

## 300mA, Low Consumption, Wide Input Voltage Linear Regulator

UM142xxS SOT23-3

UM142xxY SOT89-3

UM142xxB SOT89-3

### General Description

The UM142xx series are a group of positive voltage output, high precise, high PSRR and low power consumption voltage regulator. The output voltages are selectable in 100mV steps within a range of 2.5V to 5V. It also can be customized on command.

The UM142xx series have excellent load and line transient response and good temperature characteristics, which can assure the stability of chip and power system.

The UM142xx series are available in a low profile SOT23-3& SOT89-3 package, which are lead (Pb)-free.

### Applications

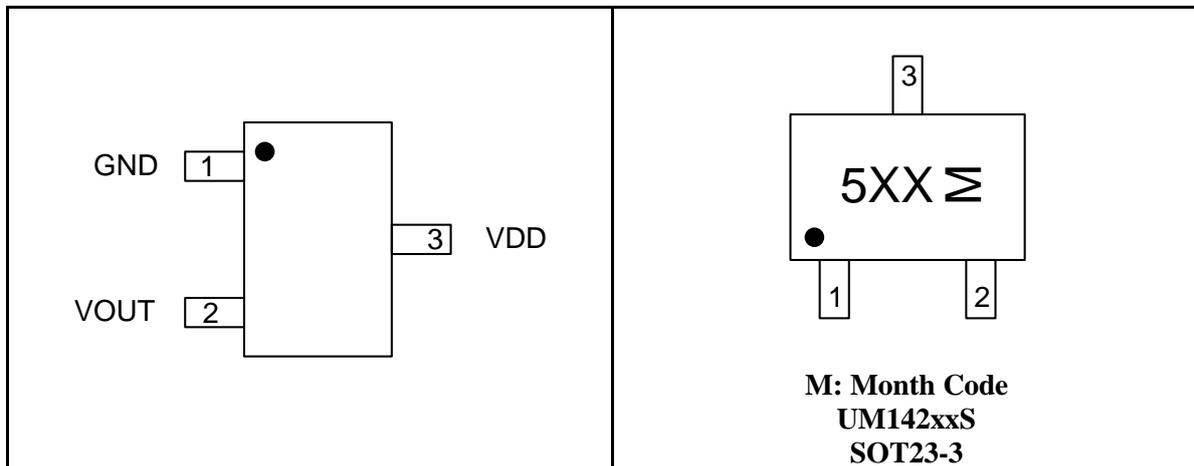
- Reference Voltage Source
- Battery Powered Equipment
- Hand-Hold Equipment
- Wireless LAN
- GPS Receivers

