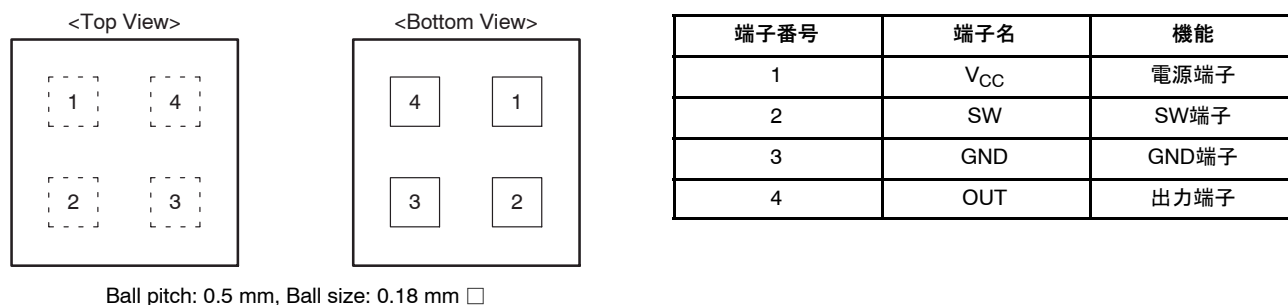
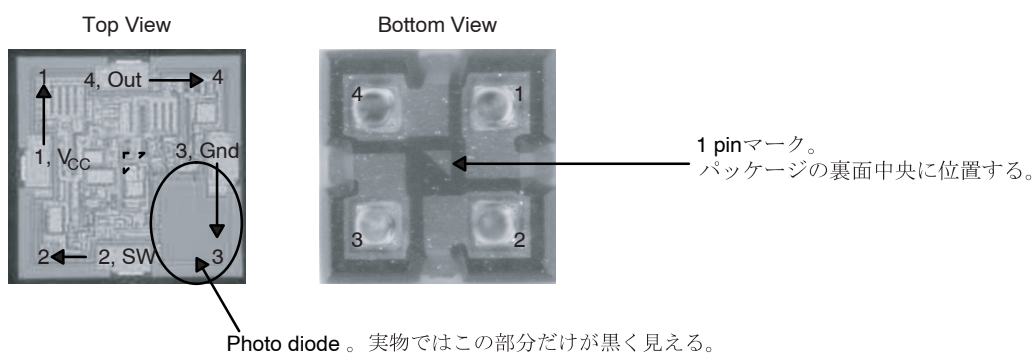


Figure 3. パッド配置図

パッド配置図(写真)



*Photo Diodeのある場所は3ピンである。Photo Diodeを1ピンマークと間違わないよう注意すること。

Figure 4. パッド配置図(写真)

