V Vin, 3A Synchronous Step-down DCDC Converter

FEATURES

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DESCRIPTION

APPLICATIONS

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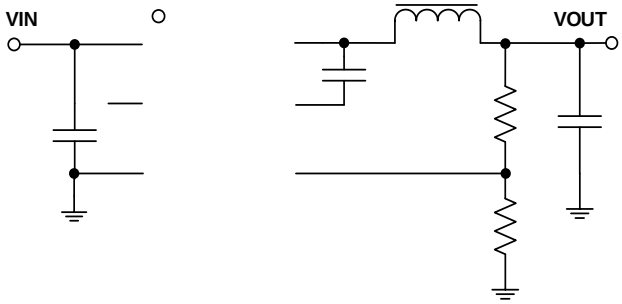
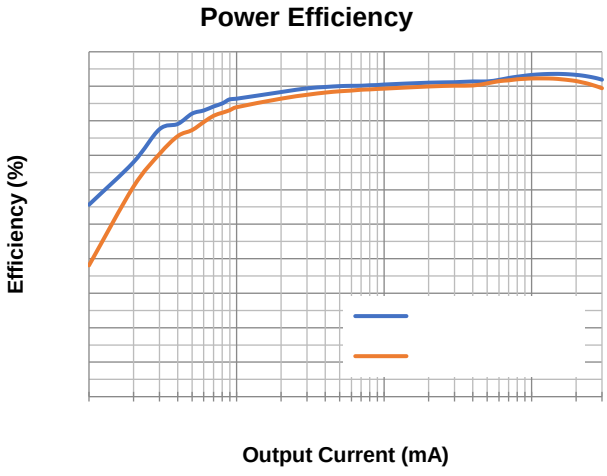




REVISION HISTORY

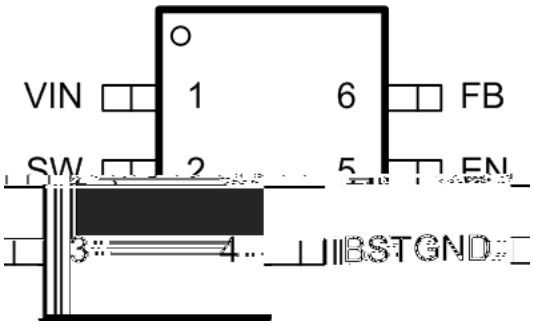
DEVICE ORDER INFORMATION

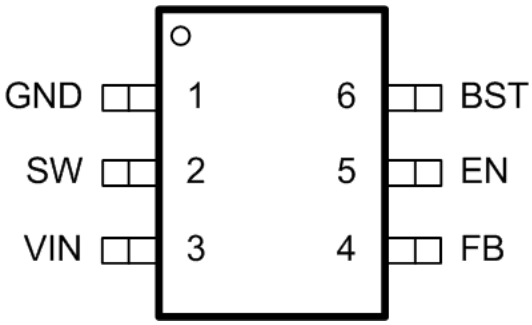
PART NUMBER	PACKAGE MARKING	PACKAGE DISCRIPTION

ABSOLUTE MAXIMUM RATING

SYMBOL	PARAMETER	RATING	UNIT

PIN CONFIGURATION





PIN FUNCTIONS

NAME	PIN NUMBER		PIN FUNCTION
	SOT563	TSOT23-6	

RECOMMENDED OPERATING CONDITIONS

PARAMETER	DEFINITION	MIN	MAX	UNIT

ESD RATINGS

PARAMETER	DEFINITION	MIN	MAX	UNIT

THERMAL INFORMATION

PARAMETER	THERMAL METRIC	SOT563	TSOT23-6	UNIT
θJA				
θJC				

θJA θJC θJA θJC

θJA θJC

ELECTRICAL CHARACTERISTICS

SYMBOL	PARAMETER	TEST CONDITION	MIN	TYP	MAX	UNIT
Power Supply and Output						
Enable, Soft Start and Working Modes						
Power MOSFETs						
						mΩ
						mΩ
Feedback and Error Amplifier						
Current Limit						
Switching Frequency						
Soft Start Time						
Protection						

