

5V Input, Low Quiescent Current Linear Regulator

UM1530S SOT23-3

UM1530DA DFN6 2.0×2.0

UM1530DB DFN4 1.0×1.0

UM1540S SOT23-5

UM1540DA DFN6 2.0×2.0

UM1540DB DFN4 1.0×1.0

General Description

The UM1530/1540 series is a set of high input voltage low quiescent current regulator implemented in CMOS technology. They can deliver 300mA output current and allow an input voltage as high as 6V. They are available with several fixed output voltages ranging from 1.2V to 5.0V. CMOS technology ensures low voltage drop and low quiescent current.

The UM1530 is available in SOT23-3, DFN6 2.0×2.0 and DFN4 1.0×1.0 packages. The UM1540 is available in SOT23-5, DFN6 2.0×2.0 and DFN4 1.0×1.0 packages.

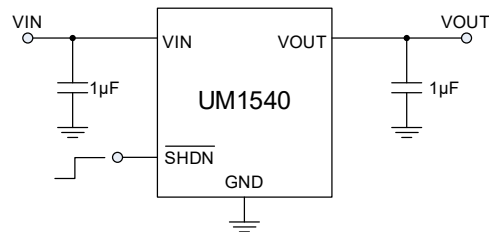
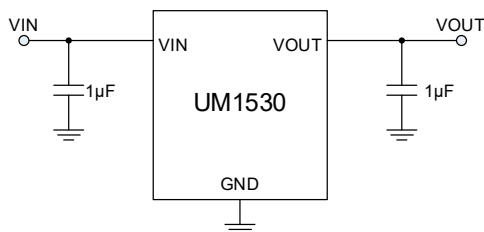
Applications

- Communication Equipments
- Audio/Video Equipments
- Portable Games
- Portable AV Equipments
- Battery-Powered Equipments

Features

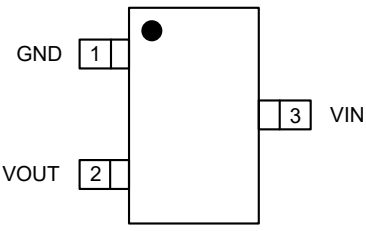
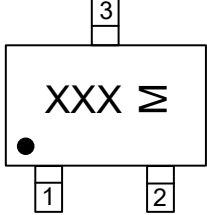
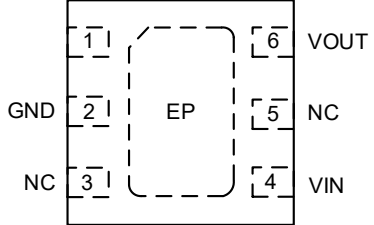
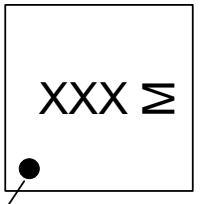
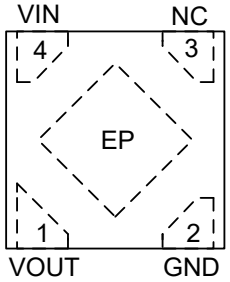
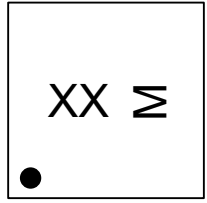
- Input Voltage Range: 1.8V to 6V
- 300mA Guaranteed Output Current
- Low Dropout Voltage:
250mV (Typical) at 200mA
- Low Quiescent Current:
1μA@V_{IN}=5V (Typical)
- Low Noise: 115μV_{RMS} (10Hz to 100kHz)
- Available Fixed Output Voltage from 1.2V to 5.0V with 0.1V Step
- With Shutdown Control (UM1540)
- Output Current Limit
- Low Profile SOT23-3, SOT23-5,
DFN6 2.0×2.0 and DFN4 1.0×1.0 Packages

