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The S-806 Series is a non-adjusting voltage detector made using a CMOS process. The voltage detectors are composed of a high-precision and low power consumption standard voltage source, a comparator, a hysteresis circuit, and an output driver. The detection voltage is fixed internally, and the output form is Nch open-drain. This series has various product line up.

■ Features

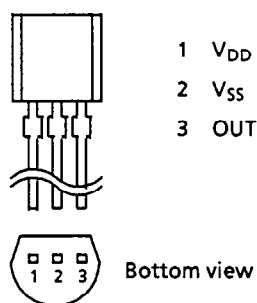
- Low current consumption 10.0 μ A typ. ($V_{DD} = 6.0$ V)
- High-stable standard voltage source built-in 0.8 V typ.
- Good hysteresis characteristics 208 mV typ. (S-806D)
- Good temperature characteristic of detection voltage ± 0.52 mV/ $^{\circ}$ C typ. (S-806D)
- TO-92 plastic packages

■ Applications

- Battery checker
- Level selector
- Battery backup for memories
- Power failure detector
- Reset for microcomputer, etc.
- Store signal detector for NV-RAM

■ Pin Arrangement

(1) Loose



(2) Taped (reel/zigzag)

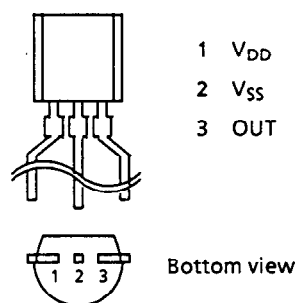


Figure 1

■ Block Diagram

Nch open-drain output

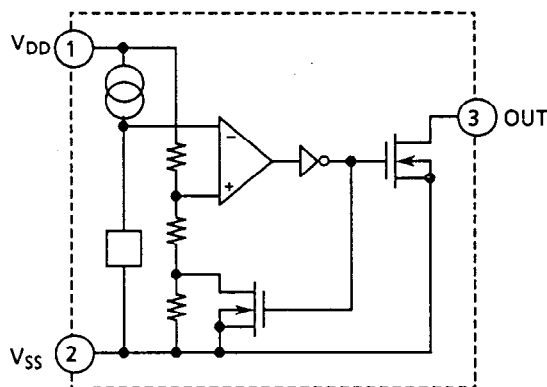


Figure 2

VOLTAGE DETECTOR

S-806 Series

Absolute Maximum Ratings

Table 1

(Unless otherwise specified : Ta = 25°C)

Parameter	Symbol	Ratings	Unit
Power supply voltage	$V_{DD} - V_{SS}$	12.0	V
Input voltage	V_{IN}	$V_{SS} - 0.3$ to $V_{DD} + 0.3$	
Output voltage	V_{OUT}	$V_{SS} - 0.3$ to 12	
Output current	I_{OUT}	50	mA
Power dissipation	P_D	200	mW
Operating temperature	T_{opr}	- 20 to + 75	°C
Storage temperature	T_{stg}	- 40 to + 125	

Caution: Keep static electricity to a minimum.

Selection Guide

The S-806 Series has 10 products with a detection voltage range of 2.3 V to 4.55 V.

Table 2

Detection voltage range (V)	Hysteresis width (V, typ.)	Product name		
		Loose	Taped(reel)*	Taped(zigzag)
2.195 to 2.405	0.115	S-806L	S-806L-X	S-806L-Z
2.395 to 2.605	0.125	S-806K	S-806K-X	S-806K-Z
2.595 to 2.805	0.135	S-806J	S-806J-X	S-806J-Z
2.795 to 3.005	0.148	S-806I	S-806I-X	S-806I-Z
2.895 to 3.205	0.150	S-806H	S-806H-X	S-806H-Z
3.095 to 3.405	0.163	S-806G	S-806G-X	S-806G-Z
3.395 to 3.705	0.178	S-806F	S-806F-X	S-806F-Z
3.695 to 4.005	0.193	S-806E	S-806E-X	S-806E-Z
3.995 to 4.305	0.208	S-806D	S-806D-X	S-806D-Z
4.40 to 4.70	0.050	S-806C	S-806C-X	S-806C-Z

* : "X" changes into T or F depending upon the direction of ICs on tape.

