

Features

- Low power consumption
- Low voltage drop
- Low temperature coefficient
- High input voltage (up to 24V)

Applications

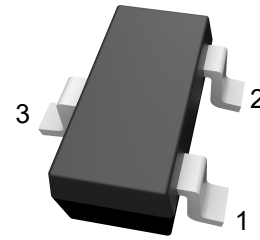
- Battery-powered equipment
- Communication equipment
- Audio/Video equipment

General Description

The TN71KXXSC series is a set of three-terminal low power high voltage regulators implemented in CMOS technology. They allow input voltages as high as 24V. They are available with several fixed output voltages ranging from 3.0V to 5.0V. CMOS technology ensures low voltage drop and low quiescent current.

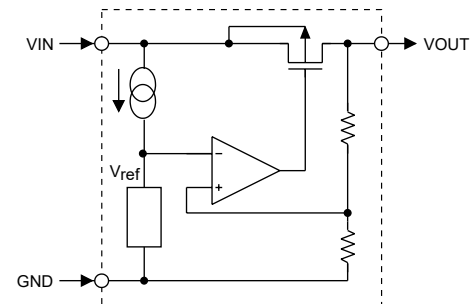
Although designed primarily as fixed voltage regulators, these devices can be used with external components to obtain variable voltages and currents.

SOT-23-3



1.GND 2.VOUT 3.VIN

Block Diagram



Selection Table

Part No.	Output Voltage	Tolerance
TN71K30SC	3.0V	±5%
TN71K33SC	3.3V	±5%
TN71K36SC	3.6V	±5%
TN71K44SC	4.4V	±5%
TN71K50SC	5.0V	±5%

Absolute Maximum Ratings (Ta=25°C unless otherwise specified)

Symbol	Parameter	Rating	Units
V _{IN}	Supply Voltage	-0.3V to 28V	V
P _D	Power Dissipation	200	mW
T _{OPR}	Operating Ambient	-40 ~ +85	°C
T _{STG}	Storage Temperature	-65 ~ +125	°C

Note: These are stress ratings only. Stresses exceeding the range specified under Absolute Maximum Ratings may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

Electrical Characteristics

TN71K30SC (Ta=25°C)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Units
		V _{IN}	Conditions				
V _{OUT}	Output Voltage	5V	I _{OUT} =10mA	2.85	3.0	3.15	V
I _{OUT}	Output Current	5V		20	30		mA
ΔV _{OUT}	Load Regulation	5V	1mA≤I _{OUT} ≤20mA		60	100	mV
V _D	Voltage Drop		I _{OUT} =1mA		100		mV
I _{SS}	Current Consumption	5V	No load		4	6.0	uA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation		4V≤V _{IN} ≤24V I _{OUT} =1mA		0.2		%/V
V _{IN}	Input Voltage					24	V
$\frac{\Delta V_{OUT}}{\Delta Ta}$	Temperature Coefficient	5V	I _{OUT} =10mA 0°C<Ta<70°C		±0.45		mV/°C

TN71K33SC (Ta=25°C)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Units
		V _{IN}	Conditions				
V _{OUT}	Output Voltage	5.5V	I _{OUT} =10mA	3.135	3.3	3.465	V
I _{OUT}	Output Current	5.5V		20	30		mA
ΔV _{OUT}	Load Regulation	5.5V	1mA≤I _{OUT} ≤30mA		60	100	mV
V _D	Voltage Drop		I _{OUT} =1mA		100		mV
I _{SS}	Current Consumption	5.5V	No load		4	6	uA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation		4.5V≤V _{IN} ≤24V I _{OUT} =1mA		0.2		%/V
V _{IN}	Input Voltage					24	V
$\frac{\Delta V_{OUT}}{\Delta Ta}$	Temperature Coefficient	5.5V	I _{OUT} =10mA 0°C<Ta<70°C		±0.5		mV/°C

TN71K36SC (Ta=25°C)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Units
		V _{IN}	Conditions				
V _{OUT}	Output Voltage	5.6V	I _{OUT} =10mA	3.42	3.6	3.78	V
I _{OUT}	Output Current	5.6V		20	30		mA
ΔV _{OUT}	Load Regulation	5.6V	1mA≤I _{OUT} ≤30mA		60	100	mV
V _D	Voltage Drop		I _{OUT} =1mA		60		mV
I _{SS}	Current Consumption	5.6V	No load		3.0	7.0	uA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation		4.6V≤V _{IN} ≤24V I _{OUT} =1mA		0.2		%/V
V _{IN}	Input Voltage					24	V
$\frac{\Delta V_{OUT}}{\Delta Ta}$	Temperature Coefficient	5.6V	I _{OUT} =10mA 0°C<Ta<70°C		±0.6		mV/°C

