Low Power, Low Dropout, 500mA RF Linear Regulators

1 FEATURES

- **Low Output Noise**
- **Low Dropout Voltage**
- **Thermal-Overload Protection**
- **Output Current Limit**
- **10nA Logic-Controlled Shutdown**
- **30µA(TYP) Low Supply Current**
- **2.5V to 7.5V Input Voltage Range**
- **500mA Output Current**
- **-40°C to 85°C Operating Temperature Range**
- **Available in Green XDFN1X1-4, SOT23-5, SOT23-3, SC70-5 and SOT89-3(L-Type) Package**

2 APPLICATIONS

- **Cellular Telephones**
- **Camera Modules**
- **Modems**
- **HiFi Audio Radio Transceivers**
- **PLL/Synthesizer, Clocking**
- **Medium-Current, Noise-Sensitive Applications**

3 DESCRIPTIONS

The RS3236 series low-power, low-dropout, CMOS LDO operate from 2.5V to 7.5V input voltage that can supply up to 500mA of output current. Designed to meet the requirements of RF and analog circuits, the RS3236 series device provides low noise, high PSRR, low quiescent current, and low line and load transient response.

The device is designed to work with a 1-µF input and a 1-µF output ceramic capacitor (no separate noise bypass capacitor required). An external noise bypass capacitor connected to the device's BP pin can further reduce the noise level.

Other features include a 10nA logic-controlled shutdown mode, foldback current limit and thermal shutdown protection.

The RS3236 series is available in Green XDFN1X1-4, SOT23-3, SOT23-5, SC70-5 and SOT89-3(L-Type) package. It operates over an ambient temperature range of -40°C to 85°C.

Device Information [1]

PART NUMBER	PACKAGE	BODY SIZE (NOM)
RS3236	XDFN1X1-4	1.00mm×1.00mm
	SOT23-3	1.60mm×2.92mm
	SOT23-5	1.60mm×2.92mm
	SC70-5	1.25mm×2.10mm
	SOT89-3	2.45mm×4.50mm

(1) For all available packages, see the orderable addendum at the end of the data sheet.

4 FUNCTIONAL BLOCK DIAGRAM

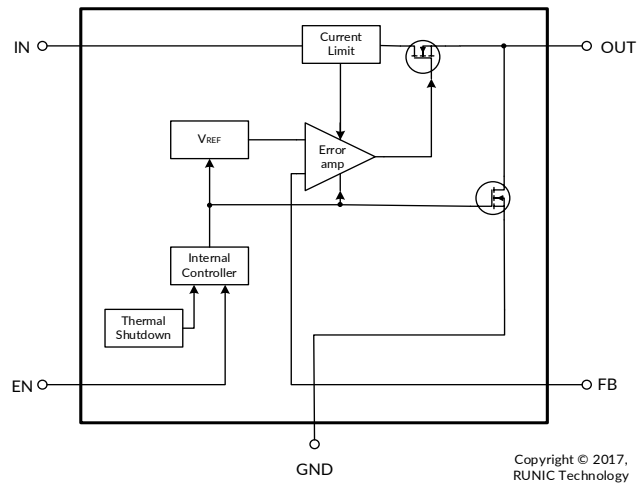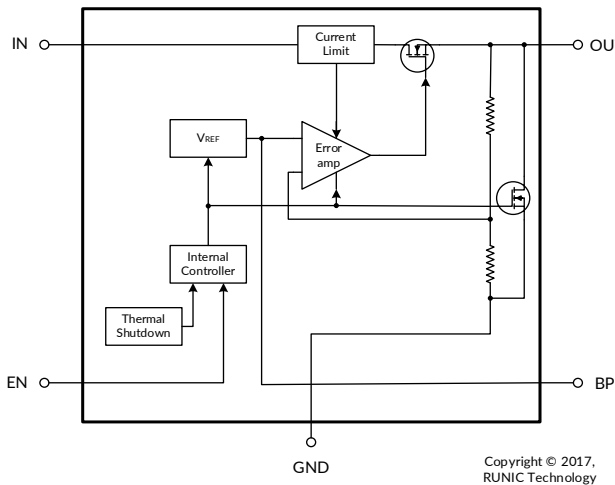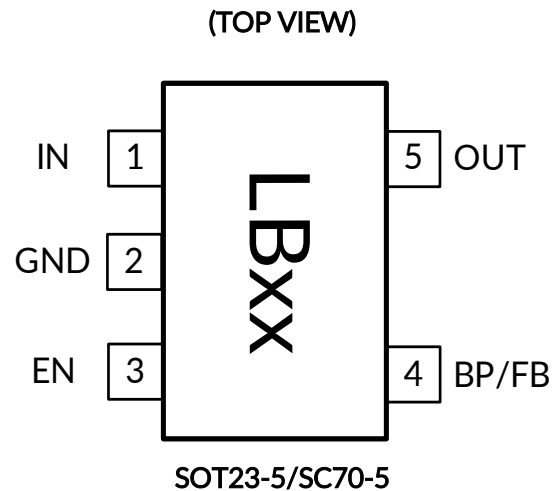
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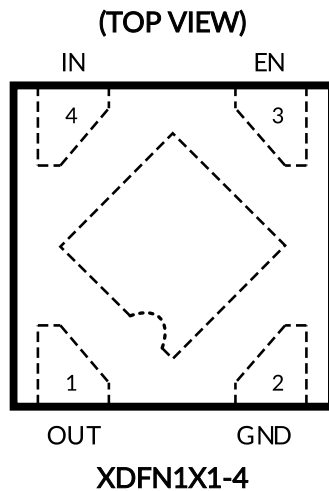RUNIC Technology

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5 REVISION HISTORY

Note: Page numbers for previous revisions may different from page numbers in the current version.

| VERSION	Change Date	Change Item
A.1	2017/06/01	Initial version completed
A.2	2018/01/05	1) Added output voltage 2) Added SOT89-3 (L) package
C.1	2019/11/12	1) Added output voltage 2) Raise the over temperature protection temperature
C.2	2020/08/23	1) Added output voltage model 2) Optimize noise index
C.3	2022/09/09	1) Added the TAPE AND REEL INFORMATION 2) Modify NC DESCRIPTION on Page 3 in RevC.2
C.4	2022/09/13	Modify Load Regulation PARAMETER
C.5	2023/09/20	1) Update ELECTRICAL CHARACTERISTICS 2) Update Input Voltage
C.6	2023/10/12	Added RS3236-3.3AYE3L ORDERING NUMBER
C.6.1	2024/03/07	Modify packaging naming
C.7	2024/06/17	1) Added MSL 2) Added THERMAL PROTECTION NOTE on Page 12 in RevC.6.1
C.8	2024/12/20	Modify RS3236-3.3AYE3L PACKAGE MARKING

6 PIN CONFIGURATION AND FUNCTIONS (TOP VIEW)

(TOP VIEW)

(TOP VIEW)

XDFN1X1-4

SOT23-5/SC70-5

XDFN1X1-4		I/O (1)	DESCRIPTION
NUMBER	NAME		
1	OUT	O	Regulator Output.
2	GND	G	Ground.
3	EN	I	Enable Input. A logic low reduces the supply current to 10nA. Connect to IN for normal operation.
4	IN	I	Regulator Input. Supply voltage can range from 2.5V to 7.5V. Bypass with a 1µF capacitor to GND.
Thermal Pad	-	-	Connect the thermal pad to a large-area ground plane. This pad is not an electrical connection to the device ground.

