IP2301 1A

1 IP2301

- 4.0V-24V, 38V
- 38V
- 4.2V/4.35V/4.4V , 3.2V 3.6V 3.6V~4.4V step=50mV
- 1/2/3 2/3
- ±0.5%
- 1A
- 1/10 1/2.5 1/5 1/20 10mA
- NTC
- 1μA
- fault
- , ,IC ,NTC
- ESOP8 DFN8(3*3) CPC8

2 IP2301

-
-
- POS
-
-

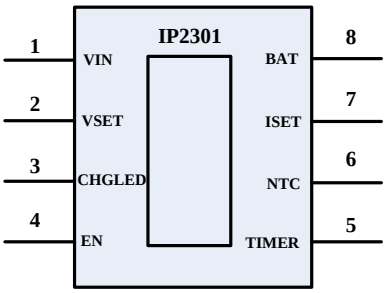
3 IP2301

IP2301 1 3 IP2301 (TC) CC CV (TC) CC CV IP2301 1A ±0.5% 120°C IP2301

IP2301 1A

4 IP2301

ESOP8 IP2301

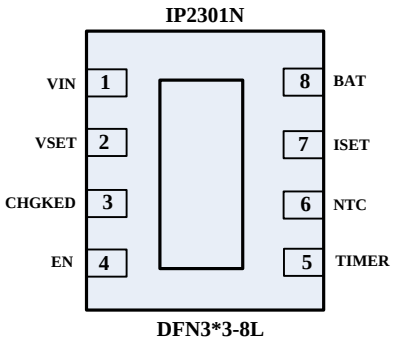


ESOP8

1	VIN	USB
2	VSET	CV R_{VSET} CV R_{VSET} 1KΩ CV=4.2V; R_{VSET} 15kΩ CV=4.35V; R_{VSET} 39kΩ CV=4.4V; R_{VSET} 75kΩ CV=3.6V; R_{VSET} 150K NC CV 4.2V
3	CHGLED	LED
4	EN	
5	TIMER	$f = 1.25 \times \frac{1}{Ctimer(uF)} Hz$
6	NTC	NTC 70k NTC TNL104AT050F-001, $B_{25/50}$=3950K
7	ISET	1kΩ 40kΩ 1A
8	BAT	
9	GND	E-PAD.

IP2301 1A

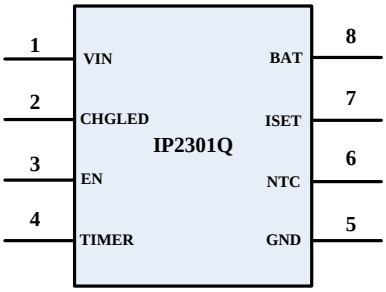
DFN8 IP2301N



1	VIN	USB
2	VSET	CV R_{VSET} CV R_{VSET} 1KΩ CV=4.2V; R_{VSET} 15kΩ CV=4.35V; R_{VSET} 39kΩ CV=4.4V; R_{VSET} 75kΩ CV=3.6V; R_{VSET} 150K NC CV 4.2V
3	CHGLED	LED
4	EN	
5	TIMER	$f = 1.25 \times \frac{1}{Ctimer(uF)} Hz$
6	NTC	NTC 70k NTC TNL104AT050F-001, $B_{25/50}$=3950K
7	ISET	1kΩ 40kΩ 1A
8	BAT	
9	GND	E-PAD.

IP2301 1A

CPC8 IP2301Q



CPC8

1	VIN	USB
2	CHGLED	LED
3	EN	
4	TIMER	$f = 1.25 \times \frac{1}{Ctimer(uF)} Hz$
5	GND	
6	NTC	NTC 70k NTC TNL104AT050F-001, $B_{25/50}$=3950K
7	ISET	1kΩ 40kΩ 1A
8	BAT	

5 IP2301

6 IP2301

	VIN	-0.3 ~38	**V**
	VBAT	-0.3 ~38	**V**
CHGLED EN	CHGLED, EN	-0.3 ~38	**V**
	VSET, TIMER, ISET, NTC	-0.3 ~6	**V**
	T_J	-40 ~ 125	
	Tstg	-60 ~ 150	
	θ_{JA_ESOP8}	60	**/W**
	θ_{JA_DFN8}	70	**/W**
	θ_{JA_CPC8}	180	**/W**
HBM	ESD	4	**KV**