Electrical Characteristics

1. S-806L (Detection voltage : 2.195 V to 2.405 V)

Table 3

(Unless otherwise specified : Ta = 25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	Test circuit
Detection voltage	$-V_{DET}$		2.195	2.30	2.405	V	1
Hysteresis width	V_{HYS}		—	$-V_{DET} \times 0.05$	—	V	1
Current consumption	I_{SS}	$V_{DD} = 3.0$ V	—	10.0	20.0	μA	2
Operating voltage	V_{DD}		1.5	—	10.0	V	1
Output current	I_{OUT}	Nch $V_{DS} = 0.5$ V	$V_{DD} = 0.95$ V	0.03	0.25	mA	3
			$V_{DD} = 1.2$ V	0.23	0.50		
Temperature characteristic of $-V_{DET}$	$\frac{\Delta -V_{DET}}{\Delta T_a}$	$-20^\circ\text{C} \leq T_a \leq 75^\circ\text{C}$	—	± 0.28	—	mV/°C	—

2. S-806K (Detection voltage : 2.395 V to 2.605 V)

Table 4 (Unless otherwise specified : Ta = 25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	Test circuit
Detection voltage	$-V_{DET}$		2.395	2.50	2.605	V	1
Hysteresis width	V_{HYS}		—	$-V_{DET} \times 0.05$	—	V	1
Current consumption	I_{SS}	$V_{DD} = 3.0\text{ V}$	—	10.0	20.0	μA	2
Operating voltage	V_{DD}		1.5	—	10.0	V	1
Output current	I_{OUT}	Nch $V_{DS} = 0.5\text{ V}$	$V_{DD} = 0.95\text{ V}$	0.03	0.25	mA	3
			$V_{DD} = 1.2\text{ V}$	0.23	0.50		
Temperature characteristic of $-V_{DET}$	$\frac{\Delta -V_{DET}}{\Delta T_a}$	$-20^\circ\text{C} \leq T_a \leq 75^\circ\text{C}$	—	± 0.31	—	mV/°C	—

3. S-806J (Detection voltage : 2.595 V to 2.805 V)

Table 5 (Unless otherwise specified : Ta = 25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	Test circuit
Detection voltage	$-V_{DET}$		2.595	2.70	2.805	V	1
Hysteresis width	V_{HYS}		—	$-V_{DET} \times 0.05$	—	V	1
Current consumption	I_{SS}	$V_{DD} = 3.0\text{ V}$	—	10.0	20.0	μA	2
Operating voltage	V_{DD}		1.5	—	10.0	V	1
Output current	I_{OUT}	Nch $V_{DS} = 0.5\text{ V}$	$V_{DD} = 0.95\text{ V}$	0.03	0.25	mA	3
			$V_{DD} = 1.2\text{ V}$	0.23	0.50		
Temperature characteristic of $-V_{DET}$	$\frac{\Delta -V_{DET}}{\Delta T_a}$	$-20^\circ\text{C} \leq T_a \leq 75^\circ\text{C}$	—	± 0.34	—	mV/°C	—

4. S-806I (Detection voltage : 2.795 V to 3.005 V)

Table 6 (Unless otherwise specified : Ta = 25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	Test circuit
Detection voltage	$-V_{DET}$		2.795	2.90	3.005	V	1
Hysteresis width	V_{HYS}		—	$-V_{DET} \times 0.05$	—	V	1
Current consumption	I_{SS}	$V_{DD} = 4.5\text{ V}$	—	10.0	20.0	μA	2
Operating voltage	V_{DD}		1.5	—	10.0	V	1
Output current	I_{OUT}	Nch $V_{DS} = 0.5\text{ V}$	$V_{DD} = 1.2\text{ V}$	0.23	0.50	mA	3
			$V_{DD} = 2.4\text{ V}$	1.60	3.70		
Temperature characteristic of $-V_{DET}$	$\frac{\Delta -V_{DET}}{\Delta T_a}$	$-20^\circ\text{C} \leq T_a \leq 75^\circ\text{C}$	—	± 0.37	—	mV/°C	—

