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REVISION HISTORY

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

Revision 1.0: Production.

Revision 1.1: Update DEVICE ORDER INFORMATION.

DEVICE ORDER INFORMATION

SCT2631ADRBR	Tape & Reel	5000	631A	10	DFN-10

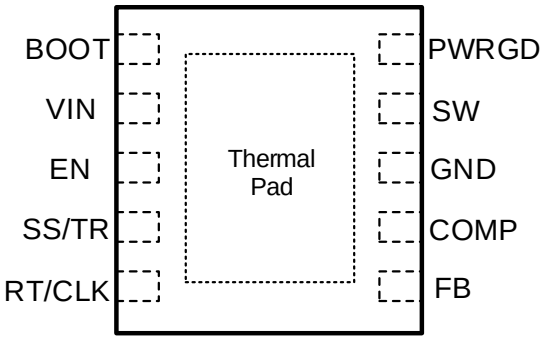
ABSOLUTE MAXIMUM RATINGS

Over operating free-air temperature unless otherwise noted(1)

VIN, EN	-0.3	65	V
BOOT	-0.3	72	V
SW	-1	65	V
SW, 5-ns Transient	-7	65	V
SW, 10-ns Transient	-2	65	V
BOOT-SW	-0.3	6	V

COMP, FB, RT/CLK, SS, PWRGD

PIN CONFIGURATION



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FB	6	Inverting input of the trans-conductance error amplifier. The tap of external feedback resistor divider from the output to GND sets the output voltage. The device regulates FB voltage to the internal reference value of 0.8V typical.
COMP	7	Error amplifier output. Connect to frequency loop compensation network.
GND	8	Ground
SW	9	Regulator switching output. Connect SW to an external power inductor
PWRGD	10	An open drain output, asserts low if output voltage is low due to thermal shutdown, dropout, over-voltage or EN shut down.
Thermal Pad	11	Heat dissipation path of die. Electrically connection to GND pin. Must be connected to ground plane on PCB for proper operation and optimized thermal performance.

RECOMMENDED OPERATING CONDITIONS

Over operating free-air temperature range unless otherwise noted

V_{IN}	Input voltage range	4.5	60	V
V_{OUT}	Output voltage range	0.8	57	V
T_J	Operating junction temperature	-40	150	°C

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R_{DSON_H}	High-side MOSFET on-resistance	V_{BOOT}-V_{SW}=5V	80	mΩ