内部ブロック図

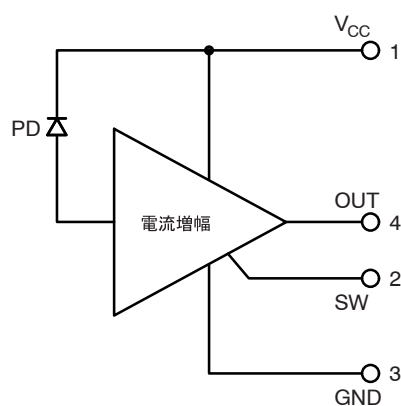


Figure 5. 内部ブロック図

LA0151CS

チップパターン図&受光パターン図

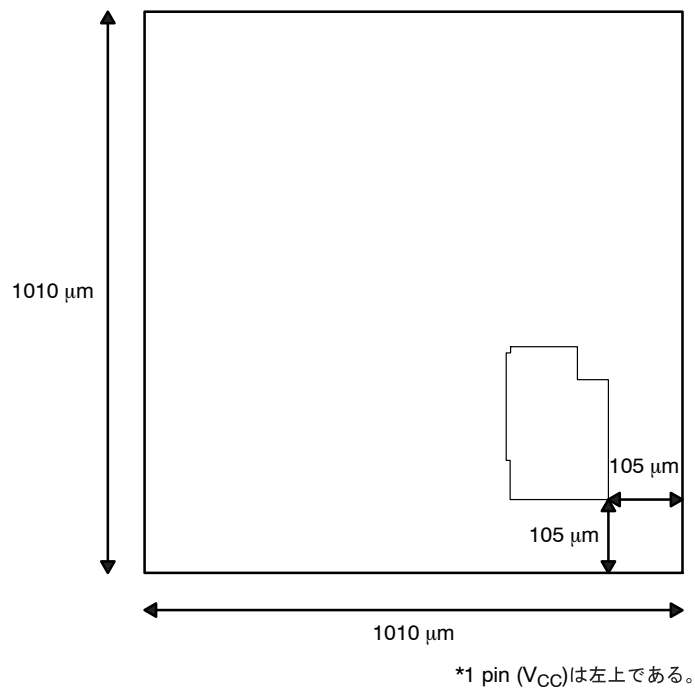


Figure 6. LA0151CSチップパターン図(Top View)

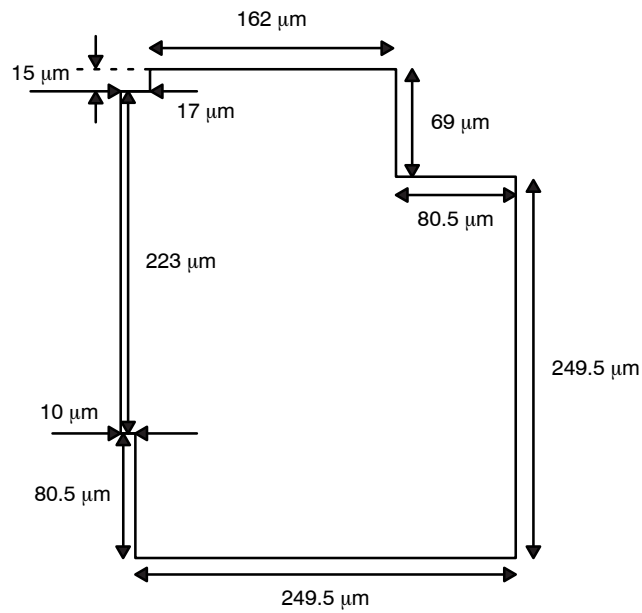


Figure 7. LA0151CS 受光パターン拡大図(有効域)