(1)   I = Input, O = Output, P = Power, G=Ground.

| SOT23-5/SC70-5		I/O (1)	DESCRIPTION
NUMBER	NAME		
1	IN	I	Regulator Input. Supply voltage can range from 2.5V to 7.5V. Bypass with a 1µF capacitor to GND.
2	GND	G	Ground.
3	EN	I	Enable Input. A logic low reduces the supply current to 10nA. Connect to IN for normal operation.
4	BP/NC	O	For internal use, floating and do not connect any pins (fixed voltage version only).
	FB		Feedback Pin (adjustable voltage version only). This is used to set the output voltage of the device.
5	OUT	O	Regulator Output.

(1)   I = Input, O = Output, P = Power, G=Ground.

PIN CONFIGURATION AND FUNCTIONS (TOP VIEW)

TOP VIEW
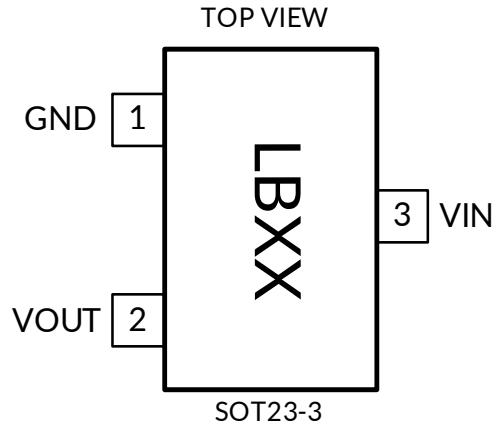
SOT23-3

NOTE:XX indicate Output Voltage,xx indicate DataCode
For example:LB33(V$_{OUT}$=3.3V)

SOT23-3		I/O [1]	DESCRIPTION
NUMBER	NAME		
1	GND	G	Ground.
2	OUT	O	Regulator Output.
3	IN	I	Regulator Input. Supply voltage can range from 2.5V to 7.5V. Bypass with a 1µF capacitor to GND.

(1) I = Input, O = Output, P = Power, G=Ground.
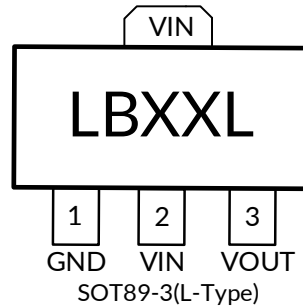
SOT89-3(L-Type)

SOT89-3(L-Type)		I/O [1]	DESCRIPTION
NUMBER	NAME		
1	GND	G	Ground.
2	IN	I	Regulator Input. Supply voltage can range from 2.5V to 7.5V. Bypass with a 1µF capacitor to GND.
3	OUT	O	Regulator Output.

(1) I = Input, O = Output, P = Power, G=Ground.

7 PACKAGE/ORDERING INFORMATION [1]

PRODUCT	ORDERING NUMBER [2]	V_{OUT}(V)	V_{OUT} Accuracy	PACKAGE LEAD	PACKAGE MARKING [3]	MSL[4]	PACKAGE OPTION
RS3236-0.75	RS3236-0.75YUTDN4	0.75V	±2.5%	XDFN1X1-4	BA	MSL3	Tape and Reel,10000
	RS3236-0.75YF5	0.75V	±2.5%	SOT23-5	LB075	MSL3	Tape and Reel,3000
	RS3236-0.75YC5	0.75V	±2.5%	SC70-5 [5]	LB075	MSL3	Tape and Reel,3000
	RS3236-0.75YF3	0.75V	±2.5%	SOT23-3	LB075	MSL3	Tape and Reel,3000
RS3236-1.0	RS3236-1.0YUTDN4	1.0V	±2.5%	XDFN1X1-4	BB	MSL3	Tape and Reel,10000
	RS3236-1.0YF5	1.0V	±2.5%	SOT23-5	LB10	MSL3	Tape and Reel,3000
	RS3236-1.0YC5	1.0V	±2.5%	SC70-5 [5]	LB10	MSL3	Tape and Reel,3000
	RS3236-1.0YF3	1.0V	±2.5%	SOT23-3	LB10	MSL3	Tape and Reel,3000
RS3236-1.2	RS3236-1.2YUTDN4	1.2V	±2.5%	XDFN1X1-4	BC	MSL3	Tape and Reel,10000
	RS3236-1.2YF5	1.2V	±2.5%	SOT23-5	LB12	MSL3	Tape and Reel,3000
	RS3236-1.2YC5	1.2V	±2.5%	SC70-5 [5]	LB12	MSL3	Tape and Reel,3000
	RS3236-1.2YF3	1.2V	±2.5%	SOT23-3	LB12	MSL3	Tape and Reel,3000
RS3236-1.5	RS3236-1.5YUTDN4	1.5V	±2.5%	XDFN1X1-4	BD	MSL3	Tape and Reel,10000
	RS3236-1.5YF5	1.5V	±2.5%	SOT23-5	LB15	MSL3	Tape and Reel,3000
	RS3236-1.5YC5	1.5V	±2.5%	SC70-5 [5]	LB15	MSL3	Tape and Reel,3000
	RS3236-1.5YF3	1.5V	±2.5%	SOT23-3	LB15	MSL3	Tape and Reel,3000
RS3236-1.8	RS3236-1.8YUTDN4	1.8V	±2.5%	XDFN1X1-4	BE	MSL3	Tape and Reel,10000
	RS3236-1.8YF5	1.8V	±2.5%	SOT23-5	LB18	MSL3	Tape and Reel,3000
	RS3236-1.8YC5	1.8V	±2.5%	SC70-5 [5]	LB18	MSL3	Tape and Reel,3000
	RS3236-1.8YF3	1.8V	±2.5%	SOT23-3	LB18	MSL3	Tape and Reel,3000
	RS3236-1.8YE3L	1.8V	±2.5%	SOT89-3(L-Type)	LB18L	MSL3	Tape and Reel,1000
RS3236-2.05	RS3236-2.05YUTDN4	2.05V	±2.5%	XDFN1X1-4	BF	MSL3	Tape and Reel,10000
	RS3236-2.05YF5	2.05V	±2.5%	SOT23-5	LB205	MSL3	Tape and Reel,3000
	RS3236-2.05YC5	2.05V	±2.5%	SC70-5 [5]	LB205	MSL3	Tape and Reel,3000
	RS3236-2.05YF3	2.05V	±2.5%	SOT23-3	LB205	MSL3	Tape and Reel,3000
RS3236-2.5	RS3236-2.5YUTDN4	2.5V	±2.5%	XDFN1X1-4	BG	MSL3	Tape and Reel,10000
	RS3236-2.5YF5	2.5V	±2.5%	SOT23-5	LB25	MSL3	Tape and Reel,3000
	RS3236-2.5YC5	2.5V	±2.5%	SC70-5 [5]	LB25	MSL3	Tape and Reel,3000
	RS3236-2.5YF3	2.5V	±2.5%	SOT23-3	LB25	MSL3	Tape and Reel,3000
RS3236-2.8	RS3236-2.8YUTDN4	2.8V	±2.5%	XDFN1X1-4	BH	MSL3	Tape and Reel,10000
	RS3236-2.8YF5	2.8V	±2.5%	SOT23-5	LB28	MSL3	Tape and Reel,3000

