

BCT78L10E

150mA, High Voltage Regulators

GENERAL DESCRIPTION

The BCT78L10E is a low-power, high voltage, low-dropout, CMOS linear voltage regulators operate up to 36.0V input voltage with 3uA low power. It is the perfect choice for high input voltage, low power applications. A low ground current makes this part attractive for battery operated power systems. The BCT78L10E is also offer low dropout voltage to prolong battery life in portable electronics. Output current minimum limit is 150mA.

The output voltage is fixed. Other features include fold-back current limit and thermal shutdown protection.

The BCT78L10E is available in Green SOT23-3, SOT89-3 packages. It operates over an ambient temperature range of -40°C to +85°C.

FEATURES

- Low Power Consumption
- 150mA Nominal Output Current
- Low Dropout Voltage
- Low Temperature Coefficient
- High Input Voltage(up to 36V)
- Output Voltage Accuracy:±3%
- Fixed Outputs Voltage: 10V
- -40°C to 85°C Operating Temperature Range
- Available in Green SOT23-3 and SOT89-3 Packages.

APPLICATIONS

Battery-Powered Equipment
Communication Equipment
Audio/Video Equipment

ORDERING INFORMATION

Order Number	V _{OUT} (V)	Package Type	Temperature Range	Marking	QTY/Reel
BCT78L10EEJR-TR	10	SOT89-3	-40°C to +85°C	78L10E XXXXX	3000
BCT78L10EEUR-TR	10	SOT23-3	-40°C to +85°C	QTXX	3000

Note:

"XXXXX" or "XX" in Marking will be appeared as the batch code.



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ABSOLUTE MAXIMUM RATINGS

VIN to GND.....	-0.3V to 44V
EN to GND.....	-0.3V to VIN
VOUT to GND	-0.3V to Min(VIN + 0.3V,15V)
Power Dissipation, PD@TA=25℃	
SOT23-3.....	0.42W
SOT89-3.....	1.25W
Package Thermal Resistance	
SOT23-3, θJA.....	300℃/W
SOT89-3, θJA.....	100℃/W
Junction Temperature.....	150℃
Storage Temperature Range.....	-65℃ to 150℃
Lead Temperature (Soldering, 10 sec).....	260℃

RECOMMENDED OPERATING CONDITIONS

Input Voltage Range	2.7V to 36V
Operating Temperature Range	-40℃ to +85℃

NOTE:

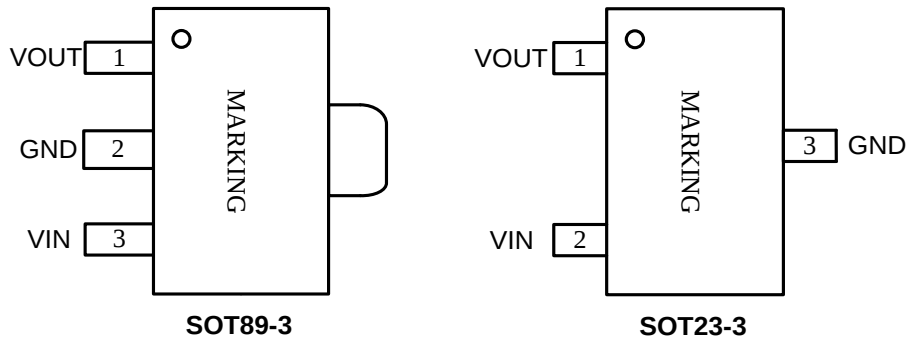
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

CAUTION

This integrated circuit can be damaged by ESD if you don't pay attention to ESD protection. Broadchip recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedures can cause damage. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

Broadchip reserves the right to make any change in circuit design, specification or other related things if necessary without notice at any time. Please contact Broadchip sales office to get the latest datasheet.