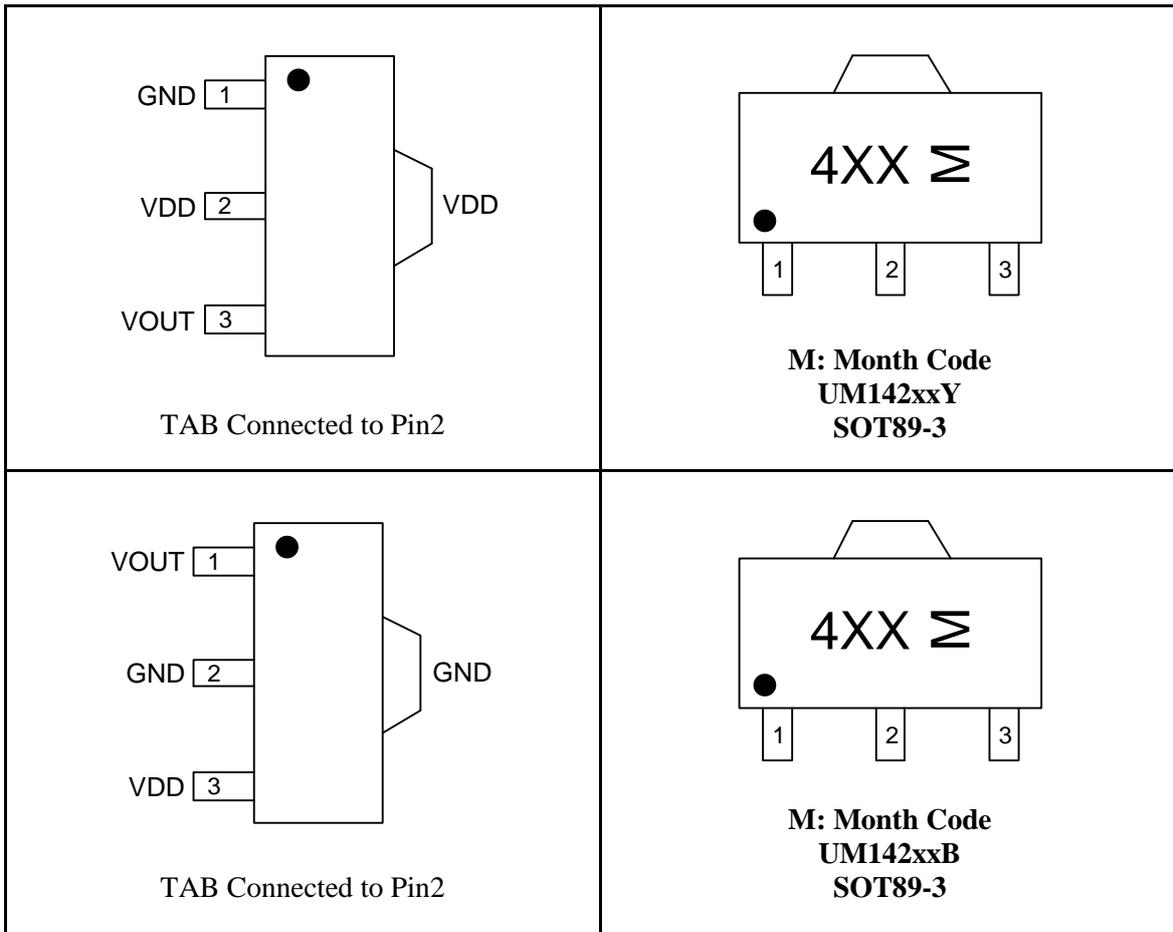
### Features

- Low Quiescent Current: 8 $\mu$ A at 5V
- High PSRR: 60dB Range to 10kHz
- Low Output Noise: 44 $\mu$ V<sub>RMS</sub>
- Low Dropout: 270mV at 150mA Load
- Low Temperature Coefficient:  $\pm 100$ ppm/°C
- Excellent Line Regulation: 0.05%/V

