



ACE701CC

Synchronous Step-Up DC/DC Converter

Description

The ACE701CC Series is a Synchronous step-up DC/DC Converter with PFM Control. With the ACE701CC Series, a step-up switching DC/DC converter can be configured by using an external coil, capacitor. The built-in MOSFET is turned off by a protection circuit when the voltage at the LX pin exceeds the limit to prevent it from being damaged.

Features

- External parts: Coil, capacitor
- Output voltage: Settable to between 1.8V to 5.5 V in 0.1 V steps
- Maximum Oscillation frequency:300KHz
- Accuracy of $\pm 2\%$
- High efficiency : 95%

Application

- Digital cameras
- Electronic notebooks and PDAs
- Portable CD/MD players
- Cameras, video equipment
- Communications equipment
- Power supply for microcomputers

Absolute Maximum Ratings

Parameter		Symbol	Max	Unit
V _{OUT} pin voltage		V _{OUT}	V _{SS} -0.3 ~ V _{SS} +8	V
EN pin voltage		EN	V _{SS} -0.3 ~ V _{SS} +8	V
LX pin voltage		V _{LX}	V _{SS} -0.3 ~ V _{SS} +8	V
LX pin current		I _{LX}	1000	mA
Power dissipation	SOT-23-3	PD	250	mW
	TSOT-23-3		250	mW
	SOT-23-5		250	mW
	SOT-89-3		500	mW
Operating temperature		T _{opr}	-40 ~+85	°C
Storage temperature		T _{stg}	-40 ~+125	°C
Soldering Temperature & Time		T _{solder}	260°C, 10s	

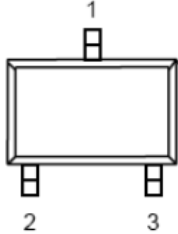


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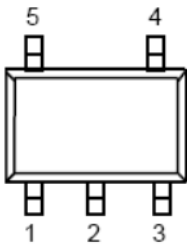
Packaging Type

SOT-23-3/TSOT-23-3



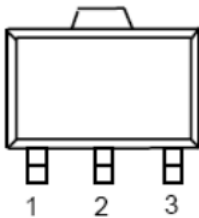
Pin No	Description	Function
1	V _{OUT}	Output voltage pin
2	V _{SS}	GND pin
3	LX	External inductor connection pin

SOT-23-5



Pin No	Description	Function
1	EN	Shutdown pin “H”: Normal operation “L”: Step-up stopped
2	V _{OUT}	Output voltage pin
3	NC	(N.C.)
4	V _{SS}	GND pin
5	LX	External inductor connection pin

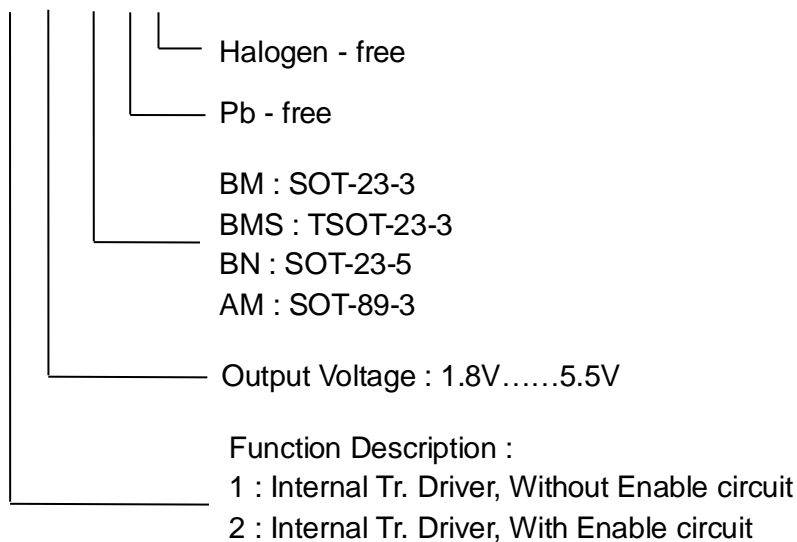
SOT-89-3



Pin No	Description	Function
1	V _{SS}	GND pin
2	V _{OUT}	Output voltage pin
3	LX	External inductor connection pin