Typical Application Circuits



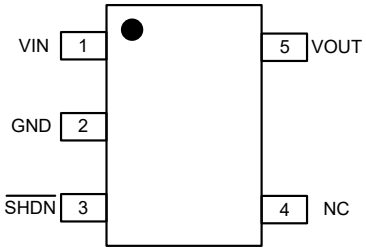
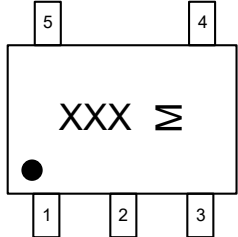
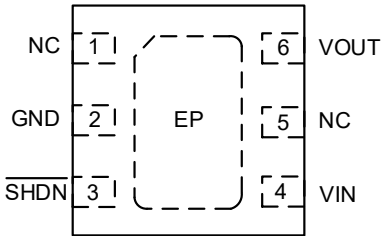
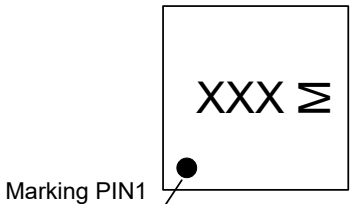
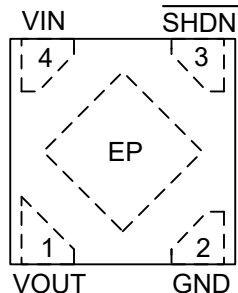
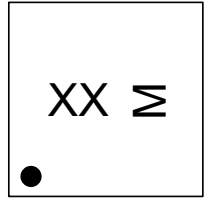
Pin Configurations

Top View

 <p style="text-align: center;">UM1530S</p>	 <p style="text-align: center;">M: Month Code UM1530S SOT23-3</p>
<p style="text-align: center;">(Top View)</p>  <p style="text-align: center;">UM1530DA</p>	 <p style="text-align: center;">M: Month Code UM1530DA DFN6 2.0×2.0</p>
<p style="text-align: center;">(Top View)</p>  <p style="text-align: center;">UM1530DB</p>	 <p style="text-align: center;">M: Month Code UM1530DB DFN4 1.0×1.0</p>

Pin Configurations

Top View

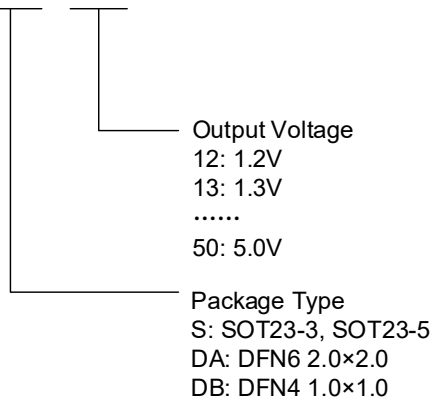
 <p style="text-align: center;">UM1540S</p>	 <p style="text-align: center;">M: Month Code UM1540S SOT23-5</p>
<p style="text-align: center;">(Top View)</p>  <p style="text-align: center;">UM1540DA</p>	 <p style="text-align: center;">M: Month Code UM1540DA DFN6 2.0×2.0</p>
<p style="text-align: center;">(Top View)</p>  <p style="text-align: center;">UM1540DB</p>	 <p style="text-align: center;">M: Month Code UM1540DB DFN4 1.0×1.0</p>

Pin Description

Name	Pin						Description
	SOT23-3	SOT23-5	DFN6		DFN4		
	UM1530S	UM1540S	UM1530DA	UM1540DA	UM1530DB	UM1540DB	
GND	1	2	2	2	2	2	Ground
V _{OUT}	2	5	6	6	1	1	Voltage Regulated Output
V _{IN}	3	1	4	4	4	4	Supply Input
NC	-	4	1,5	1,5	3	-	Not Connected
$\overline{\text{SHDN}}$	-	3	-	5	-	3	Shutdown Control Input: High=Activate LDO, Low=Shutdown LDO
EP	-	-					Exposed Pad. Connect to ground

Naming Information

UM1530 □ □ - □ □
 UM1540 □ □ - □ □



Absolute Maximum Ratings (Note 1)

Symbol	Parameter	Value	Unit	
V _{IN}	Supply Voltage on V _{IN} Pin	-0.3 to +6.5	V	
V _{OUT}	Voltage on V _{OUT} Pin	-0.3 to +6.5	V	
T _J	Operating Junction Temperature (Note 2, 3)	-40 to +125	°C	
T _{STG}	Storage Temperature Range	-65 to +150	°C	
T _L	Lead Temperature for Soldering 10 Seconds	+260	°C	
P _D (Note 4)	Power Dissipation@25°C	SOT23-3	0.40	W
		SOT23-5	0.43	
		DFN6 2.0×2.0	0.9	
		DFN4 1.0×1.0	0.4	
θ _{JA}	Package Thermal Resistance	SOT23-3	250	°C/W
		SOT23-5	230	
		DFN6 2.0×2.0	110	
		DFN4 1.0×1.0	250	

Note 1: Absolute Maximum Ratings are those values beyond which the life of a device may be impaired.

