GLD0503

Low power consumption, Low ESR Cap. Compatible

General Description

GLD0503 series are highly precise, low power consumption, positive voltage regulators manufactured using CMOS technologies .The series provides large currents with a significantly small dropout voltage.

The series is compatible with low ESR ceramic capacitors .The current limiter's foldback circuit also operates as a short protect for the output current limiter and the output pin.

Features

- Output voltage range：1.0V~5.0V
- Input voltage: up to 6 V
- Dropout Voltage:110mV@ I_{OUT} =100mA
  240mV@ I_{OUT} =200mA
- Highly Accuracy: ±1％
- Low power consumption：6uA(TYP.)
- Large output current：300mA (V_{IN}＝4.3V,V_{OUT}＝3.3V)
- Excellent Input Stability
- Be available to regulator and reference voltage

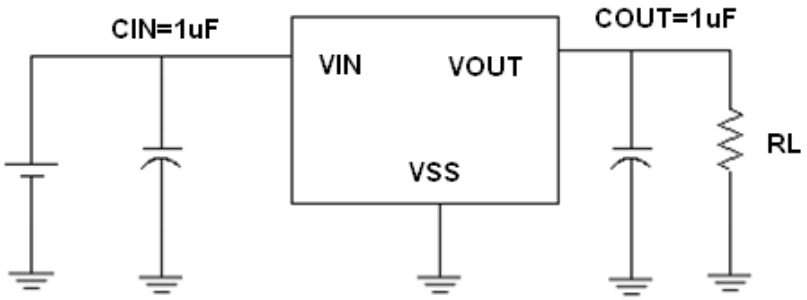
Typical Application

- Communication tools
- Mobile phones
- Portable games
- Portable AV systems
- Cameras, Video systems
- Reference voltage sources

Package

- 3-pin SOT89-3，SOT23-3，SOT23，TO92，DFN2*2-3L

Typical Application Circuit



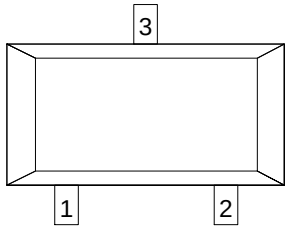
Selection Guide

product series	product description
GLD050310S9	V_{OUT} =1.0V； Package：SOT89-3
GLD050312S3	V_{OUT} =1.2V； Package：SOT23-3
GLD050314S3	V_{OUT} =1.4V； Package：SOT23-3
GLD050328S3	V_{OUT} =2.8V； Package：SOT23-3
GLD050338S3	V_{OUT} =3.8V； Package：SOT23-3
GLD050330S2	V_{OUT} =3.0V； Package：SOT23
GLD050318T3	V_{OUT} =1.8V； Package：TO92
GLD050318D3	V_{OUT} =1.8V；Package： DFN2*2-3L(2.0*2.0*0.55-1.30)

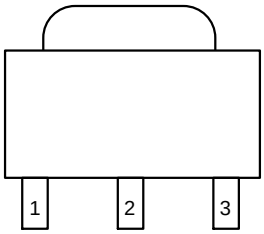
NOTE: 1. At present ,there are fifteen kinds of voltage value: 1.0V、1.2V、1.3V、1.4V、1.5V、1.8V、2.0V、2.5V、2.7V、2.8V、3.0V、3.3V、3.6V、3.8V、5.0V。