	RS3236-2.8YC5	2.8V	±2.5%	SC70-5 [5]	LB28	MSL3	Tape and Reel,3000
	RS3236-2.8YF3	2.8V	±2.5%	SOT23-3	LB28	MSL3	Tape and Reel,3000
RS3236-3.0	RS3236-3.0YUTDN4	3.0V	±2.5%	XDFN1X1-4	BI	MSL3	Tape and Reel,10000
	RS3236-3.0YF5	3.0V	±2.5%	SOT23-5	LB30	MSL3	Tape and Reel,3000
	RS3236-3.0YC5	3.0V	±2.5%	SC70-5 [5]	LB30	MSL3	Tape and Reel,3000
	RS3236-3.0YF3	3.0V	±2.5%	SOT23-3	LB30	MSL3	Tape and Reel,3000
RS3236-3.3	RS3236-3.3YUTDN4	3.3V	±2.5%	XDFN1X1-4	BJ	MSL3	Tape and Reel,10000
	RS3236-3.3YF5	3.3V	±2.5%	SOT23-5	LB33	MSL3	Tape and Reel,3000
	RS3236-3.3YC5	3.3V	±2.5%	SC70-5 [5]	LB33	MSL3	Tape and Reel,3000
	RS3236-3.3YF3	3.3V	±2.5%	SOT23-3	LB33	MSL3	Tape and Reel,3000
	RS3236-3.3YE3L	3.3V	±2.5%	SOT89-3(L-Type)	LB33L	MSL3	Tape and Reel,1000
RS3236-3.6	RS3236-3.6YUTDN4	3.6V	±2.5%	XDFN1X1-4	BK	MSL3	Tape and Reel,10000
	RS3236-3.6YF5	3.6V	±2.5%	SOT23-5	LB36	MSL3	Tape and Reel,3000
	RS3236-3.6YC5	3.6V	±2.5%	SC70-5 [5]	LB36	MSL3	Tape and Reel,3000
	RS3236-3.6YF3	3.6V	±2.5%	SOT23-3	LB36	MSL3	Tape and Reel,3000
RS3236-4.0	RS3236-4.0YUTDN4	4.0V	±2.5%	XDFN1X1-4	BL	MSL3	Tape and Reel,10000
	RS3236-4.0YF5	4.0V	±2.5%	SOT23-5	LB40	MSL3	Tape and Reel,3000
	RS3236-4.0YC5	4.0V	±2.5%	SC70-5 [5]	LB40	MSL3	Tape and Reel,3000
	RS3236-4.0YF3	4.0V	±2.5%	SOT23-3	LB40	MSL3	Tape and Reel,3000
	RS3236-4.0YE3L	4.0V	±2.5%	SOT89-3(L-Type)	LB40L	MSL3	Tape and Reel,1000
RS3236-5.0	RS3236-5.0YUTDN4	5.0V	±2.5%	XDFN1X1-4	BM	MSL3	Tape and Reel,10000
	RS3236-5.0YF5	5.0V	±2.5%	SOT23-5	LB50	MSL3	Tape and Reel,3000
	RS3236-5.0YC5	5.0V	±2.5%	SC70-5 [5]	LB50	MSL3	Tape and Reel,3000
	RS3236-5.0YF3	5.0V	±2.5%	SOT23-3	LB50	MSL3	Tape and Reel,3000
RS3236-1.35	RS3236-1.35YUTDN4	1.35V	±2.5%	XDFN1X1-4	BN	MSL3	Tape and Reel,10000
RS3236-1.85	RS3236-1.85YUTDN4	1.85V	±2.5%	XDFN1X1-4	BO	MSL3	Tape and Reel,10000
RS3236-2.7	RS3236-2.7YF5	2.7V	±2.5%	SOT23-5	LB27	MSL3	Tape and Reel,3000
RS3236-2.1	RS3236-2.1YF5	2.1V	±2.5%	SOT23-5	LB21	MSL3	Tape and Reel,3000
RS3236-2.85	RS3236-2.85YF5	2.85V	±2.5%	SOT23-5	LB285	MSL3	Tape and Reel,3000

PRODUCT	ORDERING NUMBER [2]	V_{OUT}(V)	V_{OUT} Accuracy	PACKAGE LEAD	PACKAGE MARKING [3]	MSL[4]	PACKAGE OPTION
RS3236-3.3	RS3236-3.3AYUTDN4	3.3V	±1%	XDFN1X1-4	B$\bar{J}$	MSL3	Tape and Reel,10000
RS3236-3.3	RS3236-3.3AYF5	3.3V	±1%	SOT23-5	LB33A	MSL3	Tape and Reel, 3000
RS3236-3.3	RS3236-3.3AYE3L	3.3V	±1%	SOT89-3 (L-Type)	LB33AL	MSL3	Tape and Reel,1000
RS3236-5.0	RS3236-5.0AYF5	5.0V	±1%	SOT23-5	LB50A	MSL3	Tape and Reel, 3000

MODEL	V_{FB} (V)	PIN-PACKAGE	ORDERING NUMBER	PACKAGE MARKING [3]	MSL[4]	PACKAGE OPTION
RS3236-ADJ8	0.81	SOT23-5	RS3236-ADJ8YF5	LBAD8	MSL3	Tape and Reel, 3000
RS3236-ADJ8	0.81	SC70-5 [5]	RS3236-ADJ8YC5	LBAD8	MSL3	Tape and Reel, 3000
RS3236-ADJC	1.21	SOT23-5	RS3236-ADJCYF5	LBADC	MSL3	Tape and Reel, 3000
RS3236-ADJC	1.21	SC70-5 [5]	RS3236-ADJCYC5	LBADC	MSL3	Tape and Reel, 3000

NOTE:
(1) This information is the most current data available for the designated devices. This data is subject to change without notice and revision of this document. For browser-based versions of this data sheet, refer to the right-hand navigation.

