DESCRIPTION

The A6523A is high accuracy, CMOS LDO Voltage Regulators, offering low power, high ripple rejection ratio and low dropout. the A6523A is ideal for cutting edge mobile phone. The A6523A includes a reference voltage source, error amplifiers, driver transistors, current limiters and phase compensators. The A6523A of current limiters' foldback circuit operates as a short protect for the output current limiter and the output pin.

The A6523A is fully compatible with low ESR ceramic capacitors, reducing cost and improving output stability. This high level of output stability is maintained even during frequent load fluctuations, due to the excellent transient response performance and high PSRR achieved across a broad range of frequencies. The CE function allows the output of regulator to be turned off, resulting in greatly reduced power consumption.

The A6523A is available in SOT-23, SOT-223, SOT-25, SOT89-3, DFN4(1.2x1.6), SOP8 packages

ORDERING INFORMATION

Package Type	Part Number	
SOT-23 SPQ: 3,000pcs/Reel	E3	A6523AE3R-XXZ
		A6523AE3VR-XXZ
SOT-25 SPQ: 3,000pcs/Reel	E5	A6523AE5R-XX
		A6523AE5VR-XX
SOT89-3 SPQ: 1,000pcs/Reel	K3	A6523AK3R-XX
		A6523AK3VR-XX
SOT223 SPQ: 3,000pcs/Reel	N	A6523ANR-XX
		A6523ANVR-XX
DFN4(1.2x1.6) SPQ: 4,000pcs/Reel	J4B	A6523AJ4BAR-XX
		A6523AJ4BAR-XX
SOP8 SPQ: 3,000pcs/Reel	M8	A6523AM8R-XX
		A6523AM8VR-XX
Note	XX: Output Voltage 18=1.8V, 28=2.8V ,30=3.0 33=3.3V,36=3.6V, 40=4.0 42=4.2V, 44=4.4V, 50=5.0 Z: Pin Type A or B V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

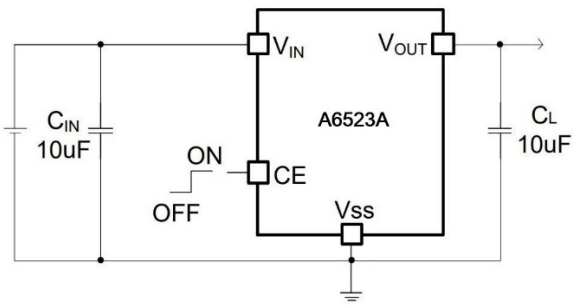
FEATURES

- Maximum Output Current: 500mA (V_{IN} = 4.3V,V_{OUT} = 3.3V)
- Dropout Voltage: 125mV@I_{OUT} =100mA (V_{OUT} = 3.3V)
- Operating Voltage Range: 1.8V~18V
- Output Voltage Range: 1.6V~5.0V
- Highly Accuracy: ±1%
- Low Power Consumption: 1.8 uA (TYP.)
- Standby Current: 0 uA (TYP.)
- High Ripple Rejection: 65dB@1KHz
- Line Regulation: 0.035%/V(TYP.)
- Built-in temperature protection and current limiting protection

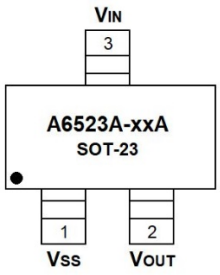
APPLICATION

- Mobile phones
- Cordless phones
- Radio communication equipment
- Portable games
- Cameras, Video cameras
- Reference voltage sources
- Battery powered equipment

TYPICAL APPLICATION

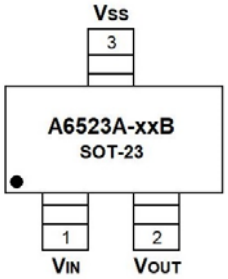


PIN DESCRIPTION



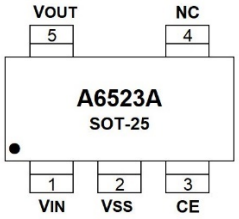
Top View

SOT-23, E3 (Type A)