2. If you need other voltage and package, please contact our sales staff。

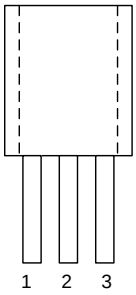
Pin Configuration



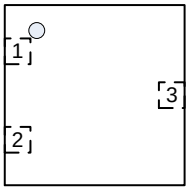
SOT23/SOT23-3



SOT89-3



TO92

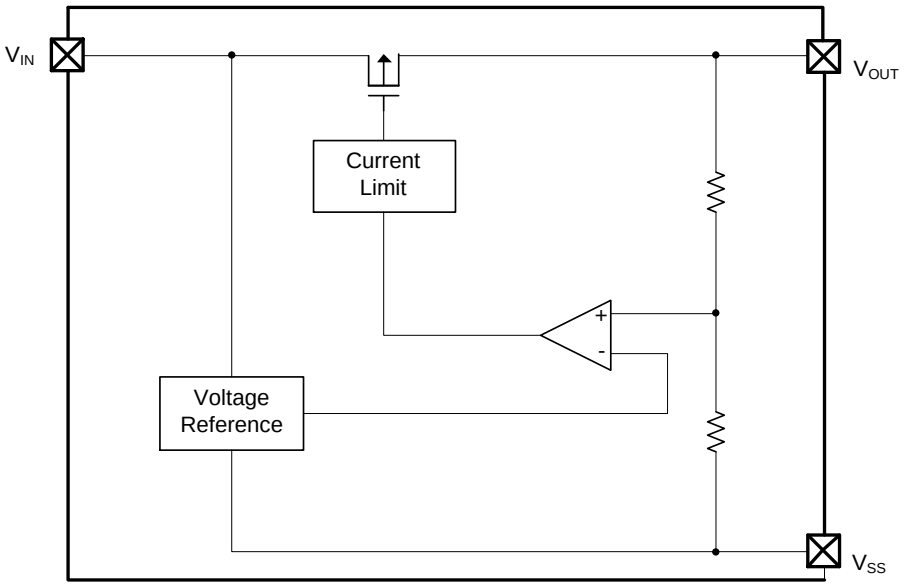


DFN2*2-3

Pin Assignment

Pin					Name	Function
M3	P	X	T	N3		
SOT23-3	SOT89-3	SOT23	TO-92	DFN3L		
1	1	1	1	3	VSS	Ground
2	3	2	3	2	VOUT	Output
3	2	3	2	1	VIN	Input

Block Diagram



Absolute Maximum Ratings

Parameter		Symbol	Description	Units
Input Voltage		V_{IN}	6.5	V
Output Current		I_{OUT}	390	mA
Output Voltage		V_{OUT}	Vss-0.3 ~ Vout+0.3	V
Internal Power Dissipation	SOT23-3	Pd	0.54	W
	SOT89-3	Pd	1.25	W
	SOT23	Pd	0.38	W
	TO-92	Pd	0.83	W
	DFN3L	Pd	1.25	W
Thermal resistance (Junction to air)	SOT23-3	θ_{JA}	230	℃/W
	SOT89-3	θ_{JA}	100	℃/W
	SOT23	θ_{JA}	328	℃/W
	TO-92	θ_{JA}	151	℃/W
	DFN3L	θ_{JA}	100	℃/W
Operating Ambient Temperature		T_{Opr}	-40 ~ +85	℃
Storage Temperature		T_{stg}	-55 ~ +150	℃
Maximum junction temperature		T_J	-40~+150	℃

Electrical Characteristics

GLD0503 (Vout=1.2V)(V_{IN}=V_{OUT}+1V,CIN=COUT=1uF,Ta=25^{O}C Unless otherwise stated)

Parameter	Symbol	Condition	Mix	Typ	Max	Unit
Output Voltage (Vout=1.0~1.3V)	V_{OUT}(E) (Note 2)	I_{OUT}=10mA, V_{IN}=V_{OUT}+1V	V_{OUT}(T) -0.015	V_{OUT}(T) (Note 1)	V_{OUT}(T) +0.015	V
Input Voltage	V_{IN}				6	V
Maximum Output Current	I_{OUT} (max)	V_{IN}= V_{OUT} +1V		250		mA
Load Regulation	ΔV_{OUT}	V_{IN}= V_{OUT} +1V 1mA≤I_{OUT}≤100mA		8	12	mV
Dropout Voltage (Note 3)	V_{dif1}	I_{OUT} =100mA		320	350	mV
	V_{dif2}	I_{OUT} =200mA		570	600	mV
Supply Current	I_{SS}	V_{IN}= V_{OUT} +1V		6	8	μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	I_{OUT} =10mA Vout+1V ≤V_{IN}≤6V		0.05	0.2	%/V
Power Supply Ripple Rejection Ratio	PSRR	Vin= [V_{OUT} +1]V +1Vp-pAC I_{OUT} =10mA,f=1kHz		65		dB
Short Circuit Current	I_{short}	Vin= V_{OUT} (T)+1V V_{OUT} =VSS		50	70	mA
Over Current Protection	I_{limit}	V_{IN}= V_{OUT} +1V		310	340	mA

GLD0503 (Vout=1.4V) (V_{IN}=V_{OUT}+1V,CIN=COUT=1uF,Ta=25°C Unless otherwise stated)

Parameter	Symbol	Condition	Mix	Typ	Max	Unit
Output Voltage	V_{OUT}(E) (Note 2)	I_{OUT}=10mA, V_{IN}=V_{OUT}+1V	X 0.99	V_{OUT}(T) (Note 1)	X 1.01	V
Input Voltage	V_{IN}				6	V
Maximum Output Current	I_{OUT} (max)	V_{IN}= V_{OUT} +1V		250		mA
Load Regulation	ΔV_{OUT}	V_{IN}= V_{OUT} +1V 1mA≤I_{OUT}≤100mA		8	12	mV
Dropout Voltage (Note 3)	V_{dif1}	I_{OUT} =100mA		280	300	mV
	V_{dif2}	I_{OUT} =200mA		510	530	mV
Supply Current	I_{SS}	V_{IN}= V_{OUT} +1V		6	8	μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	I_{OUT} =10mA Vout+1V ≤V_{IN}≤6V		0.05	0.2	%/V
Power Supply Ripple Rejection Ratio	PSRR	Vin= [V_{OUT} +1]V +1Vp-pAC I_{OUT} =10mA,f=1kHz		65		dB
Short Circuit Current	I_{short}	Vin= V_{OUT} (T)+1V V_{OUT} =VSS		50	70	mA
Over Current Protection	I_{limit}	V_{IN}= V_{OUT} +1V		380	420	mA