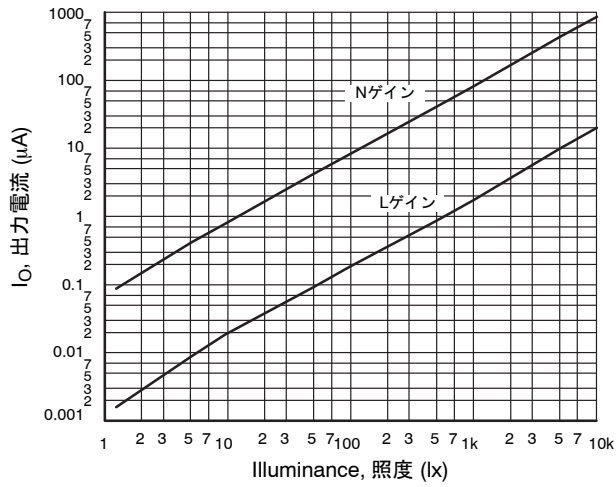


Figure 8. 出力電流 - 照度

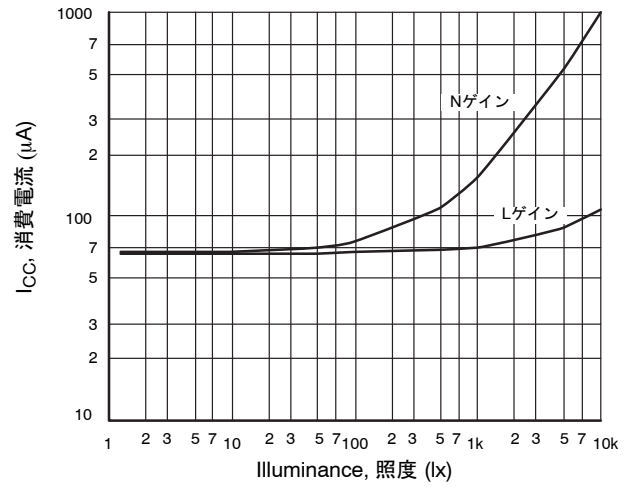


Figure 9. 消費電流 - 照度

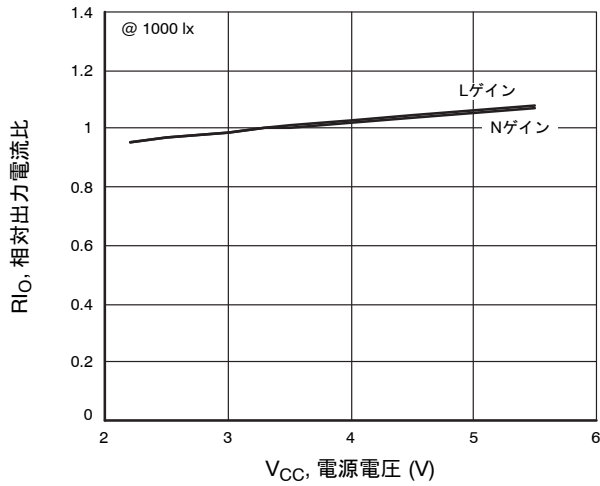


Figure 10. 相対出力電流比 - 電源電圧

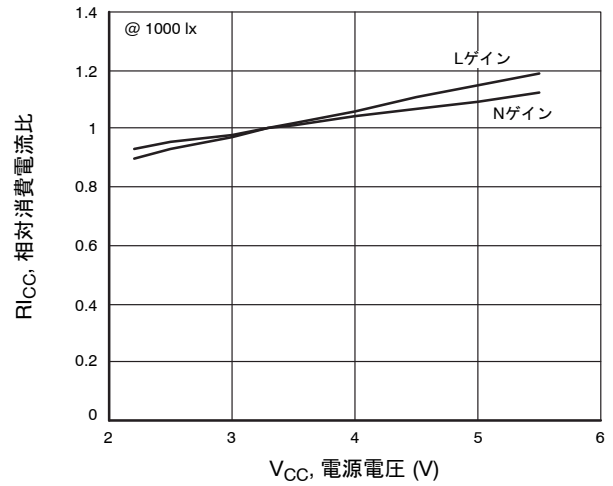


Figure 11. 相対消費電流比 - 電源電圧

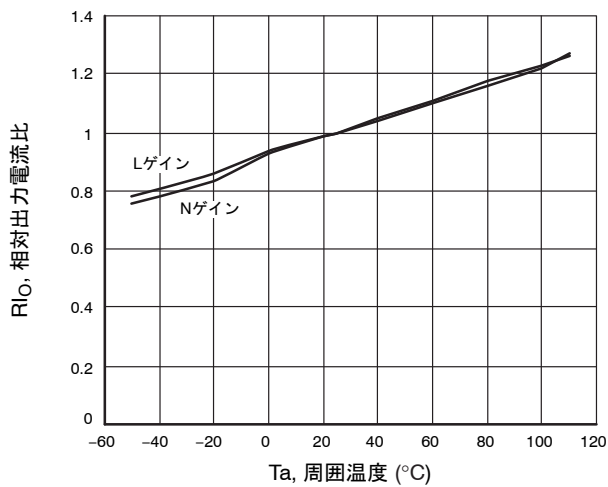


Figure 12. 相対出力電流比 - 温度

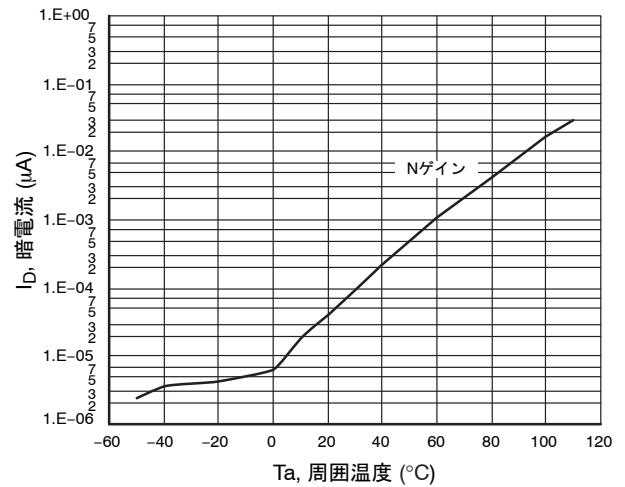