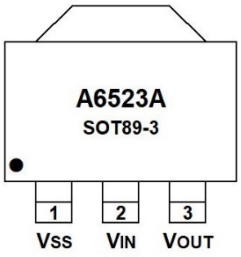
Top View

SOT-23, E3 (Type B)



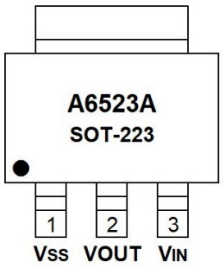
Top View

SOT-25, E5



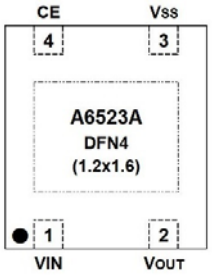
Top View

SOT89-3, K3



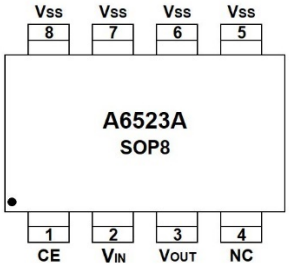
Top View

SOT223, N



Top View

DFN4(1.2×1.6), J4B



Pin #							Symbol	Function
SOT-23		SOT-25	SOT89-3	SOT223	SOP8	DFN4 (1.2×1.6)		
A	B							
3	1	1	2	3	2	1	V_{IN}	Power Input
1	3	2	1	1	5,6,7,8	3	V_{ss}	Ground
-	-	3	-	-	1	4	CE	ON/OFF Control
-	-	4	-	-	4	-	NC	No Connect
2	2	5	3	2	3	2	V_{OUT}	Output

ABSOLUTE MAXIMUM RATINGS

T_A=25℃ , unless otherwise noted

Parameter		Symbol	Value	Unit
Input Voltage		V_{IN}	-0.3 ~ 20	V
CE Pin Voltage		V_{CE}	V_{IN} -0.3 ~ V_{IN}+0.3	V
V_{OUT} Voltage		V_{OUT}	V_{IN} -0.3 ~ V_{IN}+0.3	V
V_{OUT} Current		I_{OUT}	600	mA
Internal Power Dissipation (T_A=25℃)	SOT-25	P_D	0.6	W
	SOT-23		0.54	
	SOT89-3		0.7	
	SOT223		1.8	
	SOP8		0.92	
	DFN4(1.2×1.6)		0.54	
Thermal resistance (Junction to air)	SOT-25	θ_{JA}	210	℃/W
	SOT-23		230	
	SOT89-3		180	
	SOT223		70	
	SOP8		136	
	DFN4(1.2×1.6)		230	
Operating Ambient Temperature Range		T_{Opr}	-40~+85	℃
Storage Temperature Range		T_{stg}	-55~+150	℃
Maximum Junction Temperature		T_J	150	℃

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 may affect device reliability.

ELECTRICAL CHARACTERISTICS

V_{IN}= V_{OUT}+1V (V_{OUT}>2V) , V_{IN}= V_{OUT}+1.5V (V_{OUT}≤2V) V_{CE} = V_{IN} , C_{IN}=C_L , T_A=25℃, unless otherwise noted