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5. S-806H (Detection voltage : 2.895 V to 3.205 V)

Table 7 (Unless otherwise specified : Ta = 25°C)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit	Test circuit
Detection voltage	$-V_{DET}$			2.895	3.05	3.205	V	1
Hysteresis width	V_{HYS}			—	$-V_{DET} \times 0.05$	—	V	1
Current consumption	I_{SS}	$V_{DD} = 4.5\text{ V}$		—	10.0	20.0	μA	2
Operating voltage	V_{DD}			1.6	—	10.0	V	1
Output current	I_{OUT}	Nch $V_{DS} = 0.5\text{ V}$	$V_{DD} = 1.2\text{ V}$	0.23	0.50	—	mA	3
			$V_{DD} = 2.4\text{ V}$	1.60	3.70	—		
Temperature characteristic of $-V_{DET}$	$\frac{\Delta -V_{DET}}{\Delta T_a}$	$-20^{\circ}\text{C} \leq T_a \leq 75^{\circ}\text{C}$		—	± 0.38	—	mV/°C	—

6. S-806G (Detection voltage : 3.095 V to 3.405 V)

Table 8 (Unless otherwise specified : Ta = 25°C)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit	Test circuit
Detection voltage	$-V_{DET}$			3.095	3.25	3.405	V	1
Hysteresis width	V_{HYS}			—	$-V_{DET} \times 0.05$	—	V	1
Current consumption	I_{SS}	$V_{DD} = 4.5\text{ V}$		—	10.0	20.0	μA	2
Operating voltage	V_{DD}			1.6	—	10.0	V	1
Output current	I_{OUT}	Nch $V_{DS} = 0.5\text{ V}$	$V_{DD} = 1.2\text{ V}$	0.23	0.50	—	mA	3
			$V_{DD} = 2.4\text{ V}$	1.60	3.70	—		
Temperature characteristic of $-V_{DET}$	$\frac{\Delta -V_{DET}}{\Delta T_a}$	$-20^{\circ}\text{C} \leq T_a \leq 75^{\circ}\text{C}$		—	± 0.41	—	mV/ $^{\circ}\text{C}$	—

7. S-806F (Detection voltage : 3.395 V to 3.705 V)

Table 9 (Unless otherwise specified : Ta = 25°C)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit	Test circuit
Detection voltage	$-V_{DET}$			3.395	3.55	3.705	V	1
Hysteresis width	V_{HYS}			—	$-V_{DET} \times 0.05$	—	V	1
Current consumption	I_{SS}	$V_{DD} = 4.5\text{ V}$		—	10.0	20.0	μA	2
Operating voltage	V_{DD}			1.6	—	10.0	V	1
Output current	I_{OUT}	Nch $V_{DS} = 0.5\text{ V}$	$V_{DD} = 1.2\text{ V}$	0.23	0.50	—	mA	3
			$V_{DD} = 2.4\text{ V}$	1.60	3.70	—		
Temperature characteristic of $-V_{DET}$	$\frac{\Delta -V_{DET}}{\Delta T_a}$	$-20^{\circ}\text{C} \leq T_a \leq 75^{\circ}\text{C}$		—	± 0.44	—	mV/°C	—

8. S-806E (Detection voltage : 3.695 V to 4.005 V)

Table 10 (Unless otherwise specified : Ta = 25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	Test circuit
Detection voltage	$-V_{DET}$		3.695	3.85	4.005	V	1
Hysteresis width	V_{HYS}		—	$-V_{DET} \times 0.05$	—	V	1
Current consumption	I_{SS}	$V_{DD} = 4.5 \text{ V}$	—	10.0	20.0	μA	2
Operating voltage	V_{DD}		1.6	—	10.0	V	1
Output current	I_{OUT}	Nch $V_{DS} = 0.5 \text{ V}$	$V_{DD} = 1.2 \text{ V}$	0.23	0.50	mA	3
			$V_{DD} = 2.4 \text{ V}$	1.60	3.70		
Temperature characteristic of $-V_{DET}$	$\frac{\Delta -V_{DET}}{\Delta T_a}$	$-20^\circ\text{C} \leq T_a \leq 75^\circ\text{C}$	—	± 0.48	—	mV/°C	—