(2) RS3236-☐☐☐☐

        Package Type
        YUTDN4: XDFN1X1-4
        YF5:SOT23-5
        YC5:SC70-5
        YF3:SOT23-3
        YE3L:SOT89-3(L-Type)

        None:2.5% VOUT Accuracy
        A:1% VOUT Accuracy

        Output Voltage
        0.75:0.75V
        1.0:1.0V
            :
        5.0:5.0V
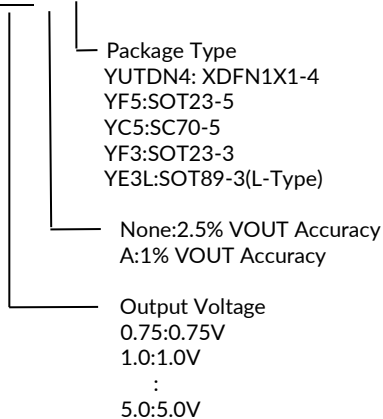
(3) There may be additional marking, which relates to the lot trace code information(include data code and vendor code)，the logo or the environmental category on the device.
(4) RUNIC classify the MSL level with using the common preconditioning setting in our assembly factory conforming to the JEDEC industrial standard J-STD-20F, Please align with RUNIC if your end application is quite critical to the preconditioning setting or if you have special requirement.
(5) Equivalent to SOT353.

8 ABSOLUTE MAXIMUM RATINGS

over operating free-air temperature range (unless otherwise noted) [1][2]

				MIN	MAX	UNIT
V_{IN}	Input voltage			-0.3	8	V
V_{EN}	Enable input voltage			-0.3	V_{IN}	V
θ_{JA}	Package thermal impedance [3]	SOT23-5			230	°C/W
		SOT23-3			295	
		XDFN1X1-4			315	
		SC70-5			380	
		SOT89-3 (L-Type)			210	
T_J	Junction temperature [4]			-40	150	°C
P_D	Continuous power dissipation [5]			Internally Limited		W
T_{stg}	Storage temperature			-65	150	°C

(1) 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.

(2) All voltages are with respect to the GND pin.

(3) The package thermal impedance is calculated in accordance with JESD-51.

(4) The maximum power dissipation is a function of $T_{J(MAX)}$, $R_{\theta JA}$, and T_A. The maximum allowable power dissipation at any ambient temperature is $P_D = (T_{J(MAX)} - T_A) / R_{\theta JA}$. All numbers apply for packages soldered directly onto a PCB.

(5) Internal thermal shutdown circuitry protects the device from permanent damage.

8.1 ESD Ratings

The following ESD information is provided for handling of ESD-sensitive devices in an ESD protected area only.

		VALUE	UNIT
$V_{(ESD)}$ Electrostatic discharge	Human-body model (HBM), per ANSI/ESDA/JEDEC JS-001[1]	±6000	V
	Machine model (MM)	±400	V

(1) JEDEC document JEP155 states that 500 V HBM allows safe manufacturing with a standard ESD control process.

ESD SENSITIVITY CAUTION

ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

8.2 Recommended Operating Conditions

over operating free-air temperature range (unless otherwise noted) [1]

		MIN	MAX	UNIT
V_{IN}	Input supply voltage	2.5	7.5	V
V_{EN}	Enable input voltage	0	V_{IN}	V
I_{OUT}	Output current	0	500	mA
T_A	Operating temperature	-40	85	°C

(1) All voltages are with respect to the GND pin.

8.3 ELECTRICAL CHARACTERISTICS

(V_{IN} = $V_{OUT (NOMINAL)}$ + 0.5V [1], Full = -40°C to 85°C, unless otherwise noted.)

PARAMETER	SYMBOL	CONDITIONS			TEMP	MIN	TYP	MAX	UNITS
Input Voltage	V_{IN}				+25°C	2.5[1]		7.5	V
Output Voltage Accuracy		I_{OUT} = 0.1mA			+25°C	-2.5		2.5	%
		I_{OUT} = 0.1mA，RS3236-xxA			+25°C	-1		1	%
Feedback Voltage	V_{FB}	I_{OUT} = 0.1 mA, RS3236-ADJ8			+25°C	0.79	0.81	0.83	V
		I_{OUT} = 0.1 mA, RS3236-ADJC			+25°C	1.18	1.21	1.24	V
Maximum Output Current					+25°C	500			mA
Current Limit	I_{LIM}				+25°C	500	800		mA
Ground Pin Current	I_Q	No load			+25°C		30	40	µA
Dropout Voltage [2]	V_{DROP}	I_{OUT} = 500mA	VOUT=1.2V		+25°C		900		mV
			VOUT=1.5V				630		
			VOUT=3.3V				450	600	
Line Regulation	ΔV_{LNR}	V_{IN} = (V_{OUT} + 0.5V) to 5.5V, I_{OUT} = 1mA			+25°C		0.1	0.2	%/V
Load Regulation	ΔV_{OUT}	I_{OUT} =0.1mA to 500mA, C_{OUT} = 1µF			+25°C		30	60	mV
		I_{OUT} =0.1mA to 500mA, C_{OUT} = 1µF, RS3236-ADJ			+25°C		0.5	10	mV
Output Voltage Noise	e_n	f = 10Hz to 100kHz, C_{BP} = 0.01µF, C_{OUT} = 10µF, I_{OUT}=30mA			+25°C		68		µVRMS
Output Voltage Temperature Coefficient	$\dfrac{\Delta V_{OUT}}{\Delta T_A \times V_{OUT}}$	I_{LOAD} = 0.1mA			FULL		35		ppm/°C
Power Supply Rejection Ratio	PSRR	C_{BP} = 0µF, I_{LOAD} = 30mA, C_{OUT} = 1µF, V_{IN} = V_{OUT}+1V ΔV_{RIPPLE}=0.2V_{P-P}	f = 217Hz		+25°C		72		dB
			f = 1kHz				70		
		C_{BP} = 10nF, I_{LOAD} = 30mA, C_{OUT} = 1µF, V_{IN} = V_{OUT}+1V ΔV_{RIPPLE}=0.2V_{P-P}	f = 217Hz		+25°C		74		dB
			f = 1kHz				70		
SHUTDOWN									
EN Input Threshold	V_{IH}	V_{IN} = 2.5V			Full	1.4			V
	V_{IL}				Full			0.4	
EN Input Threshold	V_{IH}	V_{IN} = 7.5V			Full	2.3			V
	V_{IL}				Full			0.8	
EN Input Bias Current	I_{BH}	EN = 7.5V			+25°C		0.01	1	µA
	I_{BL}	EN = 0V			Full		0.01		
Shutdown Supply Current	$I_{Q(SHDN)}$	EN = 0V			Full		0.01	1	µA
Start-Up Time [3]	t_{STR}	C_{OUT} = 1µF, No Load			+25°C		180		µs
R_{ON} of Discharge MOSFET		V_{IN} = 4.0V, V_{EN} = 0V			+25°C		260		Ω
THERMAL PROTECTION [4]									
Thermal Shutdown Temperature	T_{SHDN}						150		°C
Thermal Shutdown Hysteresis	ΔT_{SHDN}						15		°C

