

DATA SHEET		Date	Apr.01,2002
Model	CBS502405	Temp.	25 °C
Test	Static electricity immunity test 静電気放電試験	Humid.	40 %Rh
		Tested by	K.Kinoshita

- Method — according to EN61000-4-2 —
  - Points to be applied voltage  
電圧印加箇所  
Input pin / Output pin / Case pin / RC pin / TRM pin  
入力ピン / 出力ピン / ケースピン / RCピン / TRMピン
  - Testing shall be satisfied at the lower levels given below  
印加電圧はレベル1から4まで順次実施(下表参照)
  - Change the polarity (+/-) of applied voltage  
印加極性 +/- の条件でそれぞれ実施
  - For the time interval between successive single discharges an initial value of 1s. is recommended.  
On preselected points at least ten single discharges shall be applied.  
1秒以上の間隔で各ポイント10回実施
  - Contact discharge method  
接触放電で実施

Test levels of EN61000-4-2

Level	1	2	3	4
Contact discharge [kV]	2	4	6	8
Air discharge [kV]	2	4	8	15

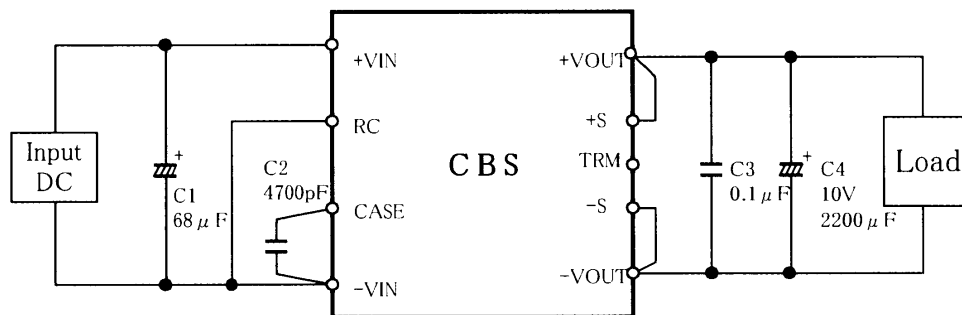
- Conditions
  - Input : DC24V
  - Output : Rated output
  - Ambient temp. : 25±10°C
- Conditions of Acceptability  
According to EN50082-2 (EN61000-4-2 Level 2)  
EN50082-2(EN61000-4-2 レベル2)を満足すること

#### 4. Result

No.	Level	Voltage [kV]	Polarity	Pin to be tested						
				+VIN	-VIN	+VOUT,+S	-VOUT,-S	CASE	RC	TRM
1	1	2	+	OK	OK	OK	OK	OK	OK	OK
2			-	OK	OK	OK	OK	OK	OK	OK
3	2	4	+	OK	OK	OK	OK	OK	OK	OK
4			-	OK	OK	OK	OK	OK	OK	OK
5	3	6	+	OK	OK	OK	OK	OK	OK	OK
6			-	OK	OK	OK	OK	OK	OK	OK
7	4	8	+	OK	OK	OK	OK	OK	OK	OK
8			-	OK	OK	OK	OK	OK	OK	OK

All are satisfactory to item 3: OK

5. Testing circuitry



C1: 50V68  $\mu$  F PMseries(nichicon)  
 C2: DE1307-640E472M-KH(MURATA)  
 C3: MDD21H104M(Nitsuko)  
 C4: 10V2200  $\mu$  F LXZseries(NIPPON CHEMI-CON)

Fig. Testing circuitry

DATA SHEET		Date	Mar.18,2002
Model	CBS502405	Temp.	25 °C
Test	Radiated, radio-frequency, electromagnetic field immunity test 放射無線周波電磁界免疫試験	Humid.	40 %Rh
		Tested by	K.Kinoshita

## 1. Method — according to EN61000-4-3 —

These tests are defined for measuring the effect that electromagnetic radiation has on the equipment connected. The tests shall be made in a shielded enclosure.