Parameter	Symbol	Conditions		Min	Typ.	Max	Unit
Operating Input Voltage	V_{IN}			1.8	-	18	V
Output Voltage	V_{OUT}	I_{OUT}=10mA, V_{IN}= V_{OUT}+1V		X0.99	V_{OUT}	X1.01	V
Output Current	I_{OUT}	V_{IN}= V_{OUT}+1V		-	500	-	mA
Load Regulation	ΔV_{OUT}	V_{IN}=V_{OUT}+1V, 1mA≤I_{OUT}≤100mA		-	7	20	mV
Dropout Voltage I_{OUT} =100mA	VDROP	1.6V≤V_{OUT} < 2V		-	260	-	mV
		2.0V≤V_{OUT} < 2.5V		-	220	-	
		2.5V≤V_{OUT} < 3.0V		-	160	-	
		3.0V≤V_{OUT}		-	125	-	
Supply Current	I_{SS}	V_{IN}= V_{OUT}+1V		-	1.8	3.6	μA
Standby Current	I_{STBY}	V_{CE} = 0V		-	0	0.2	μA
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	I_{OUT} =10mA, V_{OUT}+1V ≤V_{IN}≤18V		-	0.05	-	%/V
Output Current Limit	I_{LIM}	Peak Output Current		-	780	-	mA
CE “High” Voltage	V_{CEH}	Start up		1.7	-	-	V
CE “Low” Voltage	V_{CEL}	Shut down		-	-	0.5	V
Active Output Discharge Resistance	R_{DIS}	V_{CE}<0.5V		-	500	-	Ω
Ripple Rejection Rate[4]	PSRR	V_{IN} =5V+1VrmsAC , I_{OUT}=10mA	f=100Hz	-	76	-	dB
			f=1kHz	-	65	-	
			f=10kHz	-	45	-	
Thermal Shutdown Temperature [4]	T_{SD}	Temperature increasing, I_{OUT}=20mA		-	165	-	℃
Thermal Shutdown Hysteresis [4]	ΔT_{SDHY}	Temperature falling		-	20	-	℃