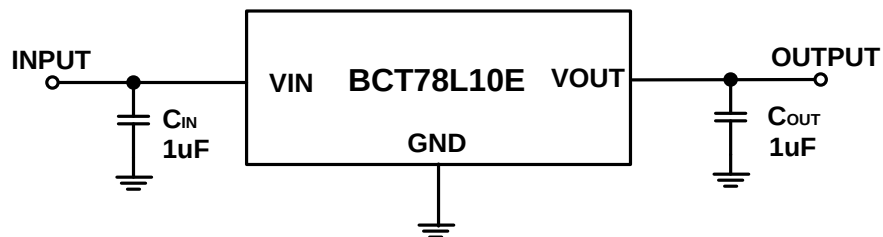
PIN CONFIGURATION (TOP VIEW)



PIN DESCRIPTION

PIN		NAME	FUNCTION
SOT89-3	SOT23-3		
1	1	VOUT	Regulated Output. It is recommended to use output capacitor with effective capacitance in the range of 1 μ F to 10 μ F.
2	3	GND	Ground.
3	2	VIN	Regulator Input. Up to 36V input voltage. At least 1 μ F supply bypass capacitor is recommended.

TYPICAL APPLICATION CIRCUIT



NOTES: If has a large Load Transient in the application, recommend using 4.7 μ F or more in C_{OUT}.

ELECTRICAL CHARACTERISTICS

($V_{IN} = V_{OUT} + 2V$ or $4V$, whichever is greater, $C_{IN} = C_{OUT} = 1\mu F$, Full = $-40^{\circ}C$ to $+85^{\circ}C$, typical values are at $T_A = +25^{\circ}C$, unless otherwise noted.)

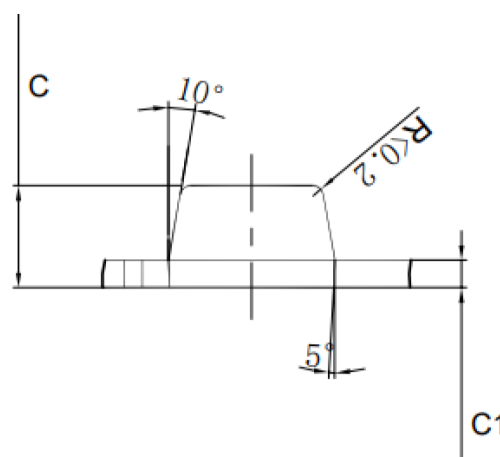
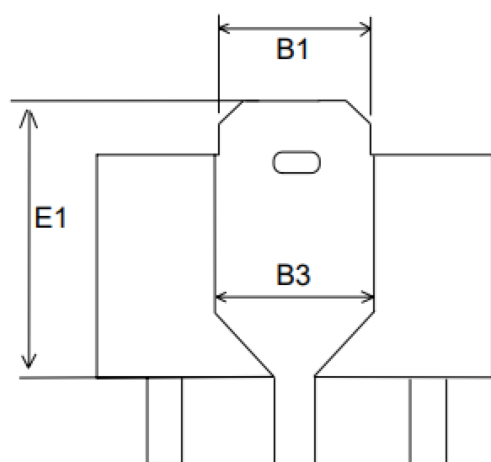
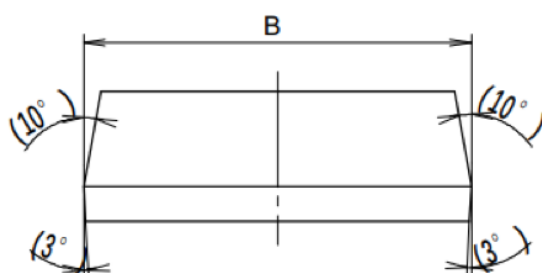
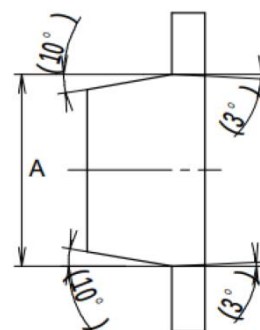
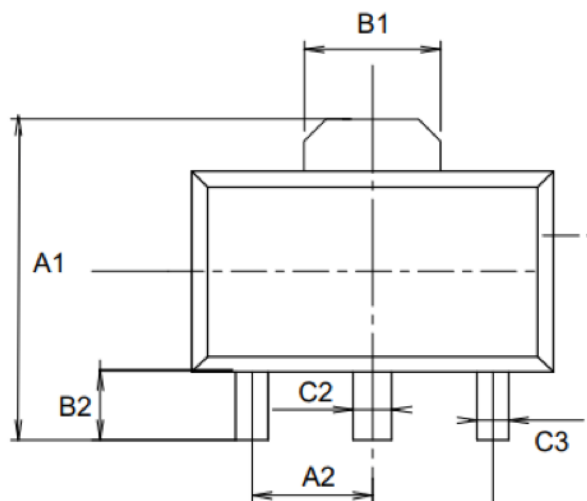
PARAMETER	SYM	CONDITIONS	MIN	TYP	MAX	UNITS
Input Voltage	V_{IN}		2.7		36	V
Output Voltage Accuracy		$I_{OUT}=1mA$	-3.0		3.0	%
Ground Pin Current	I_Q	No load		3		uA
		$I_{OUT}=50mA$		40		
Maximum Output Current ⁽¹⁾			150			mA
Current Limit	I_{LIM}			230		mA
Dropout Voltage ⁽²⁾	V_{DROP}	$I_{OUT}=150mA$		1300		mV
Line Regulation	ΔV_{LNR}	$V_{IN}=V_{OUT}+2V$ or $4V$ to $36V$, $I_{OUT} = 1mA$		0.005	0.012	%/V
Load Regulation	ΔV_{LDR}	$V_{IN} = V_{OUT} + 2V$ or $4V$, $I_{OUT} =$ $1mA$ to $150mA$		25		mV
Power Supply Rejection Ratio	PSRR	$I_{OUT} = 10mA$	$f = 217Hz$	55		dB
			$f = 1kHz$	40		