対象機器に対する電磁放射の影響を測定する。試験はシールドルームで行われること。

(1) Frequency band : 80MHz to 1000MHz

周波数範囲 : 80MHz から 1000MHz

(2) Test levels

試験レベル

Test levels of EN61000-4-3

Level	Testing field strength V/m
1	1
2	3
3	10

## 2. Conditions

(1) Input : DC24V

(2) Output : Rated output

(3) Ambient temp. :  $25 \pm 10^{\circ}\text{C}$

(4) Testing circuitry : Fig.1

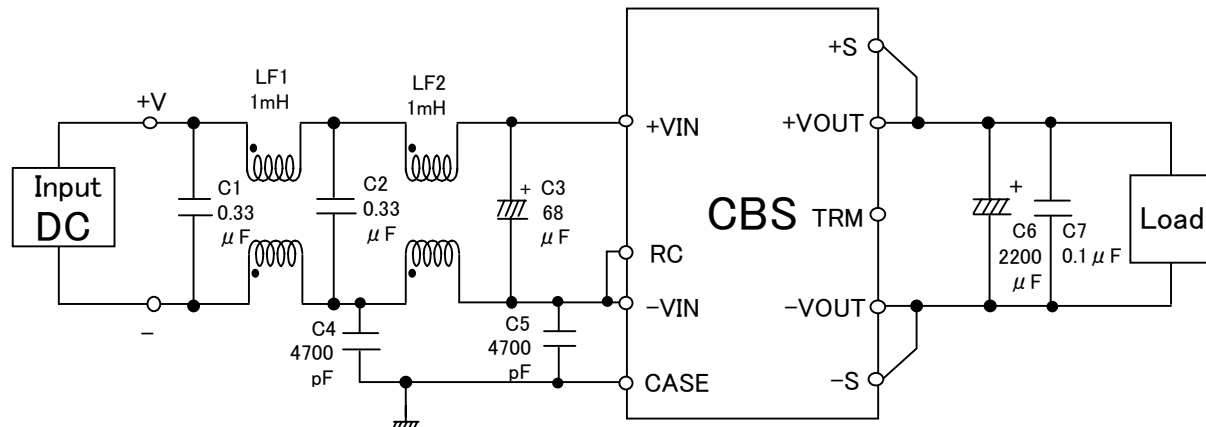


Fig.1 Testing circuitry

## 3. Conditions of Acceptability

According to EN61000-4-3 Level 3

EN61000-4-3 レベル3を満足すること

## 4. Result

No.	Level	Testing field strength [V/m]	Result
1	1	1	OK
2	2	3	OK
3	3	10	OK

All are satisfactory to item 3: OK

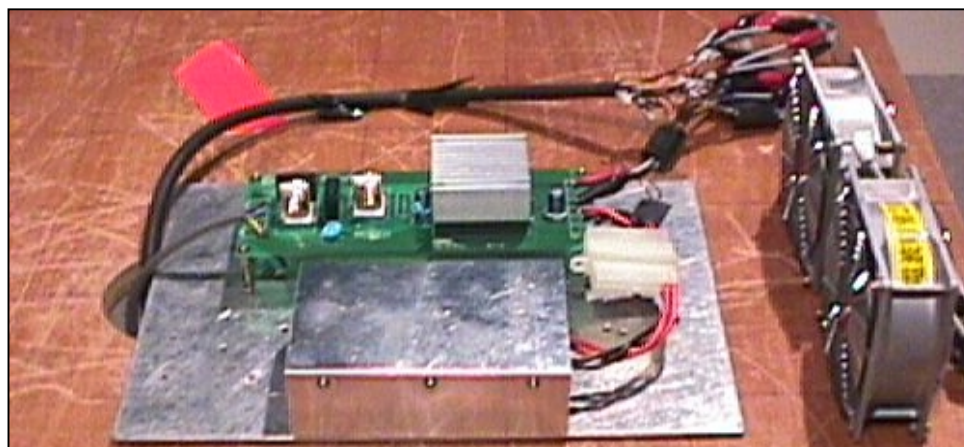
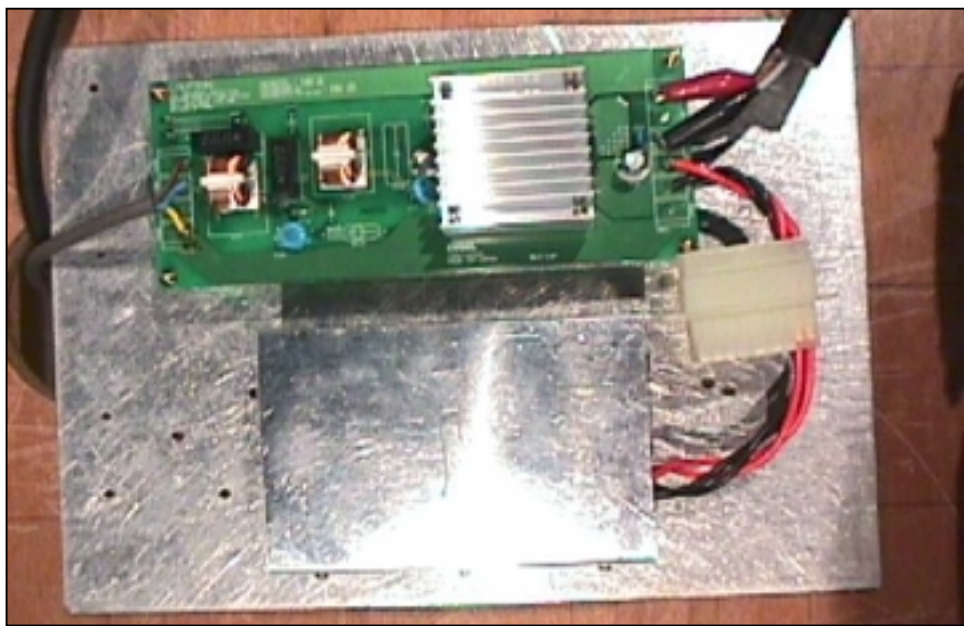
# Conditions