*****

7 IP2301

	VIN	5	--	24	V
	T_A	-40	--	85	

*

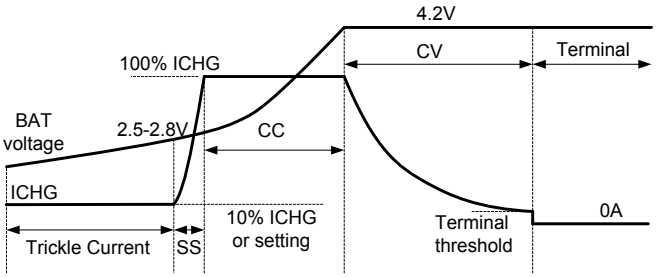
8 IP2301

T_A= -40°C to 85 C T_A=25 VIN = 5 V, EN = 5V, NTC = 1 V, VBAT =3.6V.

	VIN		4	-	24	V
	VIN_{UVLO_Rising}	EN=1,VBAT=3V, VIN	3.8	4	4.2	V
	$VIN_{UVLO\_Falling}$	EN=1,VBAT=3V, VIN	3.6	3.8	4	V
	VIN_{OVP}	VIN	5.6	5.8	6	V
	VIN_{OVP_HYS}	VIN ,VIN-VIN_{OVP}	0.3	0.4	0.5	V
VIN-DPM	VIN-DPM	VIN-CV	-	0.3	-	V

	I_Q	EN=1, VIN	-	0.6	1	mA
	I_{S_VIN}	EN=0 VIN	-	100	200	uA
	I_{S_BAT}	VIN=0 BAT	-	1	2	uA
	CV	T_A=25	4.179	4.2	4.221	V
		TA=0°C to +50°C	4.168	4.20	4.232	
OVP	BAT_{OVP}	EN=1, BAT BAT-CV	150	200	250	mV
	I_{CC}	VIN=5V, CC=1A RISET=1K	0.85	1.0	1.1	A
		VIN=5V, CC=0.5A RISET=2K	0.40	0.5	0.55	A
		VIN=5V, CC=0.1A RISET=10K	0.05	0.1	0.13	A
	V_{WK_TH}	VIN=5V, EN=1,CV=3.6-3.75V, BAT rising	2.3	2.5	2.7	V
		VIN=5V, EN=1,CV=3.8-3.95V BAT rising	2.4	2.6	2.8	V
		VIN=5V, EN=1,CV=4.05-4.2V BAT rising	2.5	2.7	2.9	V
		VIN=5V, EN=1,CV=4.25-4.4V BAT rising	2.6	2.8	3	V
	I_{TER}	I_{TER} / I_{CC}		1/10		I_{CC}
EN	V_{EN-H}	VIN=5V to 20V	1.2	-	-	V
EN	V_{EN_L}	VIN=5V to 20V	-	-	0.4	V
EN	I_{EN}	EN=3.3V	3	5	10	uA
CHGLED /	I_{CHGLED}	VIN=5V to 20V	3	5	10	

TC->CC->CV IP2301 4.2V
BAT 2.5-2.8V IP2301 I_{PRE}
ISET I_{CC}
4.2V CV CV
CV I_{TER}



IP2301 CV

IP2301 IP2301 CV
CV 500ms 500ms

I_{PRE} I_{TER} I_{CC} 1/10
I_{PRE} I_{TER} 1/20 1/5 1/2.5 I_{CC} I_{CC}

I_{CC} ISET GND RISET ISET 1V
RISET 1000

$$ICC = \frac{1}{RISET(\Omega)} \times 1000 \quad A$$

120 ° C
120 ° C RISET 1k-40k

1: RISET vs. ICHG

RISET(kΩ)	ICHG(A)
1k	1A
1.1k	0.9A
1.25k	0.8A
1.428k	0.7A

1.667k	0.6A
2.0k	0.5A
2.5k	0.4A
3.333k	0.3A
5k	0.2A
10k	0.1A
20k	0.05A
30k	0.033A
40k	0.025A