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For more information

FUNCTIONAL BLOCK DIAGRAM

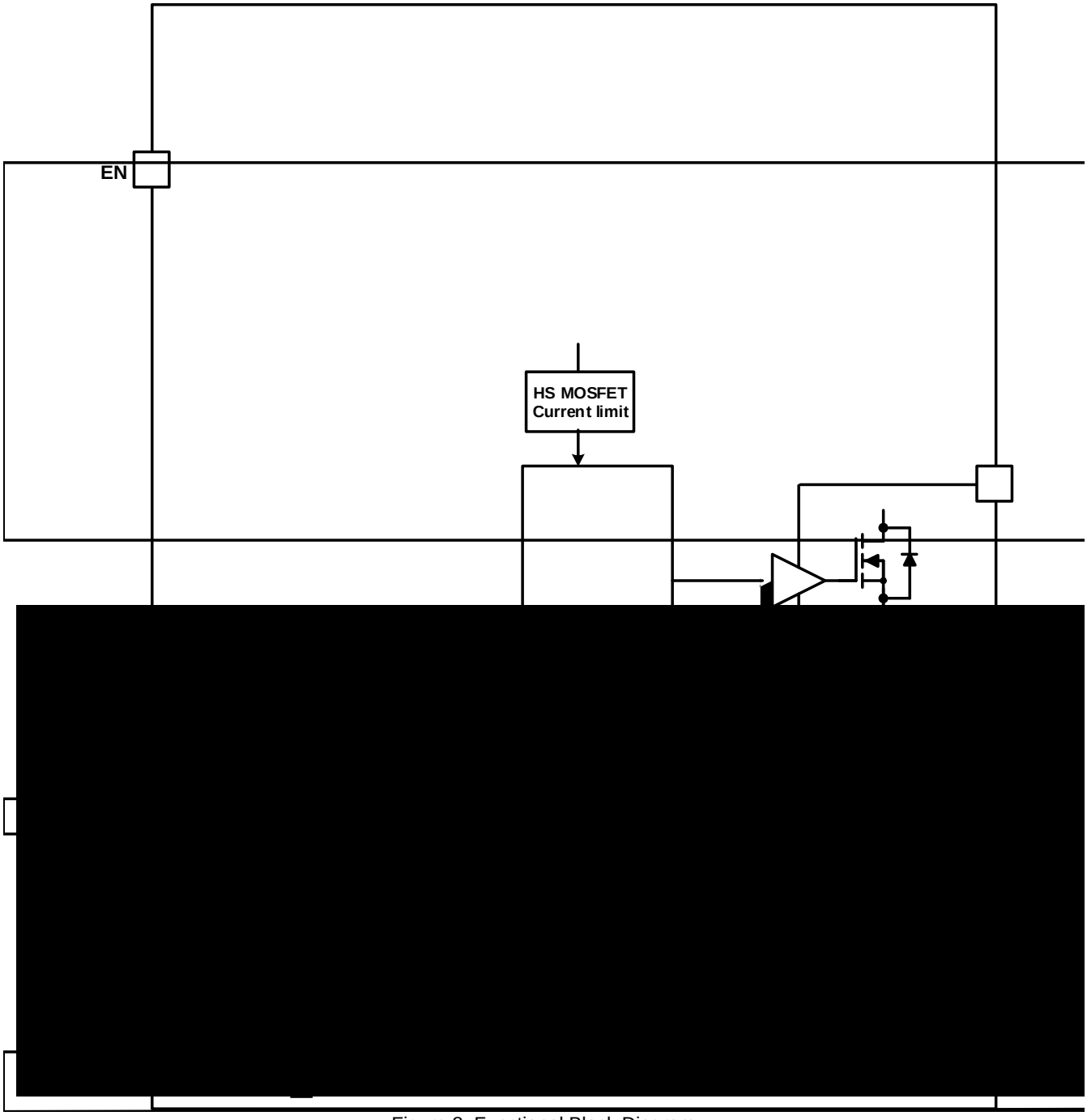

Figure 8. Functional Block Diagram

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(1)

(2)

where

V_{rise} is rising threshold of Vin UVLO

V_{fall} is falling threshold of Vin UVLO

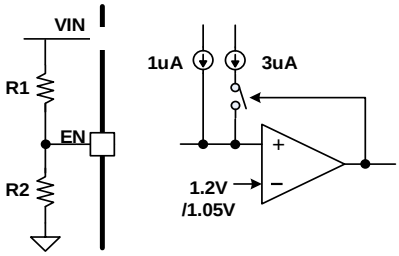

Figure 9. System UVLO by enable divide

The SCT2631A regulates the internal reference voltage at 0.8V with 1% tolerance over the operating temperature and voltage range. The output voltage is set by a resistor divider from the output node to the FB pin. It is recommended to use 1% tolerance or better resistors. Use Equation 3 to calculate resistance of resistor dividers. To improve efficiency at light loads, larger value resistors are recommended. However, if the values are too high, the regulator w

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with FB voltage less than internal reference voltage continuously. The COMP pin voltage ramps up to high clamp voltage 2.25V

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The output voltage is set by an external resistor divider R5 and R6 in typical application schematic. Recommended R6 resistance is 1.3 to 10

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When selecting

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The DC voltage gain of the loop is given by equation 21.

(21)

The system has two noteworthy poles: one is due to the compensation capacitor C7 and the error amplifier output resistor. The other is caused by the output capacitor and the load resistor. These poles as located at:

(22)

(23)

where

R_{OEA} is error amplifier output resistor
G_{EA} is

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lx tuÞ sta Table 3 lists typical values of compensation components for some stan ɹ $ st=я t

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The SCT2631A can be used to convert a positive input voltage to a negative output voltage. Typical applications are amplifiers requiring a negative power supply.