Date 2002/3/18

Test : Radiated Susceptability

Model Name : CBS502405

○Photographs of Test Set-Up



○Testing circuitry

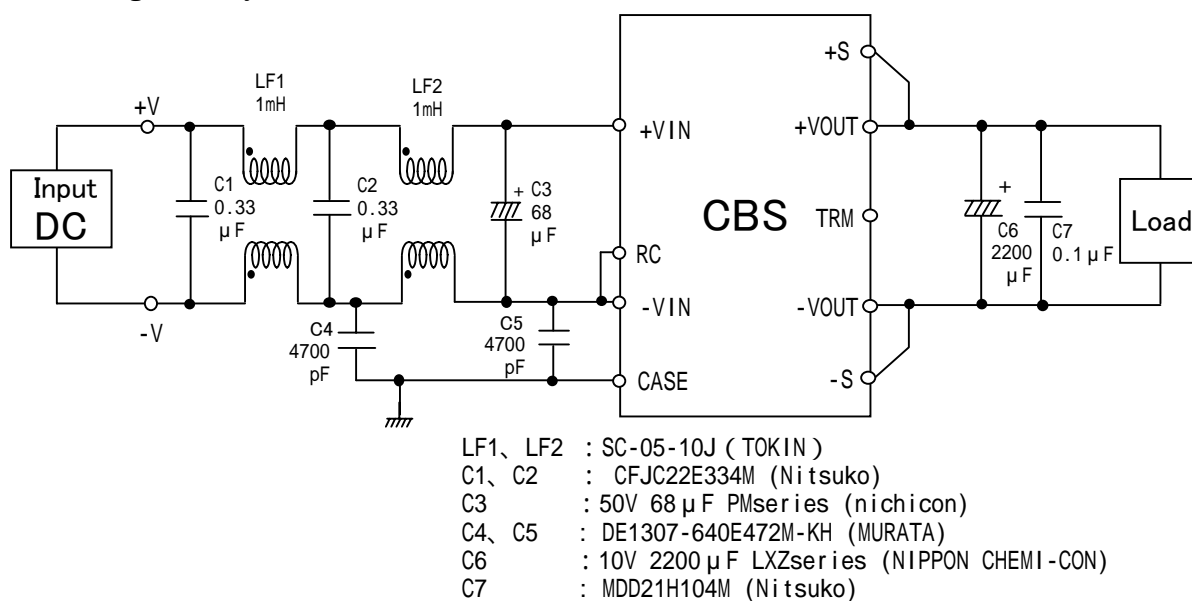


Fig. Testing circuitry

DATA SHEET		Date	2001/5/16
Model	CBS502412	Temp.	25 °C
Test	Electrical fast transient/burst immunity test 電氣的ファーストランジエントバースト試験	Humid.	40 %Rh
		Tested by	A.Yoshiyama

1. Method — according to EN61000-4-4 —

(1) Points to be applied voltage

電圧印加箇所

1) Between input pin(+VIN) and ground plane

入力ピン(+VIN) — グランドプレーン間

2) Between input pin(-VIN) and ground plane

入力ピン(-VIN) — グランドプレーン間

3) Between case pin and ground plane

ケースピン — グランドプレーン間

4) Between output pin and ground plane

出力ピン — グランドプレーン間

(2) Testing shall be satisfied at the lower levels given below

印加電圧はレベル1から4まで順次実施(下表参照)

