AnaSem

Analog Semiconductor IC

CSL2050DTA

20~50mA Current detection
CMOS+MR Monolithic Current Sensor Switch

Rev. E09-08

AnaSem Inc.

..... Future of the analog world

20~50mA Current detection, CMOS+MR Monolithic Current Sensor Switch

CSL2050DTA

GENERAL DESCRIPTIONS

CSL series are AC or DC current sensor switch with CMOS+MR monolithic structure. The current from 10 to 200mA can be measured in high accuracy by the resistance of 10mΩ. It is molded in a micro SOT-26 package because of a monolithic structure.

Because the bridge structure of MR is adopted for the current detection, high sensitivity and high accuracy temperature characteristic have been achieved. The measurement and the direction of the current value can be measured at the same time.

The detection current value of the switch is fixed by laser trim. The measurement up to 800mA is possible in CSM and CSH series.

HALOGEN

RoHS COMPLIANCE

FEATURES

- Detection current (CSL series) ····· 10mA ~ 200mA
- Operating voltage range ····· 1.6V ~ 6.0V
- Maximum detection current ····· 500mA
- Low detection line resistance ····· 0.8Ω
- Low current consumption ····· Typ. 4.7μA (V_{IN}=3.3V, Ta=25°C)
- Stand-by current ····· Max. 0.1μA
- Operating temperature range ····· -40 ~ +85°C
- Small package ····· SOT-26 (400mW)
- Reverse-voltage connection protection
- AC or DC current detection
- Output over drive protection

APPLICATIONS

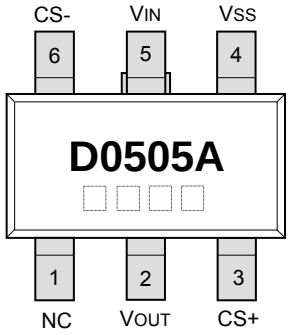
- Over current detection
- Battery current detection
- Switching power supply
- Motor control feedback detection
- Lamp disconnection detection
- Power failure detection
- Reverse-voltage connection protection
- USB over current detection

PRODUCTS NUMBERING GUIDE

CSL2050□□□

Design version	A : Detection pulse cycle 12.5msec Max. detection current 500mA
Package form	T : SOT-26 (2.9×2.8×1.1mm)
Functional Specification	A : AC current detection D : DC current detection
Detection current	2050 : 20mA ~ 50mA

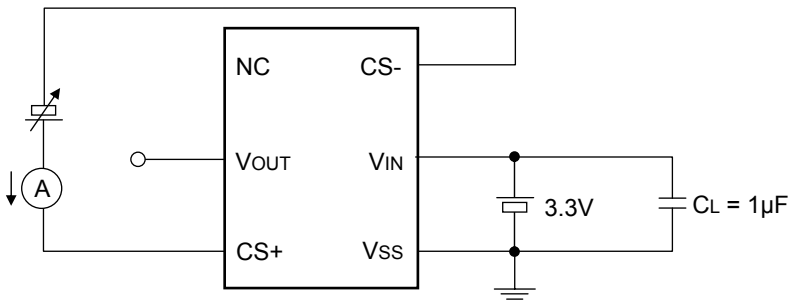
PIN CONFIGURATION (SOT-26)



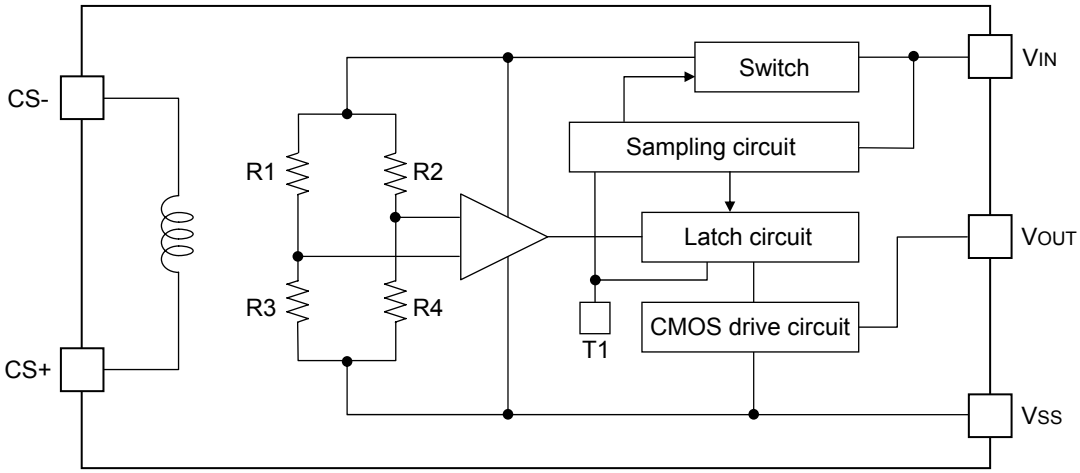
(Top view)