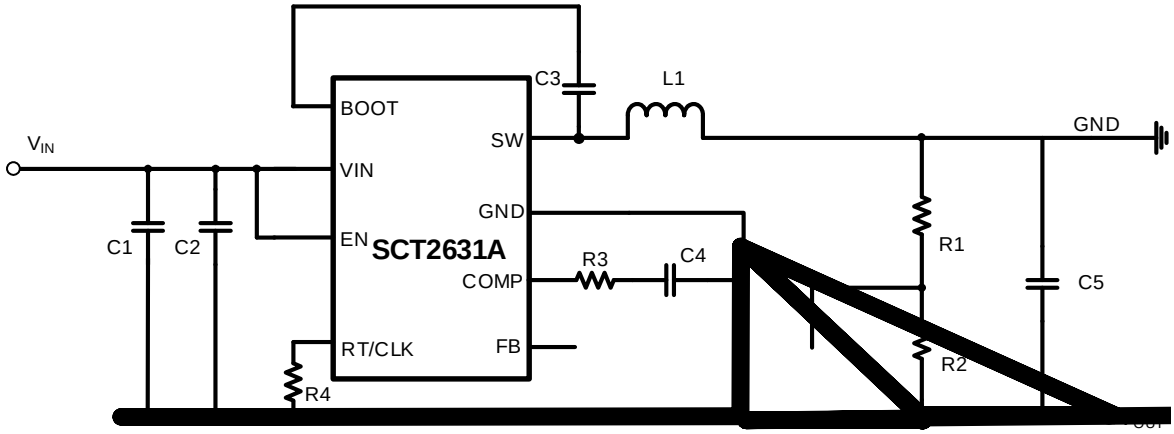

Figure 12. SCT2631A Inverting Power Supply

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Vin=24V, Vout=3.3V, unless otherwise noted

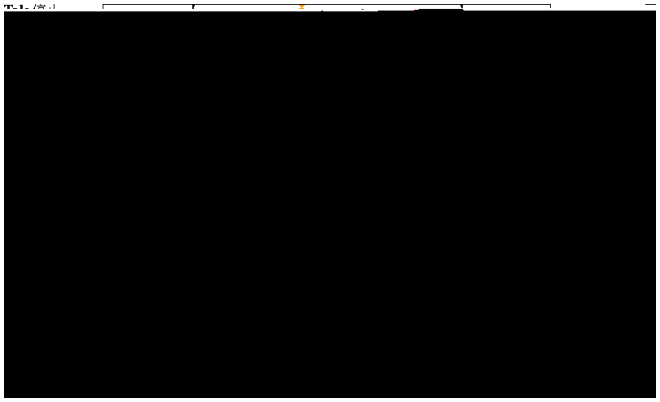

Figure 13. Power up(Iload=3.5A)

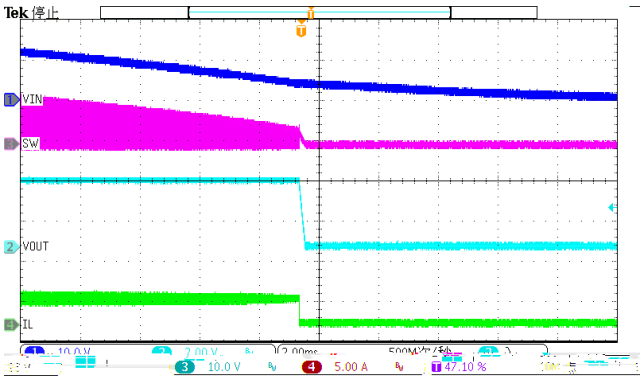

Figure 14. Power down(Iload=3.5A)