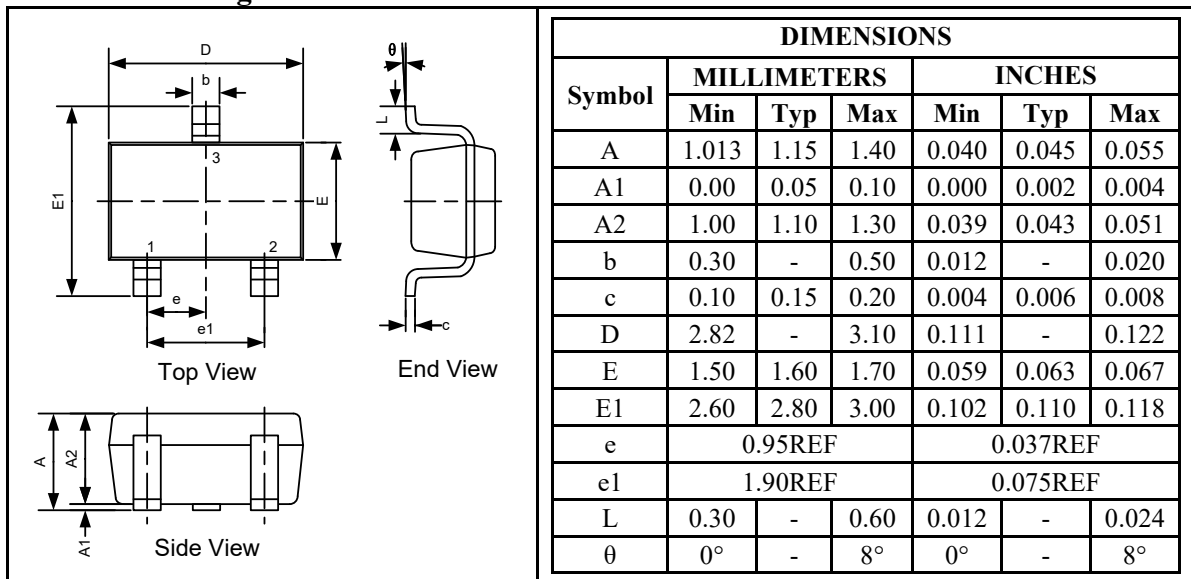
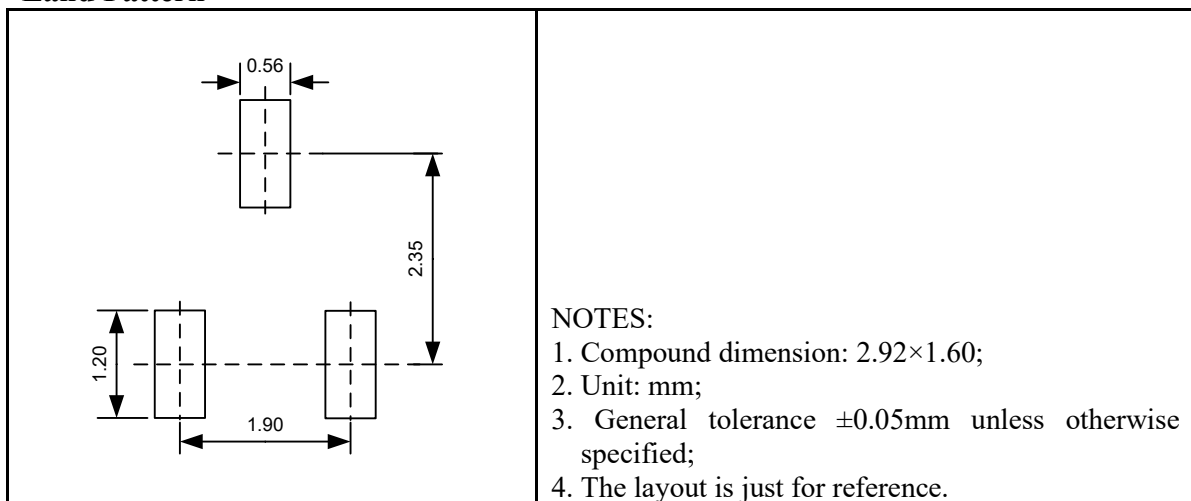
Note 2: The UM1530/1540 is tested and specified under pulse load conditions such that $T_J \approx T_A$. Specifications over the -40°C to 125°C operating junction temperature range are assured by design, characterization and correlation with statistical process controls.