(CV)

VSET 3.6-4.4V VSET

CV 3.6V 4.2V,4.35V,4.4V RVSET 2

2: R_{VSET} VS. Battery target voltage CV

R_{VSET}(kΩ)	CV V
1	4.2
15	4.35
39	4.4
75	3.6
>150K NC	

VSET

3.6-4.4V 50mV

N Vtarget*N, N

CPC8 VSET CV

VIN

IP2301 38V IP2301

4.0-24V

VIN-DPM

VIN-DPM VIN VIN-DPM IC

5V USB

VIN-DPM CV+300mV

VBAT>CV+200mV IP2301 CV

RC TIMER
TIMER RC TIMER

CHGLED

-
- EN
-

TIMER 30
4
RC

$$fosc = 1.25 \times \frac{1}{Ctimer(\mu F)} \quad Hz$$

$$Tosc = \frac{Ctimer(\mu F)}{1.25} \quad s$$

32768 262144

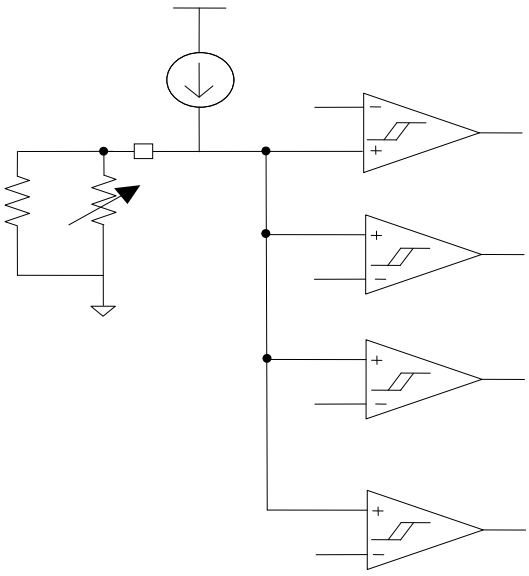
$$Tcc = \frac{262144 \times Ctimer(\mu F)}{1.25 \times 3600} (hr)$$