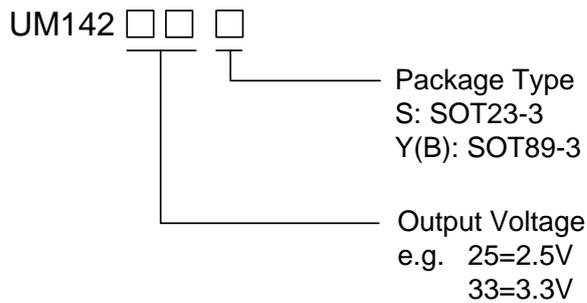
### Pin Configurations

### Top View





**Ordering Information**



## Marking Information

Part Number	Output Voltage	Packaging Type	Marking Code	Shipping Qty
UM14225S	2.5V	SOT23-3	55A	3000pcs/7Inch Tape & Reel
UM14226S	2.6V		55B	
UM14227S	2.7V		55C	
UM14228S	2.8V		55D	
UM14229S	2.9V		55E	
UM14230S	3.0V		55F	
UM14231S	3.1V		55H	
UM14232S	3.2V		55L	
UM14233S	3.3V		55M	
UM14234S	3.4V		55J	
UM14235S	3.5V		55K	
UM14236S	3.6V		55N	
UM14237S	3.7V		55P	
UM14238S	3.8V		55Q	
UM14239S	3.9V		55R	
UM14240S	4.0V		55S	
UM14241S	4.1V		55T	
UM14242S	4.2V		55Y	
UM14243S	4.3V		55U	
UM14244S	4.4V		55Z	
UM14245S	4.5V		56A	
UM14246S	4.6V		56B	
UM14247S	4.7V		56C	
UM14248S	4.8V		56D	
UM14249S	4.9V	56E		
UM14250S	5.0V	53F		
UM14225Y	2.5V	SOT89-3 (Tab connected to VDD)	4AA	1000pcs/7Inch Tape & Reel
UM14226Y	2.6V		4AB	
UM14227Y	2.7V		4AC	
UM14228Y	2.8V		4AD	
UM14229Y	2.9V		4AE	
UM14230Y	3.0V		4AF	
UM14231Y	3.1V		4AH	
UM14232Y	3.2V		4AL	
UM14233Y	3.3V		4AM	
UM14234Y	3.4V		4AJ	
UM14235Y	3.5V		4AK	
UM14236Y	3.6V		4AN	
UM14237Y	3.7V		4AP	
UM14238Y	3.8V		4AQ	
UM14239Y	3.9V		4AR	
UM14240Y	4.0V		4AS	
UM14241Y	4.1V		4AT	
UM14242Y	4.2V		4AY	
UM14243Y	4.3V		4AU	
UM14244Y	4.4V		4AZ	
UM14245Y	4.5V		4BA	
UM14246Y	4.6V		4BB	
UM14247Y	4.7V		4BC	
UM14248Y	4.8V		4BD	
UM14249Y	4.9V	4BE		
UM14250Y	5.0V	4BF		

**Marking Information (Continued)**

Part Number	Output Voltage	Packaging Type	Marking Code	Shipping Qty
UM14225B	2.5V	SOT89-3 (Tab connected to GND)	4CA	1000pcs/7Inch Tape & Reel
UM14226B	2.6V		4CB	
UM14227B	2.7V		4CC	
UM14228B	2.8V		4CD	
UM14229B	2.9V		4CE	
UM14230B	3.0V		4CF	
UM14231B	3.1V		4CH	
UM14232B	3.2V		4CL	
UM14233B	3.3V		4CM	
UM14234B	3.4V		4CJ	
UM14235B	3.5V		4CK	
UM14236B	3.6V		4CN	
UM14237B	3.7V		4CP	
UM14238B	3.8V		4CQ	
UM14239B	3.9V		4CR	
UM14240B	4.0V		4CS	
UM14241B	4.1V		4CT	
UM14242B	4.2V		4CY	
UM14243B	4.3V		4CU	
UM14244B	4.4V		4CZ	
UM14245B	4.5V		4DA	
UM14246B	4.6V		4DB	
UM14247B	4.7V		4DC	
UM14248B	4.8V		4DD	
UM14249B	4.9V		4DE	
UM14250B	5.0V	4DF		

**Pin Description**

Symbol	Function
GND	Ground
VOUT	Voltage Regulated Output
VDD	Supply Voltage Input

**Absolute Maximum Ratings (Note 1)**

Symbol	Parameter	Value	Unit
V <sub>IN</sub>	Max Input Voltage	14	V
P <sub>D</sub>	Power Dissipation	250	mW
T <sub>J</sub>	Operating Junction Temperature	+125	°C
T <sub>A</sub>	Ambient Temperature	-40 to +85	°C
T <sub>STG</sub>	Storage Temperature Range	-40 to +150	°C
T <sub>L</sub>	Lead Temperature for Soldering 10 Seconds	+260	°C

Note 1: Exposure to absolute maximum rating conditions may affect device reliability.