No.	Symbol	Descriptions
1	NC	Non connection
2	VOUT	CMOS output
3	CS+	Current +
4	VSS	Power ground
5	VIN	Power source
6	CS-	Current -

TYPICAL APPLICATION CIRCUITS



BLOCK DIAGRAM



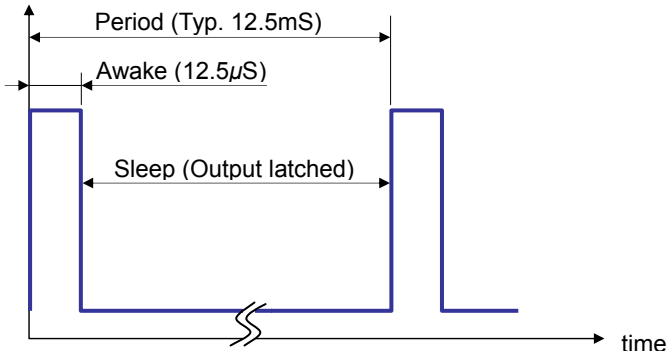
ABSOLUTE MAXIMUM RATINGS

Items		Symbol	Ratings	Unit
Input voltage range		V_{IN}	–0.3 to +7.0	V
Output current		I_{OUT}	500	mA
Output voltage range		V_{OUT}	V_{SS}–0.3 to V_{IN}+0.3	V
Power dissipation ※1)	SOT-26	P_D	400 (on PCB)	mW
Operating temperature range		T_{OPR}	–40 to +85	°C
Storage temperature range		T_{STG}	–55 to +125	°C

Note :

※1) Power dissipation depends on conditions of mounting on boards.
PCB dimension is 50mm×50mm×1.6mm.

DETECTION PULSE DRIVING CYCLE (SAMPLING CYCLE)

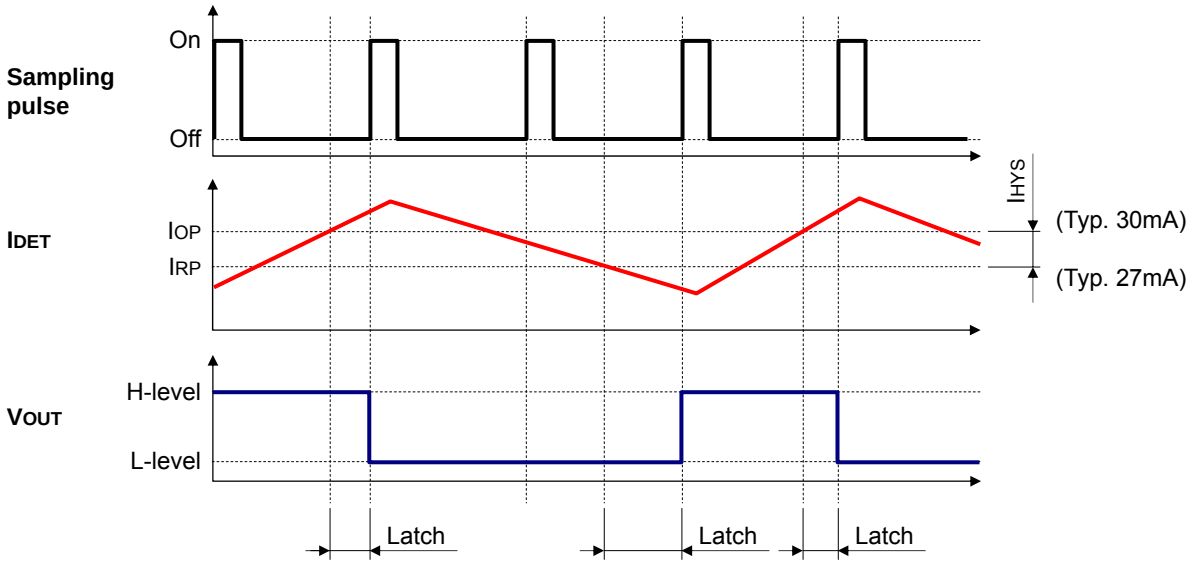


ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, V_{IN}=3.3V, Ta=25°C)