$$Tpre = \frac{32768 \times Ctimer(\mu F)}{1.25 \times 3600} (hr)$$

TIMER

$$Ctimer = \frac{1.25 \times 3600 \times Tcc(hr)}{262144} (\mu F)$$

IP2301 , NTC
120 ° C
IC IC
150 20
IP2301 NTC
WT NTC NTC
NTC OT,WT,UT disable 0.5V,0.65V,1.5V 0.1V



NTC

NTC TNL104AT050F-001 B25/50=3950K 70K NTC IC 25uA
NTC NTC NTC

$$RNTC//70K = \frac{0.5 \times 1000}{25} = 20k$$

R_{NTC}=28k OT 57 ° C

WT 46.5 ° C UT -5.5 ° C
NTC WT VIN_DPM

IP2301 CHGLED
IP2301

9 IP2301

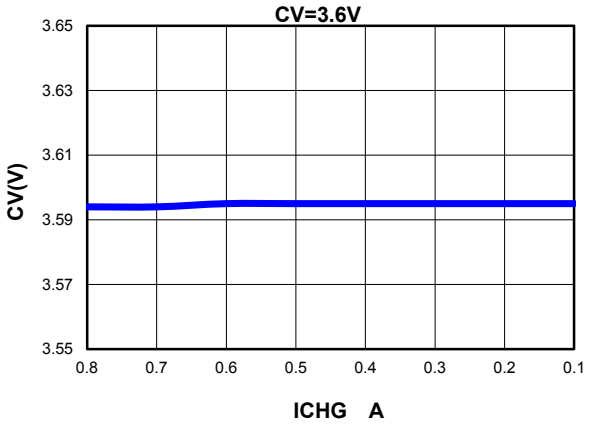


Chart 1 CV vs. ICHG@VIN=5V

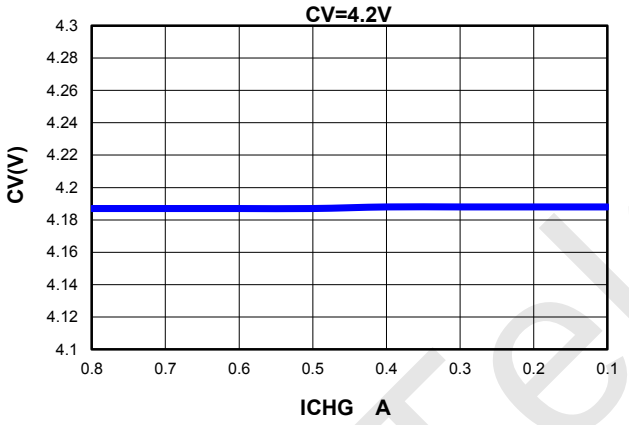


Chart 2 CV vs. ICHG@VIN=5V

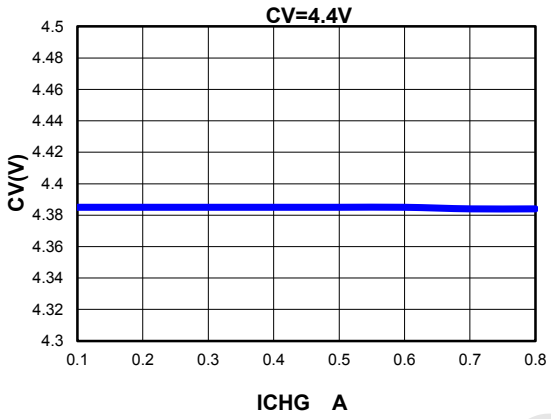