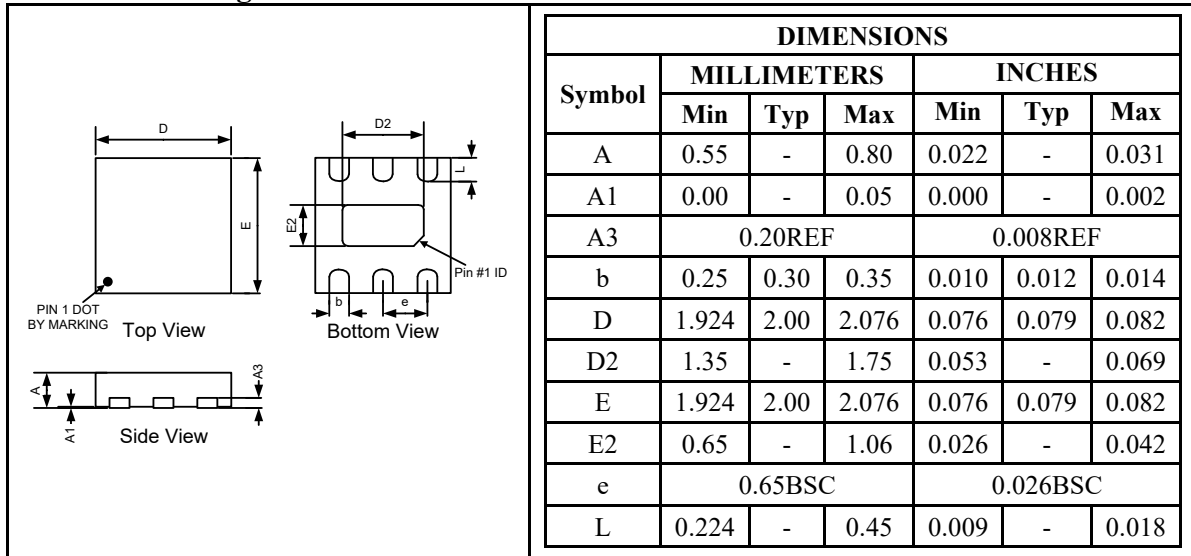
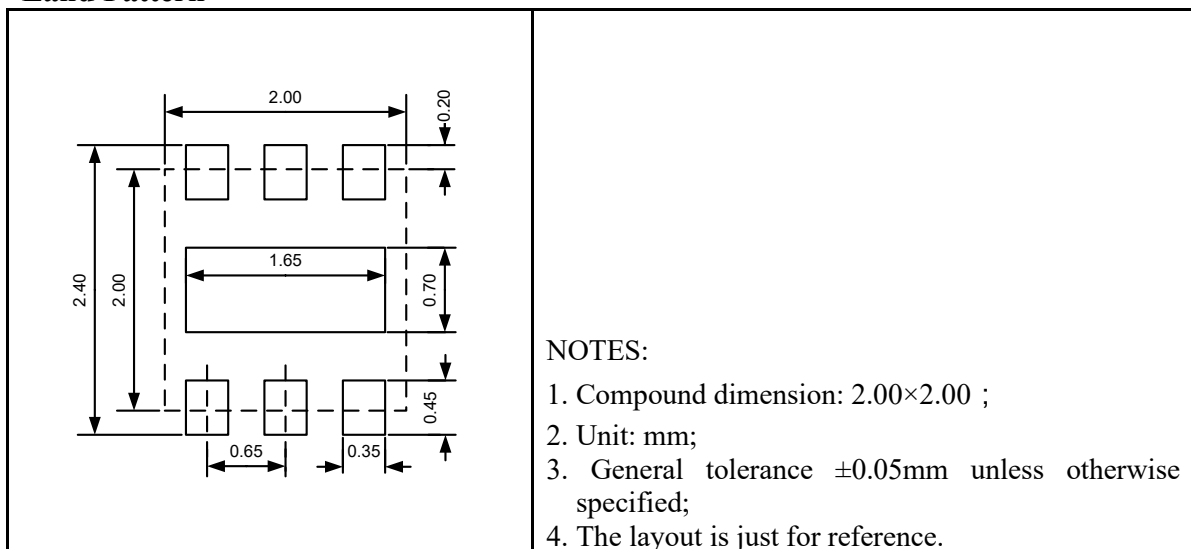
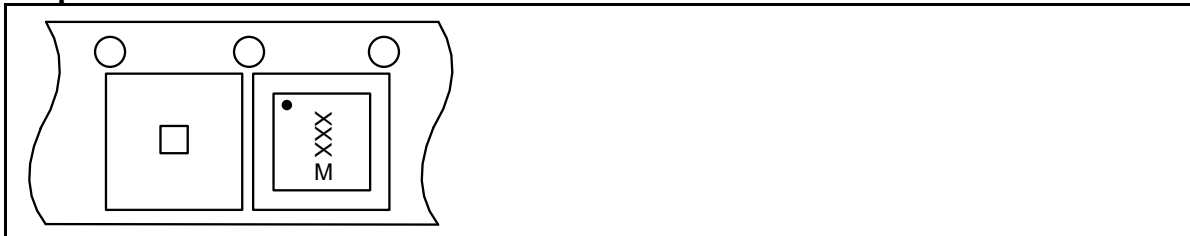
Note 3: This IC includes over temperature protection that is intended to protect the device during momentary overload conditions. Junction temperature will exceed 125°C when over temperature protection is active. Continuous operation above the specified maximum operating junction temperature may impair device reliability.