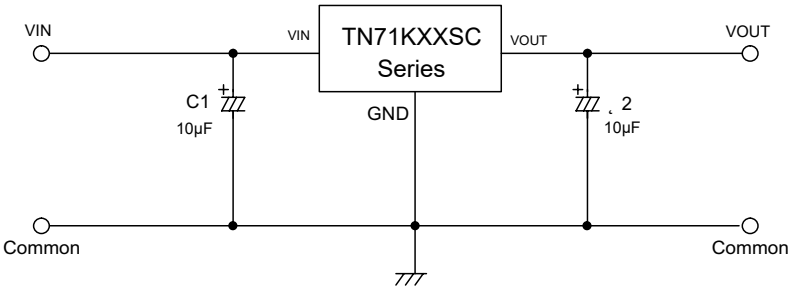
TN71K44SC (Ta=25°C)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Units
		V _{IN}	Conditions				
V _{OUT}	Output Voltage	6.4V	I _{OUT} =10mA	4.18	4.4	4.62	V
I _{OUT}	Output Current	6.4V		20	30		mA
ΔV _{OUT}	Load Regulation	6.4V	1mA≤I _{OUT} ≤30mA		60	100	mV
V _D	Voltage Drop		I _{OUT} =1mA		100		mV
I _{SS}	Current Consumption	6.4V	No load		4	7.5	uA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation		5.4V≤V _{IN} ≤24V I _{OUT} =1mA		0.2		%/V
V _{IN}	Input Voltage					24	V
$\frac{\Delta V_{OUT}}{\Delta Ta}$	Temperature Coefficient	6.4V	I _{OUT} =10mA 0°C<Ta<70°C		±0.7		mV/°C

TN71K50SC (Ta=25°C)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Units
		V _{IN}	Conditions				
V _{OUT}	Output Voltage	7V	I _{OUT} =10mA	4.75	5.0	5.25	V
I _{OUT}	Output Current	7V		20	30		mA
ΔV _{OUT}	Load Regulation	7V	1mA≤I _{OUT} ≤30mA		60	100	mV
V _D	Voltage Drop		I _{OUT} =1mA		100		mV
I _{SS}	Current Consumption	7V	No load		5	9	uA
$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	Line Regulation		6V≤V _{IN} ≤24V I _{OUT} =1mA		0.2		%/V
V _{IN}	Input Voltage					24	V
$\frac{\Delta V_{OUT}}{\Delta Ta}$	Temperature Coefficient	7V	I _{OUT} =10mA 0°C<Ta<70°C		±0.75		mV/°C