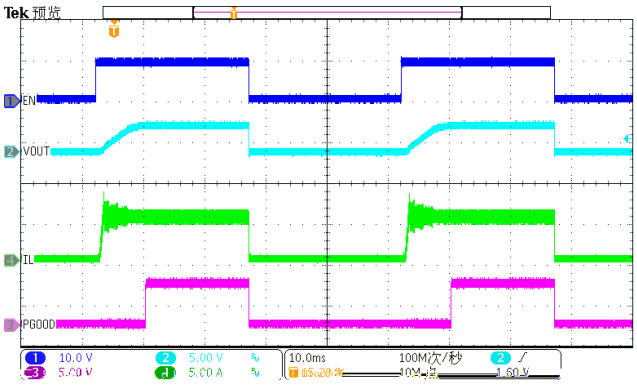

Figure 15.EN toggle (Iload=3.5A)

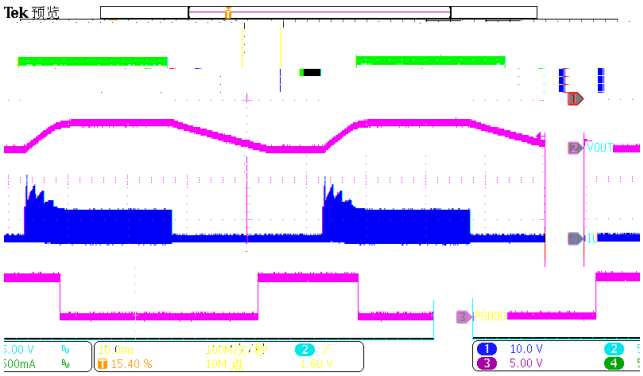

Figure 16. EN toggle (Iload=20mA)

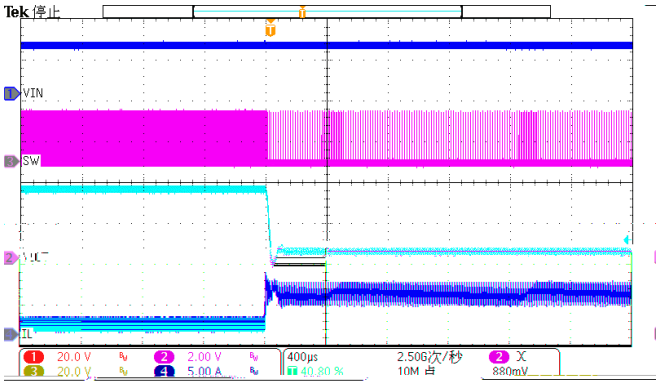

Figure 17. Over Current Protection(1A to hard short)

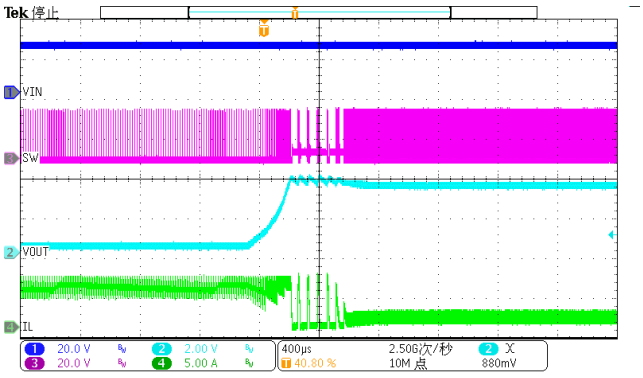

Figure 18. Over Current Release (hard short to 1A)

Vin=24V, Vout=3.3V, unless otherwise noted

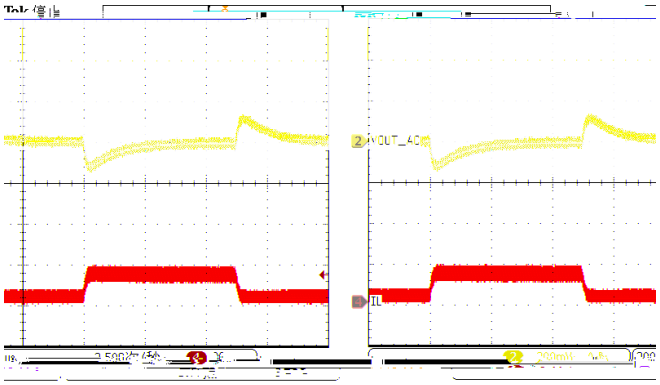

Figure 19. Load Transient (0.35A-3.15A, 1.6A/us)