GLD0503 (Vout=1.8V) (V_{IN}=V_{OUT}+1V,CIN=COUT=1uF,Ta=25°C Unless otherwise stated)

Parameter	Symbol	Condition	Mix	Typ	Max	Unit
Output Voltage	V_{OUT}(E) (Note 2)	I_{OUT}=10mA, V_{IN}=V_{OUT}+1V	X 0.99	V_{OUT}(T) (Note 1)	X 1.01	V
Input Voltage	V_{IN}				6	V
Maximum Output Current	I_{OUT} (max)	V_{IN}= V_{OUT} +1V		300		mA
Load Regulation	ΔV_{OUT}	V_{IN}= V_{OUT} +1V 1mA≤I_{OUT}≤100mA		8	12	mV
Dropout Voltage (Note 3)	V_{dif1}	I_{OUT} =100mA		190	210	mV
	V_{dif2}	I_{OUT} =200mA		380	400	mV
Supply Current	I_{SS}	V_{IN}= V_{OUT} +1V		6	8	μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	I_{OUT} =10mA Vout+1V ≤V_{IN}≤6V		0.05	0.2	%/V
Power Supply Ripple Rejection Ratio	PSRR	Vin= [V_{OUT} +1]V +1Vp-pAC I_{OUT} =10mA,f=1kHz		65		dB
Short Circuit Current	I_{short}	Vin= V_{OUT} (T)+1V V_{OUT} =VSS		50	70	mA
Over Current Protection	I_{limit}	V_{IN}= V_{OUT} +1V		380	420	mA

GLD0503(Vout=2.8V) (V_{IN}=V_{OUT}+1V,CIN=COUT=1uF,Ta=25°C Unless otherwise stated)

Parameter	Symbol	Condition	Mix	Typ	Max	Unit
Output Voltage	V_{OUT}(E) (Note 2)	I_{OUT}=10mA, V_{IN}=V_{OUT}+1V	X 0.99	V_{OUT}(T) (Note 1)	X 1.01	V
Input Voltage	V_{IN}				6	V
Maximum Output Current	I_{OUT} (max)	V_{IN}= V_{OUT} +1V		300		mA
Load Regulation	ΔV_{OUT}	V_{IN}= V_{OUT} +1V 1mA≤I_{OUT}≤100mA		8	14	mV
Dropout Voltage (Note 3)	V_{dif1}	I_{OUT} =100mA		120	140	mV
	V_{dif2}	I_{OUT} =200mA		230	250	mV
Supply Current	I_{SS}	V_{IN}= V_{OUT} +1V		5	8	μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	I_{OUT} =10mA Vout+1V ≤V_{IN}≤6V		0.05	0.2	%/V
Power Supply Ripple Rejection Ratio	PSRR	Vin= [V_{OUT} +1]V +1Vp-pAC I_{OUT} =10mA,f=1kHz		65		dB
Short Circuit Current	I_{short}	Vin= V_{OUT} (T)+1V V_{OUT} =VSS		50	70	mA
Over Current Protection	I_{limit}	V_{IN}= V_{OUT} +1V		380	420	mA

GLD0503(Vout=3.3V) (V_{IN}=V_{OUT}+1V,CIN=COUT=1uF,Ta=25°C Unless otherwise stated)

Parameter	Symbol	Condition	Mix	Typ	Max	Unit
Output Voltage	V_{OUT}(E) (Note 2)	I_{OUT}=10mA, V_{IN}=V_{OUT}+1V	X 0.99	V_{OUT}(T) (Note 1)	X 1.01	V
Input Voltage	V_{IN}				6	V
Maximum Output Current	I_{OUT} (max)	V_{IN}= V_{OUT} +1V		300		mA
Load Regulation	ΔV_{OUT}	V_{IN}= V_{OUT} +1V 1mA≤I_{OUT}≤100mA		14	18	mV
Dropout Voltage (Note 3)	V_{dif1}	I_{OUT} =100mA		100	120	mV
	V_{dif2}	I_{OUT} =200mA		210	260	mV
Supply Current	I_{SS}	V_{IN}= V_{OUT} +1V		4	8	μA
Line Regulations	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	I_{OUT} =10mA Vout+1V ≤V_{IN}≤6V		0.07	0.2	%/V
Power Supply Ripple Rejection Ratio	PSRR	Vin= [V_{OUT} +1]V +1Vp-pAC I_{OUT} =10mA,f=1kHz		65		dB
Short Circuit Current	I_{short}	Vin= V_{OUT} (T)+1V V_{OUT} =VSS		50	70	mA
Over Current Protection	I_{limit}	V_{IN}= V_{OUT} +1V		380	420	mA