TYPICAL CHARACTERISTICS

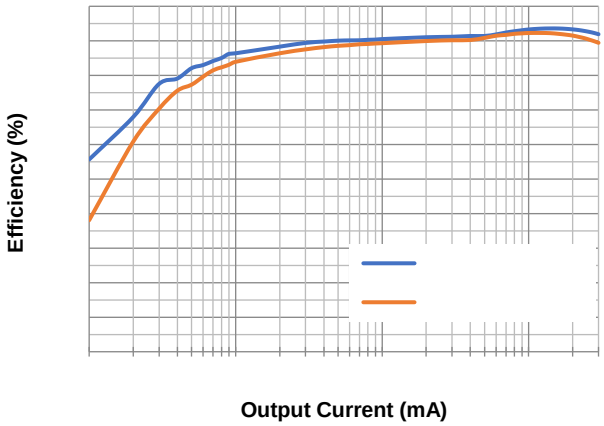


Figure 1. SCT2230 Efficiency, Vin=12V

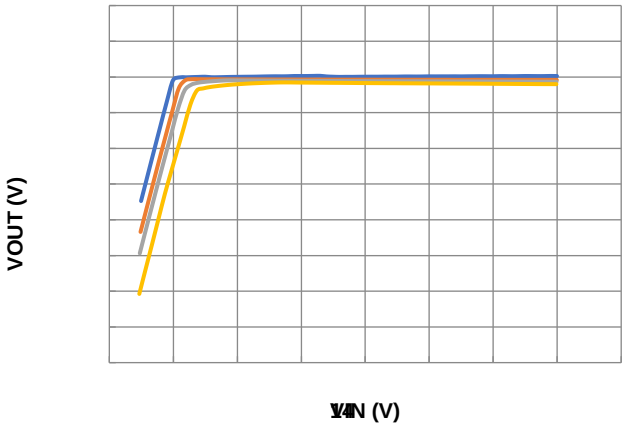


Figure 2. VOUT Vs. VIN

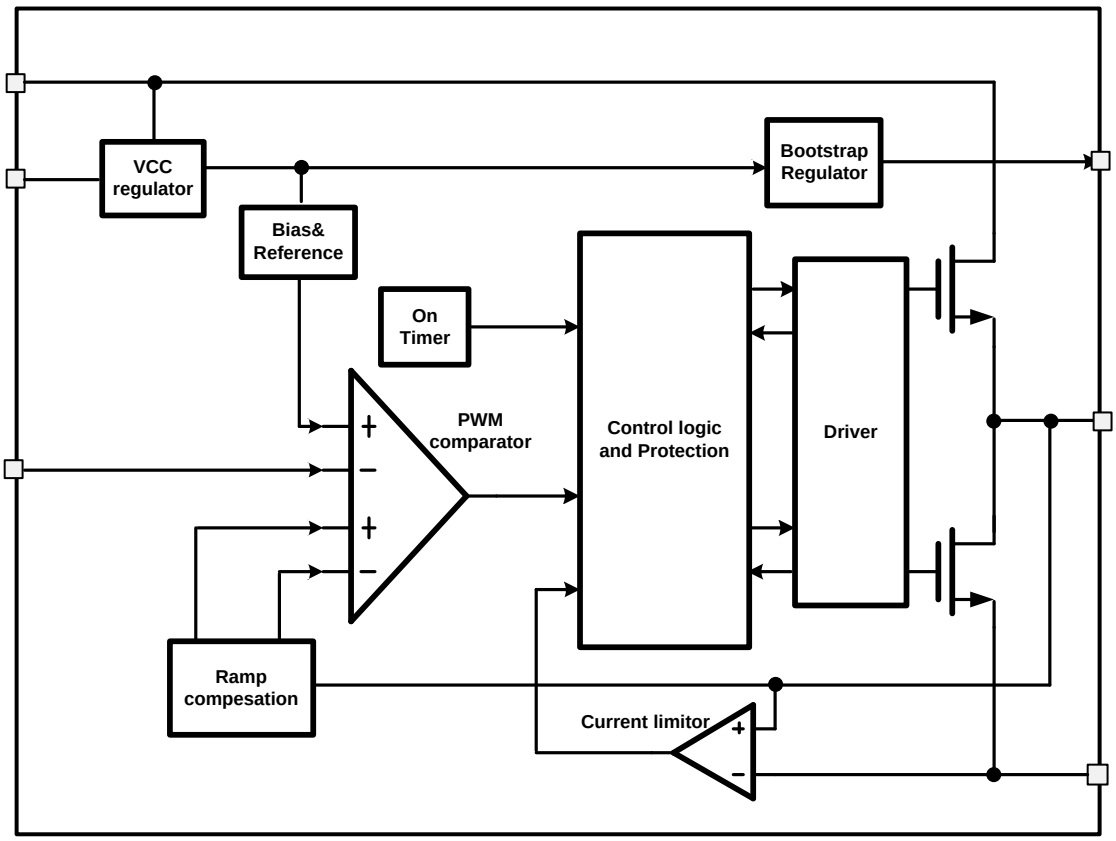
Figure 2. Load Regulation

Figure 4. FB Voltage Vs. Temperature

Figure 5. UVLO Vs. Temperature

Figure 6. Quiescent Current Vs. Temperature

FUNCTIONAL BLOCK DIAGRAM



OPERATION

Adaptive On-time Control

Under Voltage Lockout UVLO

Enable and Start up

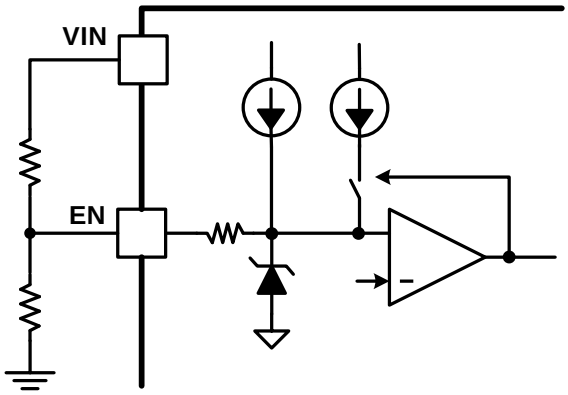


Figure 7. Adjustable VIN UVLO

