

LDO ICs

Micro-Power consumption 40V, 500mA, Low-Dropout Voltage Linear Regulator

**AS9145**

● General Description

The AS9145 is a low dropout, low noise, low power consumption, low quiescent current positive linear regulator with wide input voltage range. The AS9145 can deliver a guaranteed 500mA load current with a low dropout voltage. Quiescent current of only 2.0uA makes these devices ideal for powering the battery-powered, always-on systems that require very little idle-state power dissipation to a longer service life. There is an option of shutdown function by selecting the parts with the EN pin and pulling it low. The off state of AS9145 that consumes less than 0.1uA during shutdown mode.

The AS9145 is designed and optimized to work with low cost ceramic capacitors 1.0uF, which consumes less than 0.1uA during shutdown mode. Besides, its current limit protection and on-chip thermal shutdown function provide protection against any combination of over-load or ambient temperature which could cause junction temperature exceeding maximum rating. The AS9145 includes a reference bypass pin in order to reduce output noise and a logic control shut-down input.

The space-saving tiny SOT23-3L, SOT23-5L, DFN2020-6L, SOT223 and SOT89-3L packages are attractive for hand-held applications. The device is specified over an ambient temperature range of -40°C to 85°C.

● Features

- Output Current Up to 500mA
- Wide Voltage V_{IN} Range: 2.5V to 40V
- Very Low Quiescent Current at 2.0uA
- Low Dropout voltage of 0.35V at 100mA/ $V_{OUT}=5V$
- Output Voltage Accuracy at $\pm 2.0\%$
- Support Fixed Output Voltage: 1.8V, 3.3V, 5V, 12V.
- Adjustable Output Voltage Available by Specific Application
- PSRR 70dB at 1KHz
- Needs Only 1.0uF Capacitor for Stability
- Current Limit Protection
- Without EMI and Switch Noise
- Stable with Ceramic Capacitor or Tantalum Capacitor
- RoHS and Green Compliant
- SOT23-3L, SOT23-5L, DFN2020-6L, SOT223 and SOT89-3L Packages
- -40°C to +85 °C Temperature Range

● Applications

- Portable, Battery Powered Equipment
- Low Power Microcontrollers
- Laptop, Palmtops & PDAs
- Audio/Video Equipment
- Car Navigation Systems
- Industrial Control
- Weighting Scales
- Meters/Home Automation

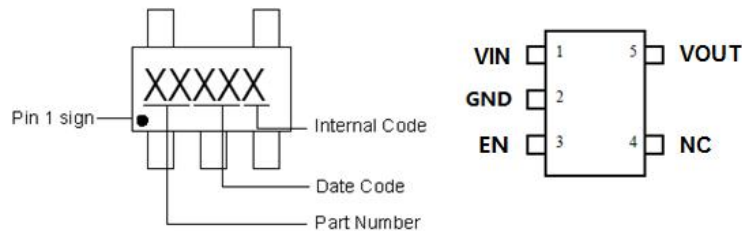
● Ordering Information

AS9145XXXX			
Output Voltage:	Package:	Packing:	Temperature Grade:
18: 1.8V 33: 3.3V	S5: SOT23-5L	R: Tape&Reel	N: -40°C~85°C
50: 5.0V A2: 12V	S3: SOT23-3L		
AD: ADJ	D: DFN2020-6L		
	E: SOT223		
	YN: SOT89-3L (N-type Pin)		
	YL: SOT89-3L (L-type Pin)		
	YR: SOT89-3L (R-type Pin)		

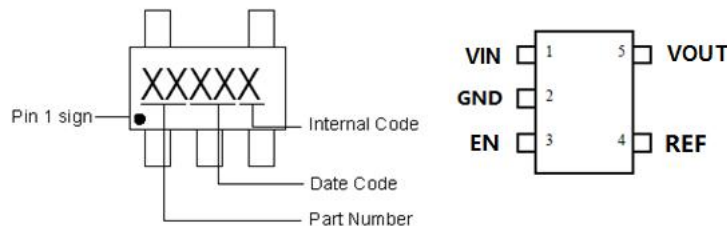
Part Number	Driver Capability	Package Type	Package Qty	Temperature	Eco Plan
AS9145-XXS5RN	500mA	SOT23-5L	7-in reel 3000pcs/reel	-40~85°C	Green
AS9145-XXS3RN	500mA	SOT23-3L	7-in reel 3000pcs/reel	-40~85°C	Green
AS9145-XXDRN	500mA	DFN2020-6L	7-in reel 3000pcs/reel	-40~85°C	Green
AS9145-XXYNRN	500mA	SOT89-3L	7-in reel 1000pcs/reel	-40~85°C	Green
AS9145-XXYLRN	500mA	SOT89-3L	7-in reel 1000pcs/reel	-40~85°C	Green
AS9145-XXYRRN	500mA	SOT89-3L	7-in reel 1000pcs/reel	-40~85°C	Green
AS9145-XXERN	500mA	SOT223	7-in reel 1000pcs/reel	-40~85°C	Green

