
CR2601

LDO

Data Sheet

**60V 150mA Ultralow-Quiescent-Current LDO General
Description**

Version: V1.3

Contents

Contents.....	2
1. 60V 150mA Ultralow-Quiescent-Current LDO General Description.....	3
2. Ordering Information.....	3
3. Features.....	3
4. Pin Configuration.....	4
5. Typical Application Circuit	4
6. Pin Assignment.....	4
7. Function Block Diagram.....	5
8. Electrical Characteristics	6
9. Ordering & Marking Information	9
10. Package Information.....	10
11. Revision History	13

1. 60V 150mA Ultralow-Quiescent-Current LDO General Description

The CR2601 ultra-low quiescent current regulator features low dropout voltage and low current in the standby mode. With less than 5 μ A quiescent current at no load, the CR2601 is ideally suited for standby micro-control-unit systems, especially for always-on applications like E-meters, fire alarms, smoke detectors and other battery operated systems. The CR2601 retains all of the features that are common to low dropout regulators including a low dropout PMOS pass device, short circuit protection, and thermal shutdown.

The CR2601 has a 65-V maximum operating voltage limit, a -40°C to 125°C operating temperature range, and $\pm 2\%$ output voltage tolerance. The CR2601 is available in a SOT23-5, SOT893 and SOP8-EP surface mount packages.

2. Ordering Information

Part Number	Package	XX : Voltage
CR2601_XX_235	SOT23-5	33 : 3.3V 50 : 5.0V
CR2601_XX_893A	SOT89-3	
CR2601_XX_893B	SOT89-3	
CR2601_XX_893C	SOT89-3	
CR2601_XX_ES8	SOP8-EP	

3. Features

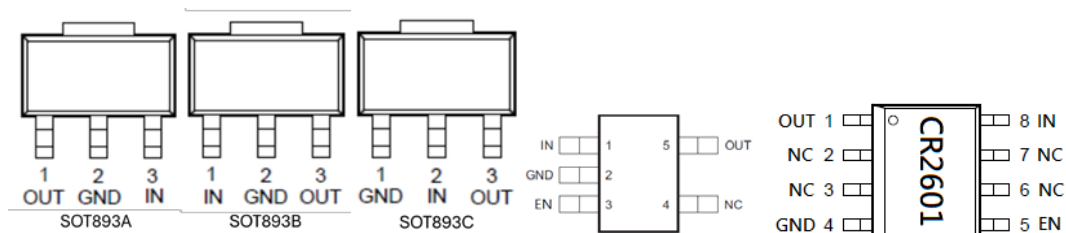
- VIN Range up to 60V
- Output Voltage Tolerances of $\pm 2\%$
- Output Current of 150 mA
- Ultra Low Quiescent Current ($I_Q = 2.8 \mu A$)
- Dropout Voltage Typically 1300 mV at $I_{OUT} = 100 \text{ mA}$
- Internal Thermal Overload Protection
- Internal Short-Circuit Current Limit
- Ceramic Capacitor Stable



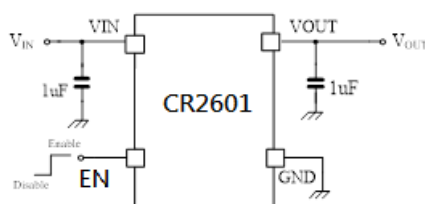
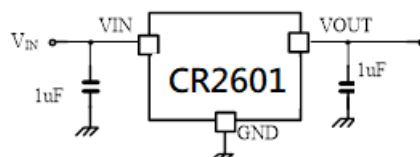
Applications

- E-meters, Water Meters and Gas Meters
- Fire Alarm, Smoke Detector
- Appliances and White Goods