NOTES:

- Maximum output current is affected by the PCB layout, size of metal trace, the thermal conduction path between metal layers, ambient temperature and the other environment factors of system. Attention should be paid to the dropout voltage when $V_{IN} < V_{OUT} + V_{DROP}$.
- The dropout voltage is defined as $V_{IN} - V_{OUT}$, when V_{OUT} is 95% of the value of V_{OUT} for $V_{IN} = V_{OUT} + 2V$.

PACKAGE OUTLINE DIMENSIONS

SOT89-3



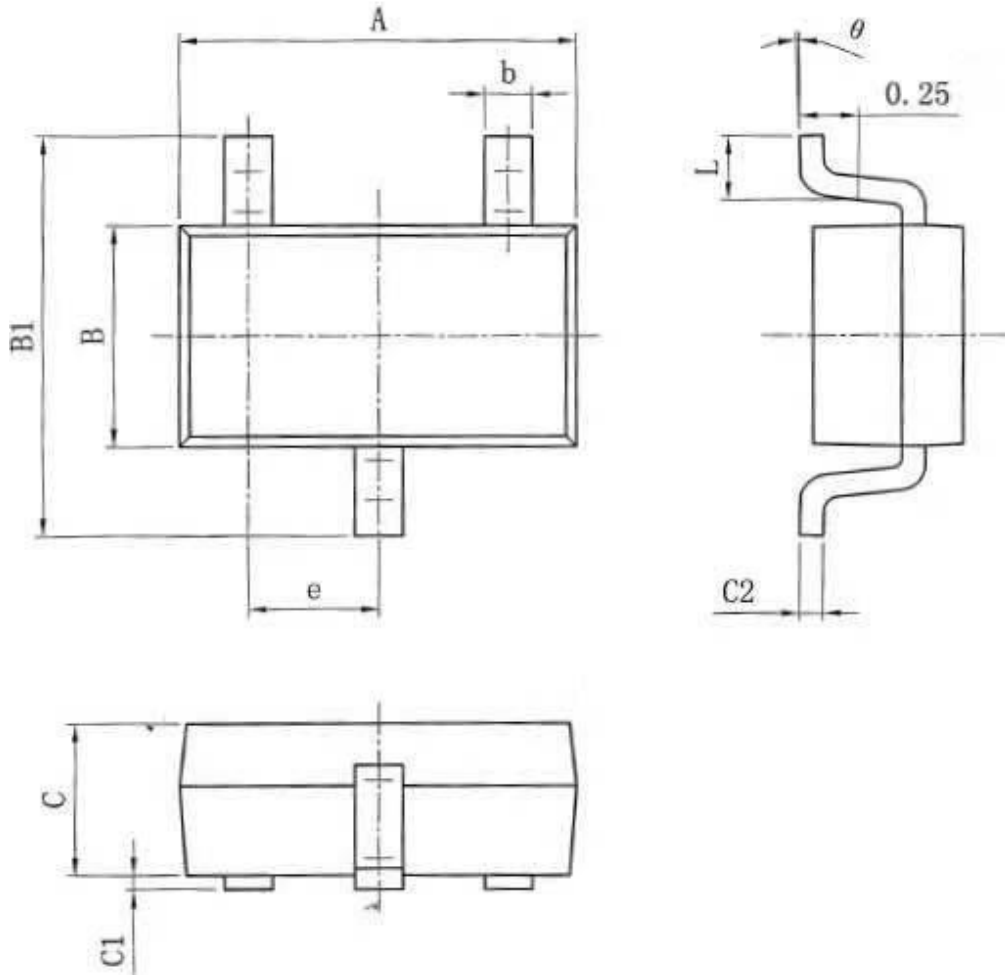
PACKAGE OUTLINE DIMENSIONS

SOT89-3

Symbol	Dimensions In Millimeters		
	Min	Nom	Max
A	2.35	2.45	2.55