● Marking Information & Pin Assignment

SOT23-5L (Fixed Output Voltage):

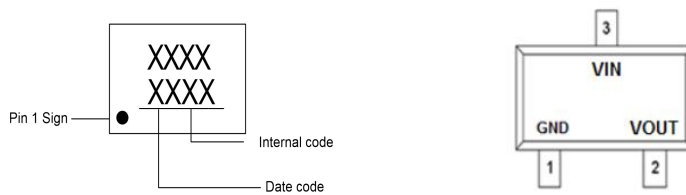


SOT23-5L (Adjustable Output Voltage):



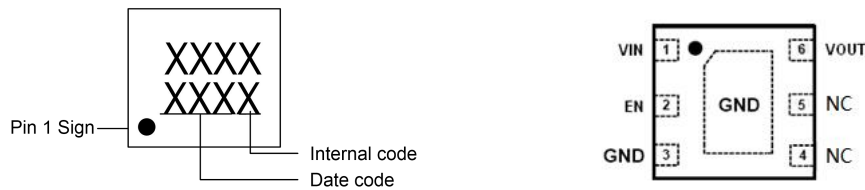
Pin Name	Pin No.		I/O	Pin Function
	SOT23-5L (AS9145-XXS5RN)	SOT23-5L (AS9145-ADS5RN)		
VIN	1	1	P	Input Power Supply
GND	2	2	P	Ground
EN	3	3	I	Pull this pin high to enable IC, pull this pin low to shutdown IC.
NC	4	-	-	Not Connected.
REF	-	4	I	Reference Voltage pin of the Output voltage.
VOUT	5	5	O	Output Pin

SOT23-3L:

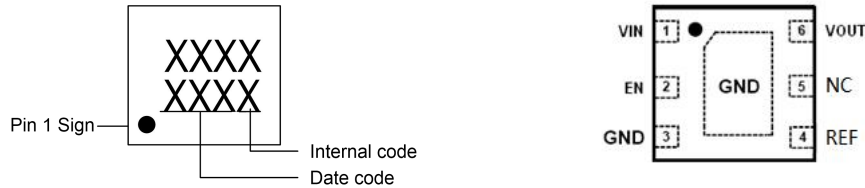


Pin Name	Pin No.	I/O	Pin Function
	SOT23-3L		
GND	1	P	Ground
VOUT	2	O	Output Pin
VIN	3	P	Input Power Supply

DFN2020-6L (Fixed Output Voltage):

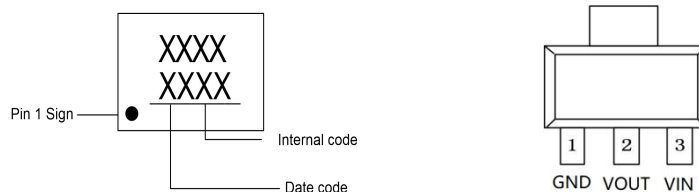


DFN2020-6L (Adjustable Output Voltage):



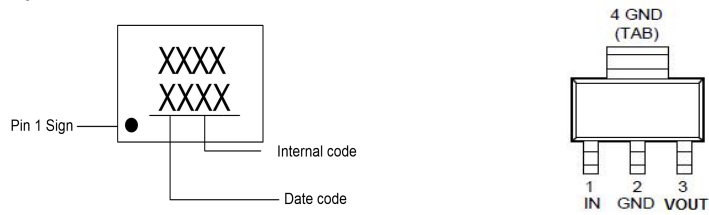
Pin Name	Pin No.		I/O	Pin Function
	DFN2020-6L (AS9145-XXDRN)	DFN2020-6L (AS9145-ADDRN)		
VIN	1	1	P	Input Power Supply
EN	2	2	I	Pull this pin high to enable IC, pull this pin low to shutdown IC.
GND	3	3	P	Ground
NC	4, 5	5	-	Not Connected.
REF	-	4	I	Reference Voltage pin of the Output voltage.
VOUT	6	6	O	Output Pin