NOTES:

1. V_{IN} = $V_{OUT (NOMINAL)}$ + 0.5V or 2.5V, whichever is greater.

2. The dropout voltage is defined as V_{IN} - V_{OUT}, when V_{OUT} is 100mV below the value of V_{OUT} for V_{IN} = V_{OUT} + 0.5V.

3. Time needed for V_{OUT} to reach 90% of final value.

4. RS3236 fixed output versions below 2V, as well as RS3236-ADJ. No hysteresis characteristics during temperature protection.

8.4 TYPICAL APPLICATION CIRCUIT

Typical Circuit

INPUT
1.7V to 7.5V

IN 1   OUT 5   OUTPUT

C_{IN}
1uF

C_{OUT}
1uF

ON

OFF

EN 3   BP 4   NC

GND

2

For most application, BP can float.

SOT23-5/SOT353(SC70-5)

Typical Circuit

INPUT
1.7V to 7.5V

IN 1   OUT 5   OUTPUT

C_{IN}
1uF

C_{OUT}
1uF

ON

OFF

If need deduce more noise, C_{BP} = 0.01uF

EN 3   BP 4

GND

2

C_{BP}
0.01uF

SOT23-5/SOT353(SC70-5)

Typical Circuit

INPUT
1.7V to 7.5V

IN 1   OUT 5   OUTPUT

C_{IN}
1uF

RS3236
-ADJ8

C_{OUT}
1uF

R1

ON

OFF

EN 3   FB 4

GND

2

R2

SOT23-5/SOT353(SC70-5)

NOTE: Choose R_2 = 160kΩ to maintain a 5μA minimum load. Calculate the value for R_1 using the following equation:

$$R1 = R2 * (\frac{V_{OUT}}{0.81} - 1)$$

Typical Circuit

INPUT
1.7V to 7.5V

IN 1   OUT 5   OUTPUT

C_{IN}
1uF

RS3236
-ADJC

C_{OUT}
1uF

R1

ON

OFF

EN 3   FB 4

GND

2

R2

SOT23-5/SOT353(SC70-5)

NOTE: Choose R_2 = 240kΩ to maintain a 5μA minimum load. Calculate the value for R_1 using the following equation:

$$R1 = R2 * (\frac{V_{OUT}}{1.21} - 1)$$

Typical Circuit

INPUT
1.7V to 7.5V

IN 4   OUT 1   OUTPUT

C_{IN}
1uF

RS3236

C_{OUT}
1uF

ON

OFF

EN 3

GND

2

UTDFN-1×1-4

8.5 TYPICAL PERFORMANCE CHARACTERISTICS

NOTE: The graphs and tables provided following this note are a statistical summary based on a limited number of samples and are provided for informational purposes only.

V_{IN} = $V_{OUT\ (NOMINAL)}$ + 0.5V, V_{OUT}=3.3V, C_{IN} = 1µF, C_{OUT} = 1µF, C_{BP} = 0µF, T_A = 25℃, unless otherwise noted.

Turn On Speed With EN Pin

Figure 1. Turn on Speed with EN Pin

Turn Off Speed With EN Pin
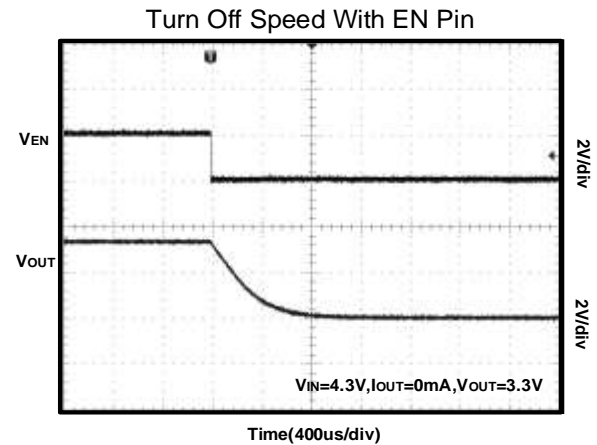
Figure 2. Turn Off Speed with EN Pin

Line Transient Response
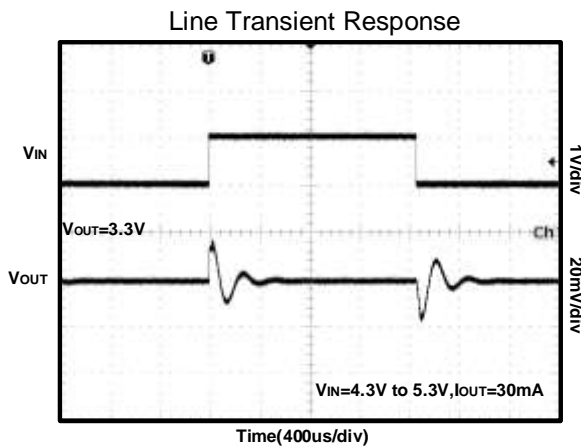
Figure 3. Line Transient Response

SHUTDOWN

Figure 4. SHUTDOWN
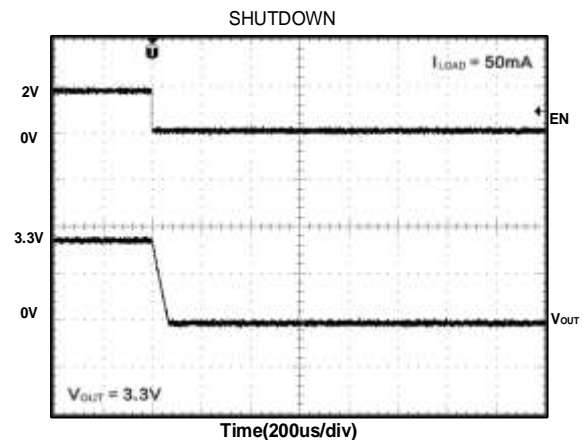
Load Transient Response
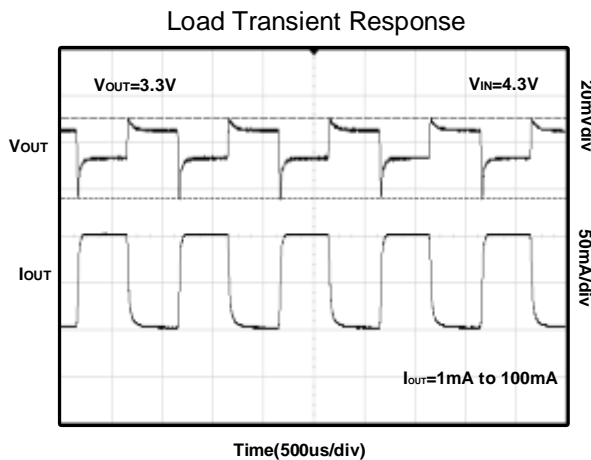
Figure 5. Load Transient Response