APPLICATION INFORMATION

Typical Application

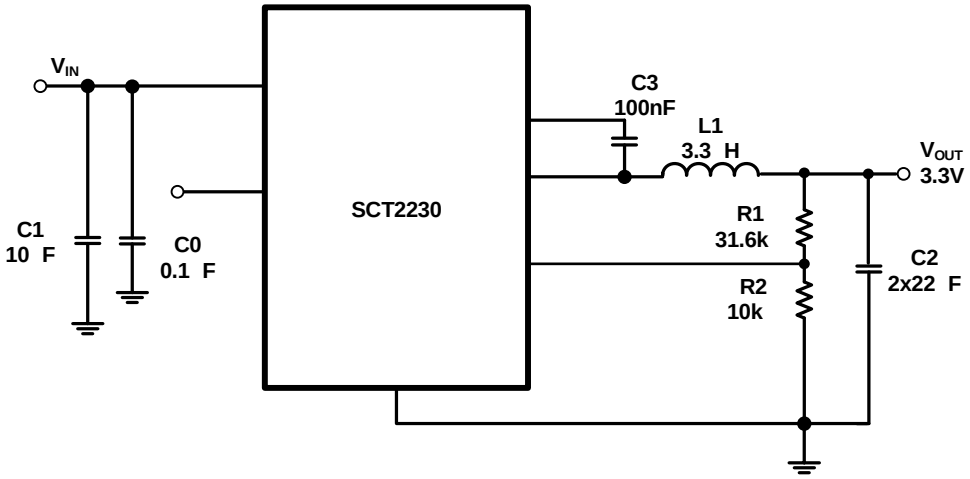


Figure 8. 12V Input, 3.3V/3A Output

Design Parameters

Design Parameters	Example Value

Input Capacitor Selection

µF is

µF ceramic bypass capacitor is recommended

$$\Delta \quad \frac{\text{OUT}}{\text{IN}} \quad -$$

-
-
-

Inductor Selection

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Output Feedback Resistor Divider Selection

1 – 2

Table 2. Recommended Component Selections

Output Voltage (V)	SCT2231		L (μH)	C1 (μF)	C2 (μF)	C3 (nF)