Ordering information

ACE701CC X XX XX + H

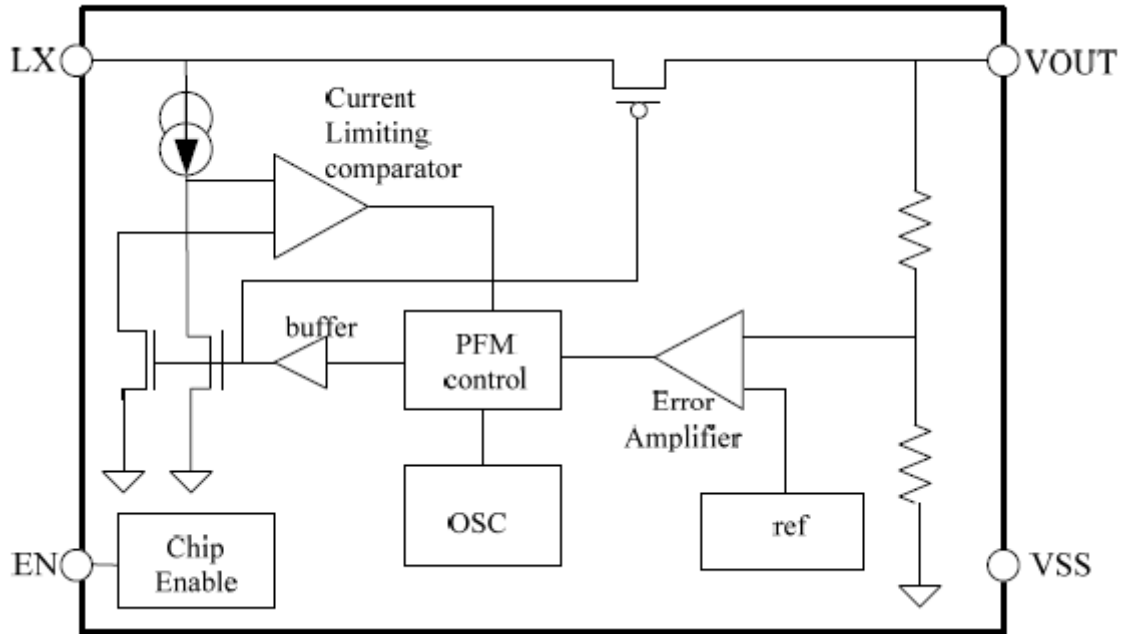




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Block Diagram





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Electrical Characteristics

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Output voltage	V_{OUT}		$V_{OUT(S)} \times 0.98$	V_{OUT}	$V_{OUT(S)} \times 1.02$	V
Input voltage	V_{IN}	$V_{OUT} \leq 3.6\text{ V}$	0.9		5	V
		$V_{OUT} > 3.6\text{ V}$	1.8		5	
Operation start voltage	V_{ST1}	$I_{OUT} = 1\text{ mA}$			0.9	V
Input Current At No Load	I_{SS2}	$V_{IN} = 1.8\text{ V}, V_{OUT} = 3.0\text{ V}$		15		μA
Current consumption 2	I_{SS2}	$V_{OUT} = V_{OUT} + 0.5\text{ V}$		6	10	μA
Current consumption During shutdown	I_{SS3}	$V_{EN} = 0\text{ V}$			1.0	mA
Maximum Oscillation frequency	fosc	$V_{OUT} = 0.95 \times V_{OUT}$, measure waveform at LX pin		300		KHz
Duty ratio 1	Duty1	$V_{OUT} = 0.95 \times V_{OUT}$, measure waveform at LX pin	70	78	85	%
Efficiency	EFFI			90		%
Shutdown pin input voltage	V_{SH}	$V_{OUT} = 0.95 \times V_{OUT}$, judge oscillation at LX pin	0.75			V
	V_{SL1}	$V_{OUT} = 0.95 \times V_{OUT}$, judge stop at LX pin			0.3	V
Shutdown pin input current	I_{SH}	$V_{EN} = 6\text{ V}$	-0.1		0.1	μA
	I_{SL}	$V_{EN} = 0\text{ V}$	-0.1		0.1	μA

Remark: $V_{OUT(S)}$ specified above is the set output voltage value, and V_{OUT} is the typical value of the actual output voltage.