GLD0503(Vout=5.0V) (V_{IN}=V_{OUT}+1V,CIN=COUT=1uF,Ta=25^{O}C Unless otherwise stated)

Parameter	Symbol	Condition	Mix	Typ	Max	Unit
Output Voltage	V_{OUT}(E) (Note 2)	I_{OUT}=10mA, V_{IN}=V_{OUT}+1V	X 0.99	V_{OUT}(T) (Note 1)	X 1.01	V
Input Voltage	V_{IN}				6	V
Maximum Output Current	I_{OUT} (max)	V_{IN}= V_{OUT} +1V		500		mA
Load Regulation	ΔV_{OUT}	V_{IN}= V_{OUT} +1V 1mA≤I_{OUT}≤100mA		8	14	mV
Dropout Voltage (Note 3)	V_{dif1}	I_{OUT} =100mA		90	110	mV
	V_{dif2}	I_{OUT} =200mA		170	200	mV
Supply Current	I_{SS}	V_{IN}= V_{OUT} +1V		7	8	μA
Power Supply Ripple Rejection Ratio	PSRR	Vin= [V_{OUT} +1]V +1Vp-pAC I_{OUT} =10mA,f=1kHz		65		dB
Short Circuit Current	I_{short}	Vin= V_{OUT} (T)+1V V_{OUT} =VSS		50	70	mA
Over Current Protection	I_{limit}	V_{IN}= V_{OUT} +1V		550	600	mA

Note :

1. V_{OUT} (T) ： Specified Output Voltage

2.V_{OUT} (E) ： Effective Output Voltage (Ie. The output voltage when "V_{OUT} (T)+1.0V"is provided at the Vin pin while maintaining a certain I_{OUT} value.)

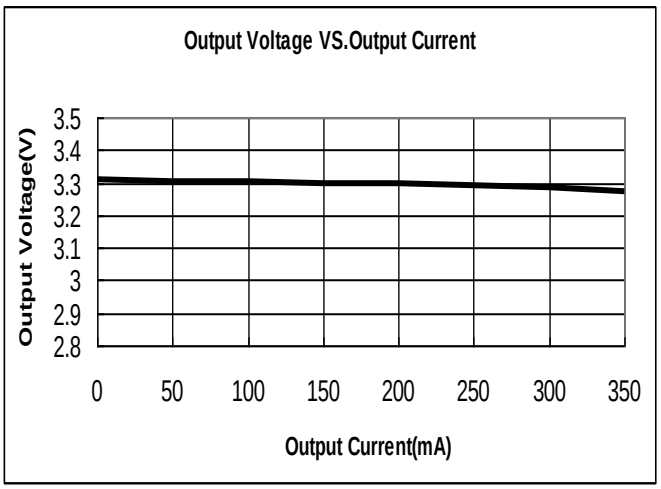
3.V_{dif} ： V_{IN1} –V_{OUT} (E)'

V_{IN1} ： The input voltage when V_{OUT}(E)' appears as input voltage is gradually decreased.

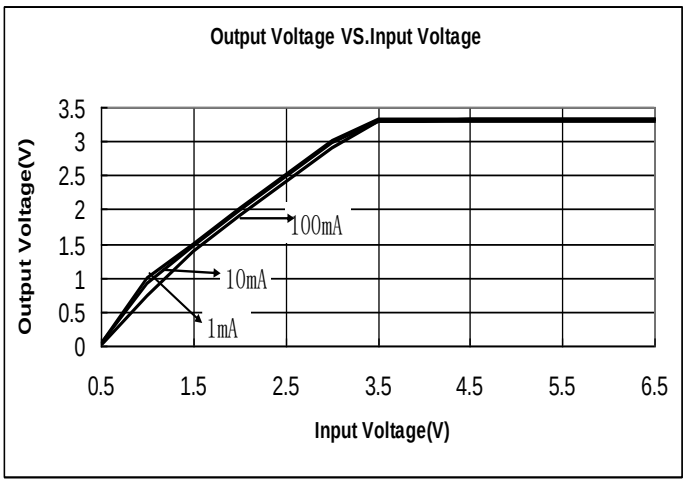
V_{OUT} (E)'=A voltage equal to 98% of the output voltage whenever an amply stabilized I_{OUT} {V_{OUT} (T)+1.0V} is input.