SOT223:

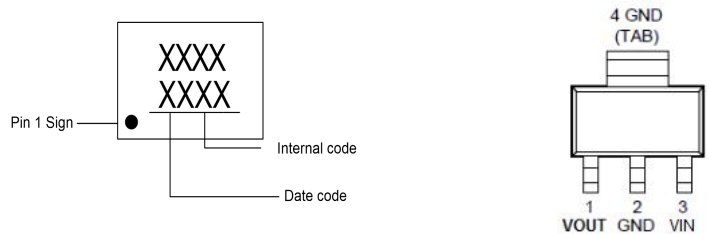


Pin Name	Pin No.	I/O	Pin Function
	SOT223		
VOUT	2	O	Output Pin
GND	1	P	Ground
VIN	3	P	Input Power Supply
TAB	4	P	Please Connected to VOUT.

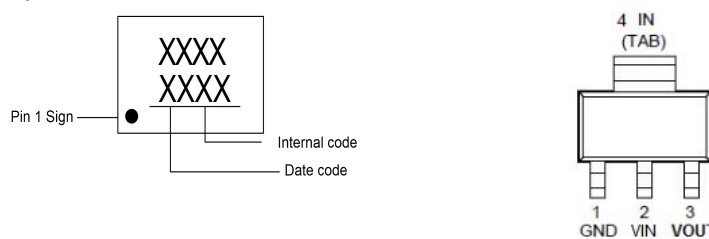
SOT89-3L (N-type Pin):



SOT89-3L (L-type Pin):



SOT89-3L (R-type Pin):



Pin Name	Pin No.			I/O	Pin Function
	SOT89-3L (N-type Pin)	SOT89-3L (L-type Pin)	SOT89-3L (R-type Pin)		
VOUT	3	1	3	O	Output Pin
GND	2	2	1	P	Ground
VIN	1	3	2	P	Input Power Supply
TAB	4	4	-	P	Please Connected to GND.
TAB	-	-	4	P	Please Connected to VIN.