4. Pin Configuration



5. Typical Application Circuit

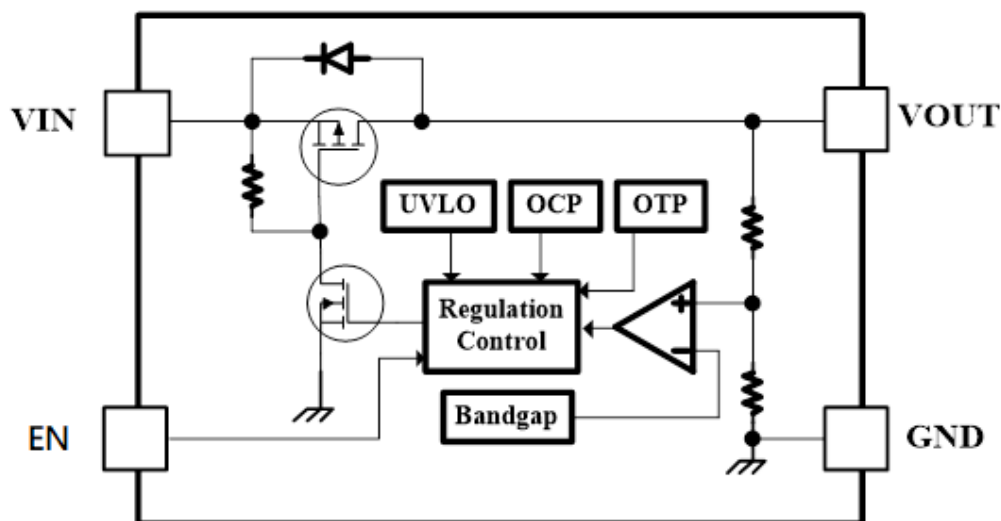


Ceramic Capacitor Stable

6. Pin Assignment

Pin Name	Pin No. SOT235	Pin No. SOT893A	Pin No. SOT893B	Pin No. SOP8-EP	Pin Function
VOUT	5	1	3	1	Output Voltage Pin
GND	2	2,4	2,4	4	Ground
VIN	1	3	1	8	Input Voltage pin.
EN	3	--	--	5	Enable

7. Function Block Diagram



Absolute Maximum Ratings (Note1)

- V_{IN} ----- -0.3V to +65V
- Power Dissipation, $P_D@T_A=25^{\circ}\text{C}$, SOT89-3-----1.8W
- Thermal Resistance, θ_{JA} , SOT89-3-----55 $^{\circ}\text{C/W}$
- Power Dissipation, $P_D@T_A=25^{\circ}\text{C}$, SOP8-EP-----1.81W
- Thermal Resistance, θ_{JA} , SOP8-EP-----55 $^{\circ}\text{C/W}$
- Junction Temperature----- 125 $^{\circ}\text{C}$
- Lead Temperature (Soldering, 10 sec.)----- 300 $^{\circ}\text{C}$
- Storage Temperature ----- -65 $^{\circ}\text{C}$ to 150 $^{\circ}\text{C}$

ESD Rating

- HBM(per ANSI/ESDA/JEDEC JS-001) ----- 2KV
- CDM(per JEDEC specification JESD22-C10) ----- 1KV

Recommended Operating Conditions

- Input Voltage, V_{IN} ----- +2.7V to +60V
- Junction Temperature ----- -40 $^{\circ}\text{C}$ to 125 $^{\circ}\text{C}$
- Ambient Temperature----- -40 $^{\circ}\text{C}$ to 85 $^{\circ}\text{C}$

8. Electrical Characteristics

$V_{IN}=V_{OUT} + 2.5V$, $I_{OUT}=1mA$, $C_{IN}=C_{OUT}=1.0\mu F$, $T_J=25^{\circ}C$, unless otherwise specified