(3) Change the polarity (+/-) of applied voltage

印加極性 +/- の条件でそれぞれ実施

(4) The period of applied voltage is 1 minute

電圧印加時間は1分間

Test levels of EN61000-4-4

Level	1	2	3	4
Voltage peak [kV]	0.5	1	2	4
Repetition rate [kHz]	5	5	5	2.5

2. Conditions

(1) Input : DC24V

(2) Output : Rated output

(3) Ambient temp. : 25±10°C

3. Conditions of Acceptability

According to EN50082-2 (EN61000-4-4 Level 3)

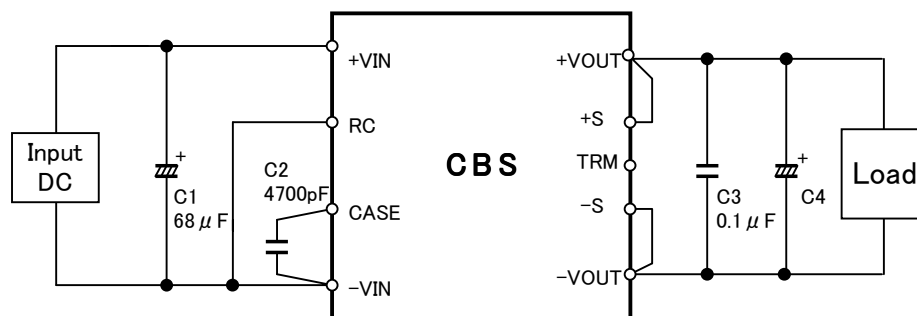
EN50082-2(EN61000-4-4 レベル3)を満足すること

4. Result

No.	Level	Voltage [kV]	Polarity	Pin to be tested					
				+VIN	-VIN	+VOUT,+S	-VOUT,-S	CASE	RC
1	1	0.5	+	OK	OK	OK	OK	OK	OK
2			-	OK	OK	OK	OK	OK	OK
3	2	1	+	OK	OK	OK	OK	OK	OK
4			-	OK	OK	OK	OK	OK	OK
5	3	2	+	OK	OK	OK	OK	OK	OK
6			-	OK	OK	OK	OK	OK	OK
7	4	4	+	OK	OK	OK	OK	OK	OK
8			-	OK	OK	OK	OK	OK	OK

All are satisfactory to item 3: OK

## 5. Testing circuitry



C1: 50V 68  $\mu$  F PMseries (nichicon)  
 C2: DE1307-640E472M-KH (MURATA)  
 C3: MDD21H104M (Nitsuko)  
 C4: 35V 470  $\mu$  F LXZseries (NIPPON CHEMI-CON)

Fig. Testing circuitry

DATA SHEET		Date	2002/2/28
Model	CBS502405	Temp.	25 °C
Test	Surge immunity test サージ・immunity試験	Humid.	40 %Rh
		Tested by	K.Kinoshita

## 1. Method — according to EN61000-4-5 —

### (1) Points to be applied voltage

電圧印加箇所

— Line to line (ライン - ライン間 : ノーマル) —

1) Between input pin (+V) and input pin (-V)

入力ピン(+V) - 入力ピン(-V)

— Line to case pin (ライン - ケースピン間 : コモン) —

2) Between input pin (+V) and case pin

入力ピン(+V) - ケースピン

3) Between input pin (-V) and case pin

入力ピン(-V) - ケースピン

### (2) Test at the selected levels shown below

印加電圧(レベル)は、下表に従う

### (3) Change the polarity (+/-) of applied voltage

印加極性 +/- の条件でそれぞれ実施

### (4) Number of tests : Six positive and six negative at selected points.

試験の回数 : それぞれの印加箇所、正負各6回試験する

### (5) Repetition rate : maximum 1/min.

繰り返し速度 : 最大1回/分 (1分以上の間隔をおく)

Test levels of EN61000-4-5

Level	1	2	3	4
Test voltage [kV]	0.5	1	2	4

## 2. Conditions

(1) Input : DC24V

(2) Output : Rated output

(3) Ambient temp. : 25 ± 10°C

(4) Testing circuitry : Refer to item 5

## 3. Conditions of Acceptability

Line to line : According to EN50082-2 (EN61000-4-5 Level 3)

ライン - ライン間 (ノーマル) : EN50082-2(EN61000-4-5 レベル3)を満足すること

Line to Case pin : According to EN50082-2 (EN61000-4-5 Level 4)