9. S-806D (Detection voltage : 3.995 V to 4.305 V)

Table 11 (Unless otherwise specified : Ta = 25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	Test circuit
Detection voltage	$-V_{DET}$		3.995	4.15	4.305	V	1
Hysteresis width	V_{HYS}		—	$-V_{DET} \times 0.05$	—	V	1
Current consumption	I_{SS}	$V_{DD} = 6.0 \text{ V}$	—	10.0	20.0	μA	2
Operating voltage	V_{DD}		1.6	—	10.0	V	1
Output current	I_{OUT}	Nch $V_{DS} = 0.5 \text{ V}$	$V_{DD} = 1.2 \text{ V}$	0.23	0.50	mA	3
			$V_{DD} = 2.4 \text{ V}$	1.60	3.70		
			$V_{DD} = 3.6 \text{ V}$	3.18	7.00		
Temperature characteristic of $-V_{DET}$	$\frac{\Delta -V_{DET}}{\Delta T_a}$	$-20^\circ\text{C} \leq T_a \leq 75^\circ\text{C}$	—	± 0.52	—	mV/°C	—

10. S-806C (Detection voltage : 4.4 V to 4.7 V)

Table 12 (Unless otherwise specified : Ta = 25°C)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	Test circuit
Detection voltage	$-V_{DET}$		4.40	4.55	4.70	V	1
Hysteresis width	V_{HYS}		—	0.05	0.10	V	1
Current consumption	I_{SS}	$V_{DD} = 6.0 \text{ V}$	—	10.0	20.0	μA	2
Operating voltage	V_{DD}		1.6	—	10.0	V	1
Output current	I_{OUT}	Nch $V_{DS} = 0.5 \text{ V}$	$V_{DD} = 1.2 \text{ V}$	0.23	0.50	mA	3
			$V_{DD} = 2.4 \text{ V}$	1.60	3.70		
Temperature characteristic of $-V_{DET}$	$\frac{\Delta -V_{DET}}{\Delta T_a}$	$-20^\circ\text{C} \leq T_a \leq 75^\circ\text{C}$	—	± 0.57	—	mV/°C	—

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■ Test Circuits

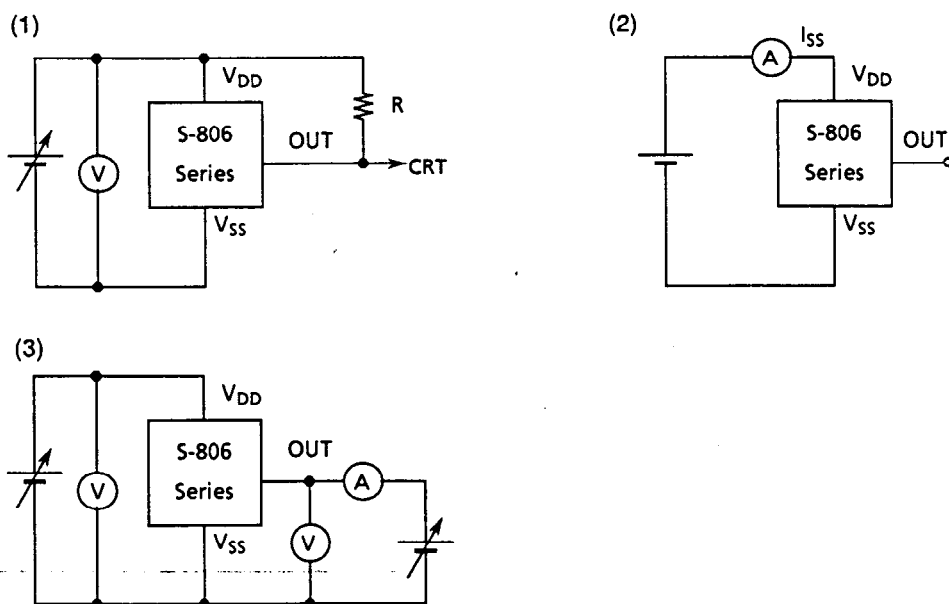
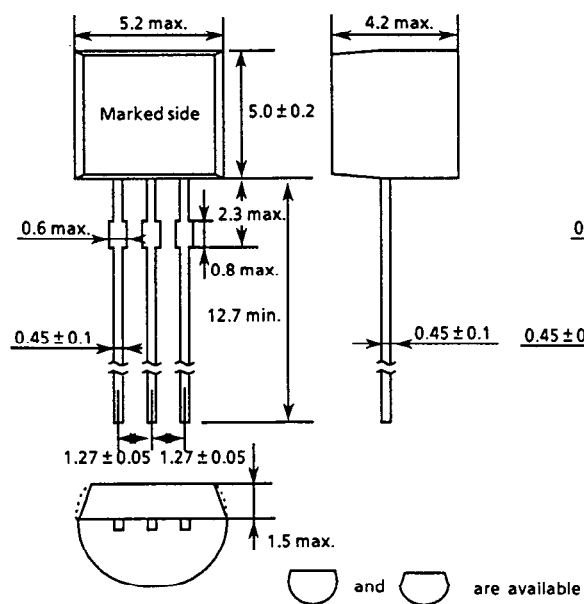