Figure 13. 暗電流 - 温度

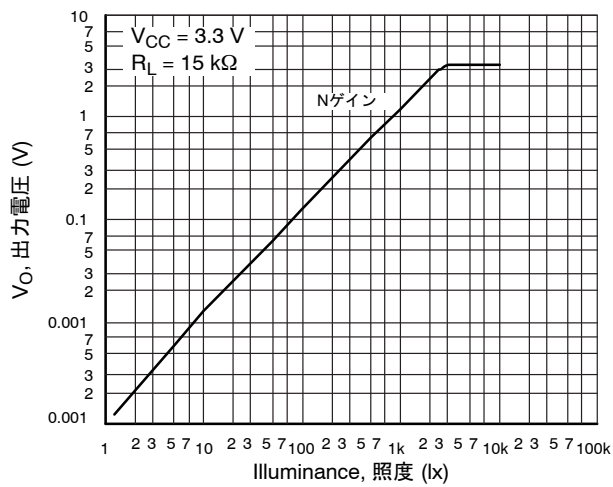


Figure 14. 出力電圧 - 照度

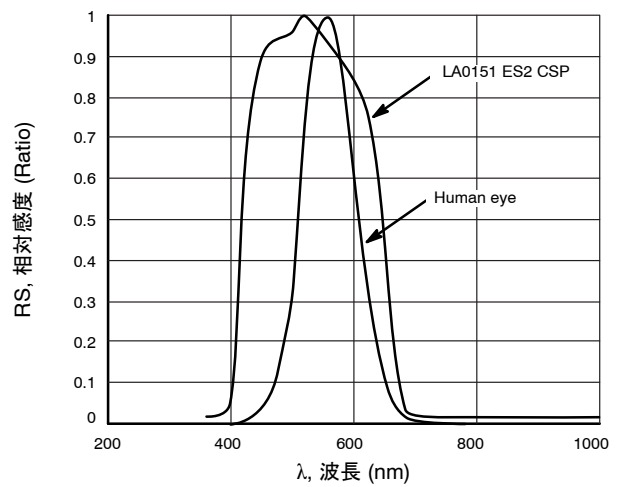


Figure 15. 分光感度特性

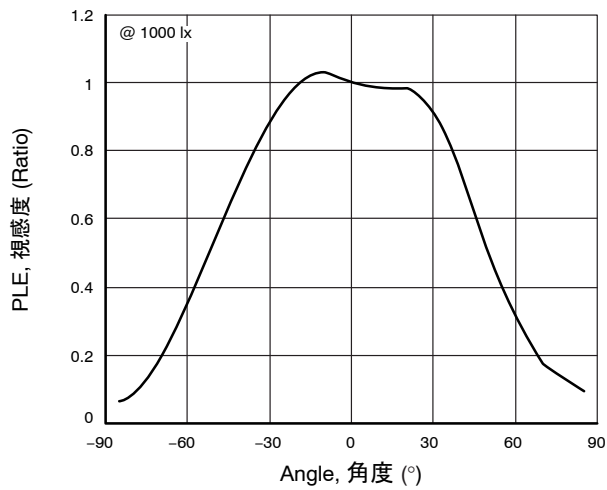


Figure 16. 指向感度特性 Nゲイン

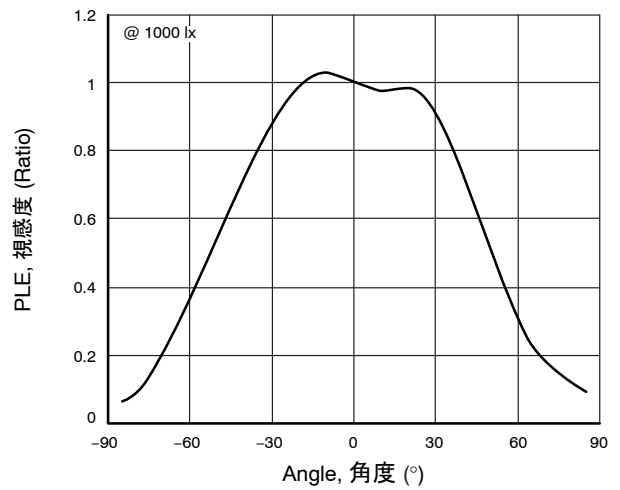
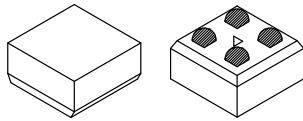


Figure 17. 指向感度特性 Lゲイン

MECHANICAL CASE OUTLINE

PACKAGE DIMENSIONS