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Output Voltage	V_{OUT}		-2%		2%	V
Line Regulation	ΔV_{LINE}	$V_{IN}=V_{OUT} + 2.5V$ to 60V,			0.01	%/V
Load Regulation	ΔV_{LOAD}	$I_{OUT}= 1mA$ to 100mA			1	%
		$I_{OUT}= 1mA$ to 150mA			1.5	
Dropout Voltage	V_{DROP}	$I_{OUT}=100mA$		1300		mV
		$I_{OUT}=150mA$		2300		mV
Quiescent Current	I_Q	$T_J= 25^{\circ}C$		2.8	5	μA
Current Limit	I_{CL}		200	300		mA
Enable high level	V_{ENHI}		0.9			V
Enable low level	V_{ENLO}				0.4	V
Enable pin pull high current	I_{EN}			0.1		μA
Thermal Shutdown	T_{SD}			140		$^{\circ}C$
Thermal Shutdown Hysteresis	T_{HY}			20		$^{\circ}C$

Typical Characteristics

$V_{IN} = V_{OUT} + 2.5V$, $I_{OUT} = 1mA$, $V_{OUT} = 3.3V$, $C_{IN} = C_{OUT} = 1\mu F$, $T_J = 25^\circ C$, unless otherwise specified

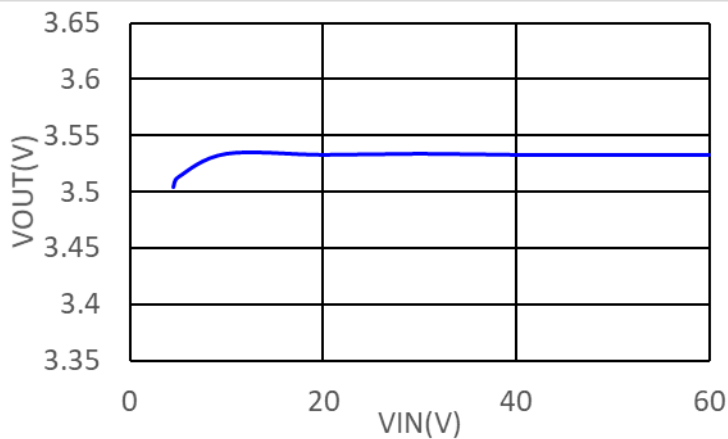


Fig 1 Vout vs Vin

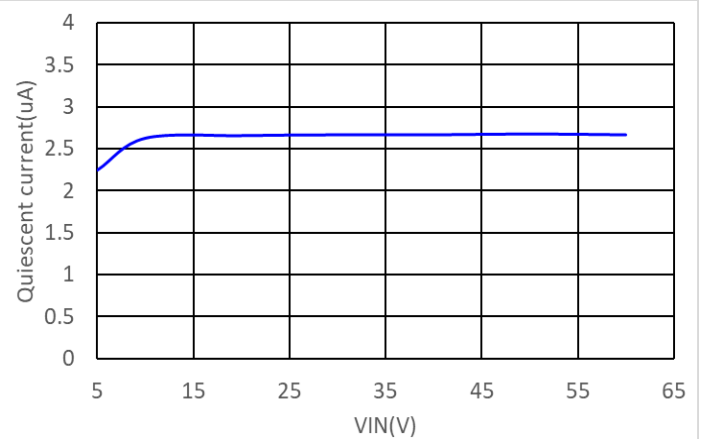


Fig 2 Iq vs Vin

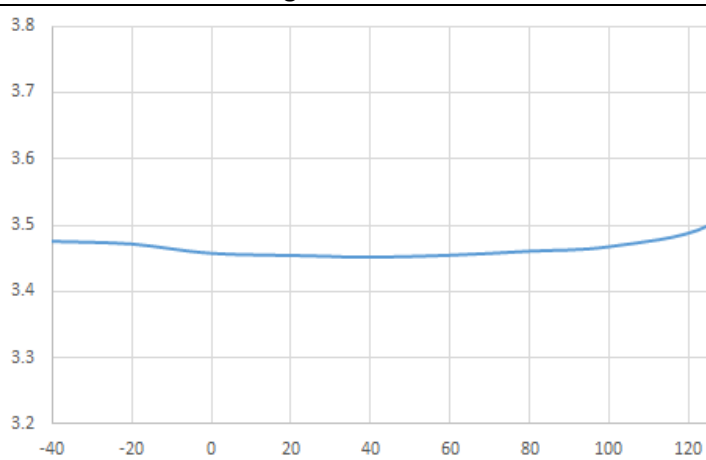


Fig 3 Vout vs Temperature

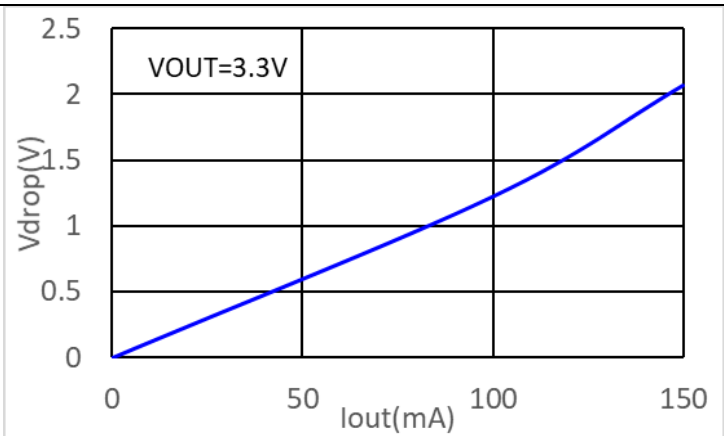


Fig 4 Dropout vs Load

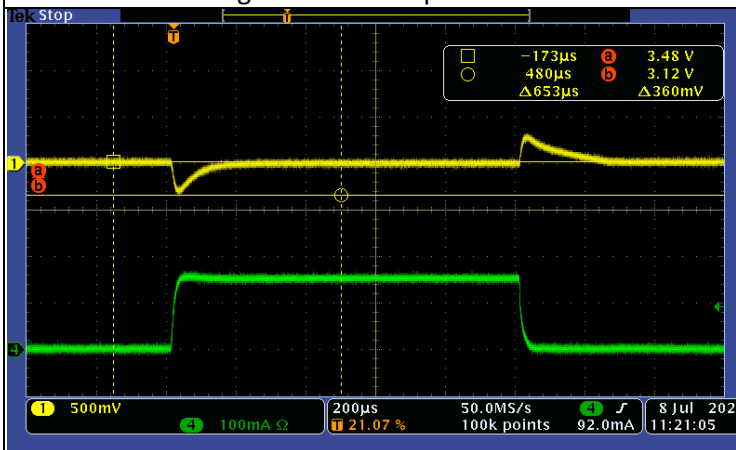


Fig 5 Vout Load Transient (1 to 150mA)