Note 4: The maximum allowable power dissipation of any T_A (ambient temperature) is $P_{DMAX} = (T_{JMAX} - T_A) / \theta_{JA}$. Exceeding the maximum allowable power dissipation will result in excessive die temperature and the regulator will go into thermal shutdown.

Electrical Characteristics
 $V_{IN} = V_{OUT} + 1V$, $C_{IN} = C_{OUT} = 1\mu F$, $T_A = 25^\circ C$.

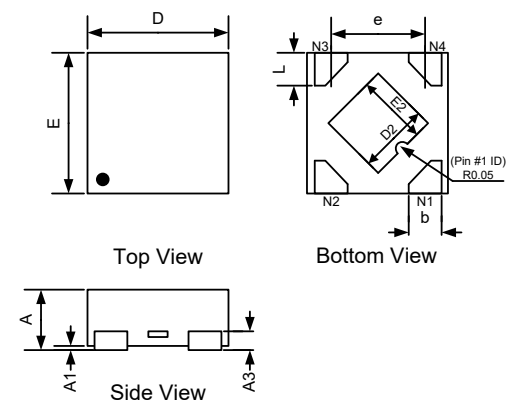
Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{IN}	Input Voltage Range		1.8		6	V
V_{OUT}	Output Voltage Range		1.2		5.0	V
I_Q	Operating Quiescent Current	$V_{IN} = 5V$, $I_{OUT} = 0mA$		1	1.5	μA
	Shut Down Quiescent Current	$V_{IN} = 5V$, $\overline{SHDN} = GND$			1	μA
$\overline{I_{SHDN}}$	SHDN Input Current	$\overline{SHDN} = V_{IN}$ or GND			1	μA
I_{OUT}	Output Current		300			mA
	Output Voltage Accuracy	$1mA \leq I_{OUT} \leq 250mA$	-2.5		+2.5	%
ΔV_{DO}	Dropout Voltage	$I_{OUT} = 200mA$		250	330	mV
I_{LIMIT}	Output Current Limit	$R_L = 1\Omega$	350	450	550	mA
t	Startup Time Response	$V_{OUT} = 3.3V$, $R_L = 68\Omega$, $C_{OUT} = 1\mu F$		80		μs
V_{IL}	SHDN Input Low Voltage	$V_{IN} = 1.8V$ to 5V			0.4	V
V_{IH}	SHDN Input High Voltage	$V_{IN} = 1.8V$ to 5V	1.2			V
	Output Voltage TC	$-40^\circ C$ to $+125^\circ C$		60		ppm/ $^\circ C$
	Line Regulation	$V_{OUT} + 0.3V \leq V_{IN} \leq 5V$ or $V_{IN} > 1.8V$ $I_{OUT} = 10mA$			0.3	%/V
	Load Regulation	$V_{IN} = V_{OUT} + 1V$ or $V_{IN} > 1.8V$ $1mA \leq I_{OUT} \leq 250mA$			0.6	%
	Output Voltage Noise	$V_{OUT} = 3.0V$, $f = 10Hz$ to $100kHz$, $C_{IN} = 1\mu F$, $I_{OUT} = 100mA$		115		μV_{RMS}
PSRR	Power Supply Ripple Rejection	$V_{IN} = V_{OUT} + 1V$ $I_{OUT} = 100mA$	$f = 100Hz$		56	dB
			$f = 1kHz$		42	
	ESD Rating	Human Body Mode	2			kV