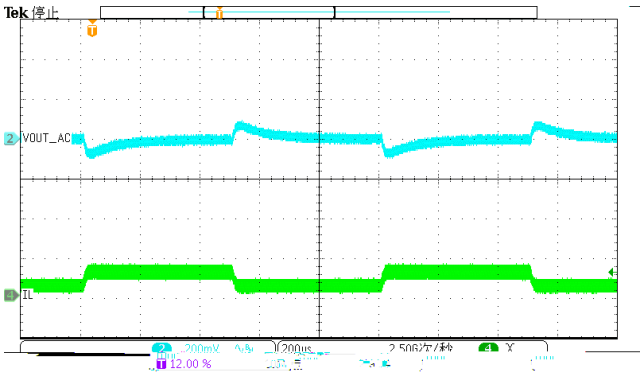

Figure 20. Load Transient (0.875A-2.625A, 1.6A/us)

Figure 21. Output Ripple (Iload=0A)

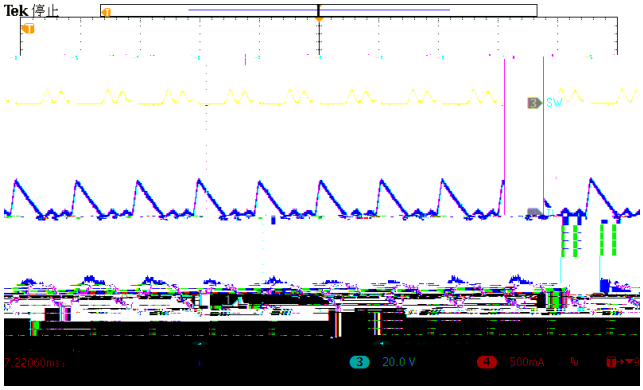

Figure 22. Output Ripple (Iload=100mA)

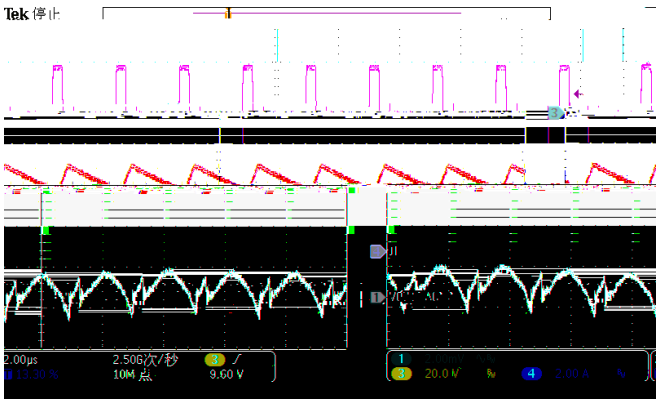

Figure 23. Output Ripple (Iload=3.5A)