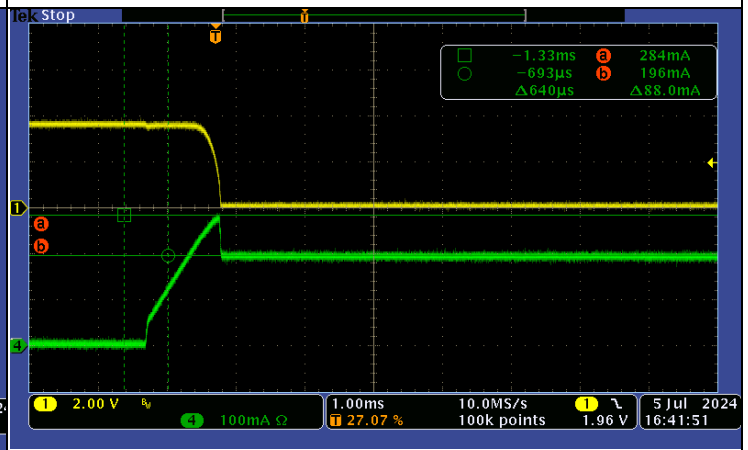
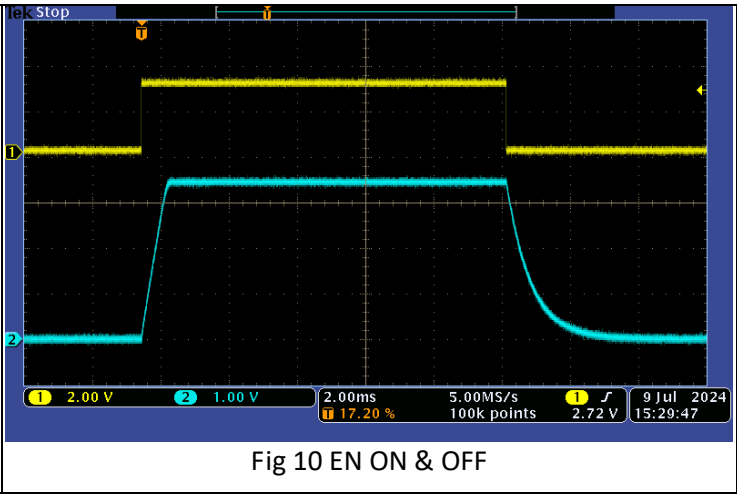
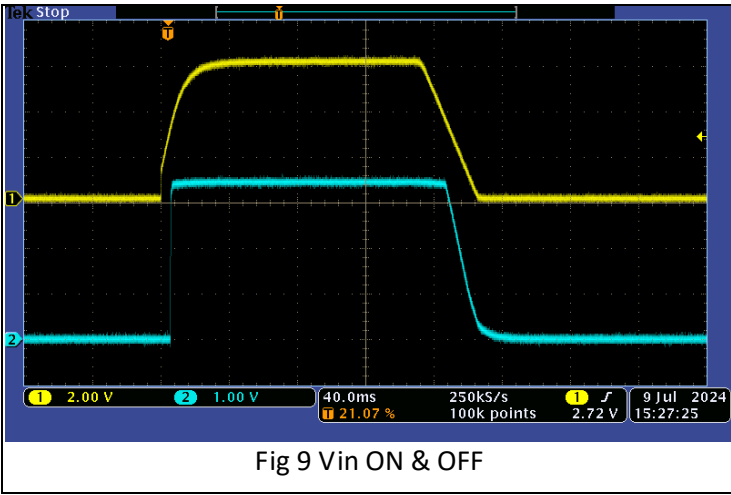