**Recommended Work Condition**

Symbol	Parameter	Value	Unit
V <sub>IN</sub>	Max Input Voltage	12	V

**Thermal Information**

Symbol	Parameter	Value	Unit	
R <sub>θJA</sub>	Junction-to-ambient thermal resistance	SOT23-3	250.5	°C/W
		SOT89-3	174.9	
R <sub>θJB</sub>	Junction-to-board thermal resistance	SOT23-3	140.1	°C/W
		SOT89-3	100.2	
R <sub>θJC(TOP)</sub>	Junction-to-case (top) thermal resistance	SOT23-3	63.4	°C/W
		SOT89-3	45.1	

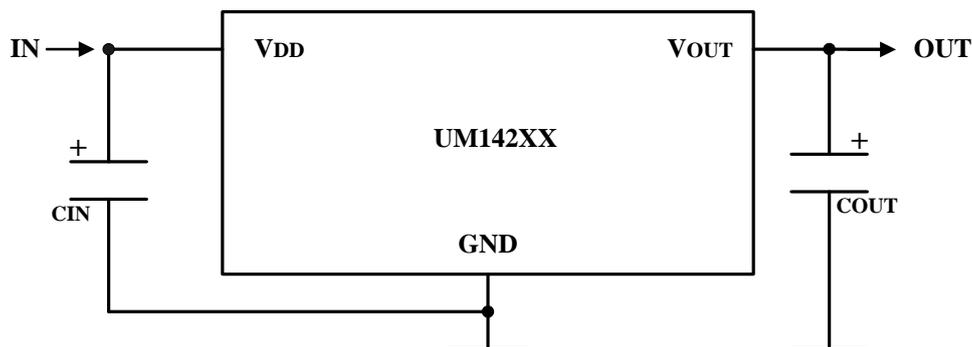
## Electrical Characteristics

(Test conditions:  $C_{IN}=1.0\mu F$ ,  $C_{OUT}=1.0\mu F$ ,  $T_A=25\text{ }^\circ\text{C}$ , unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
$V_{IN}$	Input Voltage				12	V
$V_{OUT}$	Output Voltage	$V_{IN}=\text{Set } V_{OUT}+1V$ $1mA \leq I_{OUT} \leq 10mA$	$V_{OUT} \times 0.98$	$V_{OUT} \times 1.0$	$V_{OUT} \times 1.02$	V
$I_{OUT}(\text{Max})$ (Note 2)	Maximum Output Current	$V_{IN}-V_{OUT}=1V$	300			mA
$V_{DROP}$	Dropout Voltage	$I_{OUT}=150mA$		270		mV
	Output Voltage Accuracy	$I_{OUT}=300mA$	-3		+3	%
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \cdot V_{OUT}}$	Line Regulation	$I_{OUT}=10mA$ $4V \leq V_{DD} \leq 6V$		0.05	0.2	%/V
$\Delta V_{OUT}$	Load Regulation	$V_{IN}=\text{Set } V_{OUT}+1V$ $1mA \leq I_{OUT} \leq 300mA$		60		mV
$I_S$	Supply Current	$V_{IN}=\text{Set } V_{OUT}+1V$ $V_{OUT}$ Floating		8	15	$\mu A$
$\frac{\Delta V_{OUT}}{\Delta T \cdot V_{OUT}}$	Output Voltage Noise	$I_{OUT}=10mA$		$\pm 100$		ppm/ $^\circ\text{C}$
PSRR	Power Supply Ripple Rejection	$f=100Hz$ , Ripple=0.5Vp-p $V_{IN}=\text{Set } V_{OUT}+1V$		60		dB
	Output Noise	BW=10Hz~100kHz		44		$\mu V_{RMS}$

Note 2: The maximum power rating of each package is constant, so along with the change of  $I_{LOAD}$ , the  $V_{IN}-V_{OUT}$  should be controlled to a certain range to ensure the normal operation.