Type Characteristics (GLD0503A33)

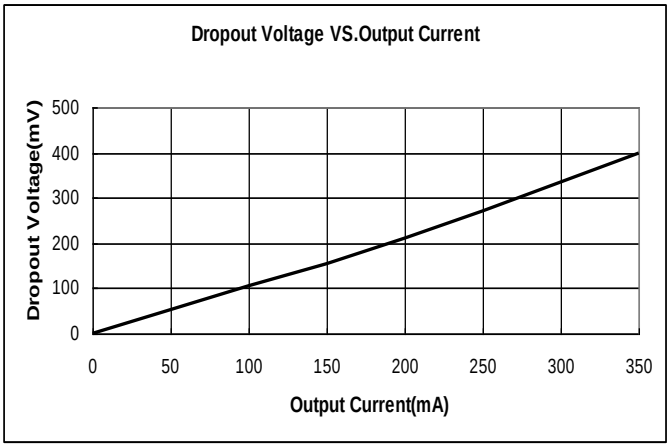
（1）Output Voltage VS. Output Current
（V_{IN}=V_{OUT}+1, **Ta = 25 °C**）



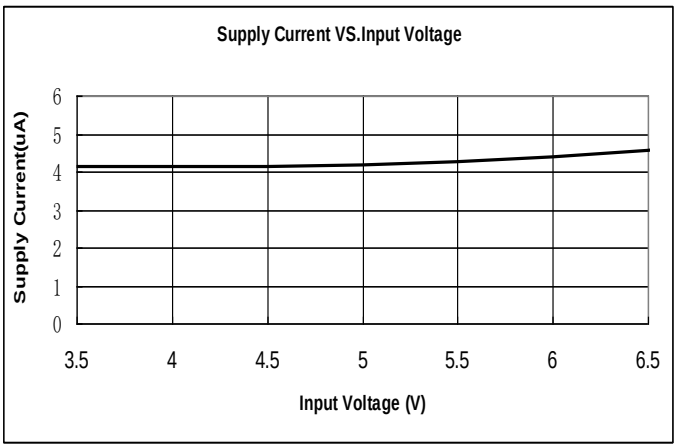
（2）Output Voltage VS. Input Voltage
（**Ta = 25 °C**）



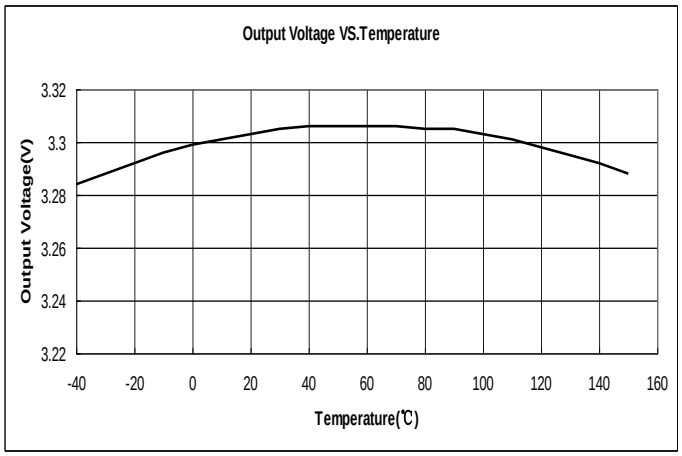
（3）Dropout Voltage VS. Output Current
（V_{IN}=V_{OUT}+1V,**Ta = 25 °C**）