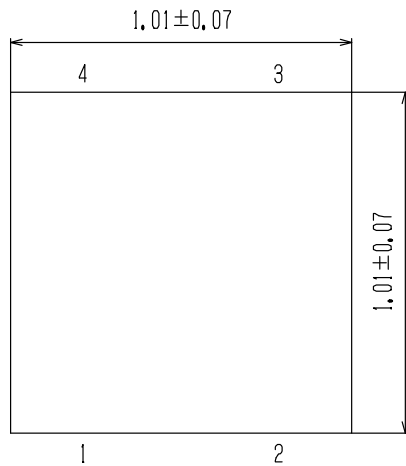
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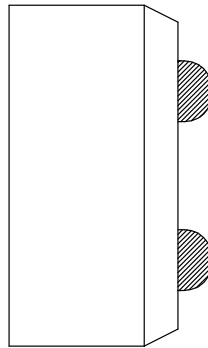
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DATE 31 MAR 2012

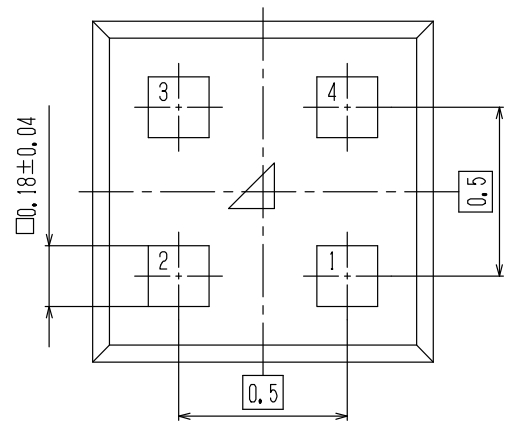
TOP VIEW



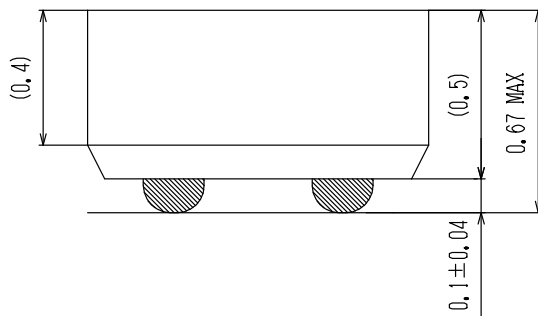
SIDE VIEW



BOTTOM VIEW



SIDE VIEW



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