Chart 3 CV vs. ICHG@VIN=5V

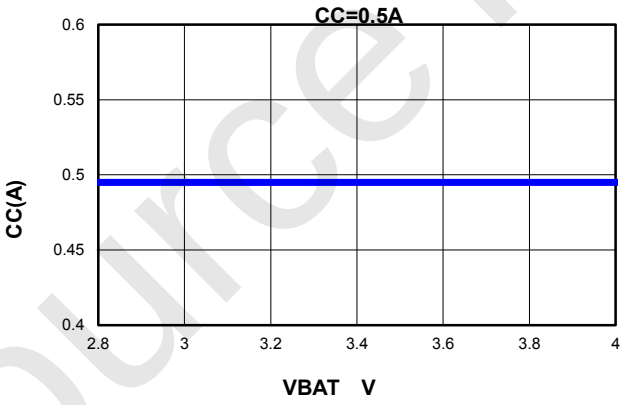


Chart 4 CC vs. VBAT@VIN=5V

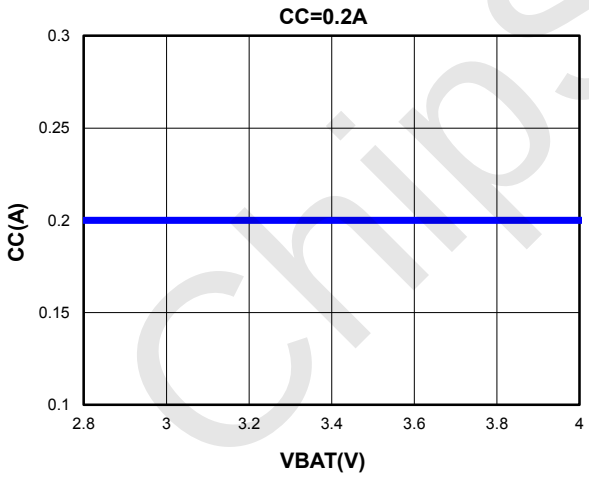


Chart 5 CC vs. VBAT@VIN=5V

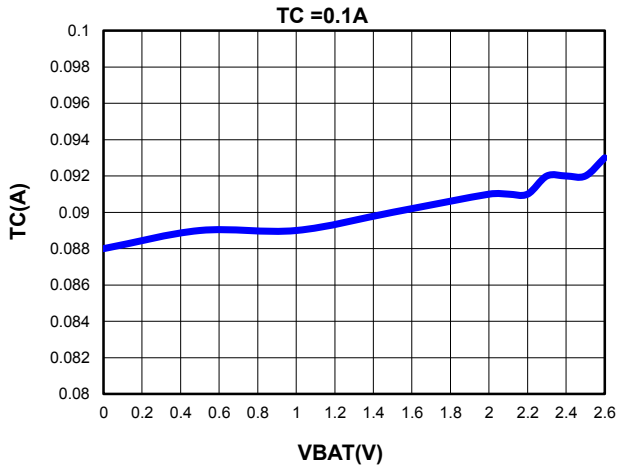


Chart 6 TC vs. VBAT@VIN=5V

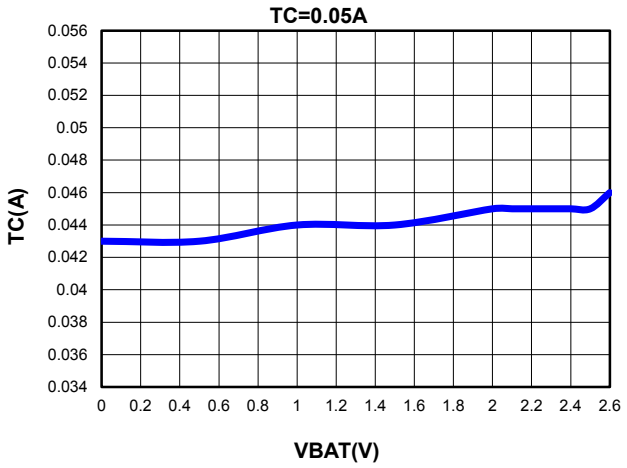


Chart 7 TC vs. VBAT@VIN=5V

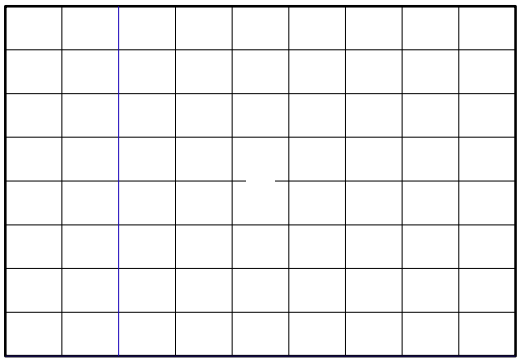


Chart 8 CV Vs. ambient temperature(@VIN=5V)

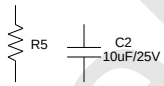
Chart 9 Real Bat (CV=4.35V,CC=0.5A EOC=50mA)

Chart 10 Internal Timer (CC Timer=4hr)

Chart 11 EN Start(CH1:VIN CH2: VBAT CH3: EN CH4: ICHG)

Chart 12 EN Shutdown(CH1:VIN CH2: VBAT CH3: EN CH4: ICHG)