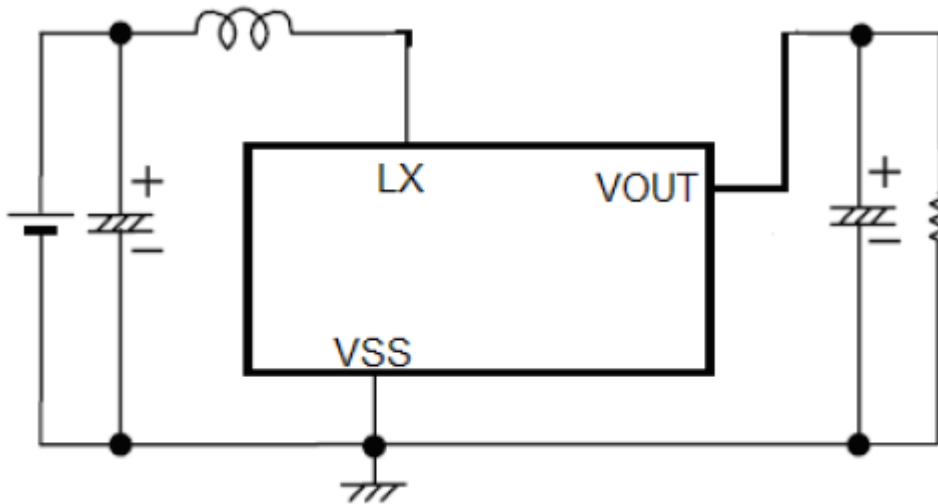
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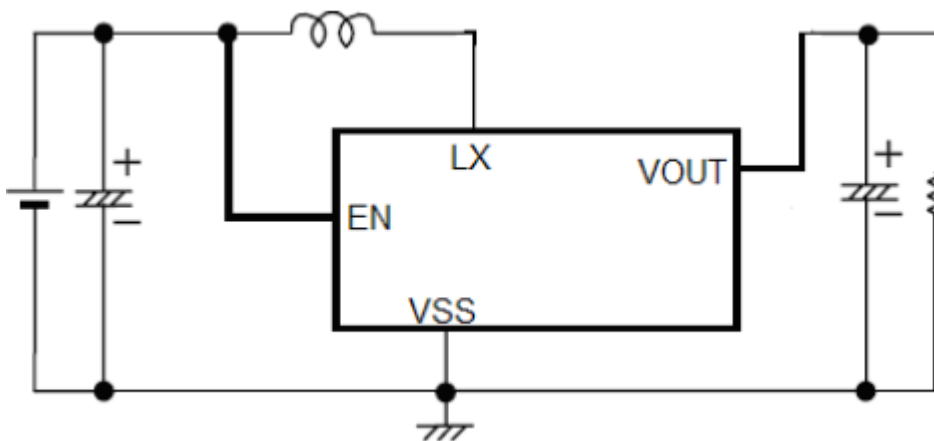
Standard Circuits

Component: Inductor : 47uH(Sumida)
Capacitor : 47uF/16V(Tantalum)

1、 ACE701CC-1 Circuits :



3、 ACE701CC-2 Circuits :