Application Waveforms

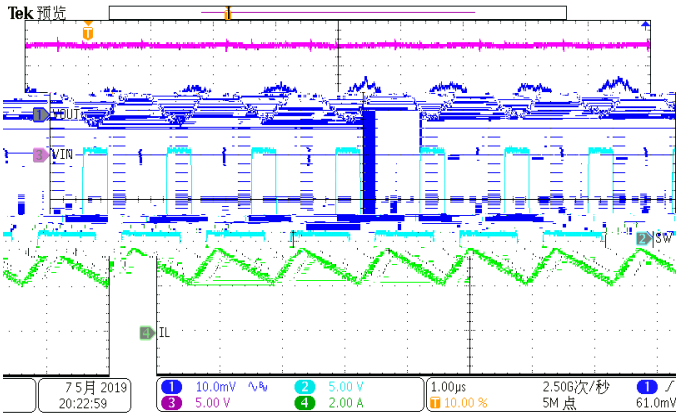


Figure 9. SW node waveform and Output Ripple
VIN=12V, IOUT=3A

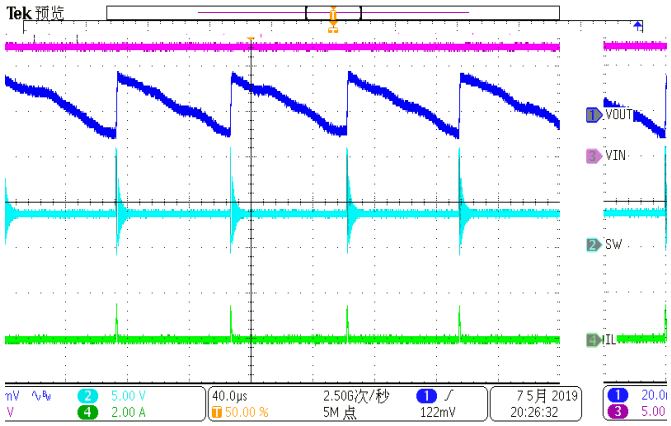


Figure 10. SW node Waveform and Output Ripple
VIN=12V, IOUT=10mA

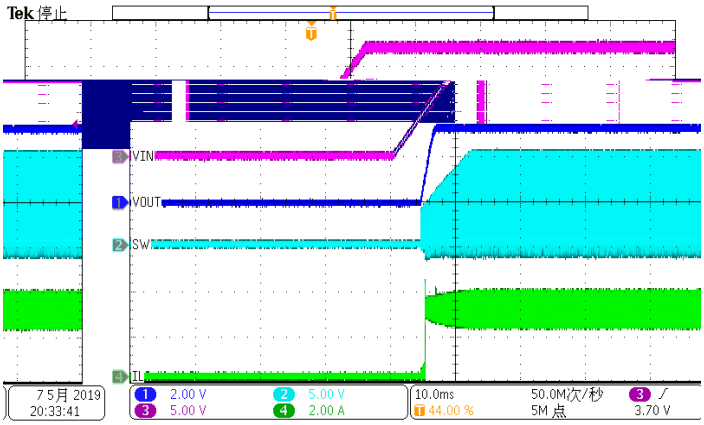


Figure 11. Power Up
VIN=12V, VOUT=3.3V, IOUT=3A

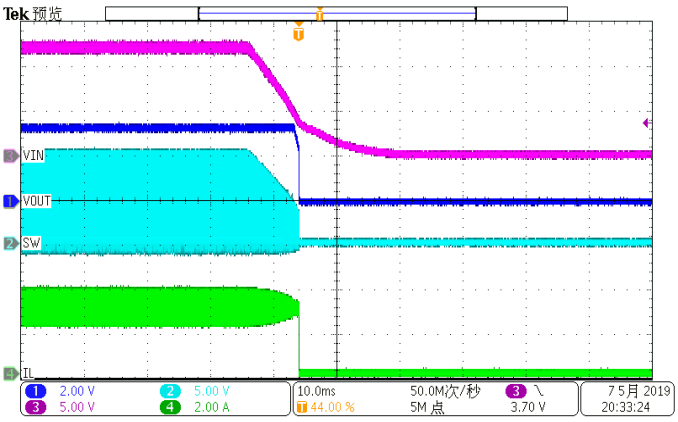


Figure 12. Power Down
VIN=12V, VOUT=3.3V, IOUT=3A

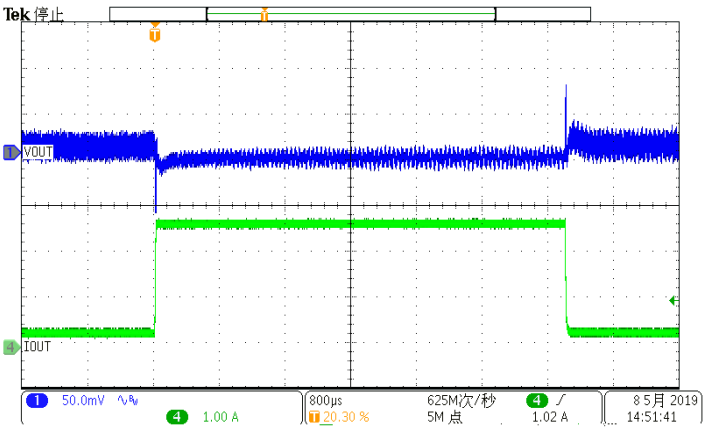