Fig 6 Short Circuit Current Limit



9. Ordering & Marking Information

Device Name: CR2601 for SOT23-5

SA: Device Name

YW: Date Code

V	Output Voltage
3	3.3V
5	5V

Device Name: CR2601 for SOT89-3

2601: Device Name

YYWW: Date Code

X	Package
A	SOT893A
B	SOT893B
C	SOT893C

VV	Output Voltage
33	3.3V
50	5V

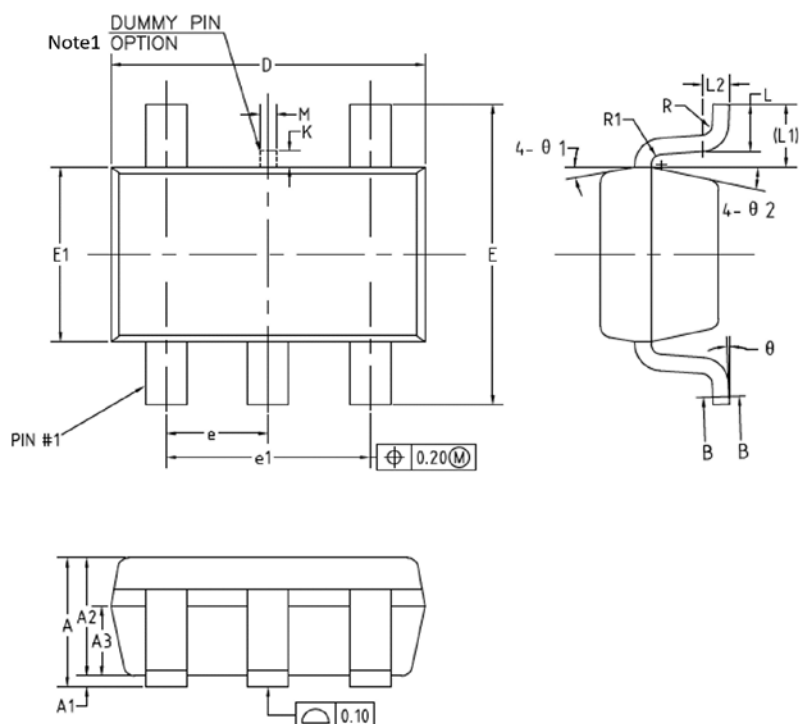
Device Name: CR2601 for SOP8-EP

2601: Device Name

YYWW: Date Code

10. Package Information

SOT23-5

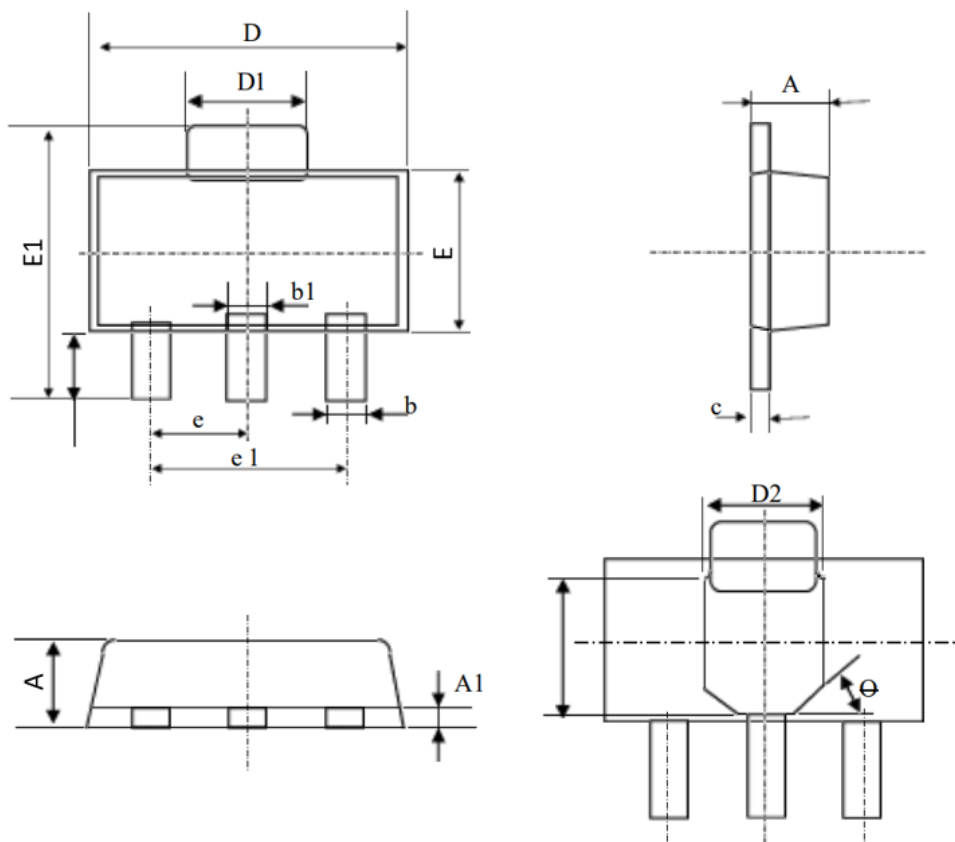


COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	—	—	1.25
A1	0	—	0.15
A2	1.00	1.10	1.20
A3	0.60	0.65	0.70
Δ b	0.34	—	0.45
Δ b1	0.34	0.38	0.41
Δ c	0.12	—	0.20
Δ c1	0.12	0.15	0.16
D	2.826	2.926	3.026
E	2.60	2.80	3.00
Δ E1	1.526	1.626	1.700
e	0.90	0.95	1.00
e1	1.80	1.90	2.00
Δ K	0	—	0.20
L	0.30	0.40	0.60
L1	0.59REF		
L2	0.25BSC		
Δ M	0.10	0.15	0.20
R	0.05	—	0.20
R1	0.05	—	0.20
θ	0°	—	8°
$\theta 1$	8°	10°	12°
$\theta 2$	10°	12°	14°