● **Typical Application Circuit**

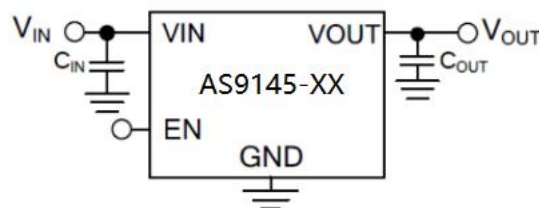


Figure 1A, Typical Application Circuit of AS9145 Fixed Output Voltage

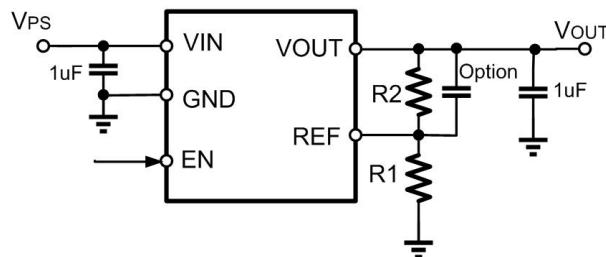
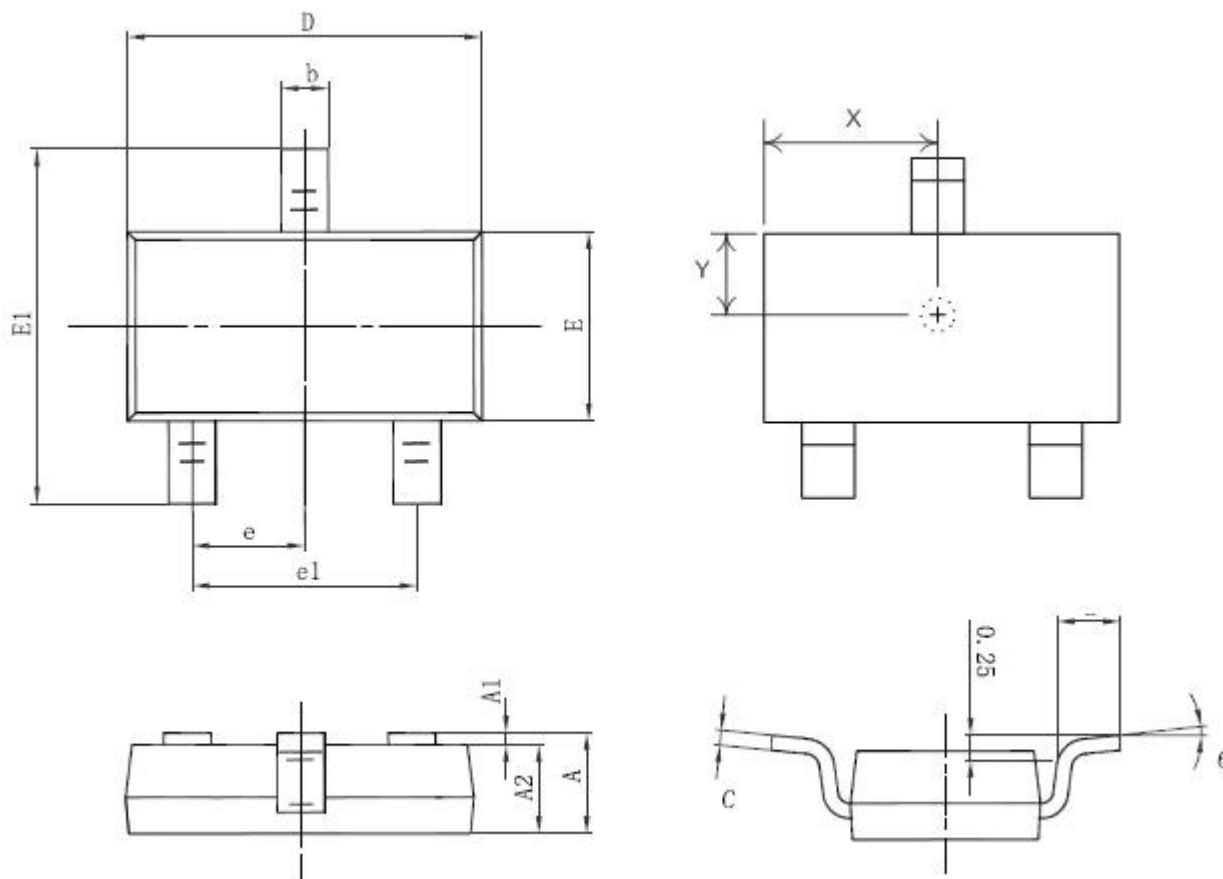


Figure 1B, Typical Application Circuit of AS9145 Adjustable Output Voltage ($V_{REF}=1.8V$)