TYPICAL PERFORMANCE CHARACTERISTICS

Fig.1 Output Voltage vs. Output Current
V_{IN}=4.3V, C_{IN}=C_L=1uF

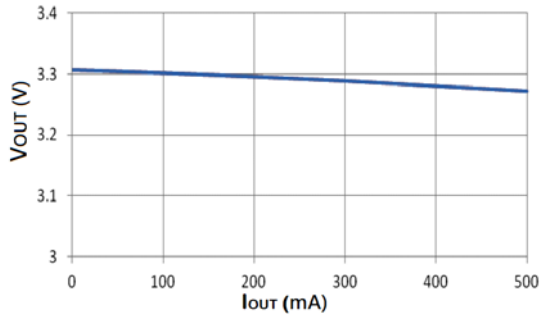


Fig.2 Output Voltage vs. Input Voltage
V_{IN}=4.3V, C_{IN}=C_L=1uF, I_{OUT}=10mA

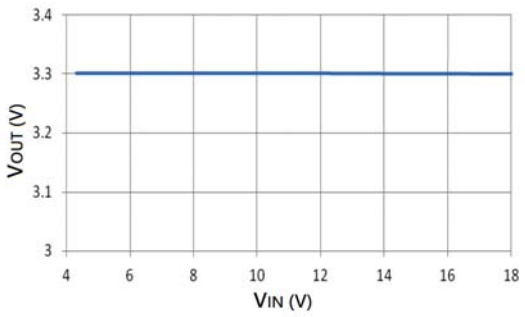


Fig.3 Dropout Voltage vs. Output Current
V_{OUT}=3.3V

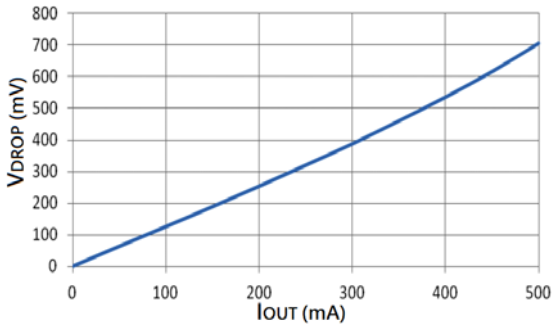


Fig.4 Quiescent Current vs. Input Voltage