10 IP2301

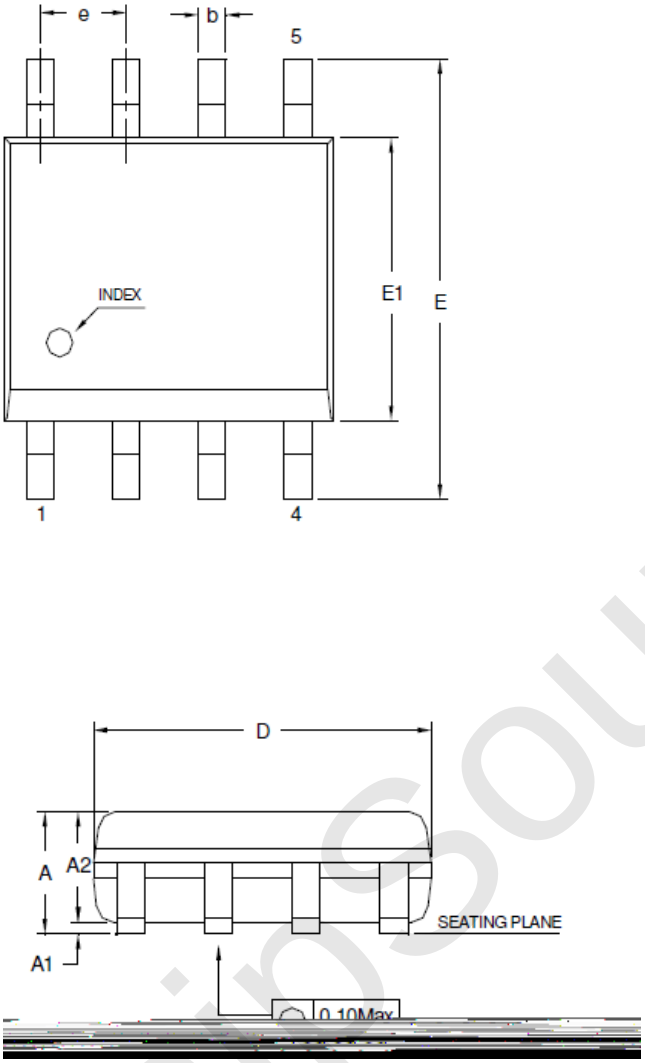


IP2301

1. R1 CV CV CV=4.2V IP2301Q
   VSET CV
2. R2 LED
3. NTC NTC R4 NTC
4. R5
5. BAT 2 3
6. C5
7. C1,C2

11 IP2301

ESOP8

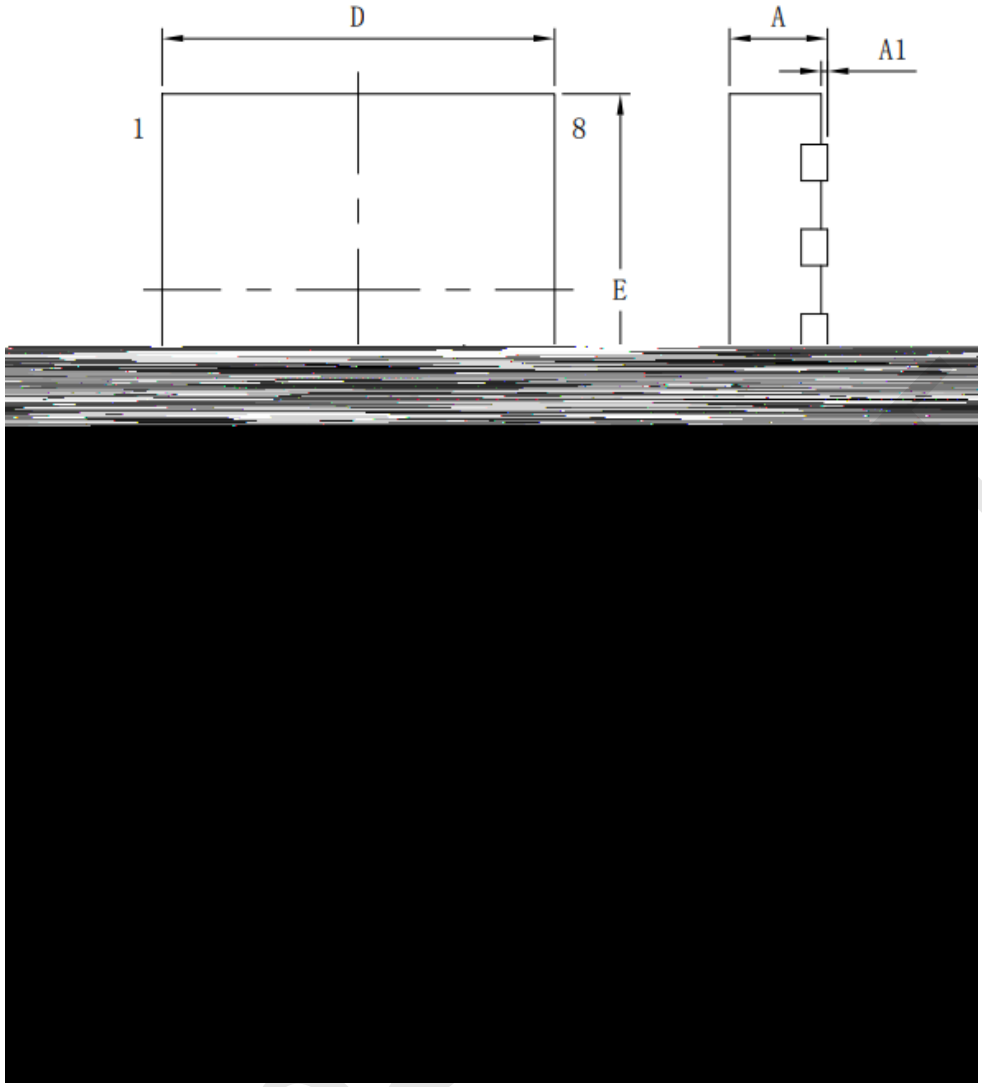


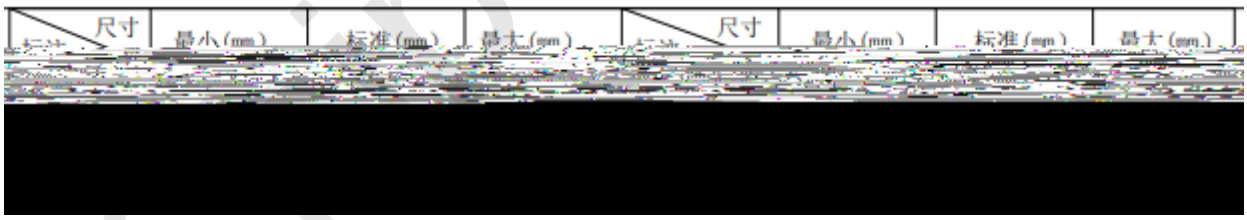
COMMON DIMENSIONS (MM)			