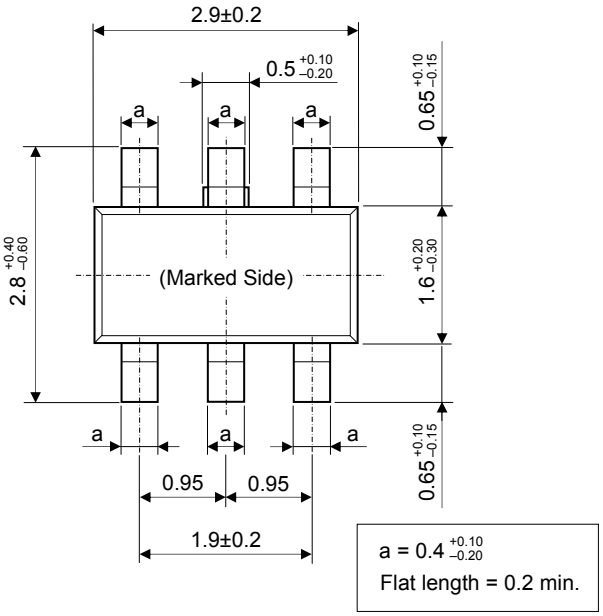
Items	Symbol	Min.	Typ.	Max.	Conditions	Unit
Detection current	I_{DET}	20	-	50	CSL2050DTA	mA
Detection current hysteresis	I_{HYS}	-	I_{DET}×0.9	-		mA
Detection current limit	I_{MAX}	-	-	500		mA
Coil current resistance	C_R	-	800	-	I_{CS+CS-}=100mA	mΩ
Insulation resistance	I_R	-	500	-	Between coil and each terminal	MΩ
Operating voltage	V_{IN}	3.135	3.3	3.465		V
Current consumption	I_{DD}	-	4.7	7.3		μA
Detection pulse driving cycle	ts	-	12.5	-	Pulse width : 1/1000	msec
"H"-level output voltage	V_{OH}	0.9V_{IN}	-	-	I_{OUT}=+1.0mA	V
"L"-level output voltage	V_{OL}	-	-	0.1V_{IN}	I_{OUT}=-1.0mA	V

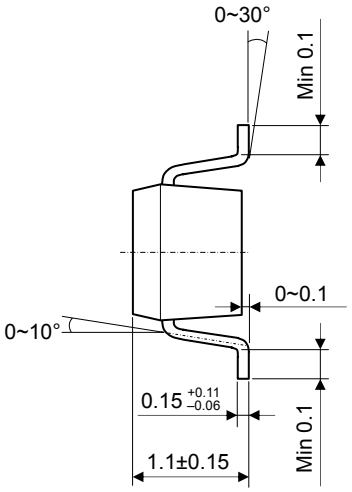
OUTPUT SWITCHING TIMING CHART

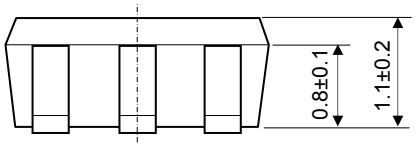


PACKAGE DIMENSIONS (SOT-26)

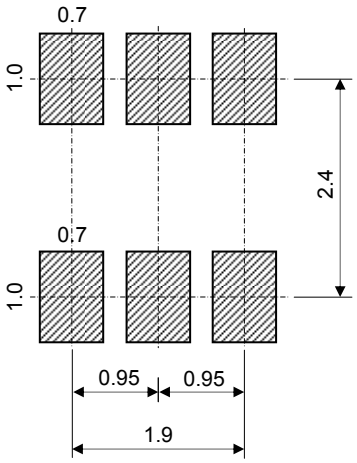
(Unit : mm)