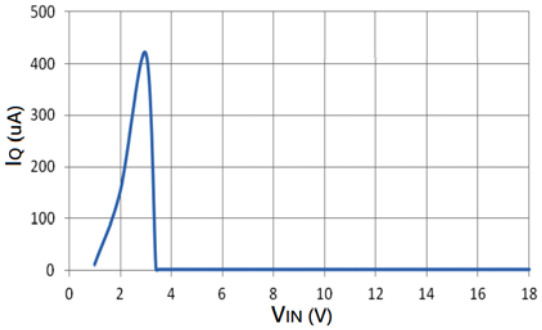


Fig.5 Quiescent Current vs. Temperature

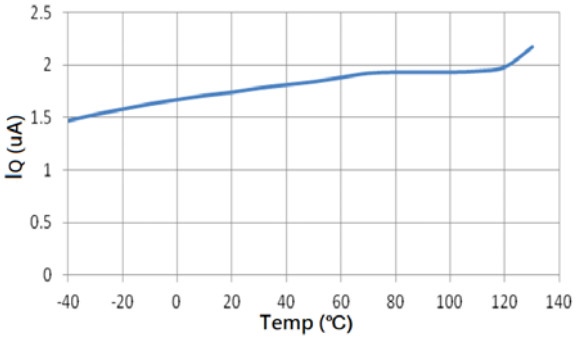


Fig.6 Output Voltage vs. Temperature (I_{OUT}=10mA)

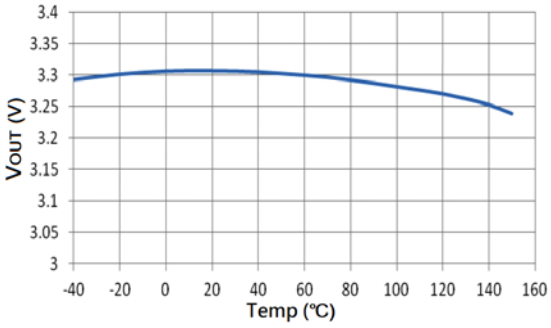


Fig.7 GND Current vs. Output Current

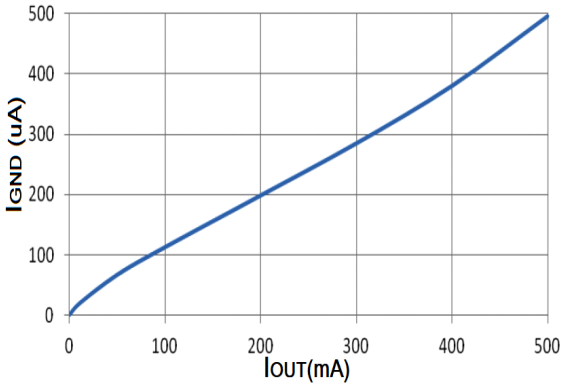
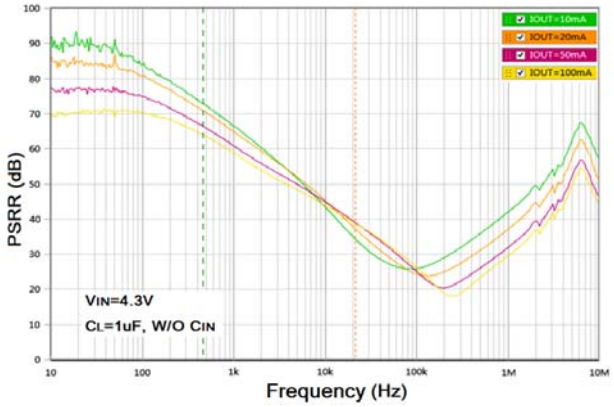
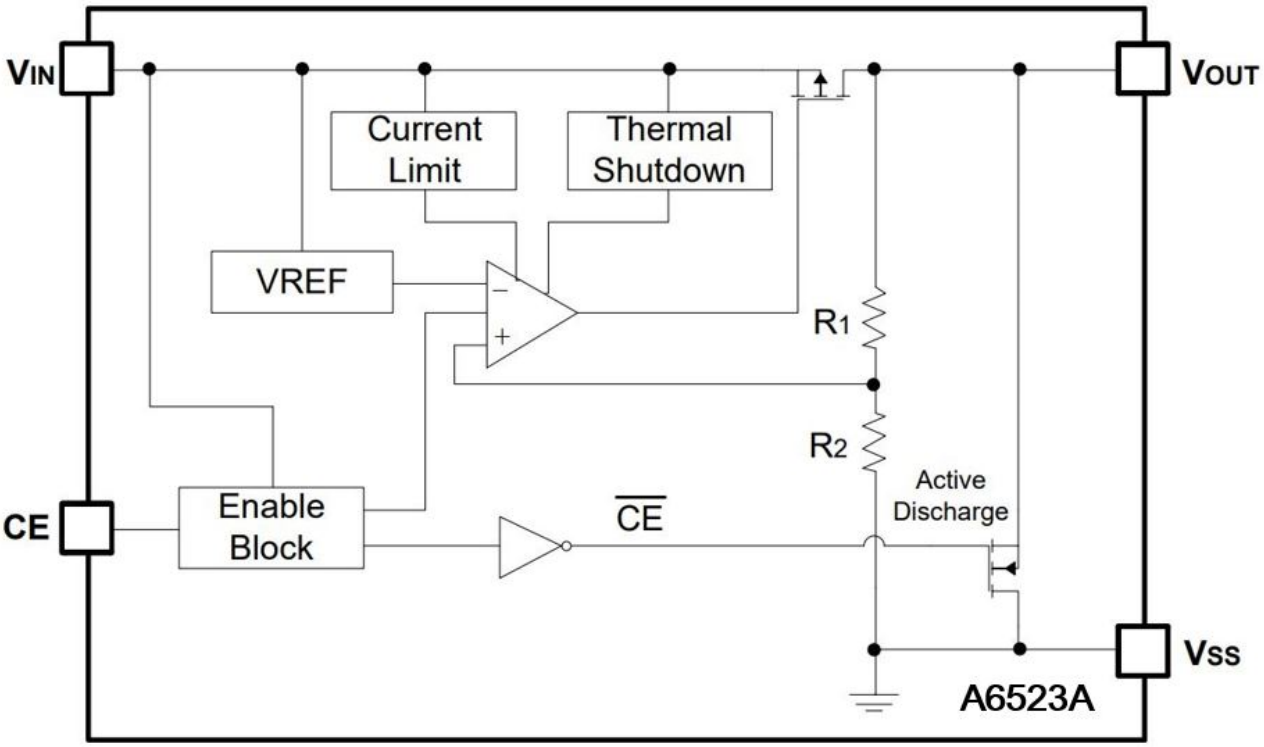