SYMBOL	MIN	NOM	MAX
A	1.35	1.60	1.75
A1	0.10	0.15	0.25
A2	1.25	-	-
b	0.33	-	0.51
c	0.17	-	0.25
D	4.70	4.90	5.10
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27BSC		
L	1.27	-	0.40
L1	1.04REF		
h	0.25	-	0.50
θ	0°	-	8°

IP2301 ESOP8

IP2301 1A

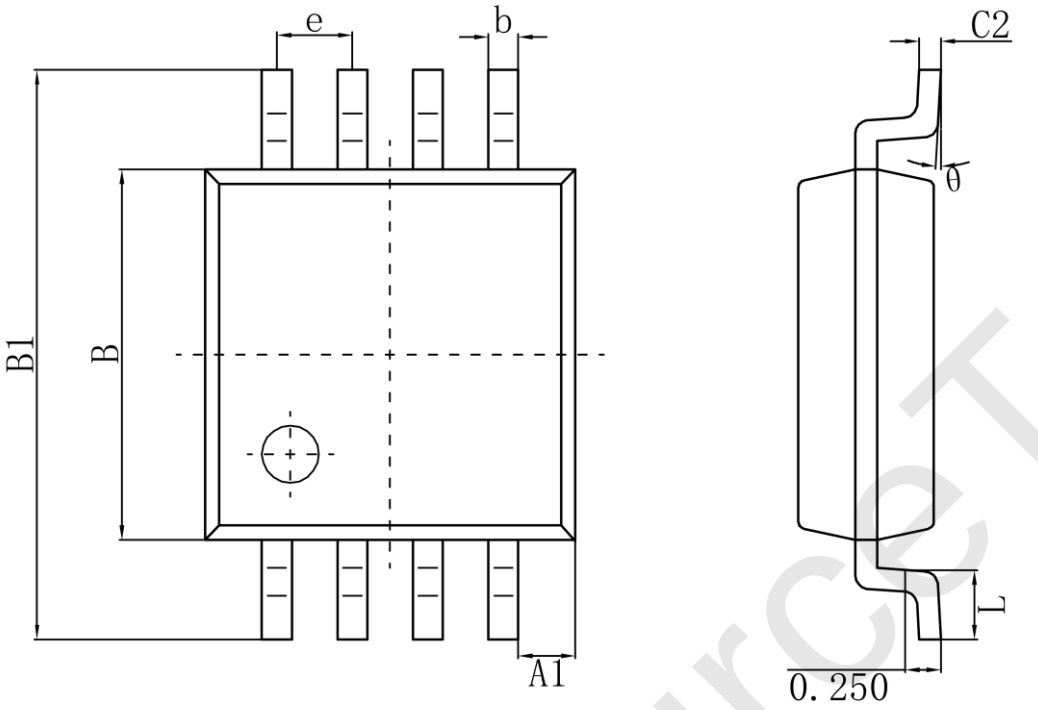
DFN8(3*3)