Load Transient Response
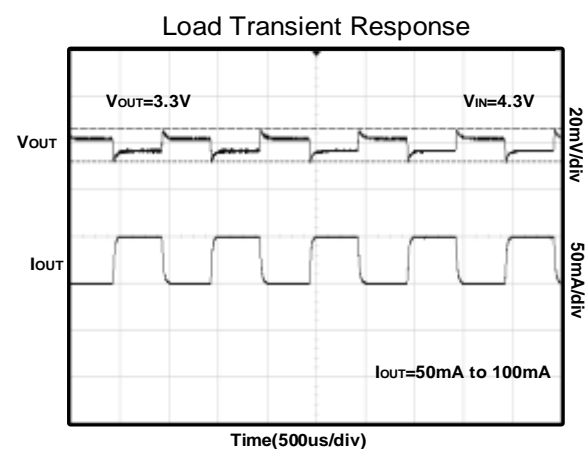
Figure 6. Load Transient Response

TYPICAL PERFORMANCE CHARACTERISTICS

NOTE: The graphs and tables provided following this note are a statistical summary based on a limited number of samples and are provided for informational purposes only.

V_{IN} = $V_{OUT (NOMINAL)}$ + 0.5V, V_{OUT}=3.3V, C_{IN} = 1μF, C_{OUT} = 1μF, C_{BP} = 0.1μF, T_A = 25℃, unless otherwise noted.
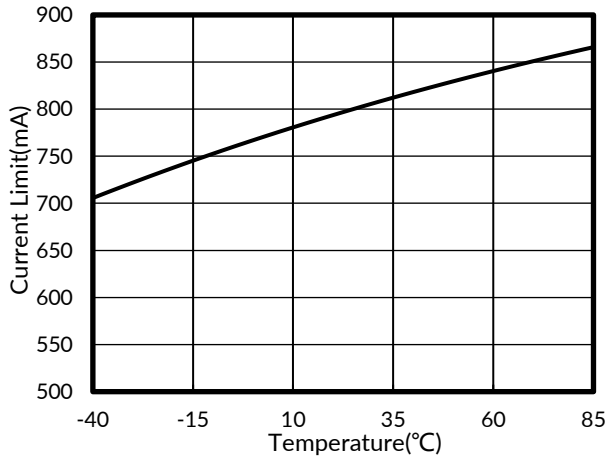
Figure 7. Current Limit vs Temperature
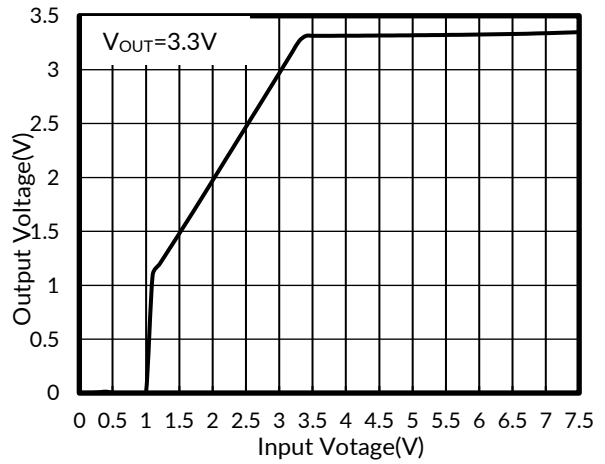
Figure 8. Output Voltage vs Input Voltage
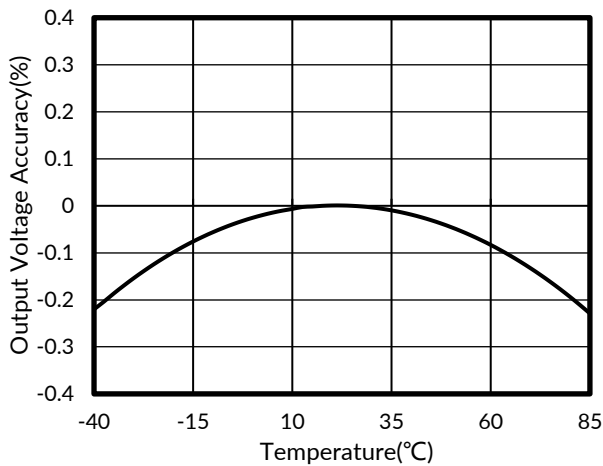
Figure 9. Output Voltage Accuracy vs Temperature
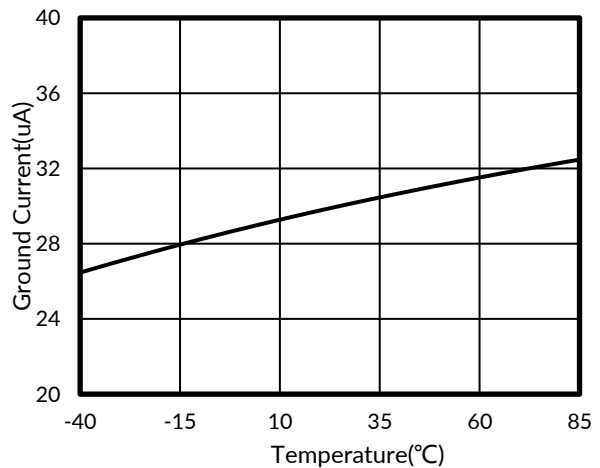
Figure 10. Ground Current vs Temperature
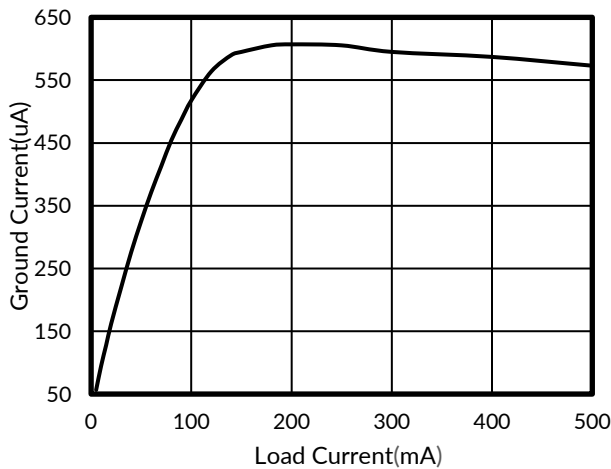
Figure 11. Ground Current vs Load Current
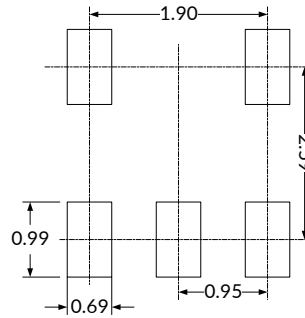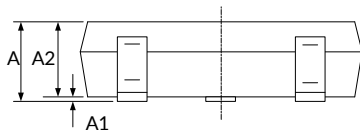
9 PACKAGE OUTLINE DIMENSIONS
SOT23-3 [3]