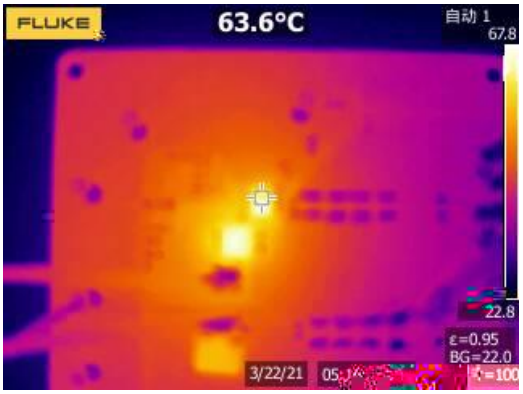

Figure 24. Thermal, 24VIN, 3.3Vout, 3.5A

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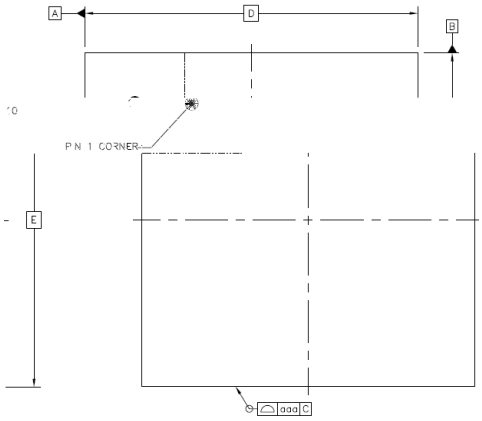
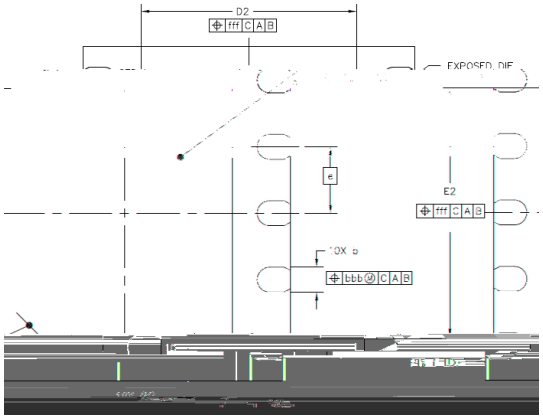
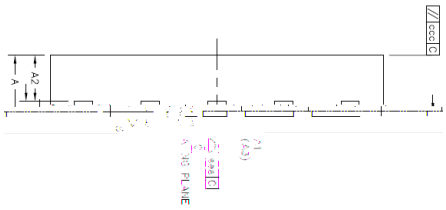
PACKAGE INFORMATION



TOP VIEW



BOTTOM VIEW



SIDE VIEW

1. Drawing proposed be made a JEDEC package utine MO - 220 variation.
2. Drawing not to scale.
3. All linear dimensions re in millimeters.
4. Thermal pad hall be soldered gn the board.
5. Dimensions f exposed pad gn bottom f package o ot include mold flash.
6. Contact PCB board fabrication for minimum solder mask web Sglerances between the pins.

A	0.70	0.75	0.80
A1	0	0.02	0.05
A2	---	0.55	---
A3	0.203 REF		
b	0.25	0.3	0.35
D	4 BSC		
E	4 BSC		
e	0.8 BSC		
D2	2.5	2.6	2.7
E2	2.9	3	3.1
L	0.3	0.4	0.5
K	0.3 REF		
aaa	0.1		
ccc	0.1		
eee	0.08		
bbb	0.1		
fff	0.1		