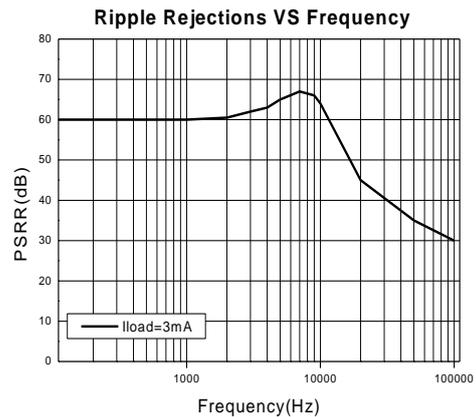
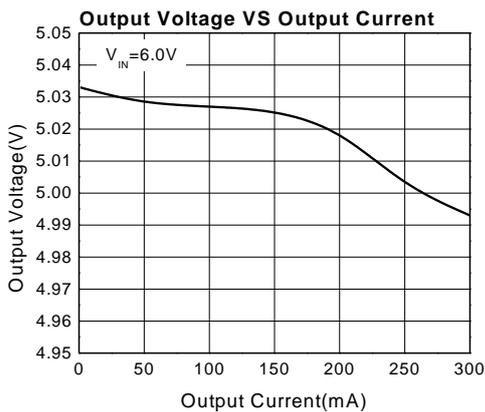
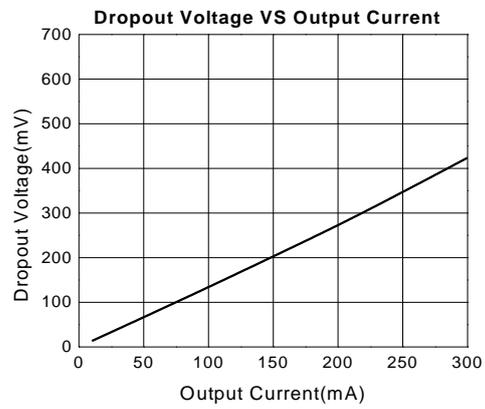
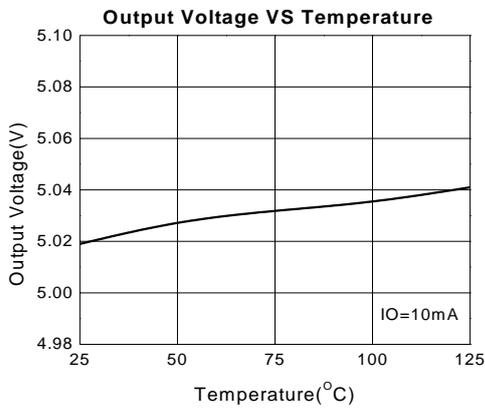
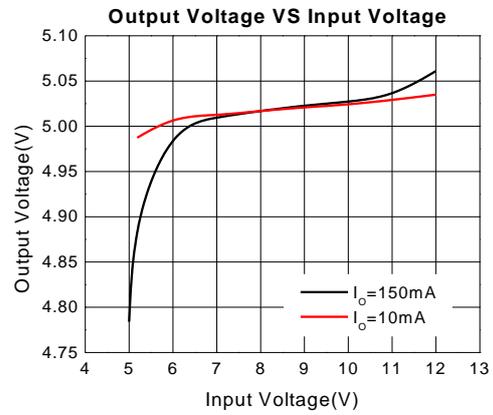
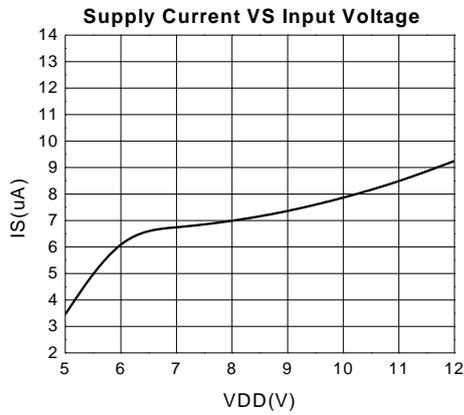
## Typical Application Circuit



Note 3: Input Capacitor ( $C_{IN}=1\mu F$ ) is recommended in all applications.

Note 4: Output Capacitor ( $C_{OUT}=1\mu F/6.8\mu F$ ) is recommended in all applications to assure the stability of circuit.  $1\mu F$  Tantalum capacitor or  $6.8\mu F$  ceramic capacitor is recommended.