Package Information
UM1530S: SOT23-3
Outline Drawing

Land Pattern

Tape and Reel Orientation


UM1530DA, UM1540DA: DFN6 2.0×2.0
Outline Drawing

Land Pattern

Tape and Reel Orientation


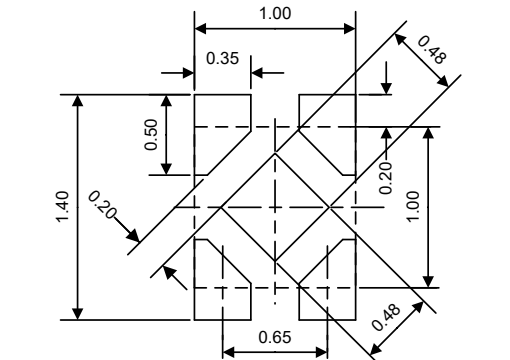
UM1530DB, UM1540DB: DFN4 1.0×1.0

Outline Drawing



Symbol	DIMENSIONS					
	MILLIMETERS			INCHES		
	Min	Typ	Max	Min	Typ	Max
A	0.32	-	0.40	0.013	-	0.016
A1	0.00	0.02	0.05	0.000	0.0008	0.002
A3	0.13REF			0.005REF		
b	0.18	-	0.30	0.007	-	0.012
D	0.95	1.00	1.05	0.037	0.039	0.041
D2	0.43	0.48	0.53	0.017	0.019	0.021
E	0.95	1.00	1.05	0.037	0.039	0.041
E2	0.43	0.48	0.53	0.017	0.019	0.021
e	0.65TYP			0.026TYP		
L	0.20	0.25	0.30	0.008	0.010	0.012

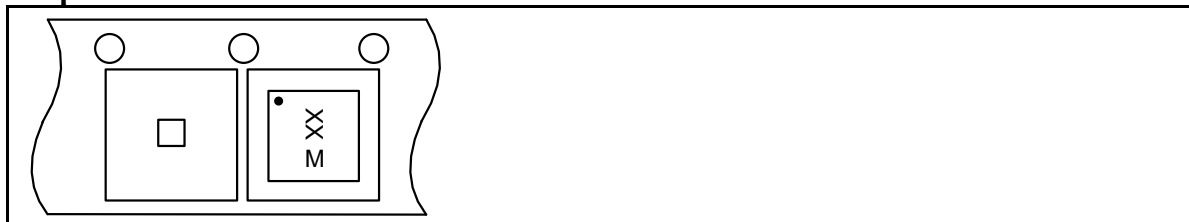
Land Pattern



NOTES:

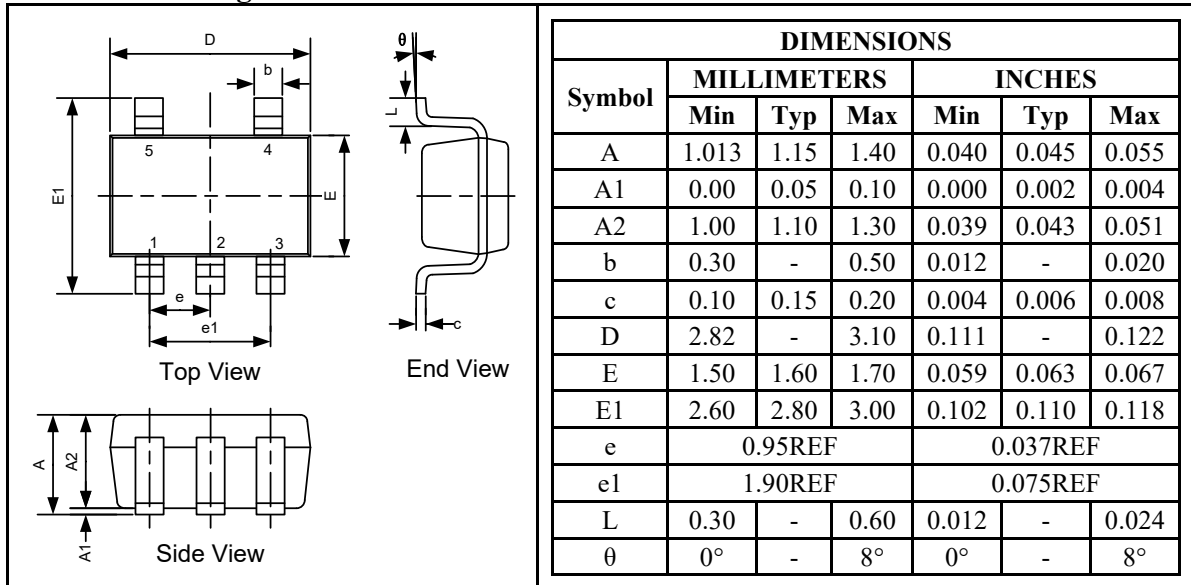
1. Compound dimension: 1.00×1.00;
2. Unit: mm;
3. General tolerance ±0.05mm unless otherwise specified;
4. The layout is just for reference.