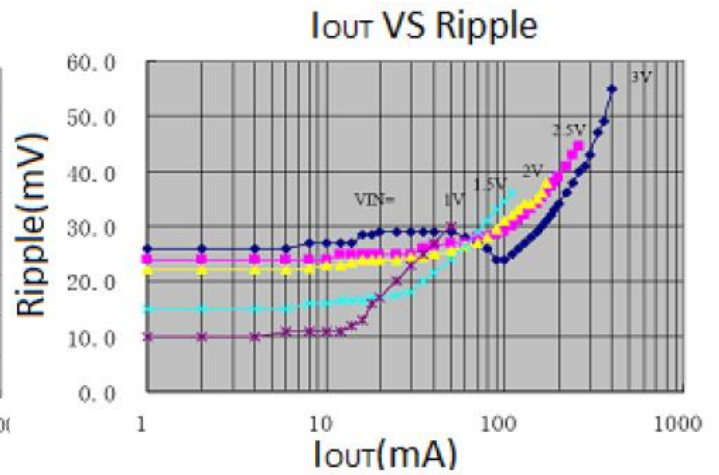
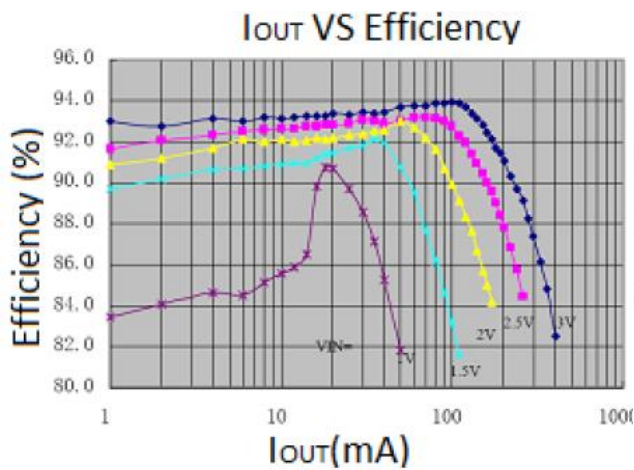
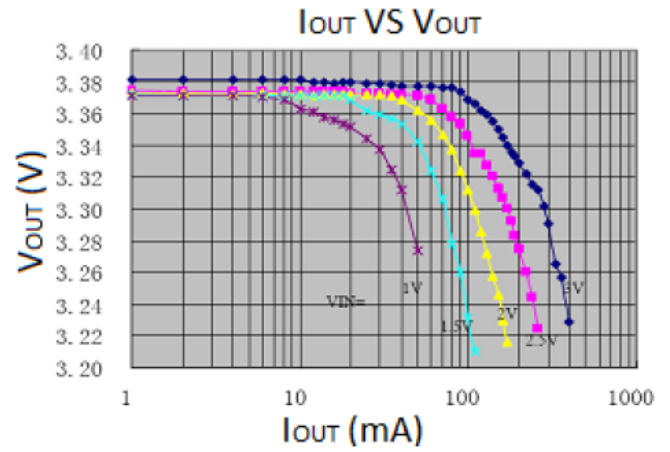
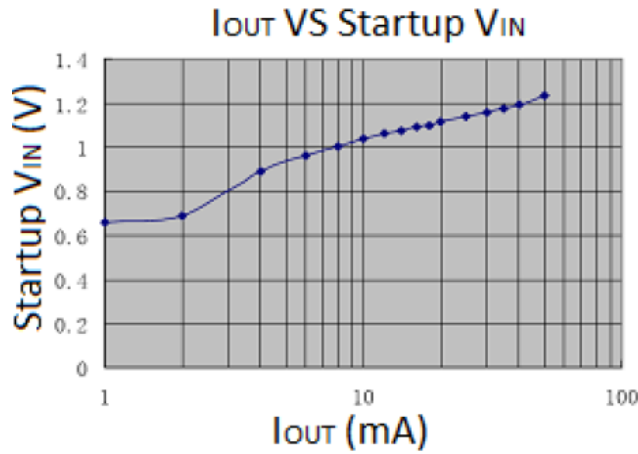
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Typical Performance Characteristics