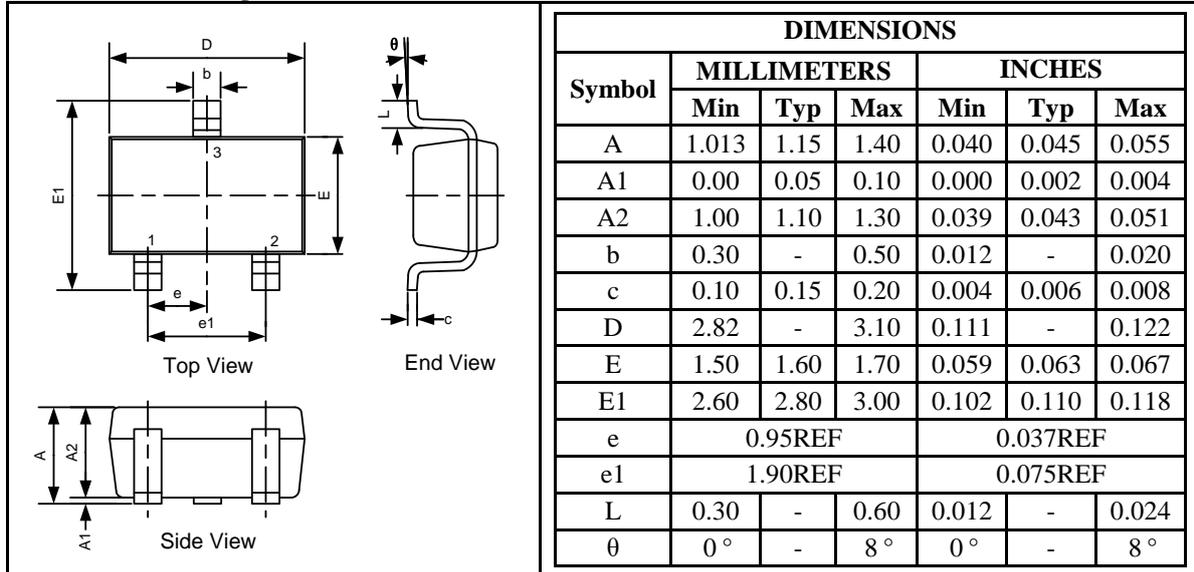
## Typical Operating Characteristics



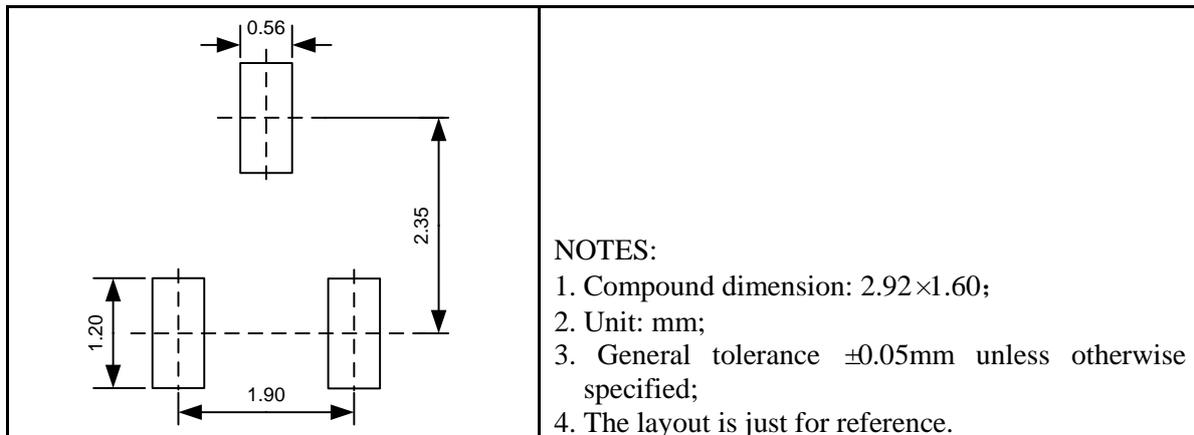
## Package Information

### SOT23-3

#### Outline Drawing

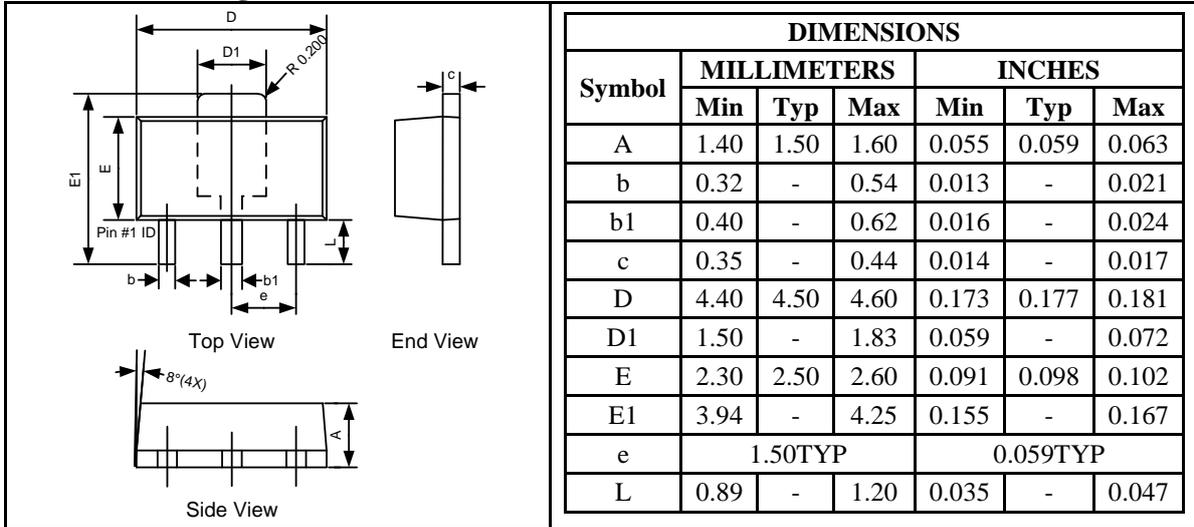