Figure 13. Load Transient
VOUT=3.3V, IOUT=0.3A to 2.7A, SR=250mA/us

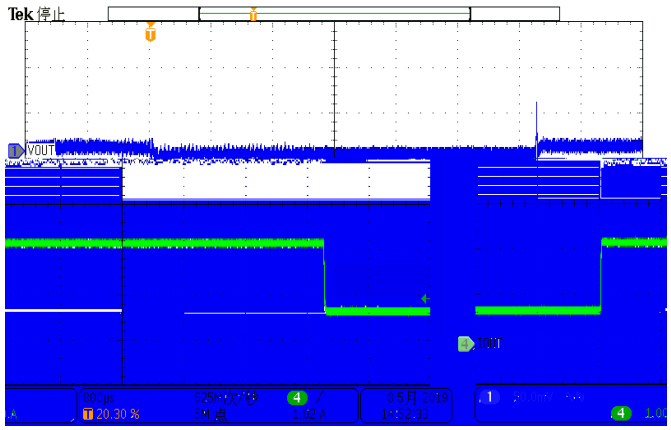


Figure 14. Load Transient
VOUT=3.3V, IOUT=0.75A to 2.25A, SR=250mA/us

Layout Guideline

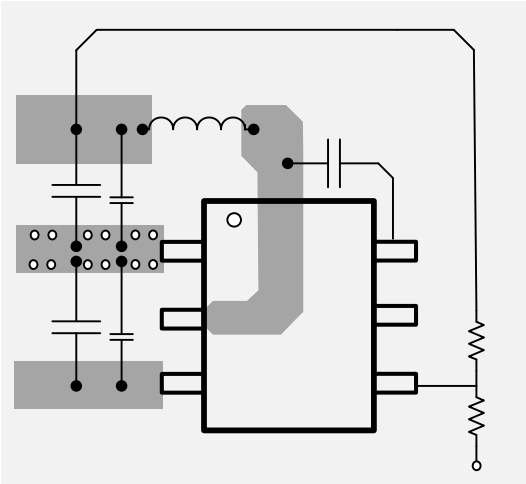
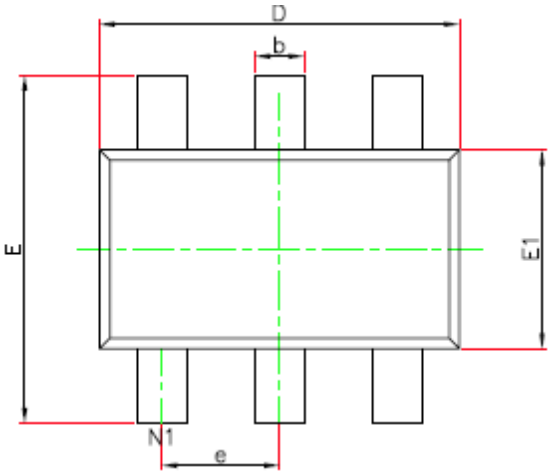
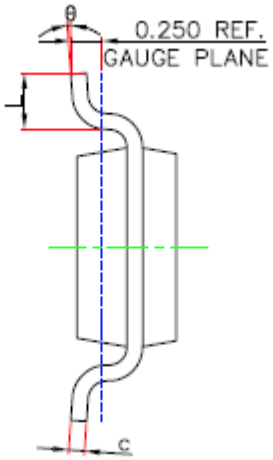
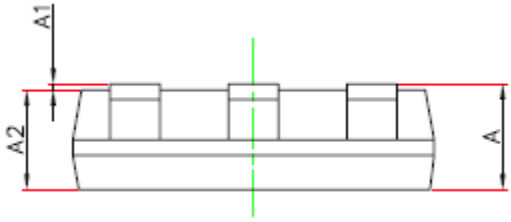


Figure 15. PCB Layout Example

PACKAGE INFORMATION (TSOT23-6)