Tape and Reel Orientation

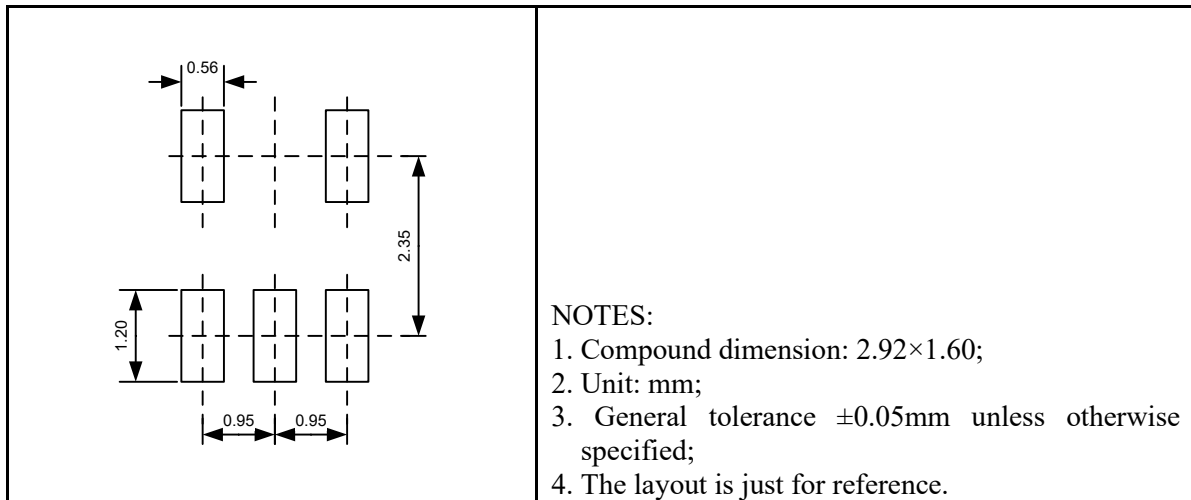


UM1540S: SOT23-5

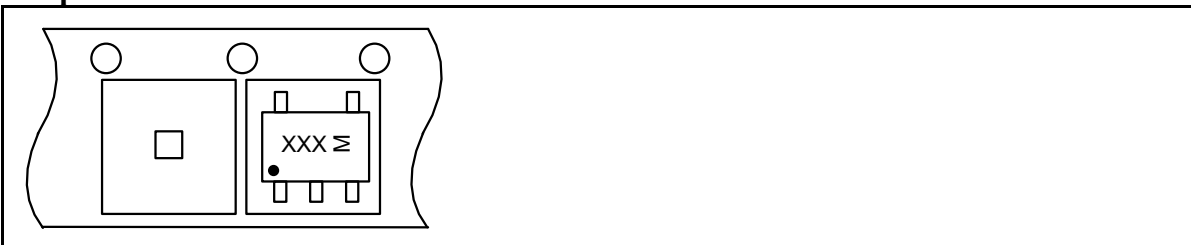
Outline Drawing



Land Pattern



Tape and Reel Orientation



Ordering Information

Part Number	Output Voltage	Marking Code	Package	Shipping Qty
UM1530S-13	1.3V	UC3	SOT23-3	3000pcs/7Inch Tape & Reel
UM1530S-15	1.5V	UC5		
UM1530S-18	1.8V	UC8		
UM1530S-25	2.5V	UD5		
UM1530S-27	2.7V	UD7		
UM1530S-28	2.8V	UD8		
UM1530S-30	3.0V	UDA		
UM1530S-33	3.3V	UG3		
UM1530S-35	3.5V	UG5		
UM1530S-36	3.6V	UG6		
UM1530S-38	3.8V	UG8		
UM1530S-40	4.0V	UGA		
UM1530S-42	4.2V	UI2		
UM1530S-43	4.3V	UI3		
UM1530S-45	4.5V	UI5		
UM1530S-47	4.7V	UI7		
UM1530S-48	4.8V	UI8		
UM1530S-50	5.0V	UIA		

Ordering Information (Continued)

Part Number	Output Voltage	Packaging Type	Marking Code	Shipping Qty
UM1530DA-13	1.3V	DFN6 2.0×2.0	AND	3000pcs/7Inch Tape & Reel
UM1530DA-15	1.5V		ANE	
UM1530DA-18	1.8V		ANF	
UM1530DA-25	2.5V		ANG	
UM1530DA-27	2.7V		ANH	
UM1530DA-28	2.8V		ANJ	
UM1530DA-30	3.0V		ANK	
UM1530DA-33	3.3V		ANL	
UM1530DA-35	3.5V		ANN	
UM1530DA-36	3.6V		ANP	
UM1530DA-38	3.8V		ANQ	
UM1530DA-40	4.0V		ANR	
UM1530DA-42	4.2V		ANS	
UM1530DA-43	4.3V		ANT	
UM1530DA-45	4.5V		ANU	
UM1530DA-47	4.7V		ANV	
UM1530DA-48	4.8V		ANZ	
UM1530DA-50	5.0V	BFD		