（4）Supply Current VS. Input Voltage
（**Ta = 25 °C**）

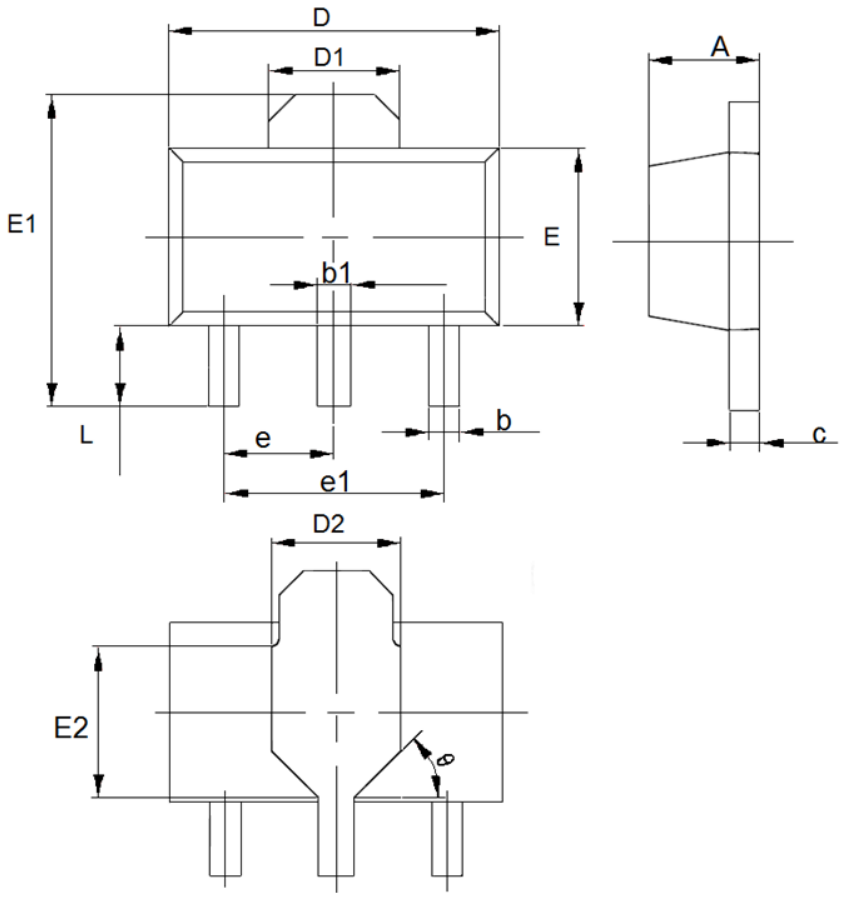


（5）Output Voltage VS. Temperature (V_{IN}=V_{OUT}+1V, I_{OUT} =10mA)



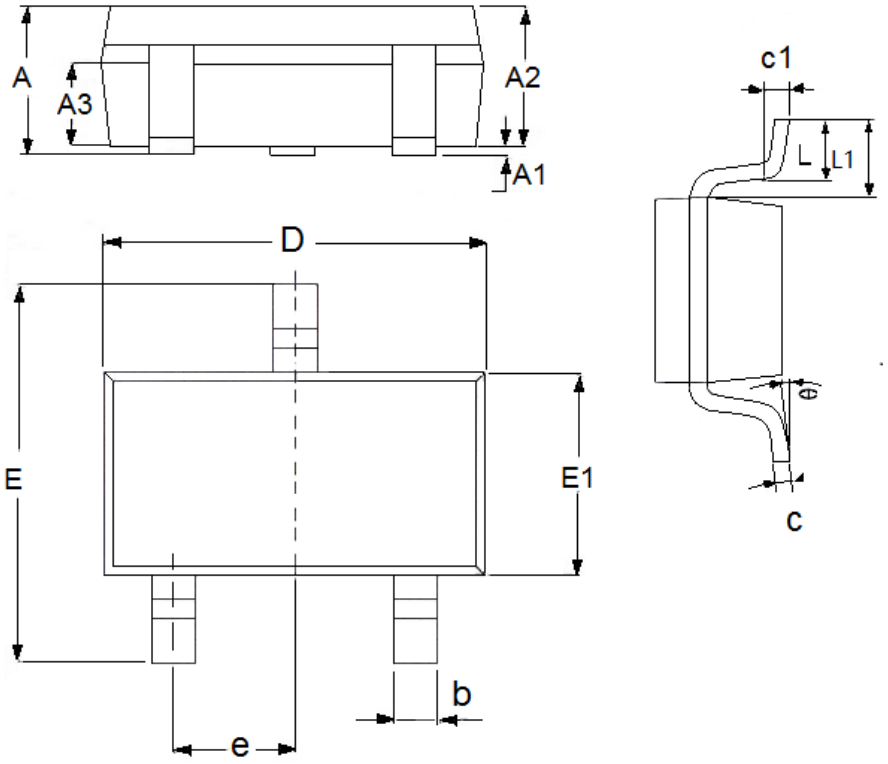
Packaging Information

- **Package Type：SOT89-3**



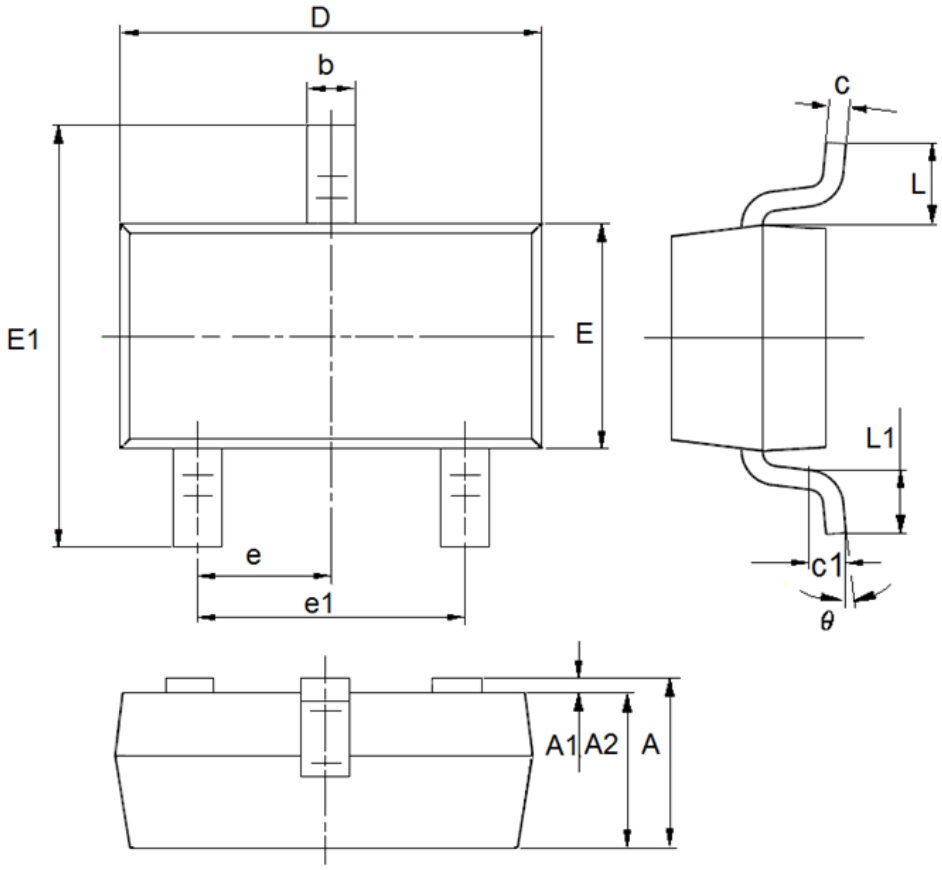
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.4	1.6	0.0551	0.063
b	0.32	0.52	0.0126	0.0205
b1	0.4	0.58	0.0157	0.0228
c	0.35	0.45	0.0138	0.01772
D	4.4	4.6	0.1732	0.1811
D1	1.55(TYP)		0.061(TYP)	
D2	1.75(TYP)		0.0689(TYP)	
e1	3.0(TYP)		0.1181(TYP)	
E	2.3	2.6	0.0906	0.1023
E1	3.94	4.4	0.1551	0.1732
E2	1.9(TYP)		0.0748(TYP)	
e	1.5(TYP)		0.0591(TYP)	
L	0.8	1.2	0.0315	0.0472
θ	45°		45°	