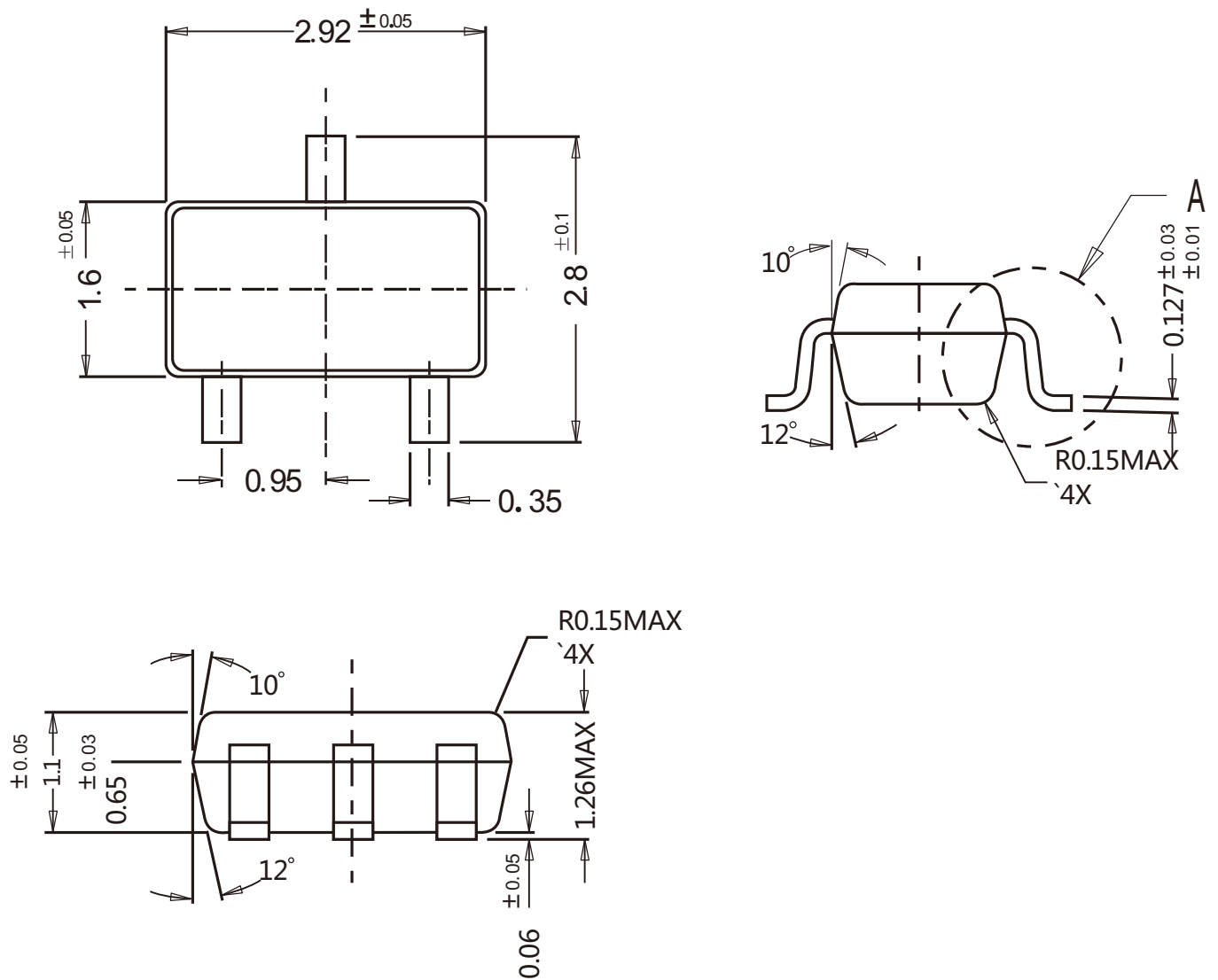
Basic Circuits



Package Outline

SOT-23-3

Dimensions in mm

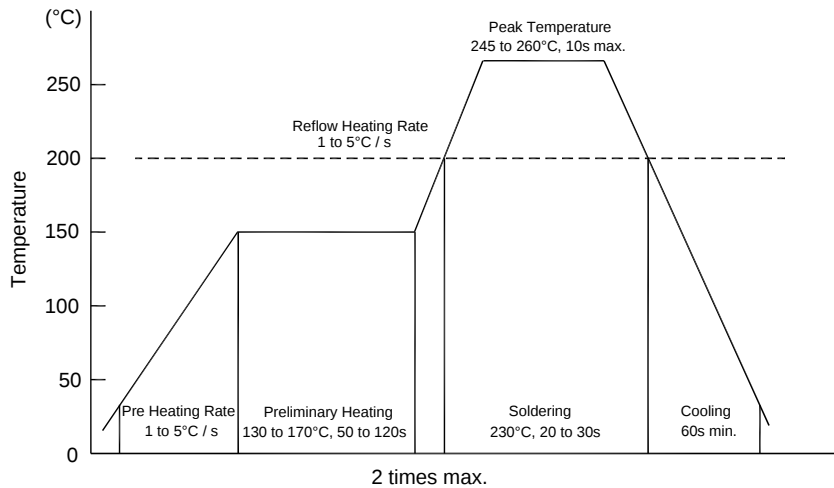


Ordering Information

Device	Package	Shipping
TN71KXXSC Series	SOT-23-3	3000/Reel&Tape(7inch)

Conditions of Soldering and Storage

◆ Recommended condition of reflow soldering



Recommended peak temperature is over 245 °C. If peak temperature is below 245 °C, you may adjust the following parameters:

- Time length of peak temperature (longer)
- Time length of soldering (longer)
- Thickness of solder paste (thicker)