Fig.8 PSRR vs. Frequency

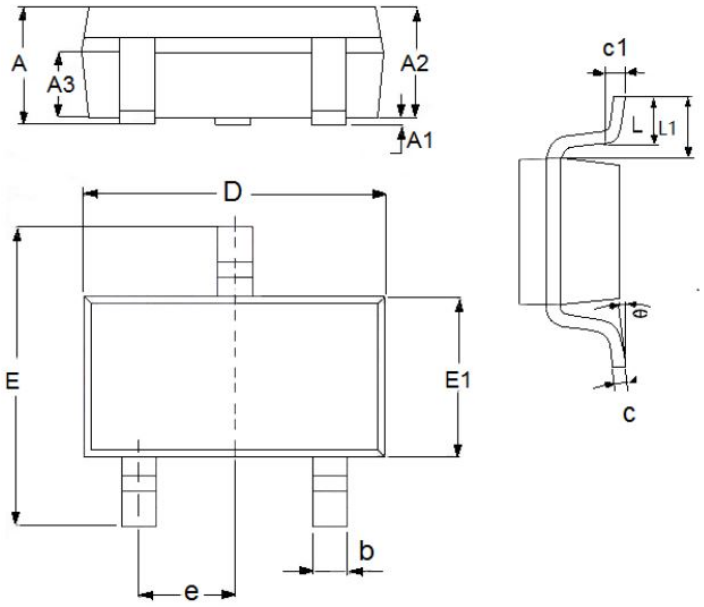


BLOCK DIAGRAM



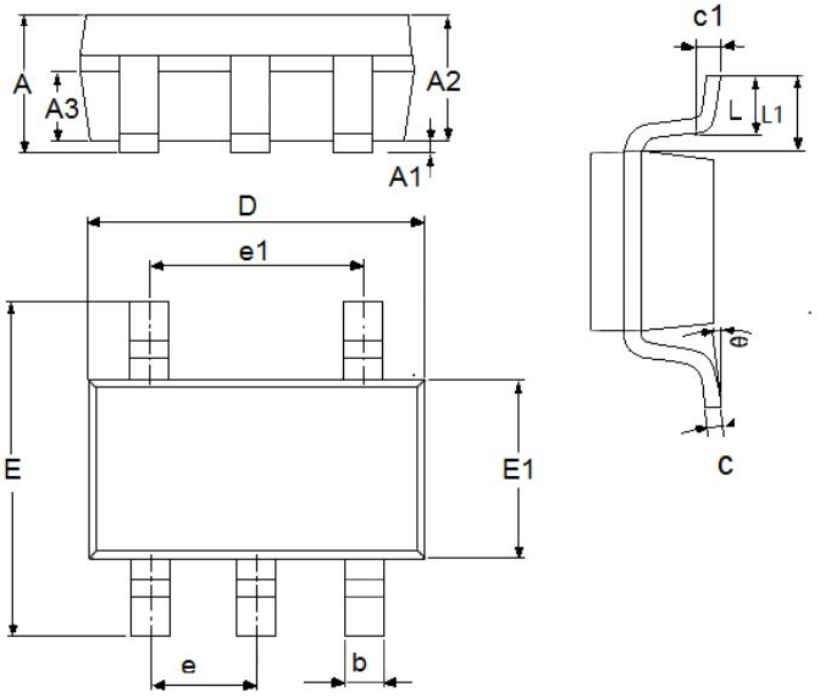
PACKAGE INFORMATION

Dimension in SOT-23 (Unit: mm)



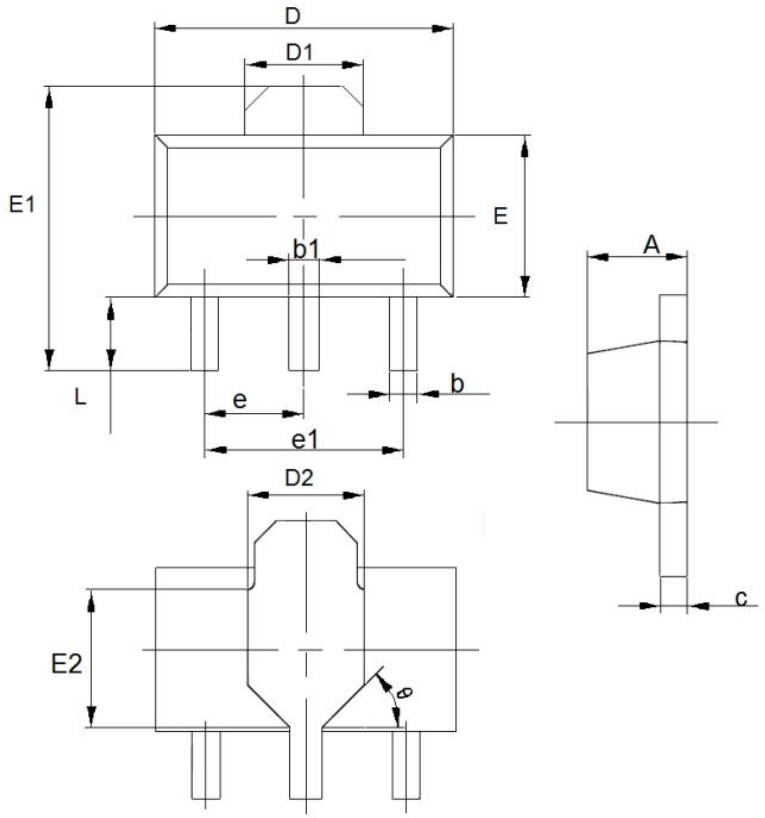
Symbol	Dimensions In Millimeters	
	Min	Max
A	1.050	1.450
A1	0.000	0.150
A2	0.900	1.300
A3	0.600	0.700
b	0.250	0.500
c	0.100	0.250
D	2.800	3.100
E	2.600	3.100
E1	1.500	1.800
e	0.950 (TYP)	
L	0.250	0.600
L1	0.590 (TYP)	
C1	0.200 (TYP)	
θ	0°	8°

