CJ6331 Series

■ INTRODUCTION

The CJ6331 series are a group of positive voltage regulators manufactured by CMOS technologies with low power consumption and low dropout voltage, which provide large output currents even when the difference of the input-output voltage is small. The CJ6331 series can deliver 300mA output current and allow an input voltage as high as 18V. The series are very suitable for the battery-powered equipments, such as RF applications and other systems requiring a quiet voltage source.

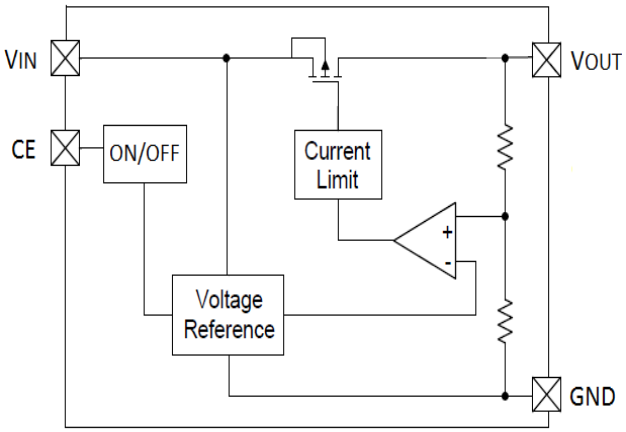
■ FEATURES

- Low Quiescent Current: 0.8μA
- Max Operating Voltage: 18V
- Output Current: 300mA
- Low Dropout Voltage: 170mV@100mA(V_{OUT}=3.3V)
- Output Voltage: 1.5 ~ 5.0V
- High Accuracy: ±2%(Typ.)
- Excellent Line and Load Transient Response
- Built-in Current Limiter, Short-Circuit Protection
- Over-Temperature Protection

■ APPLICATIONS

- Cordless Phones
- Radio Control Systems
- Laptop, Palmtops and PDAs
- Single-lens Reflex DSC
- PC Peripherals with Memory
- Wireless Communication Equipments
- Portable Audio Video Equipments
- Car Navigation Systems
- LAN Cards
- Ultra Low Power Microcontroller

■ BLOCK DIAGRAM

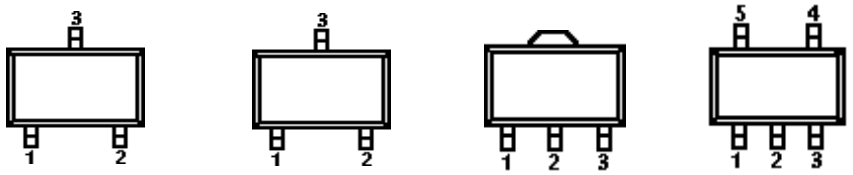


■ ORDER INFORMATION

CJ6331①②③④

DESIGNATOR	SYMBOL	DESCRIPTION
①	A	Standard
	B	With Shutdown Function
②③	Integer	Output Voltage e.g.1.8V=②:1, ③:8
④	N	Package:SOT-23
	M	Package:SOT-23-3L
	M	Package:SOT-23-5L
	P	Package:SOT-89-3L

SOT-23 SOT-23-3L SOT-89-3L SOT-23-5L



PIN NUMBER			PIN NAME	FUNCTION
SOT-23	SOT-23-3L	SOT-89-3L		
CJ6331AxxM		CJ6331AxxP		
1	1	1	V_{SS}	Ground
2	2	3	V_{OUT}	Output
3	3	2	V_{IN}	Power input

SOT-23-5L

PIN NUMBER	SYMBOL	FUNCTION
CJ6331BxxM		
1	V_{IN}	Power Input Pin
2	V_{SS}	Ground
3	CE	Chip Enable Pin
4	NC	No Connection
5	V_{OUT}	Output Pin

■ ABSOLUTE MAXIMUM RATINGS(1)

(Unless otherwise specified, T_A=25°C)