IP2301N DFN8

CPC8

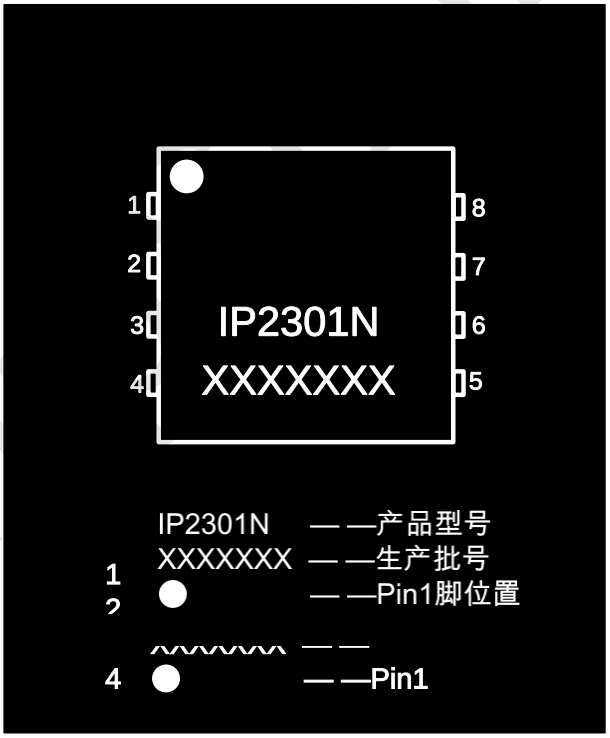


尺寸 / 标注	最小(mm)	最大(mm)	尺寸 / 标注	最小(mm)	最大(mm)
A	2.50	2.70	C	0.85	1.05
A1	0.35	0.45	C1	0.00	0.15

IP2301Q CPC8

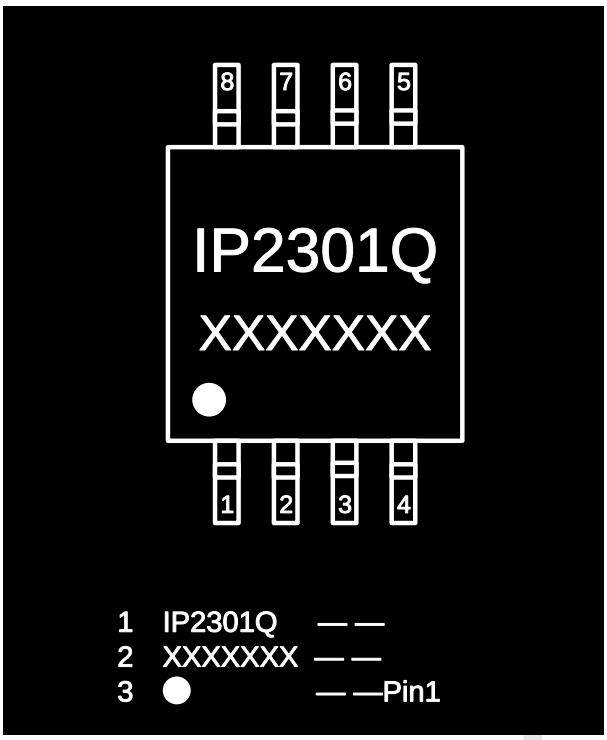
12 IP2301 IC

9 IP2301 IC (ESOP8)



10 IP2301N IC (DFN8_3*3)

IP2301 1A



11 IP2301Q IC (CPC8)

13

,