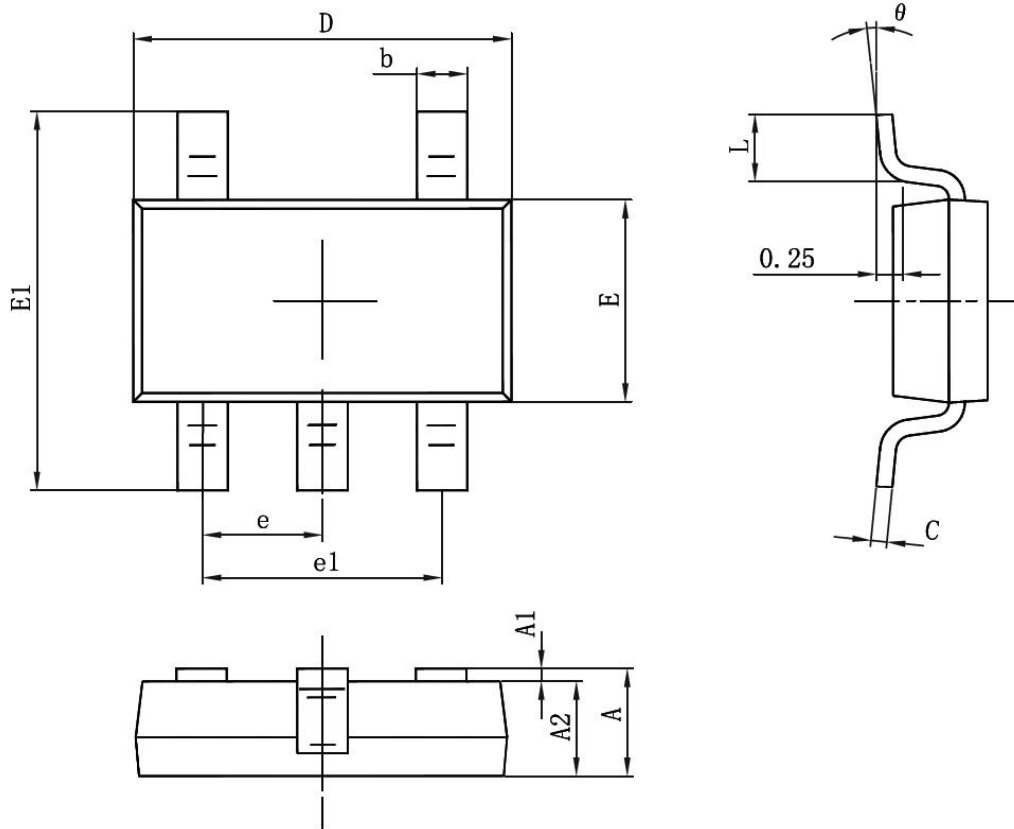
● **Package Information**

SOT23-3L:

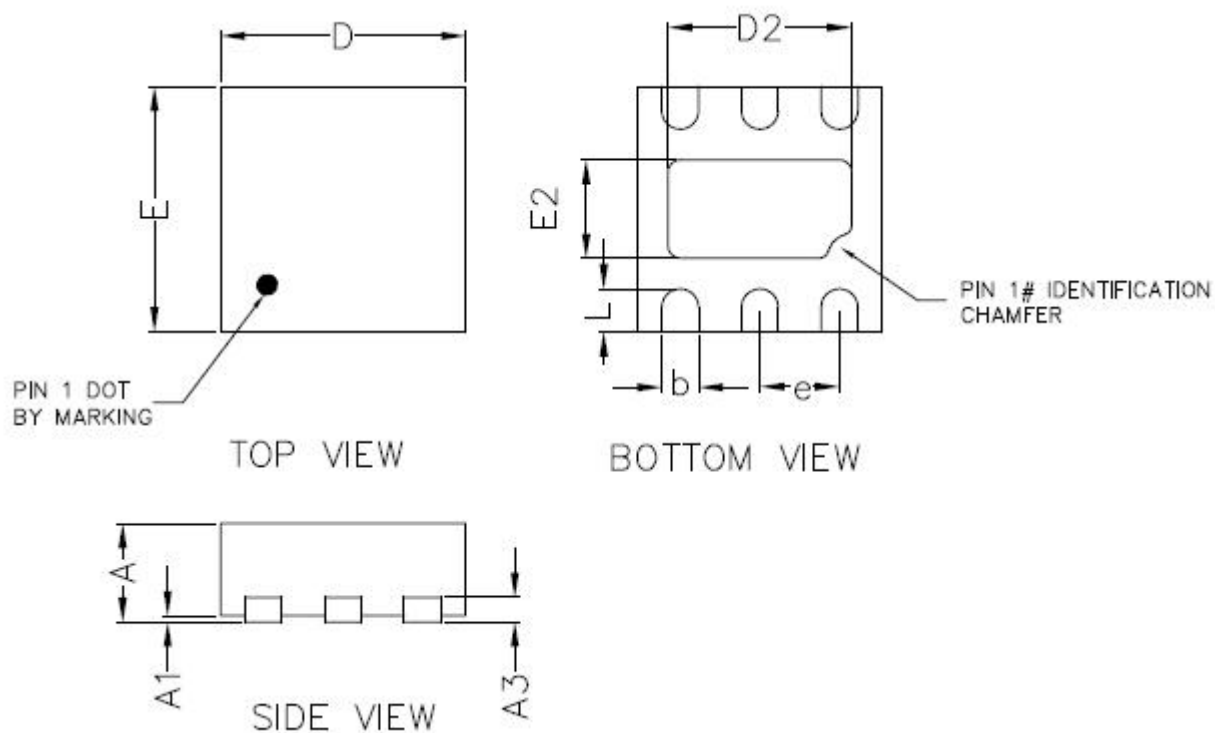


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.900(BSC)		0.075(BSC)	
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