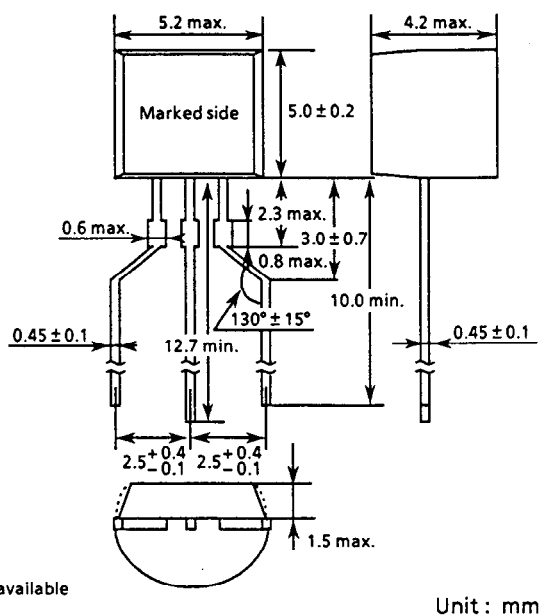
Figure 3

■ Dimensions

1. Loose



2. Taped (reel/zigzag)



Unit: mm

Figure 4

■ Taping

1. Tape specifications

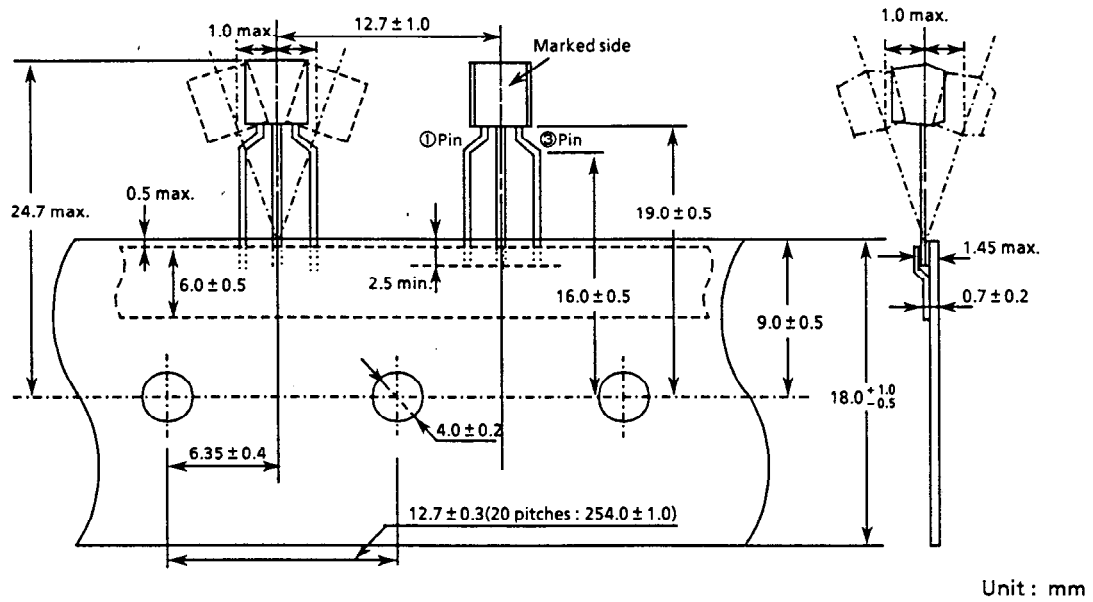


Figure 5

2. Reel specifications

T and F types are available depending upon the direction of ICs on the tape.

1 reel holds 2000 detectors.