PARAMETER		SYMBOL	RATINGS	UNITS
Input Voltage(2)		V_{IN}	-0.3~20	V
Output Voltage(2)		V_{OUT}	-0.3~10	V
CE Pin Voltage		V_{CE}	-0.3~20	V
Output Current		I_{OUT}	300	mA
Power Dissipation	SOT-23	P_D	Internally Limited	W
	SOT-23-3L			
	SOT-23-5L			
	SOT-89-3L			
Operating free air temperature range		T_A	-25~85	°C
Storage Temperature		T_{stg}	-40~125	°C
Lead Temperature(Soldering, 10 sec)		T_{solder}	260	°C
ESD rating(3)		Human Body Model -(HBM)	8	kV
		Machine Model- (MM)	400	V

(1) 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 under *recommended operating conditions* is not implied. Exposure to absolute-maximum-rated conditions for extended periods my affect device reliability.

(2) All voltages are with respect to network ground terminal.

Electrical Characteristics

(3) ESD testing is performed according to the respective JESD22 JEDEC standard.

The human body model is a 100 pF capacitor discharged through a 1.5kΩ resistor into each pin. The machine model is a 200pF capacitor discharged directly into each pin.

(V_{IN}=V_{OUT}+1V, C_{IN}=C_{OUT}=1μF, T_A=25℃,unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.(5)	MAX.	UNITS
Input Voltage	V_{IN}				18	V
Output Voltage Range	V_{OUT}		1.2		5	V
DC Output Accuracy		I_{OUT}=1mA	-2		2	%
Dropout Voltage	V_{dif}(6)	I_{OUT} =100mA,V_{OUT}=3.3V		170		mV
Supply Current	I_{SS}	I_{OUT}=0A		0.8		μA
Line Regulation	$\frac{\Delta V_{OUT}}{V_{OUT} \times \Delta V_{IN}}$	I_{OUT} =10mA V_{OUT} +1V≤V_{IN}≤18V		0.1		%/V
Load Regulation	$\underline{\Delta}V_{OUT}$	V_{IN}= V_{OUT} +1V, 1mA≤I_{OUT}≤100mA		6		mV
Output Current Limit	I_{LIM}	V_{OUT}= 0.5 x $V_{OUT(Normal)}$, V_{IN} = 5V		500	-	mA
Short Current	I_{SHORT}	V_{OUT} =V_{SS}		40		mA
Thermal Shutdown Temperature	T_{SD}	——		150		°C
Thermal Shutdown Hysteresis	ΔT_{SD}	——		20		°C
CE "High" Voltage	V_{CE}"H"		1.3			V
CE "Low" Voltage	V_{CE}"L"				0.7	V
C_{OUT} Auto-Discharge Resistance	$R_{DISCHRG}$	V_{IN}=5V, V_{OUT}=3.0V, V_{CE}=V_{SS}		500		Ω

(5) Typical numbers are at 25°C and represent the most likely norm.

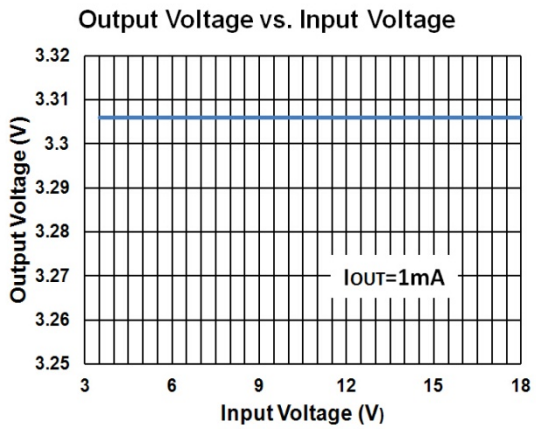
(6) V_{dif}: The Difference Of Output Voltage And Input Voltage When Input Voltage Is Decreased Gradually Till Output Voltage Equals To 98% Of V_{OUT} (E).