RECOMMENDED LAND PATTERN (Unit: mm)

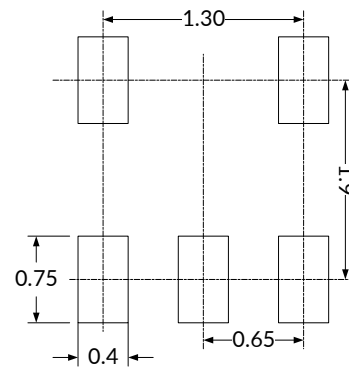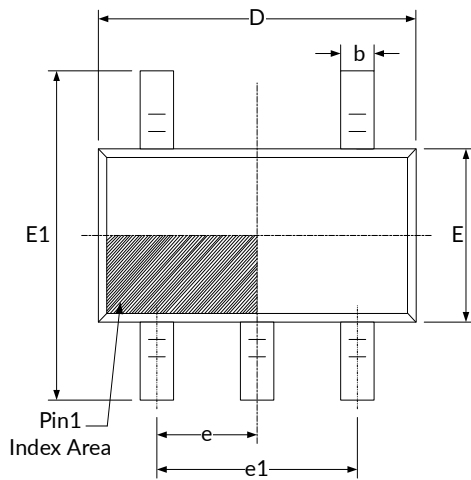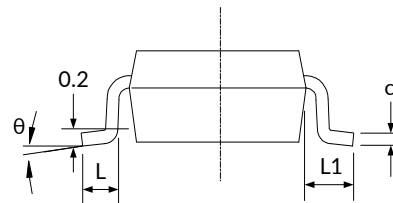| Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A [1]	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D [1]	2.820	3.020	0.111	0.119
E [1]	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC) [2]		0.037(BSC) [2]	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

NOTE:
1. Plastic or metal protrusions of 0.15mm maximum per side are not included.
2. BSC (Basic Spacing between Centers), "Basic" spacing is nominal.
3. This drawing is subject to change without notice.

SOT23-5 [3]

RECOMMENDED LAND PATTERN (Unit: mm)

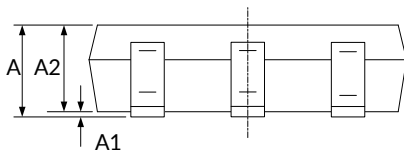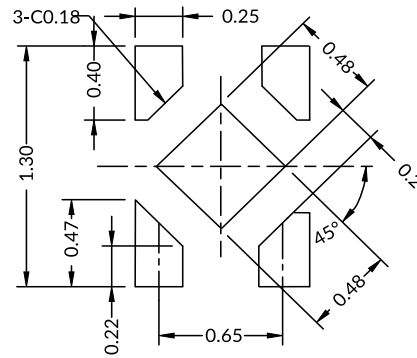| Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A [1]	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D [1]	2.820	3.020	0.111	0.119
E [1]	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC) [2]		0.037(BSC) [2]	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

NOTE:

1. Plastic or metal protrusions of 0.15mm maximum per side are not included.
2. BSC (Basic Spacing between Centers), "Basic" spacing is nominal.
3. This drawing is subject to change without notice.

SC70-5 [3]

Pin1
Index Area

RECOMMENDED LAND PATTERN (Unit: mm)

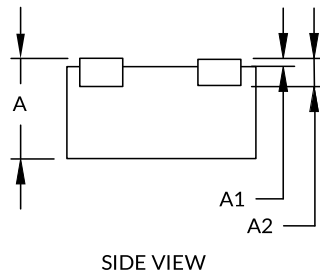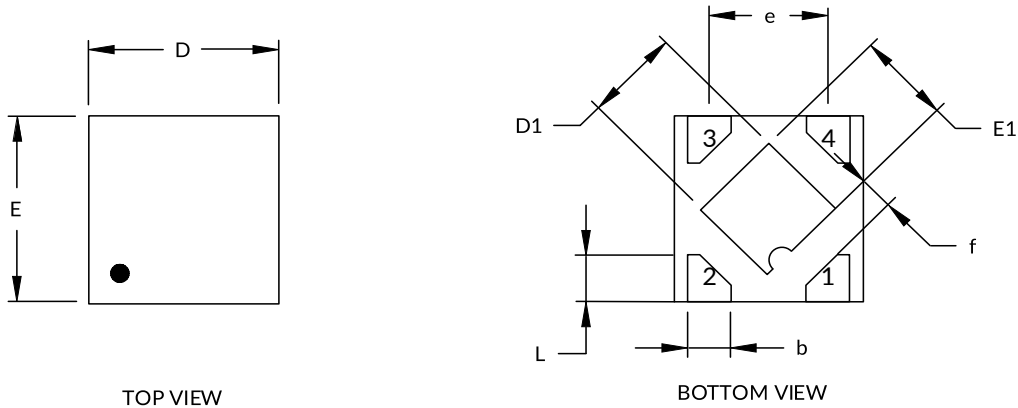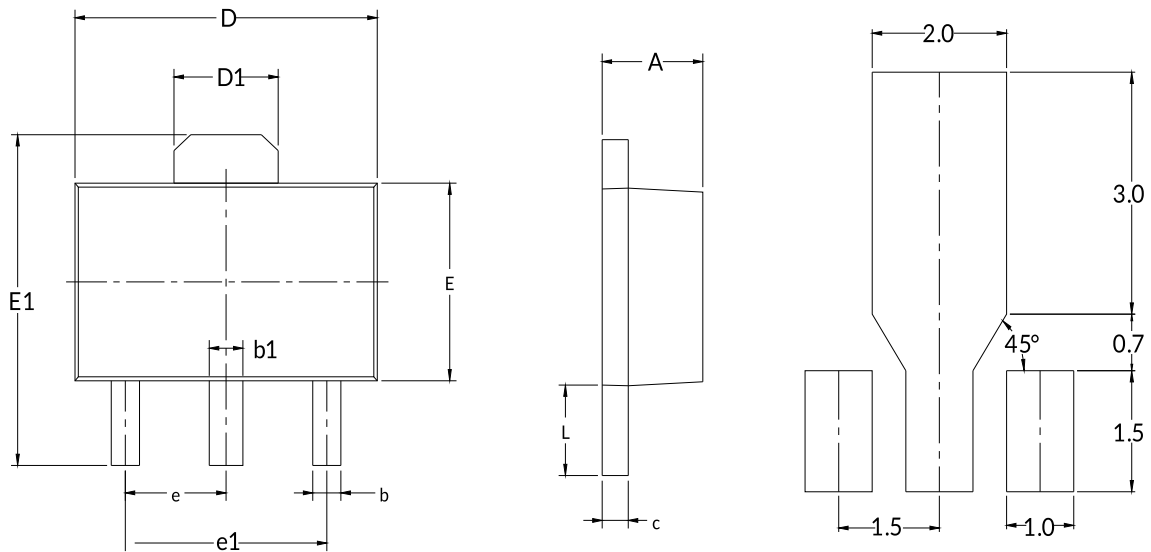| Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A [1]	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.080	0.150	0.003	0.006
D [1]	2.000	2.200	0.079	0.087
E [1]	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650(BSC) [2]		0.026(BSC) [2]	
e1	1.300(BSC) [2]		0.051(BSC) [2]	
L	0.260	0.460	0.010	0.018
L1	0.525		0.021	
θ	0°	8°	0°	8°