- **Package Type：SOT23-3**



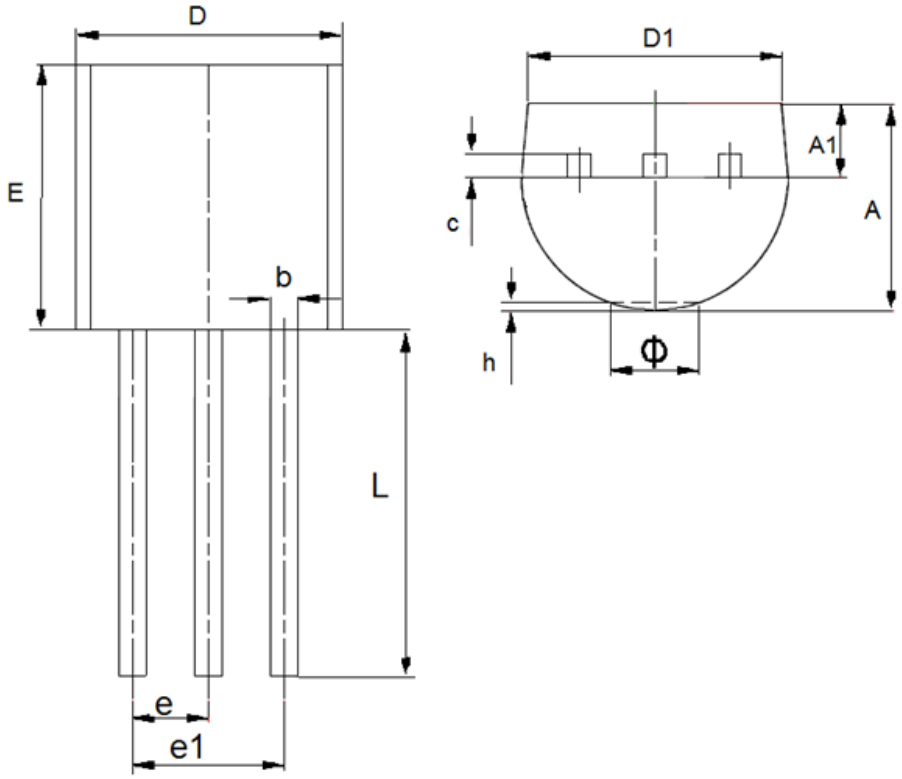
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.05	1.45	0.0413	0.0571
A1	0	0.15	0.0000	0.0059
A2	0.9	1.3	0.0354	0.0512
A3	0.6	0.7	0.0236	0.0276
b	0.25	0.5	0.0098	0.0197
c	0.1	0.25	0.0039	0.0098
D	2.8	3.1	0.1102	0.1220
E	2.6	3.1	0.1023	0.1220
E1	1.5	1.8	0.0591	0.0709
e	0.95(TYP)		0.0374(TYP)	
L	0.25	0.6	0.0098	0.0236
L1	0.59(TYP)		0.0232(TYP)	
θ	0	8°	0.0000	8°
c1	0.2(TYP)		0.0079(TYP)	