Dimension in SOT-25 (Unit: mm)



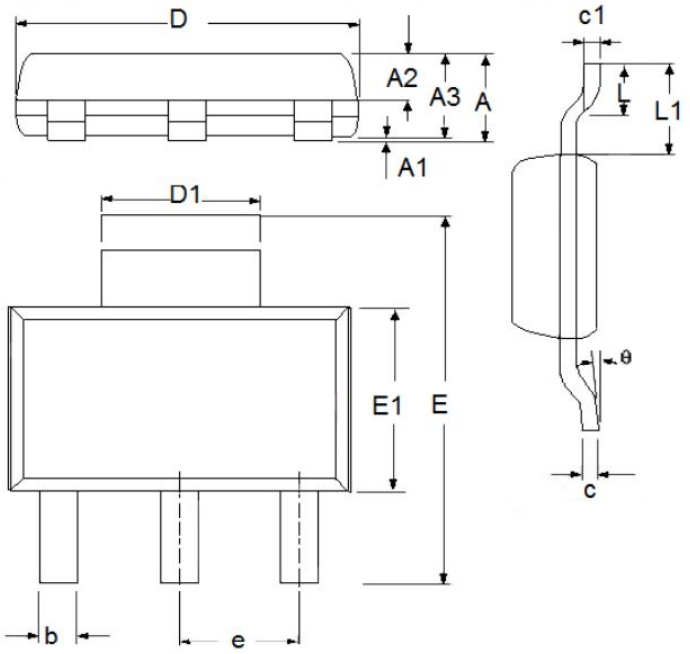
Symbol	Dimensions In Millimeters	
	Min	Max
A	1.050	1.450
A1	0.000	0.150
A2	0.900	1.300
A3	0.600	0.700
b	0.250	0.500
c	0.100	0.230
D	2.820	3.050
e1	1.900 (TYP)	
E	2.600	3.050
E1	1.500	1.750
e	0.950 (TYP)	
L	0.300	0.600
L1	0.590 (TYP)	
C1	0.200 (TYP)	
θ	0°	8°

Dimension in SOT89-3 (Unit: mm)



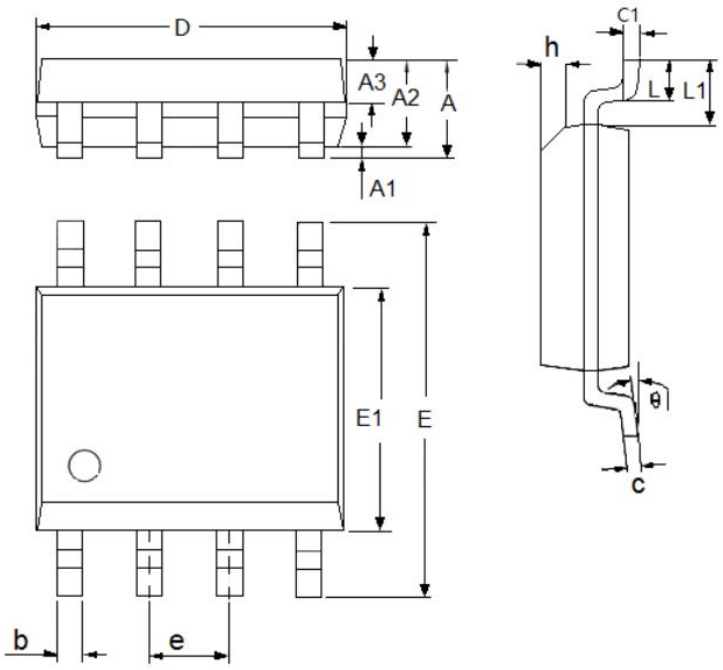
Symbol	Dimensions In Millimeters	
	Min	Max
A	1.400	1.600
b	0.320	0.520
b1	0.400	0.580
c	0.350	0.450
D	4.400	4.600
D1	1.550 (TYP)	
D2	1.750 (TYP)	
e1	3.000 (TYP)	
E	2.300	2.600
E1	3.940	4.400
E2	1.900 (TYP)	
e	1.500 (TYP)	
L	0.800	1.200
θ	45°	