#### Land Pattern

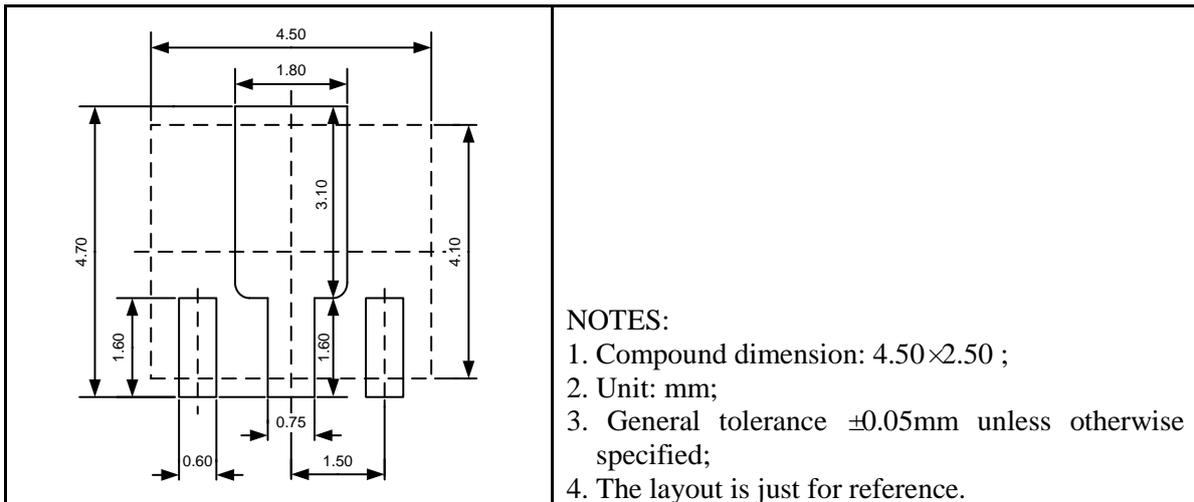


## SOT89-3

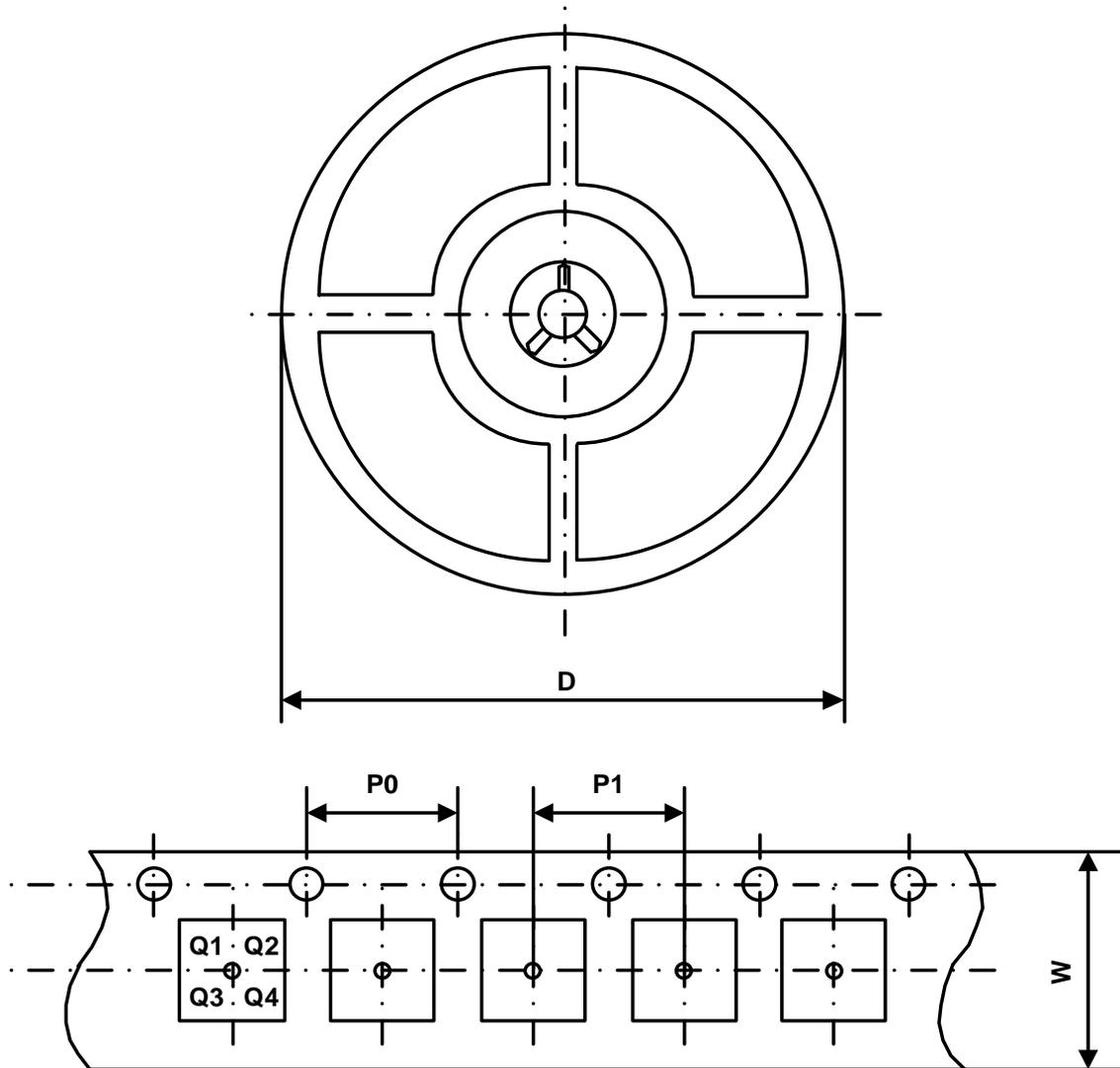
### Outline Drawing



### Land Pattern



## Packing Information



Part Number	Package Type	Carrier Width (W)	Pitch (P0)	Pitch (P1)	Reel Size (D)	PIN 1 Quadrant
UM142xxS	SOT23-3	8 mm	4 mm	4 mm	180 mm	Q3
UM142xxY	SOT89-3	12 mm	4 mm	8 mm	180 mm	Q3
UM142xxB	SOT89-3	12 mm	4 mm	8 mm	180 mm	Q3

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