- **Package Type：SOT23**



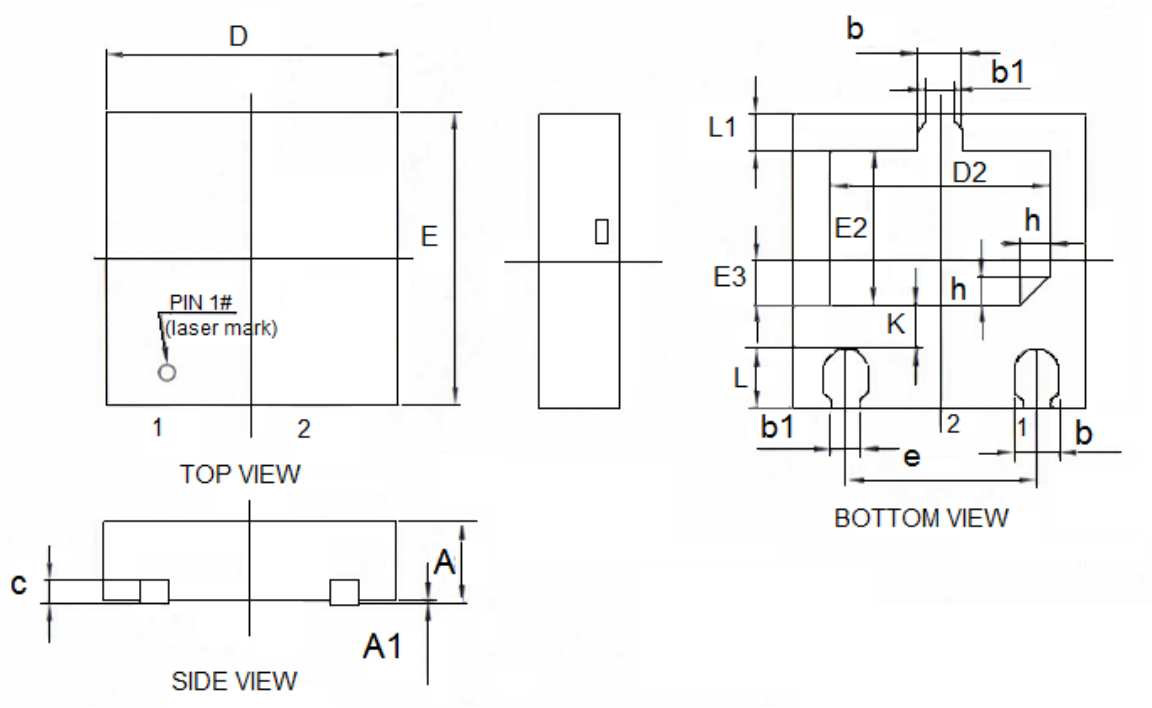
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	0.9	1.2	0.0354	0.0472
A1	0	0.14	0.0000	0.0055
A2	0.9	1.05	0.0354	0.0413
b	0.28	0.52	0.0110	0.0205
c	0.07	0.23	0.0028	0.0091
D	2.8	3.0	0.1102	0.1181
e1	1.8	2.0	0.0709	0.0787
E	1.2	1.4	0.0472	0.0551
E1	2.2	2.6	0.0866	0.1024
e	0.95(TYP)		0.0374(TYP)	
L	0.55(TYP)		0.0217(TYP)	
L1	0.25	0.55	0.0098	0.0217
θ	0	8°	0.0000	8°
c1	0.25(TYP)		0.0098(TYP)	

- **Package Type：TO-92**



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	3.3	3.7	0.1299	0.1457
A1	1.1	1.4	0.0433	0.0551
b	0.38	0.55	0.015	0.0217
c	0.36	0.51	0.0142	0.0201
D	4.3	4.7	0.1693	0.185
D1	3.43	—	0.135	—
E	4.3	4.7	0.1693	0.185
e	1.27		0.05	
e1	2.44	2.64	0.0961	0.1039
L	14.1	14.5	0.5551	0.5709
h	0	0.38	0	0.015
Φ	—	1.6	—	0.063

- **Package Type：DFN3L(2.0*2.0*0.55-1.30)**



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	0.5	0.6	0.0197	0.0236
A1	0	0.05	0	0.002
c	0.152REF		0.006REF	
b	0.25	0.35	0.0098	0.0138
D	1.9	2.1	0.0748	0.0827
b1	0.2REF		0.0079REF	
E	1.9	2.1	0.0748	0.0827
E2	0.95	1.15	0.0374	0.0453
E3	0.2	0.4	0.0079	0.0157
e	1.3BSC		0.0512BSC	
L	0.35	0.45	0.0138	0.0177
L1	0.2	0.3	0.00787402	0.01181103
h	0.2REF		0.0079REF	
D2	1.4	1.6	0.0551	0.063
K	0.2	0.4	0.0079	0.01579

- The contents of this document will be updated with the product's improvement without prior notice. Please consult our sales staff before using this document to ensure that you are using the latest version.
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