NOTE:
    1. Plastic or metal protrusions of 0.15mm maximum per side are not included.
    2. BSC (Basic Spacing between Centers), "Basic" spacing is nominal.
    3. This drawing is subject to change without notice.

XDFN1X1-4 [3]

TOP VIEW

BOTTOM VIEW

SIDE VIEW

RECOMMENDED LAND PATTERN   (Unit: mm)

Symbol	Dimensions In Millimeters			Dimensions In Inches		
	MIN	TYP	MAX	MIN	TYP	MAX
A [1]	0.340	0.370	0.400	0.013	0.015	0.016
A1	0.000	0.020	0.050	0.000	0.001	0.002
A2	0.100 REF [2]			0.004 REF [2]		
D [1]	0.950	1.000	1.050	0.037	0.039	0.041
D1	0.430	0.480	0.530	0.017	0.019	0.021
E [1]	0.950	1.000	1.050	0.037	0.039	0.041
E1	0.430	0.480	0.530	0.017	0.019	0.021
b	0.170	0.220	0.270	0.007	0.009	0.011
e	0.600	0.650	0.700	0.024	0.026	0.028
f	0.195 REF [2]			0.008 REF [2]		
L	0.200	0.250	0.300	0.008	0.010	0.012

NOTE:
    1. Plastic or metal protrusions of 0.075mm maximum per side are not included.
    2. REF is the abbreviation for Reference.
    3. This drawing is subject to change without notice.

SOT89-3 [4]

RECOMMENDED LAND PATTERN (Unit: mm)

| Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A [1]	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 [1]	4.400	4.600	0.173	0.181
D1	1.550 REF [2]		0.061 REF [2]	
E [1]	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 BSC [3]		0.060 BSC [3]	
e1	3.000 BSC [3]		0.118 BSC [3]	
L	0.900	1.200	0.035	0.047

NOTE:
1. Plastic or metal protrusions of 0.15mm maximum per side are not included.
2. REF is the abbreviation for Reference.
3. BSC (Basic Spacing between Centers), "Basic" spacing is nominal.
4. This drawing is subject to change without notice.

10 TAPE AND REEL INFORMATION

REEL DIMENSIONS   TAPE DIMENSION
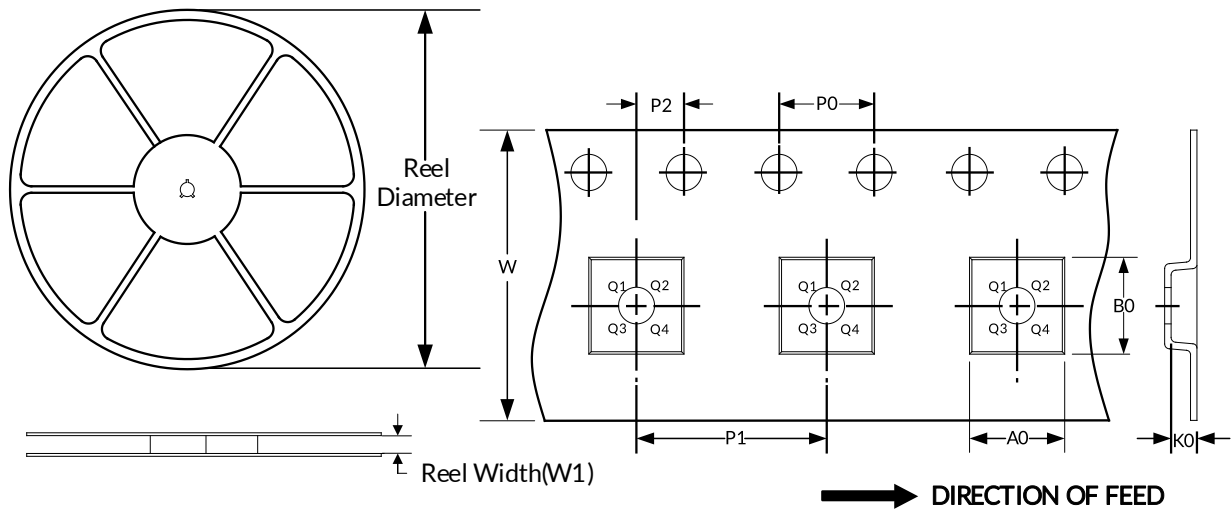
NOTE: The picture is only for reference. Please make the object as the standard.

KEY PARAMETER LIST OF TAPE AND REEL

Package Type	Reel Diameter	Reel Width(mm)	A0 (mm)	B0 (mm)	K0 (mm)	P0 (mm)	P1 (mm)	P2 (mm)	W (mm)	Pin1 Quadrant
XDFN1X1-4	7"	9.5	1.16	1.16	0.5	4.0	4.0	2.0	8.0	Q1
SOT23-3	7"	9.0	3.20	3.30	1.30	4.0	4.0	2.0	8.0	Q3
SOT23-5	7"	9.5	3.20	3.20	1.40	4.0	4.0	2.0	8.0	Q3
SC70-5	7"	9.5	2.25	2.55	1.20	4.0	4.0	2.0	8.0	Q3
SOT89-3	7"	13.2	4.85	4.45	1.85	4.0	8.0	2.0	12.0	Q3

NOTE:
1. All dimensions are nominal.
2. Plastic or metal protrusions of 0.15mm maximum per side are not included.

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