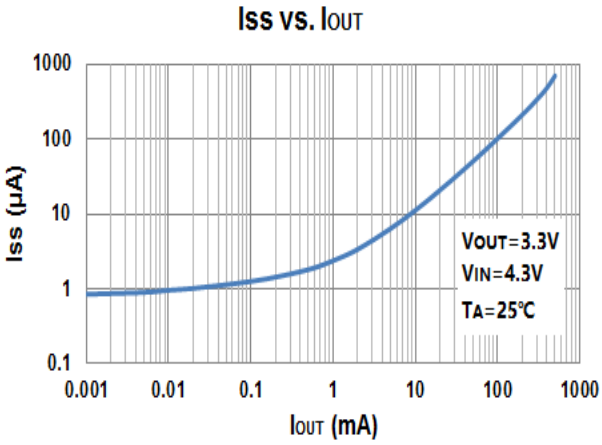
■ Thermal Information

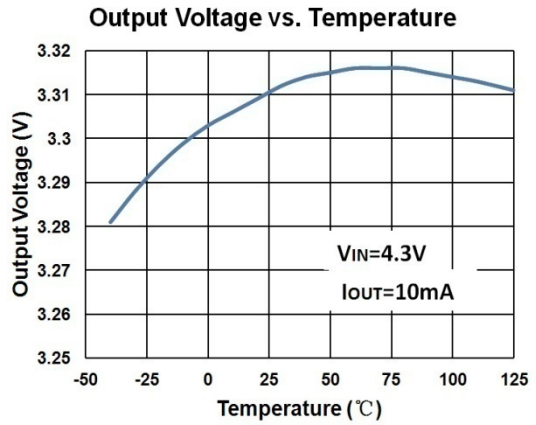
THERMAL METRIC(7)	SYMBOL	CJ6331 Series				UNIT
		SOT-23	SOT-23-3L	SOT-23-5L	SOT-89-3L	
Junction-to-ambient thermal resistance	$R_{\Theta JA}$	333.3	250	200	166.7	°C/W
Maximum power dissipation for reference	$P_{D\ Ref}$	0.3	0.4	0.5	0.6	W

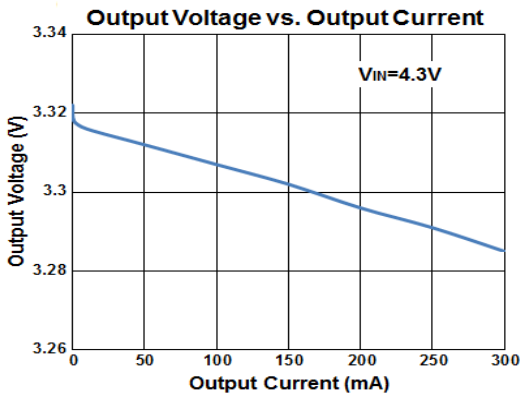
(7) $R_{\Theta JA}$ is measured in still air with TA = 25°C and installed on a 1 in 2 FR-4 board covered with 2 ounces of copper.