Ordering Information (Continued)

Part Number	Output Voltage	Packaging Type	Marking Code	Shipping Qty
UM1530DB-13	1.3V	DFN4 1.0×1.0	DC	10000pcs/7Inch Tape & Reel
UM1530DB-15	1.5V		DD	
UM1530DB-18	1.8V		DE	
UM1530DB-25	2.5V		DF	
UM1530DB-27	2.7V		DG	
UM1530DB-28	2.8V		DH	
UM1530DB-30	3.0V		DJ	
UM1530DB-33	3.3V		DK	
UM1530DB-35	3.5V		DL	
UM1530DB-36	3.6V		DN	
UM1530DB-38	3.8V		DP	
UM1530DB-40	4.0V		DQ	
UM1530DB-42	4.2V		DR	
UM1530DB-43	4.3V		DS	
UM1530DB-45	4.5V		DT	
UM1530DB-47	4.7V		DU	
UM1530DB-48	4.8V		DV	
UM1530DB-50	5.0V		DZ	

Ordering Information (Continued)

Part Number	Output Voltage	Packaging Type	Marking Code	Shipping Qty
UM1540S-13	1.3V	SOT23-5	5FB	3000pcs/7Inch Tape & Reel
UM1540S-15	1.5V		5FC	
UM1540S-18	1.8V		5FD	
UM1540S-25	2.5V		5FE	
UM1540S-27	2.7V		5FF	
UM1540S-28	2.8V		5FH	
UM1540S-30	3.0V		5FL	
UM1540S-33	3.3V		5FM	
UM1540S-35	3.5V		5FJ	
UM1540S-36	3.6V		5FK	
UM1540S-38	3.8V		5FN	
UM1540S-40	4.0V		5FP	
UM1540S-42	4.2V		5FQ	
UM1540S-43	4.3V		5FR	
UM1540S-45	4.5V		5FS	
UM1540S-47	4.7V		5FT	
UM1540S-48	4.8V		5FY	
UM1540S-50	5.0V		5FU	

Ordering Information (Continued)

Part Number	Output Voltage	Packaging Type	Marking Code	Shipping Qty
UM1540DA-13	1.3V	DFN6 2.0×2.0	AG2	3000pcs/7Inch Tape & Reel
UM1540DA-15	1.5V		AG3	
UM1540DA-18	1.8V		AG4	
UM1540DA-25	2.5V		AG5	
UM1540DA-27	2.7V		AG6	
UM1540DA-28	2.8V		AG7	
UM1540DA-30	3.0V		AG8	
UM1540DA-33	3.3V		AG9	
UM1540DA-35	3.5V		AGA	
UM1540DA-36	3.6V		AGB	
UM1540DA-38	3.8V		AGC	
UM1540DA-40	4.0V		AGD	
UM1540DA-42	4.2V		AGE	
UM1540DA-43	4.3V		AGF	
UM1540DA-45	4.5V		AGG	
UM1540DA-47	4.7V		AGH	
UM1540DA-48	4.8V		AGJ	
UM1540DA-50	5.0V		AGK	

Ordering Information (Continued)

Part Number	Output Voltage	Packaging Type	Marking Code	Shipping Qty
UM1540DB-13	1.3V	DFN4 1.0×1.0	FC	10000pcs/7Inch Tape & Reel
UM1540DB-15	1.5V		FD	
UM1540DB-18	1.8V		FE	
UM1540DB-25	2.5V		FF	
UM1540DB-27	2.7V		FG	
UM1540DB-28	2.8V		FH	
UM1540DB-30	3.0V		FJ	
UM1540DB-33	3.3V		FK	
UM1540DB-35	3.5V		FL	
UM1540DB-36	3.6V		FN	
UM1540DB-38	3.8V		FP	
UM1540DB-40	4.0V		FQ	
UM1540DB-42	4.2V		FR	
UM1540DB-43	4.3V		FS	
UM1540DB-45	4.5V		FT	
UM1540DB-47	4.7V		FU	
UM1540DB-48	4.8V		FV	
UM1540DB-50	5.0V		FZ	

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