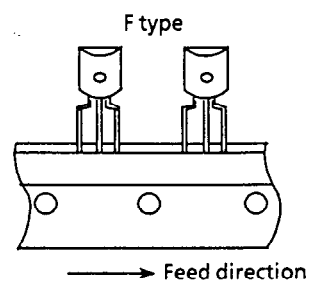
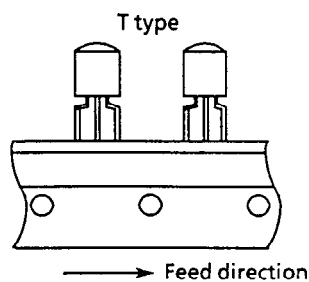
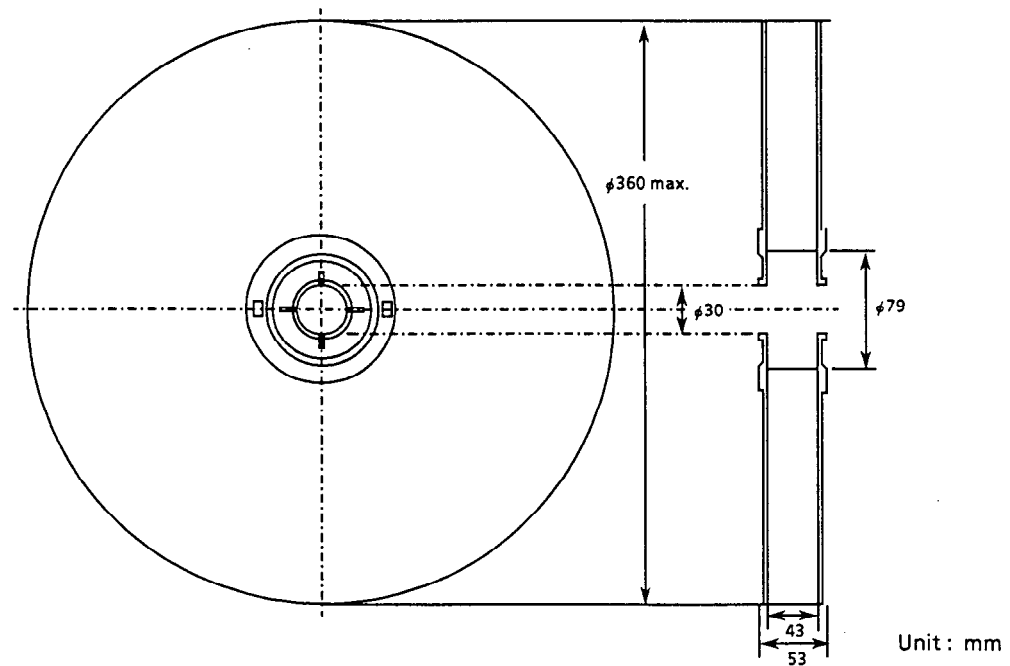
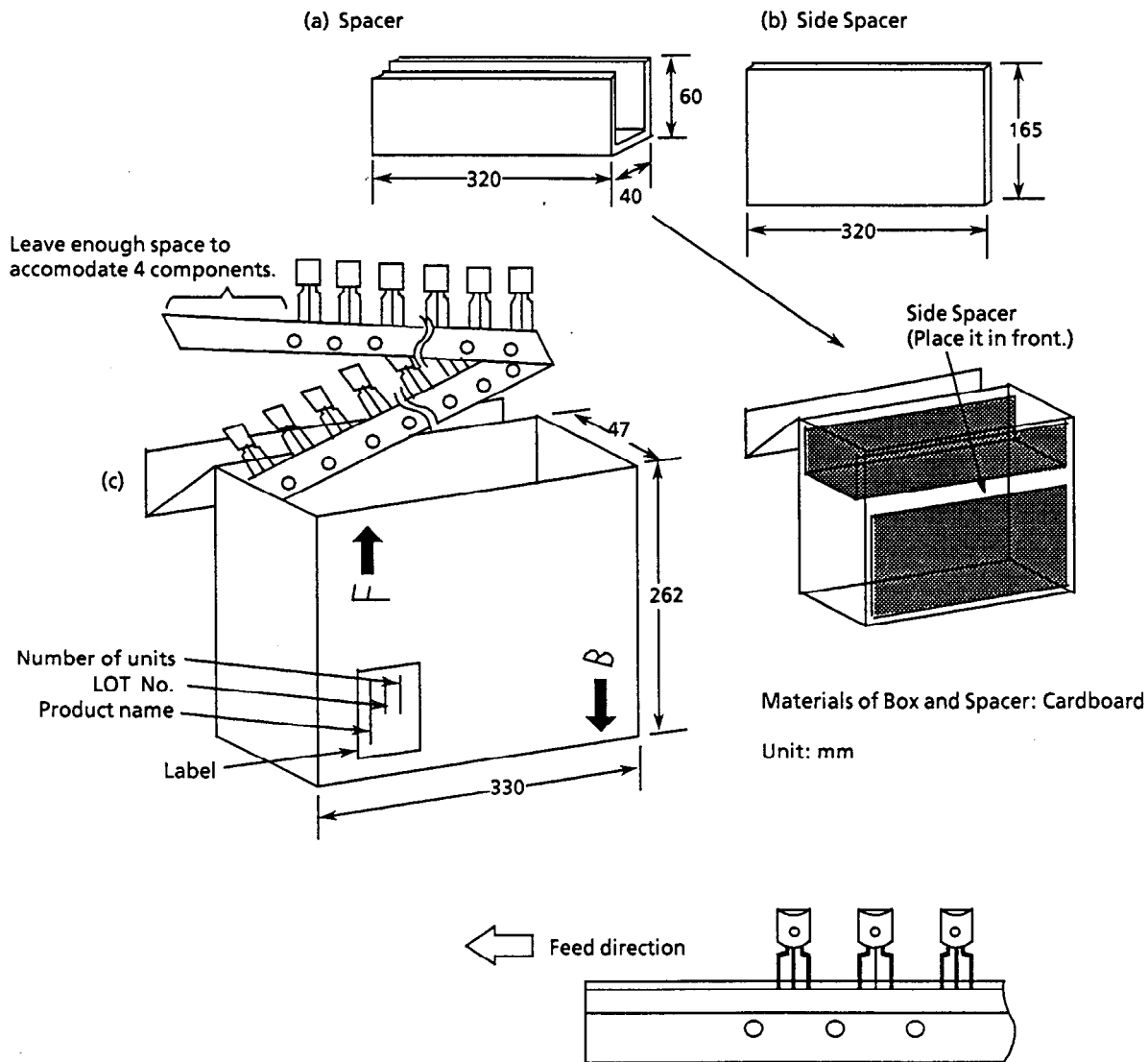


Figure 6

VOLTAGE DETECTOR S-806 Series

3. Switch-back (wrap) Taping Specifications 1 box holds 2500 detectors.



■ Notes

- Since there are projection and resin burr on roots of lead terminals formed at Tiebar-cut in TO-92 products, do not solder on them.