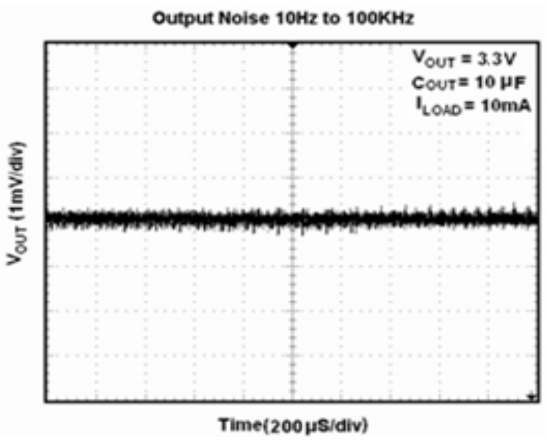
Typical Characteristics

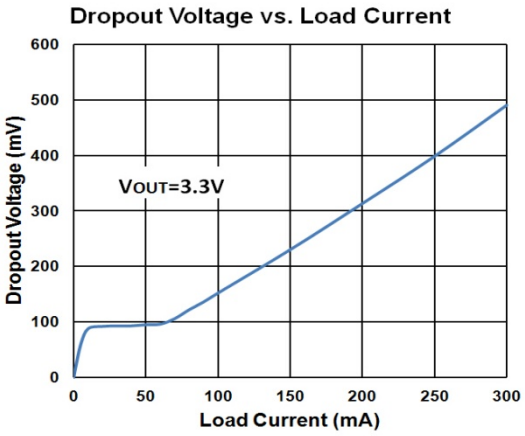




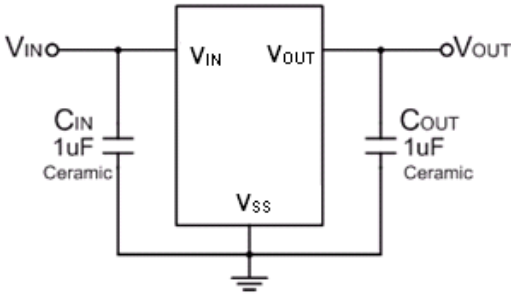


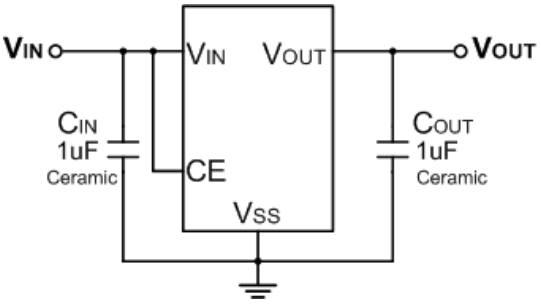




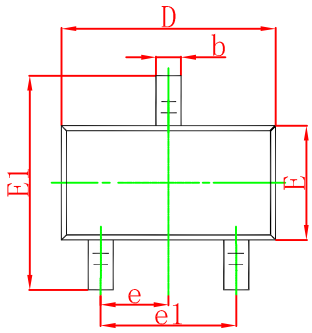


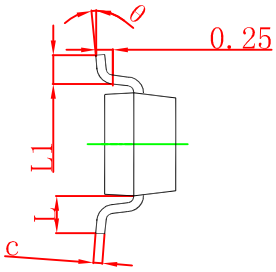
■ Typical Application

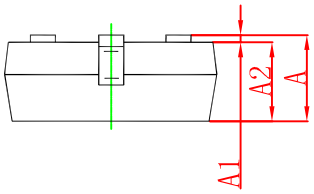




SOT-23 Package Outline Dimensions

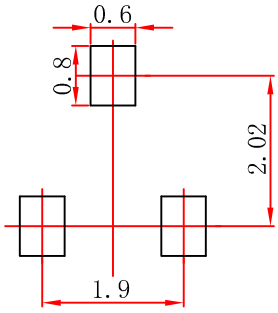






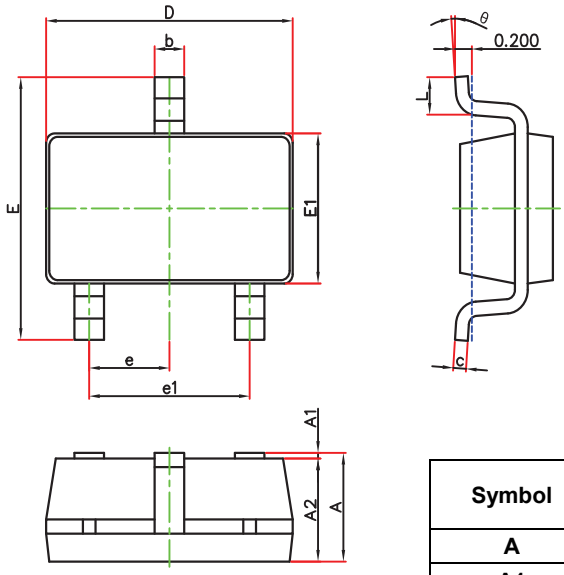
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		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°

SOT-23 Suggested Pad Layout



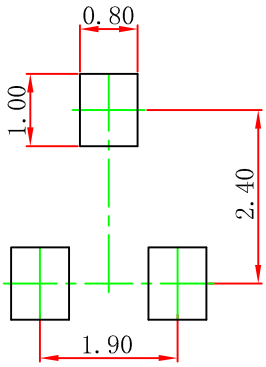
Note:
1.Controlling dimemsion"in"milimeters.
2.General tolerance: ±0.05mm.
3.The pad layout is for reference purpose only.