$C_{in}=C_{out}=100\mu F$

$L=47\mu H$



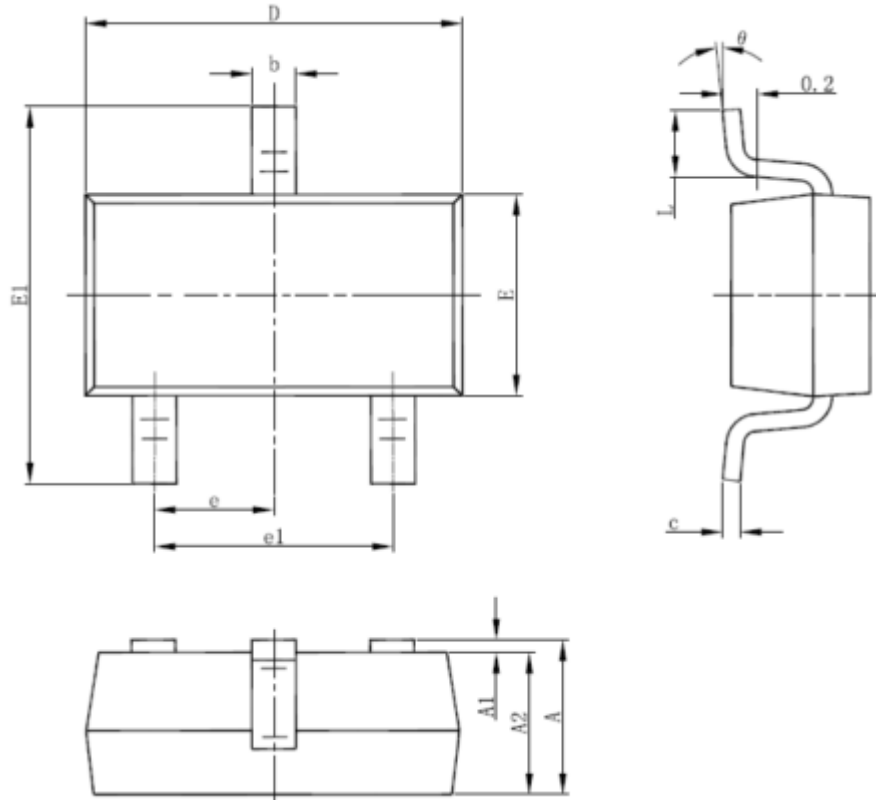


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Packing Information

SOT-23-3



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
theta	0°	8°	0°	8°

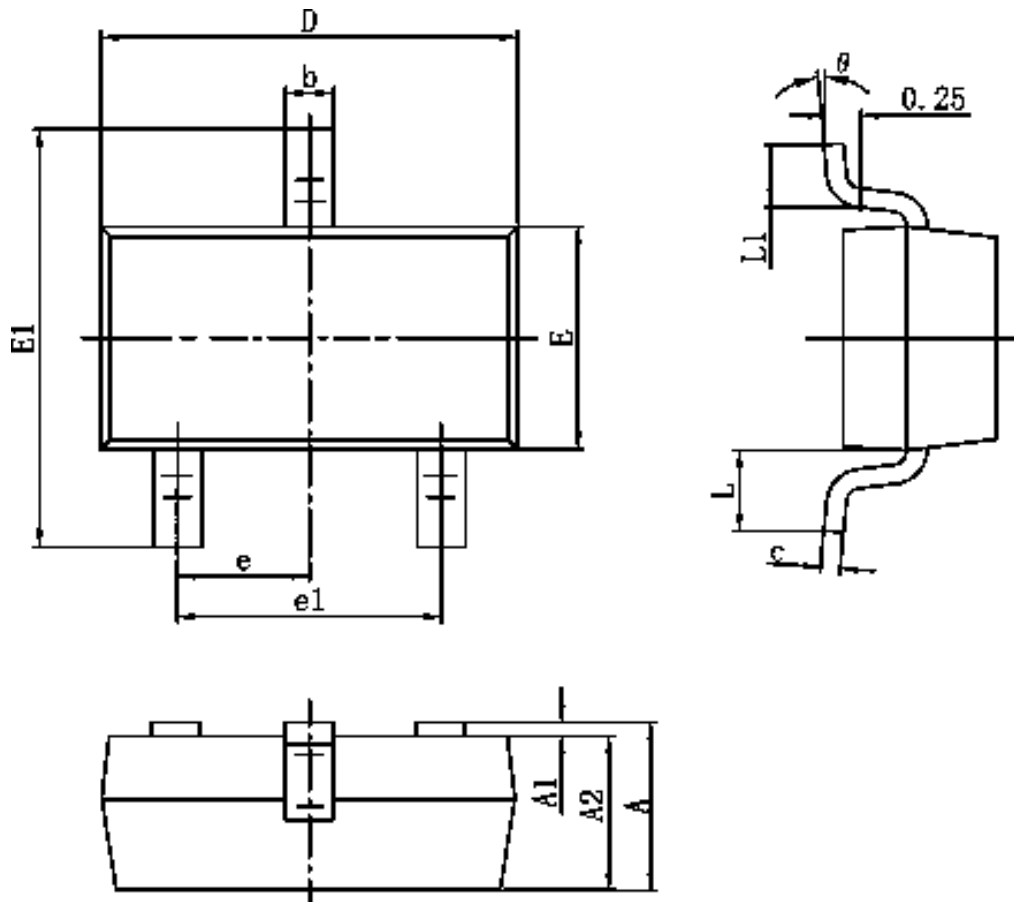


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Packing Information

TSOT-23-3



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

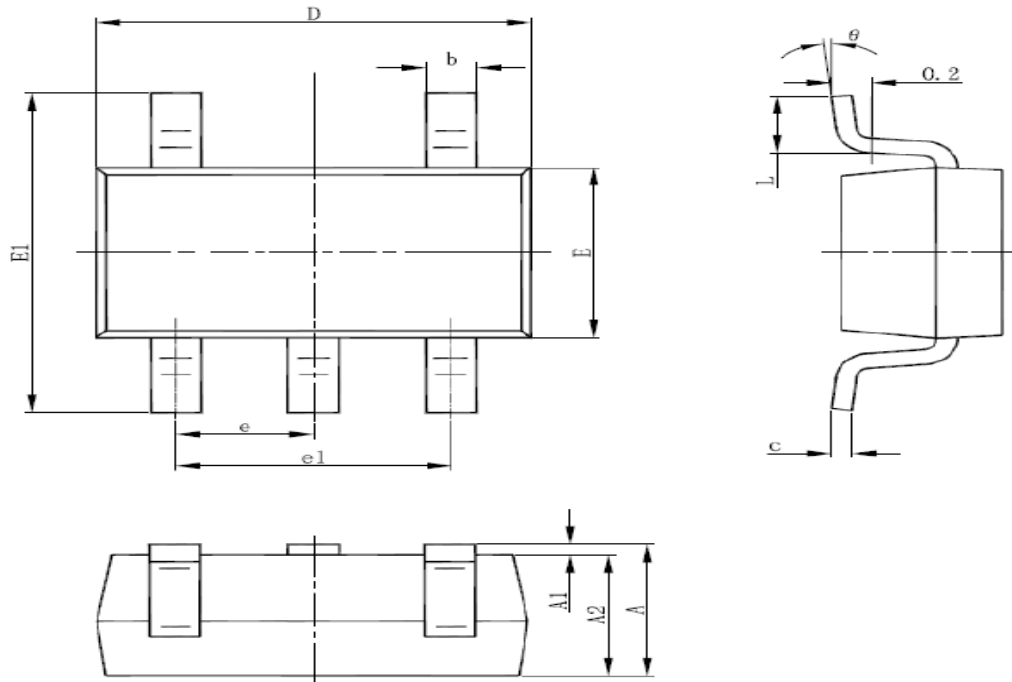


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Packing Information

SOT-23-5



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
theta	0°	8°	0°	8°

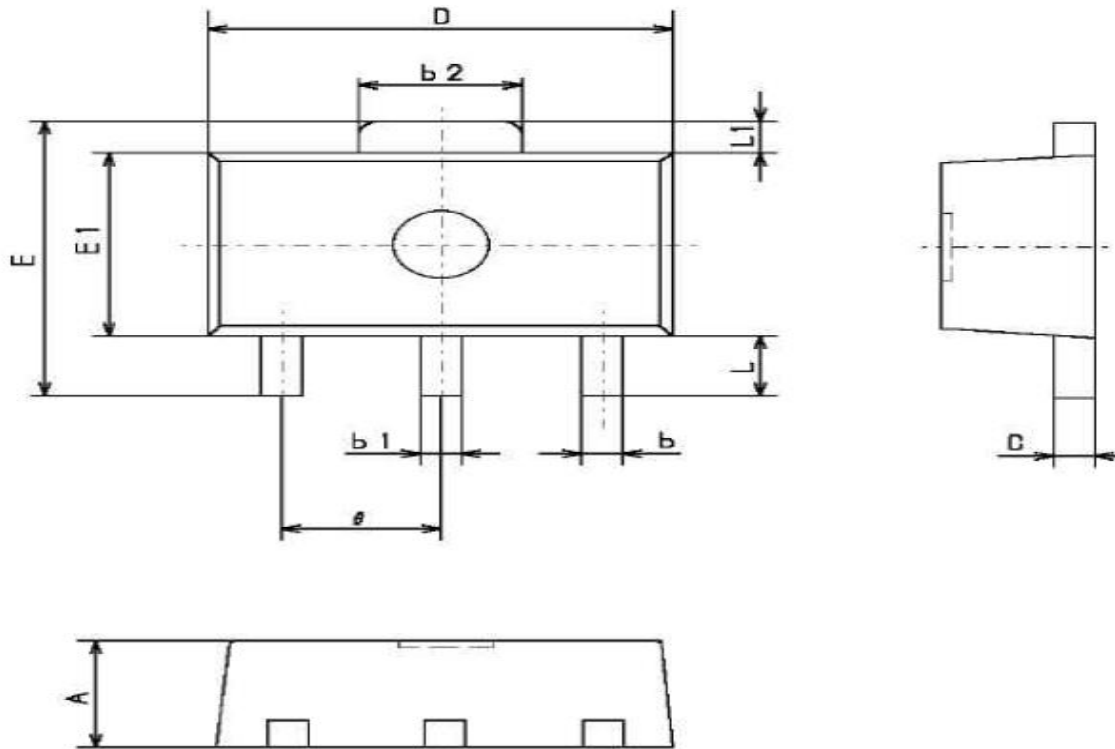


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Packing Information

SOT-89-3



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.197
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF		0.061 REF	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP		0.060TYP	
e1	3.000 TYP		0.118TYP	
L	0.900	1.200	0.035	0.047



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Notes

ACE does not assume any responsibility for use as critical components in life support devices or systems without the express written approval of the president and general counsel of ACE Technology Co., LTD. As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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