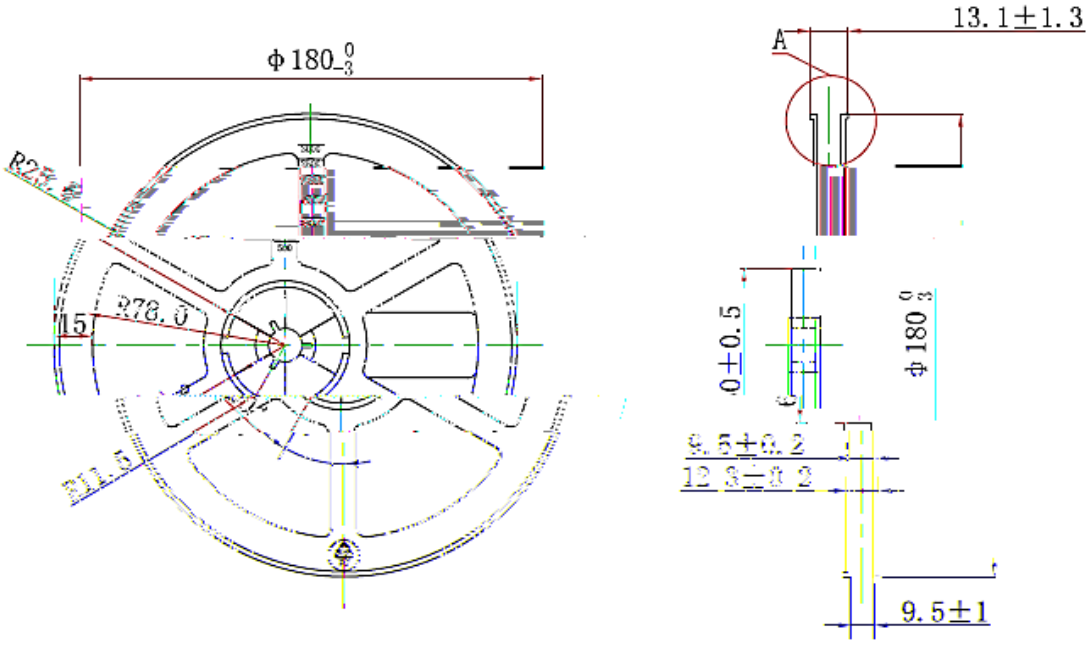


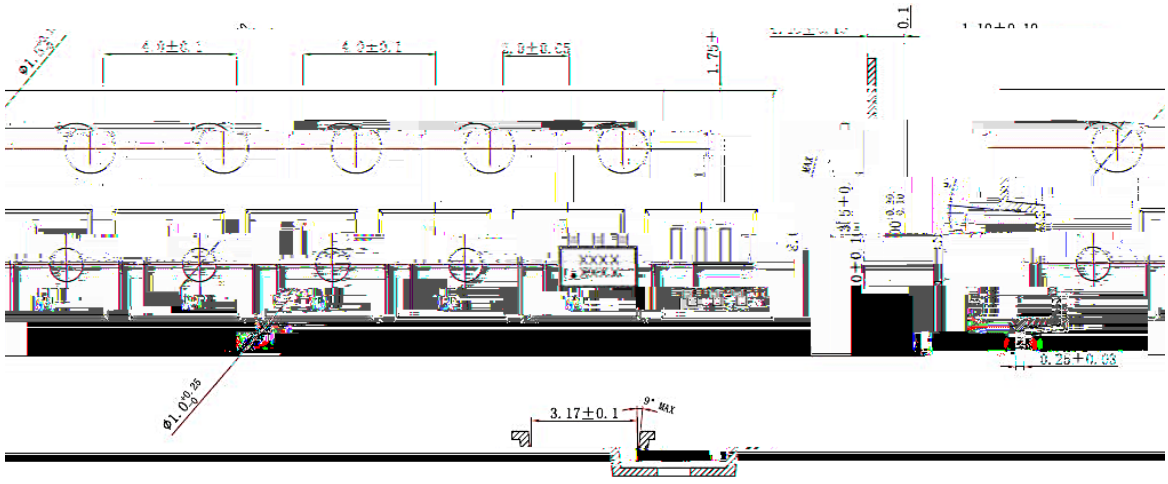


NOTE:

SYMBOL	Unit: Millimeter		
	MIN	TYP	MAX
θ			

TAPE AND REEL INFORMATION (TSOT23-6)





Feeding Direction