A1	4.10	4.20	4.30
A2	1.45	1.50	1.55
B	4.40	4.50	4.60
B1		1.55REF	
B2	0.85	1.00	1.15
B3		1.75REF	
C	1.45	1.50	1.55
C1	0.39	0.40	0.41
C2	0.43	0.48	0.53
C3	0.39	0.40	0.41
E1	3.07	3.17	3.27

PACKAGE OUTLINE DIMENSIONS

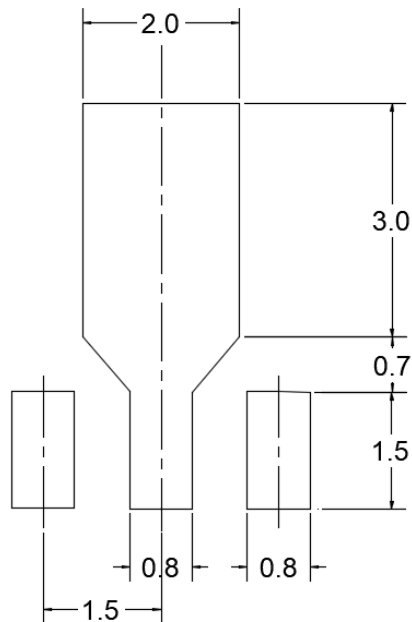
SOT23-3



Symbol	Dimensions In Millimeters	
	Min	Max
A	2.82	3.02
e	0.95(BSC)	
b	0.28	0.45
B	1.50	1.70
B1	2.75	3.05
C	1.05	1.15
C1	0.03	0.15
C2	0.12	0.23
L	0.35	0.55
θ	0°	8°

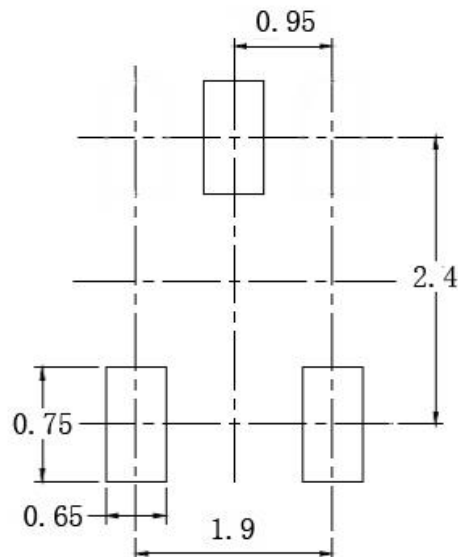
LAND PATTERN DATA

SOT89-3



RECOMMENDED PCB LAYOUT PATTERN (Unit: mm)

SOT23-3



RECOMMENDED PCB LAYOUT PATTERN (Unit: mm)