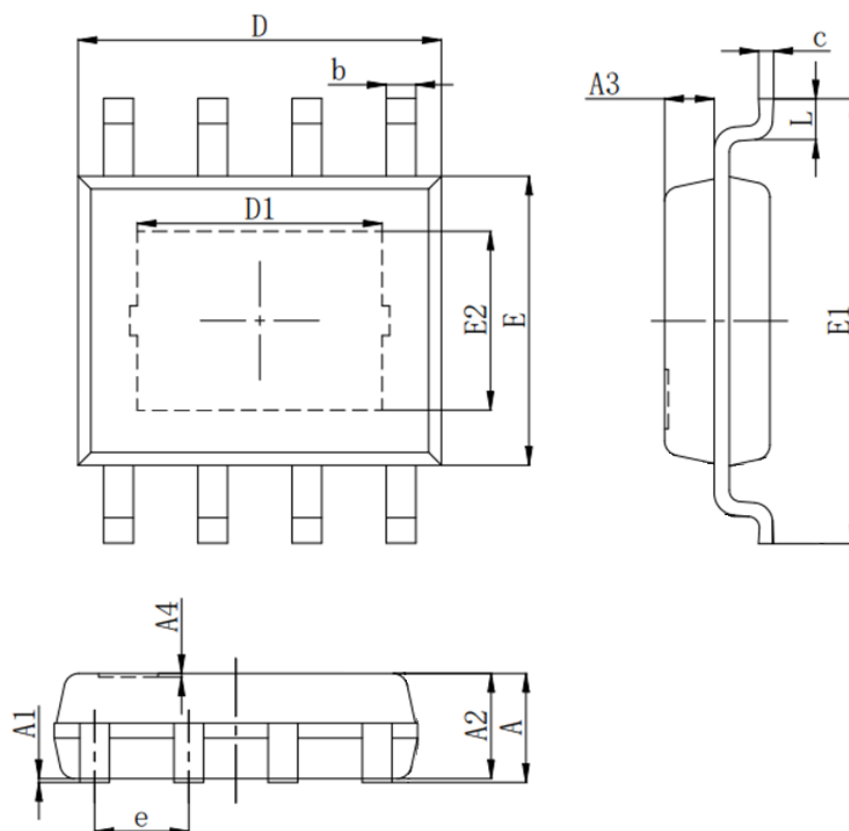
Notes: 1. Dummy pin may differ or may not be present.

SOT89-3



Symbol	Dimension in mm		
	Min.	Nom.	Max.
A	1.40	1.50	1.60
A1	0.30	0.40	0.50
L	0.8	1.00	1.20
b	0.35	0.40	0.45
b1	0.40	0.48	0.55
c	0.30	0.40	0.5
D	4.40	4.50	4.6
D1	1.60	1.70	1.80
D2		1.72	
E	2.40	2.50	2.60
E1	3.94	4.10	4.25
E2		1.9	
e		1.5	
e1		3.0	
θ		45°	

SOP8-EP



Symbol	Dimension in mm		
	Min.	Nom.	Max.
A	1.300	1.500	1.700
A1	0.000	0.100	0.150
A2	1.350	1.420	1.550
A3	0.645	0.670	0.695
A4	0.020		0.050
c	0.170	0.203	0.250
E	3.800	3.900	4.000
E1	5.800	6.000	6.200
2	2.183	2.283	2.383
L	0.450	0.600	0.750
b	0.330	0.400	0.510
D	4.800	4.900	5.000
D1	3.272	3.372	3.472
e		1.270	

11. Revision History

Rev	Descriptions	Date
V1.0	first version	2025/03/05
V1.1	Add SOT893C package	2025/04/28
V1.2	Revised content	2025/05/19
V1.3	Updated package name from PSOP-8 to SOP8-EP.	2025/06/27

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