Dimension in SOT-223 (Unit: mm)



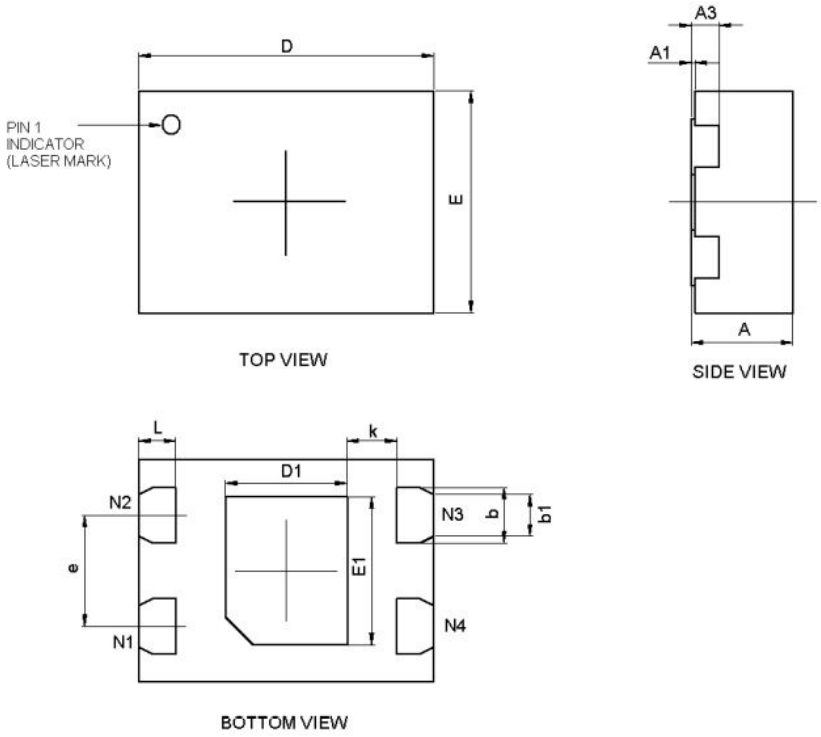
Symbol	Dimensions In Millimeters	
	Min	Max
A	1.480	1.800
A1	0.000	0.150
A2	0.600	0.950
A3	1.450	1.750
b	0.600	0.820
c	0.200	0.350
D	6.200	6.600
D1	2.900	3.100
E	6.700	7.300
E1	3.300	3.700
e	2.300 (TYP)	
L	0.760	1.160
L1	1.750 (TYP)	
c1	0	10°
θ	0.25(TYP)	

Dimension in SOP8 (Unit: mm)



Symbol	Dimensions In Millimeters	
	Min	Max
A	1.300	1.800
A1	0.050	0.250
A2	1.250	1.650
A3	0.500	0.700
b	0.300	0.510
c	0.170	0.250
D	4.700	5.100
E	5.800	6.200
E1	3.800	4.000
e	1.270 (TYP)	
h	0.250	0.500
L	0.400	1.270
L1	1.040 (TYP)	
c1	0.250 (TYP)	
θ	0°	8°

Dimension in DFN4(1.2×1.6) (Unit: mm)



Symbol	Dimensions In Millimeters	
	Min	Max
A	0.500	0.600
A1	0.000	0.050
A3	0.152 (TYP)	
D	1.500	1.700
E	1.100	1.300
D1	0.560	0.760
E1	0.700	0.900
b	0.250	0.350
b1	0.175	0.275
e	0.600 (TYP)	
L	0.150	0.250
k	0.200 (TYP)	

IMPORTANT NOTICE

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