SOT-23-3L Package Outline Dimensions



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	2.650	2.950	0.104	0.116
E1	1.500	1.700	0.059	0.067
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
θ	0°	8°	0°	8°

SOT-23-3L Suggested Pad Layout



Note:
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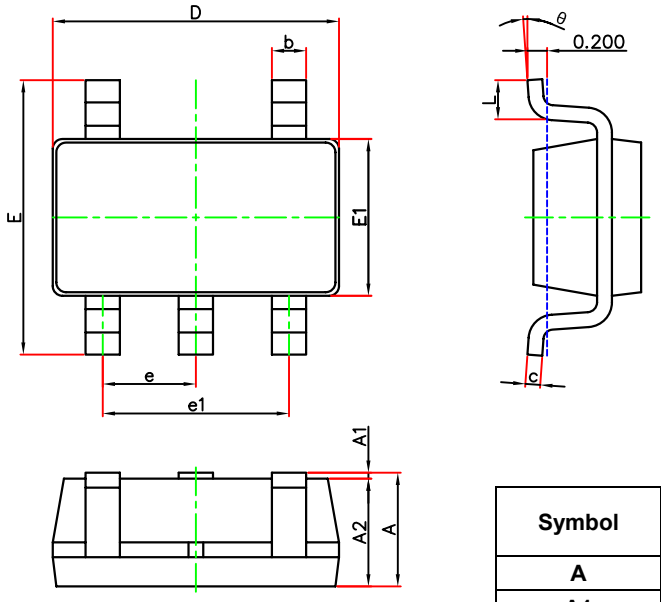
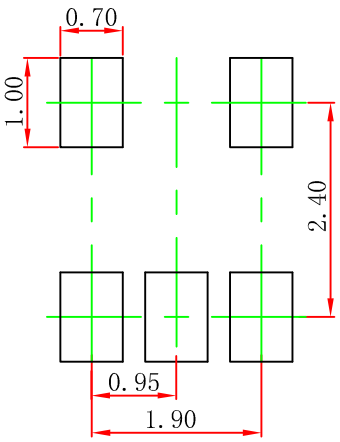
2.General tolerance: ±0.05mm.
3.The pad layout is for reference purpose only.

SOT-23-5L Package Outline Dimensions



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	2.650	2.950	0.104	0.116
E1	1.500	1.700	0.059	0.067
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
θ	0°	8°	0°	8°

SOT-23-5L Suggested Pad Layout



Note:
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2.General tolerance: ±0.05mm.
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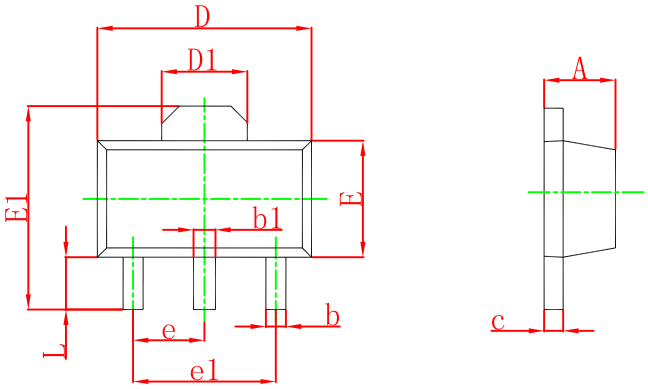
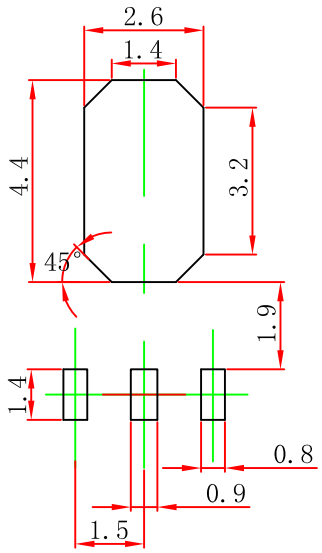
SOT-89-3L Package Outline Dimensions



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		0.060 TYP	
e1	3.000 TYP		0.118 TYP	
L	0.900	1.200	0.035	0.047

SOT-89-3L Suggested Pad Layout



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DISCLAIMER

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