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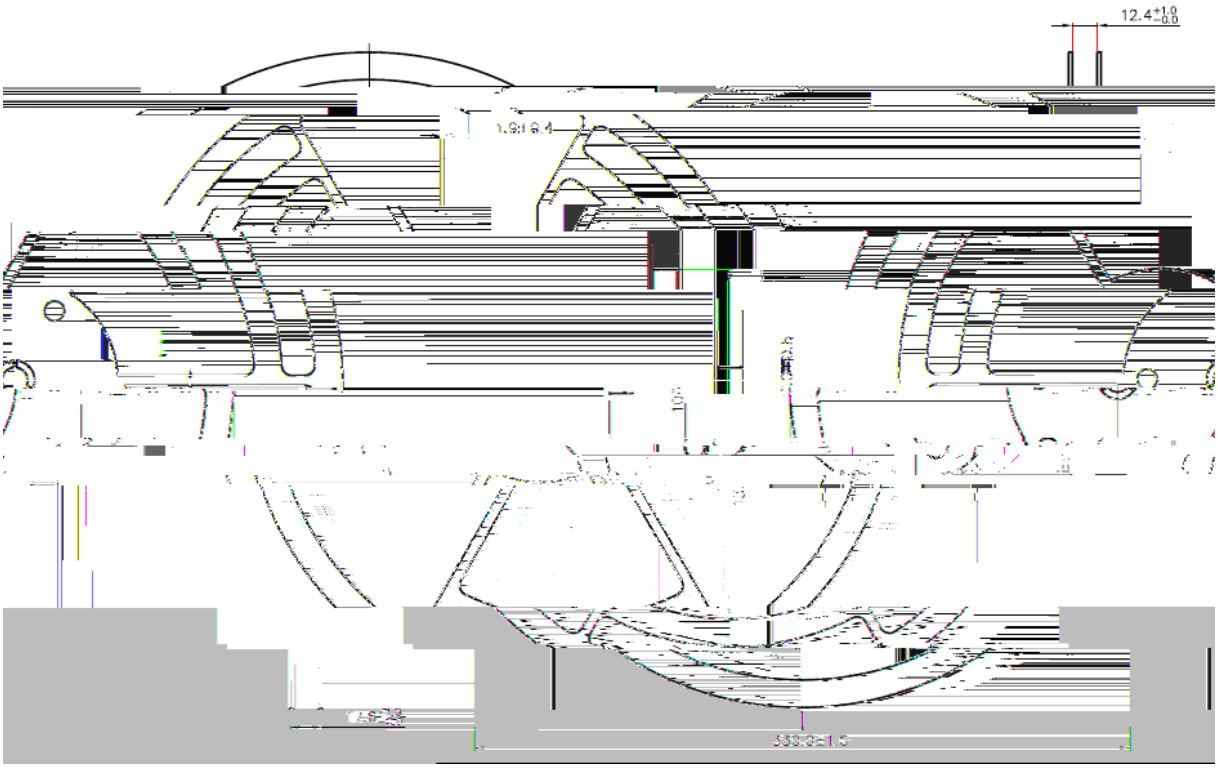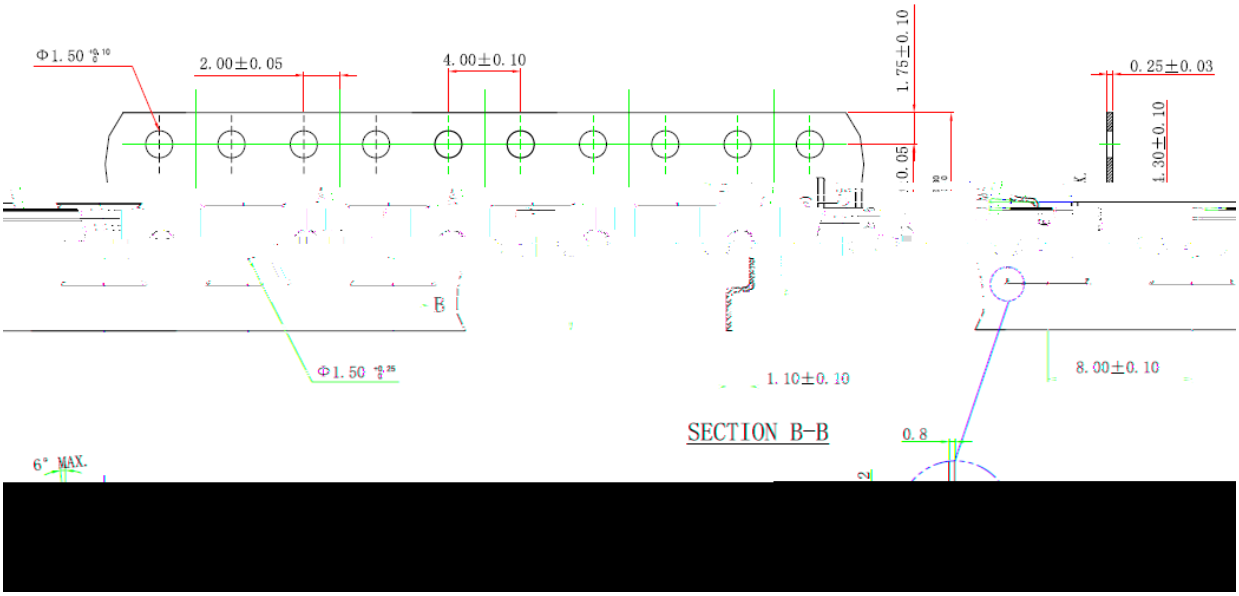
TAPE AND REEL INFORMATION