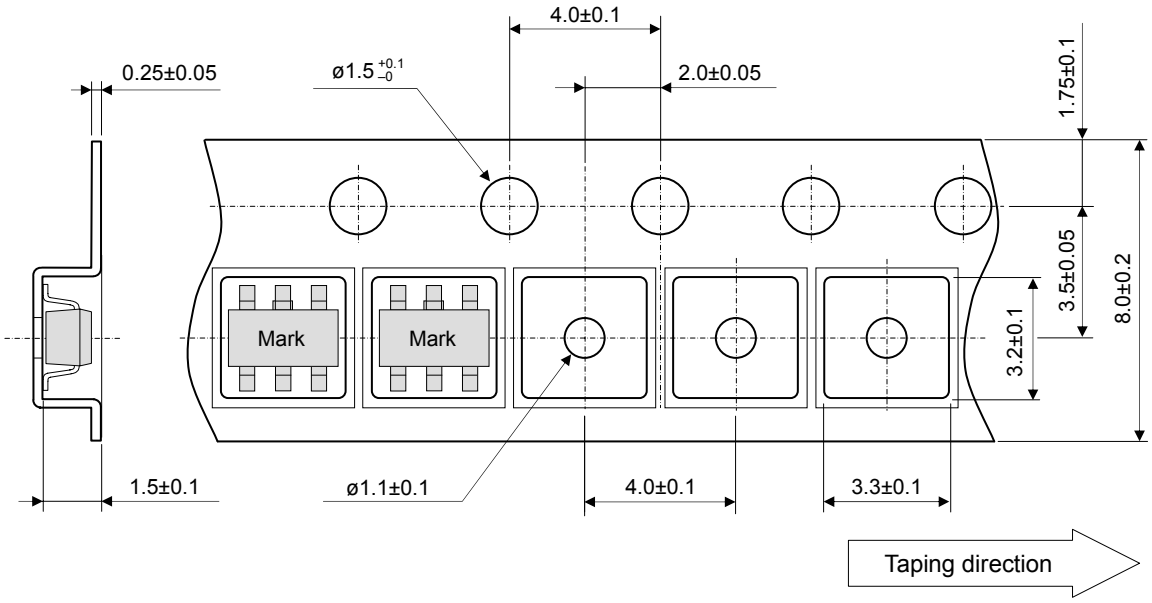


Recommended land pattern



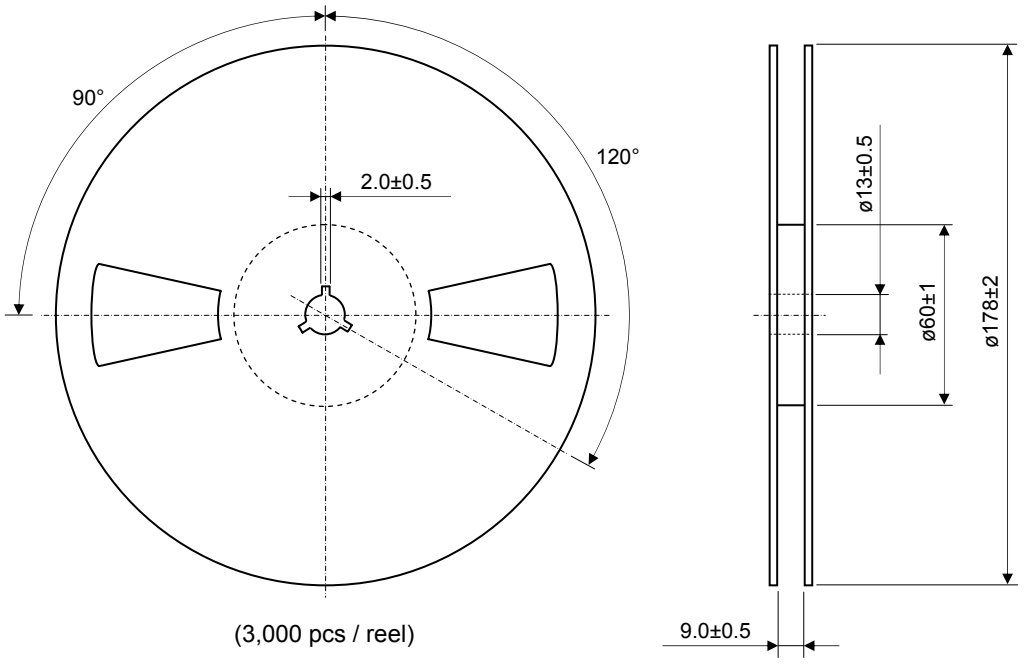
TAPING AND LOADING SPECIFICATIONS (SOT-26)

(Unit : mm)

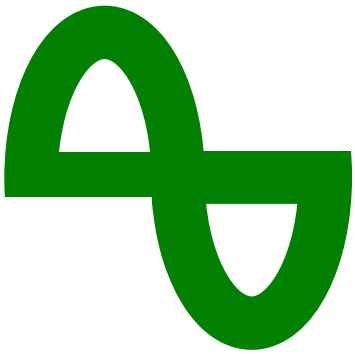


REEL DIMENSIONS (SOT-26)

(Unit : mm)



(3,000 pcs / reel)



AnaSem Inc. may change the products described in this data sheet, or may discontinue production or services without any notice in order to supply the best products through improve the design and performance. Customers are recommended to obtain the latest data or information before placing orders in order to make sure the data or information required is the newest. It is necessary for customers to fully understand the products described in this data sheet and to use it in accordance with its specifications. The products described in this data sheet are not intended to use for the apparatus which have influence on human lives due to the failure or malfunction of the products. AnaSem Inc. is not responsible for any support to customer's application, product design, software performance, patent infringement or service. AnaSem Inc. does not disclose or imply a guarantee or description about being licensed based on patents, copy-rights, circuit location license, or other intellectual properties associated with the devices or combinations in which the products or service of AnaSem Inc. are used or can be used, or which cover the methods. Customers should not export, directly or indirectly, any products without obtaining required licenses and approvals in advance from appropriate government agencies.