SOT23-5L:

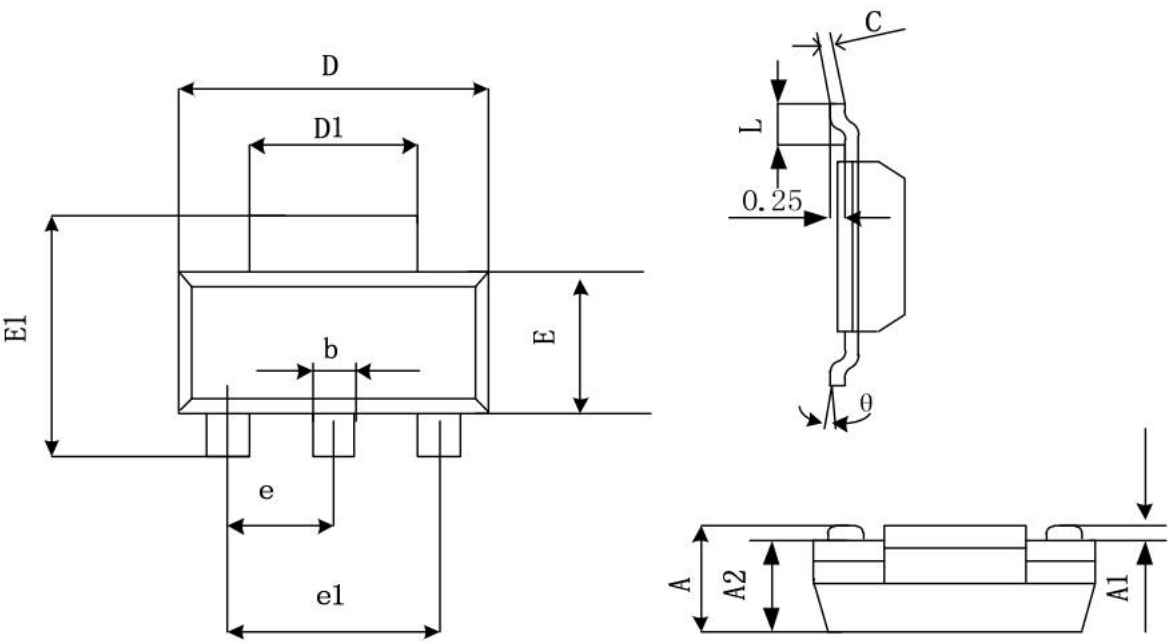


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.450	0.036	0.058
A1	0.000	0.150	0.000	0.006
A2	0.900	1.300	0.036	0.052
b	0.300	0.500	0.012	0.020
C	0.080	0.200	0.003	0.008
D	2.800	3.000	0.112	0.120
E	1.500	1.700	0.060	0.068
E1	2.600	3.000	0.104	0.120
e	0.95(BSC)		0.037(BSC)	
e1	1.90(BSC)		0.075(BSC)	
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

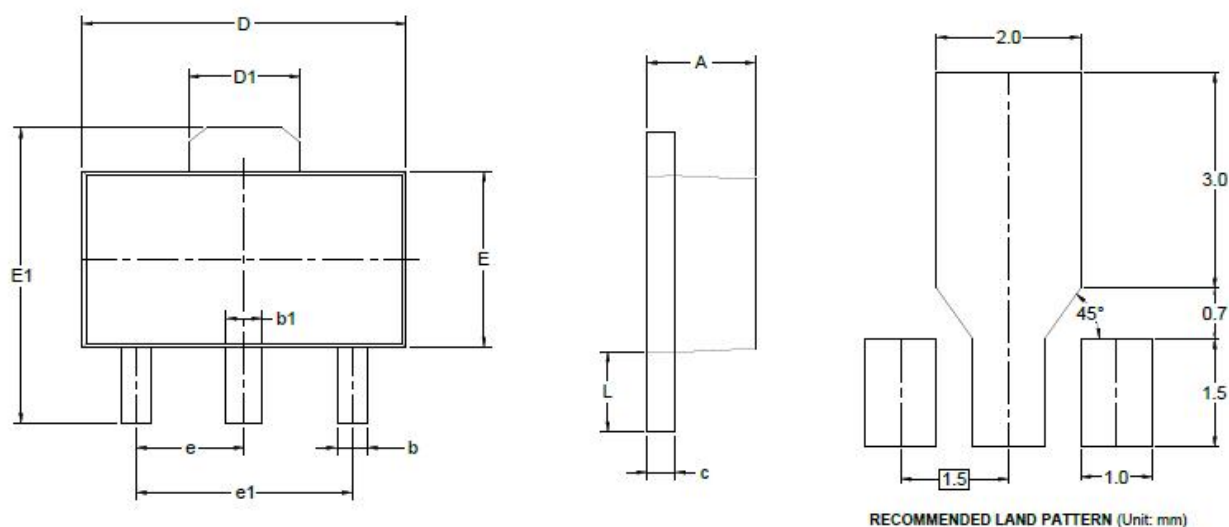
DFN2020-6L:


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.027	0.031
A1	0.000	0.050	0.000	0.002
A3	0.200 BSC		0.008 BSC	
D	1.900	2.100	0.075	0.083
E	1.900	2.100	0.075	0.083
D2	1.350	1.600	0.053	0.063
E2	0.650	0.900	0.026	0.035
b	0.250	0.350	0.010	0.014
e	0.650 BSC		0.026 BSC	
L	0.250	0.350	0.010	0.014

SOT223:

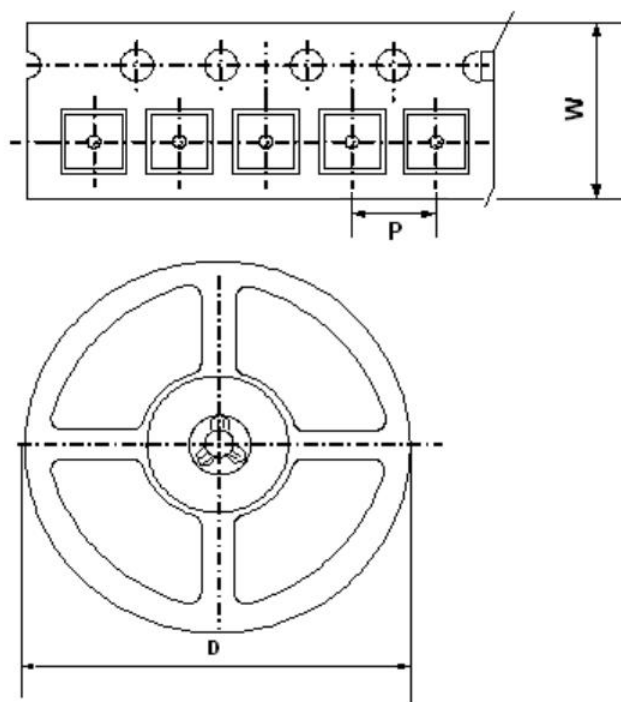


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.520	1.800	0.060	0.071
A1	0.020	0.130	0.001	0.005
A2	1.500	1.700	0.059	0.067
b	0.660	0.840	0.026	0.033
c	0.230	0.350	0.009	0.014
D	6.450	6.850	0.254	0.270
D1	2.900	3.000	0.114	0.122
E	3.450	3.850	0.136	0.152
E1	6.830	7.070	0.269	0.278
e	2.300 (BSC)		0.091 (BSC)	
e1	1.900(BSC)		0.075(BSC)	
e1	4.500	4.700	0.177	0.185
L	0.900	1.150	0.035	0.045
θ	0°	10°	0°	10°

SOT89-3L:


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	0.020
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

■ Packing Information



Package Type	Carrier Width(W)	Pitch(P)	Reel Size(D)	Packing Minimum
SOT23-3L	8.0±0.1 mm	4.0±0.1 mm	180±1 mm	3000pcs
SOT23-5L	8.0±0.1 mm	4.0±0.1 mm	180±1 mm	3000pcs
DFN2020-6L	8.0±0.1 mm	4.0±0.1 mm	180±1 mm	3000pcs
SOT223	8.0±0.1 mm	4.0±0.1 mm	180±1 mm	1000pcs
SOT89-3L	8.0±0.1 mm	4.0±0.1 mm	180±1 mm	1000pcs

Note: Carrier Tape Dimension, Reel Size and Packing Minimum