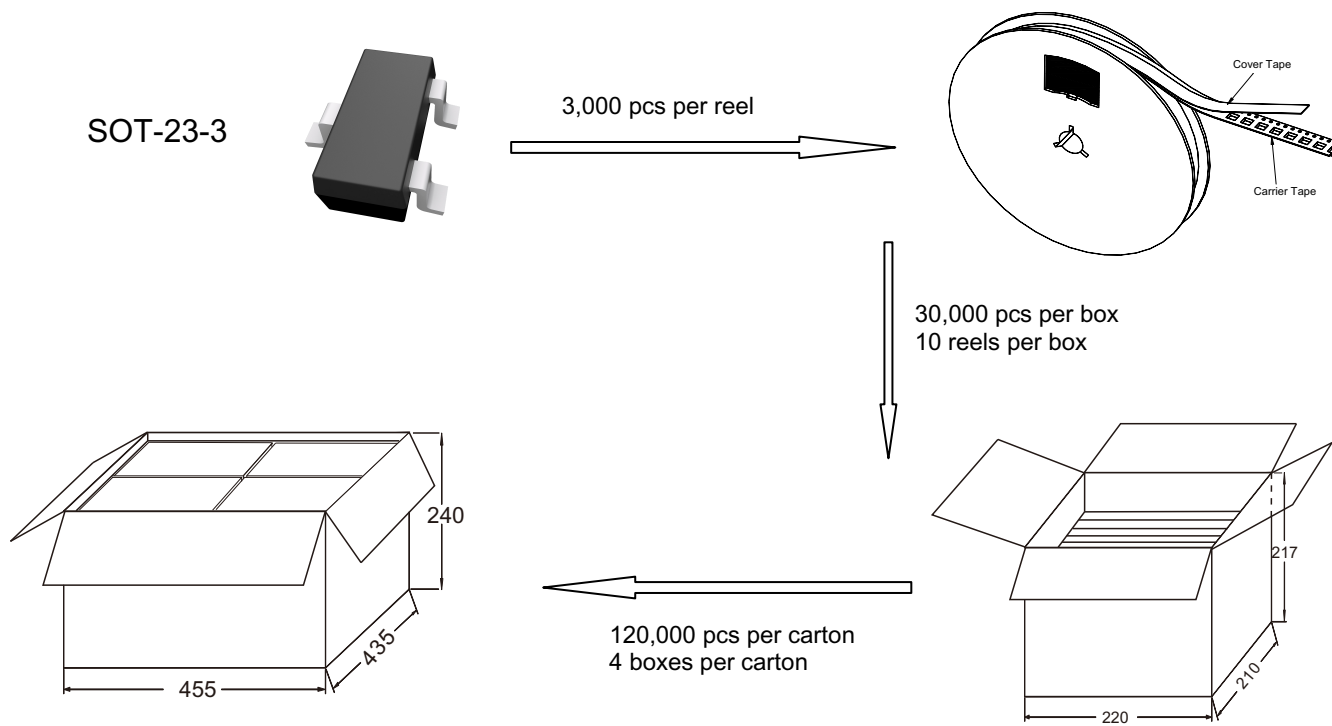
◆ Conditions of hand soldering

- Temperature: 370 °C
- Time: 3s max.
- Times: one time

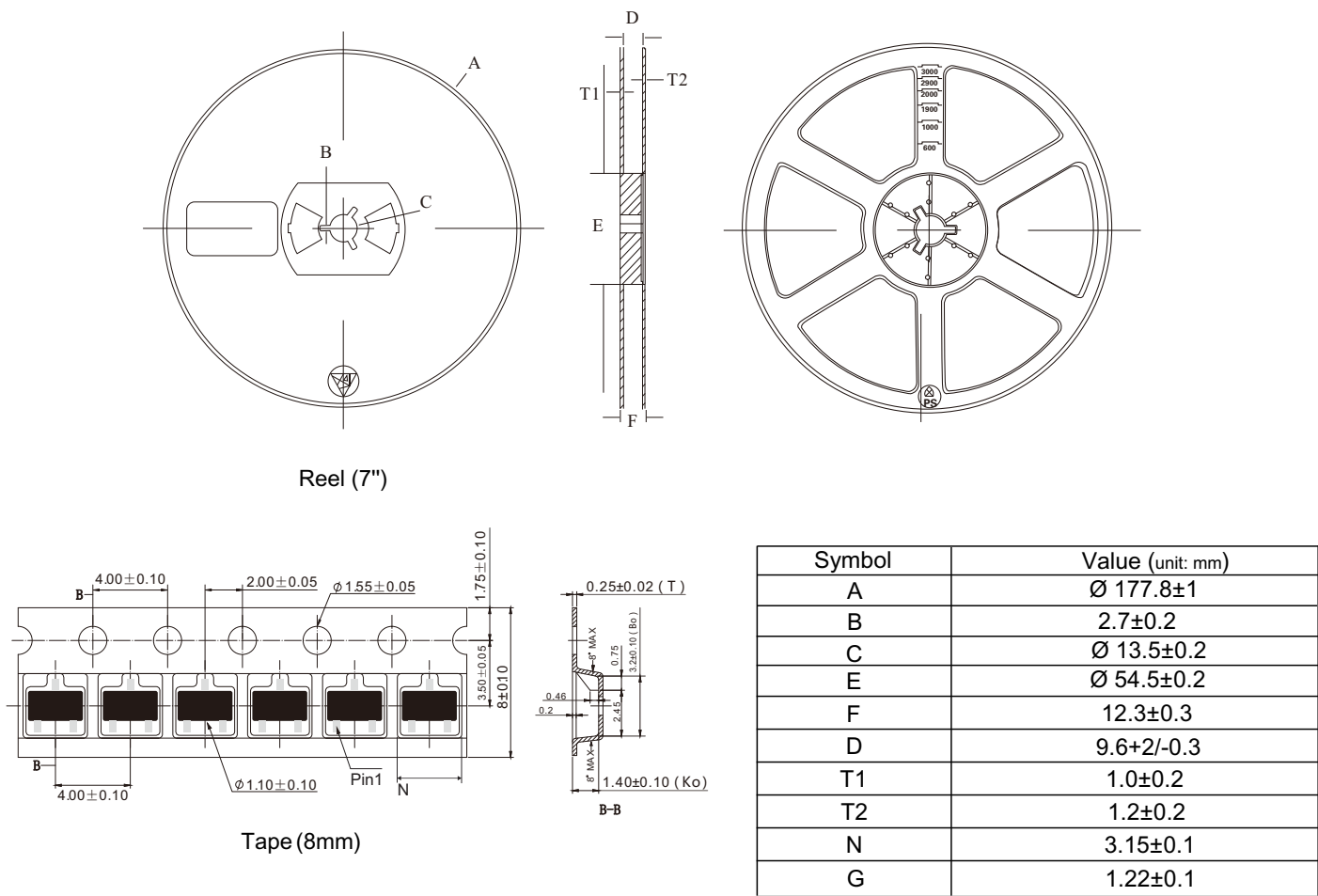
◆ Storage conditions

- **Temperature**
5 to 40 °C
- **Humidity**
30 to 80% RH
- **Recommended period**
One year after manufacturing

Package Specifications



2. Tape and reel data(7inch Units:mm)



Contact Information

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For additional information, please contact your local Sales Representative.

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Product Specification Statement

The product specification aims to provide users with a reference regarding various product parameters, performance, and usage. It presents certain aspects of the product's performance in graphical form and is intended solely for users to select product and make product comparisons, enabling users to better understand and evaluate the characteristics and advantages of the product. It does not constitute any commitment, warranty, or guarantee.

The product parameters described in the product specification are numerical values, characteristics, and functions obtained through actual testing or theoretical calculations of the product in an independent or ideal state. Due to the complexity of product applications and variations in test conditions and equipment, there may be slight fluctuations in parameter test values. TANI shall not guarantee that the actual performance of the product when installed in the customer's system or equipment will be entirely consistent with the product specification, especially concerning dynamic parameters. It is recommended that users consult with professionals for product selection and system design. Users should also thoroughly validate and assess whether the actual parameters and performance when installed in their respective systems or equipment meet their requirements or expectations. Additionally, users should exercise caution in verifying product compatibility issues, and TANI assumes no responsibility for the application of the product. TANI strives to provide accurate and up-to-date information to the best of our ability. However, due to technical, human, or other reasons, TANI cannot guarantee that the information provided in the product specification is entirely accurate and error-free. TANI shall not be held responsible for any losses or damages resulting from the use or reliance on any information in these product specifications.

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Users are advised to pay attention to the parameter limit values specified in the product specification and maintain a certain margin in design or application to ensure that the product does not exceed the parameter limit values defined in the product specification. This precaution should be taken to avoid exceeding one or more of the limit values, which may result in permanent irreversible damage to the product, ultimately affecting the quality and reliability of the system or equipment.

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