ライン - ケースピン間 (コモン) : EN50082-2(EN61000-4-5 レベル4)を満足すること

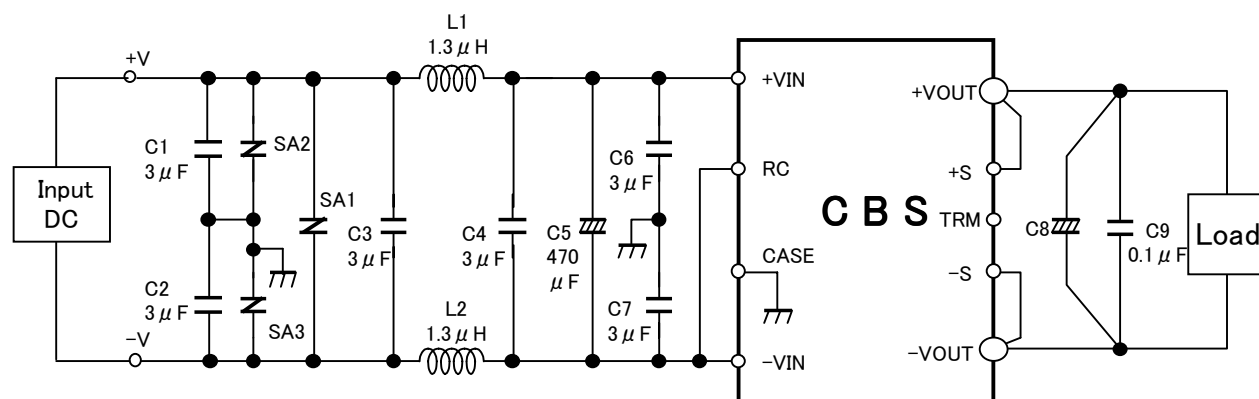
## 4. Result

No.	Voltage [kV]	Polarity	Line (+V) - Line (-V)
1	0.5	+	OK
2		-	OK
3	1	+	OK
4		-	OK
5	2	+	OK
6		-	OK
7	2.4	+	OK
8		-	OK
9	3	+	OK
10		-	OK

No.	Voltage [kV]	Polarity	Line (+V) - Case pin	Line (-V) - Case pin
1	0.5	+	OK	OK
2		-	OK	OK
3	1	+	OK	OK
4		-	OK	OK
5	2	+	OK	OK
6		-	OK	OK
7	4	+	OK	OK
8		-	OK	OK
9	6	+	OK	OK
10		-	OK	OK

All are satisfactory to item 3: OK

5. Testing circuitry



L1、L2 :ETQP6F1R3LFA (MATSUSHITA)  
 C1、C2、C3、C4、C6、C7 :CY55Y5P2A305M(TOKIN)  
 C5 :50V 470  $\mu$  F PMseries (nichicon)  
 C8 :10V 2200  $\mu$  F LXZseries (NIPPON CHEMI-CON)  
 SA1、SA2、SA3 :ERZV10D470 (MATSUSHITA)  
 C9 : MDD21H104M (Nitsuko)

Fig. Testing circuitry



DATA SHEET		Date	2002/3/1
Model	CBS502405	Temp.	25 °C
Test	Surge immunity test サージ・immunity試験	Humid.	40 %Rh
		Tested by	K.Kinoshita

## 1. Method — according to EN61000-4-5 —

### (1) Points to be applied voltage

電圧印加箇所

— Line to line (ライン - ライン間 : ノーマル) —

1) Between input pin (+V) and input pin (-V)

入力ピン(+V) - 入力ピン(-V)

— Line to case pin (ライン - ケースピン間 : コモン) —

2) Between input pin (+V) and case pin

入力ピン(+V) - ケースピン

3) Between input pin (-V) and case pin

入力ピン(-V) - ケースピン

### (2) Test at the selected levels shown below

印加電圧(レベル)は、下表に従う

### (3) Change the polarity (+/-) of applied voltage

印加極性 +/- の条件でそれぞれ実施

### (4) Number of tests : Six positive and six negative at selected points.

試験の回数 : それぞれの印加箇所、正負各6回試験する

### (5) Repetition rate : maximum 1/min.

繰り返し速度 : 最大1回/分 (1分以上の間隔をおく)

Test levels of EN61000-4-5

Level	1	2	3	4
Test voltage [kV]	0.5	1	2	4

## 2. Conditions

(1) Input : DC24V

(2) Output : Rated output

(3) Ambient temp. : 25 ± 10°C

(4) Testing circuitry : Refer to item 5

## 3. Conditions of Acceptability

Line to line : According to EN50082-2 (EN61000-4-5 Level 3)

ライン - ライン間 (ノーマル) : EN50082-2(EN61000-4-5 レベル3)を満足すること

Line to Case pin : According to EN50082-2 (EN61000-4-5 Level 4)

ライン - ケースピン間 (コモン) : EN50082-2(EN61000-4-5 レベル4)を満足すること

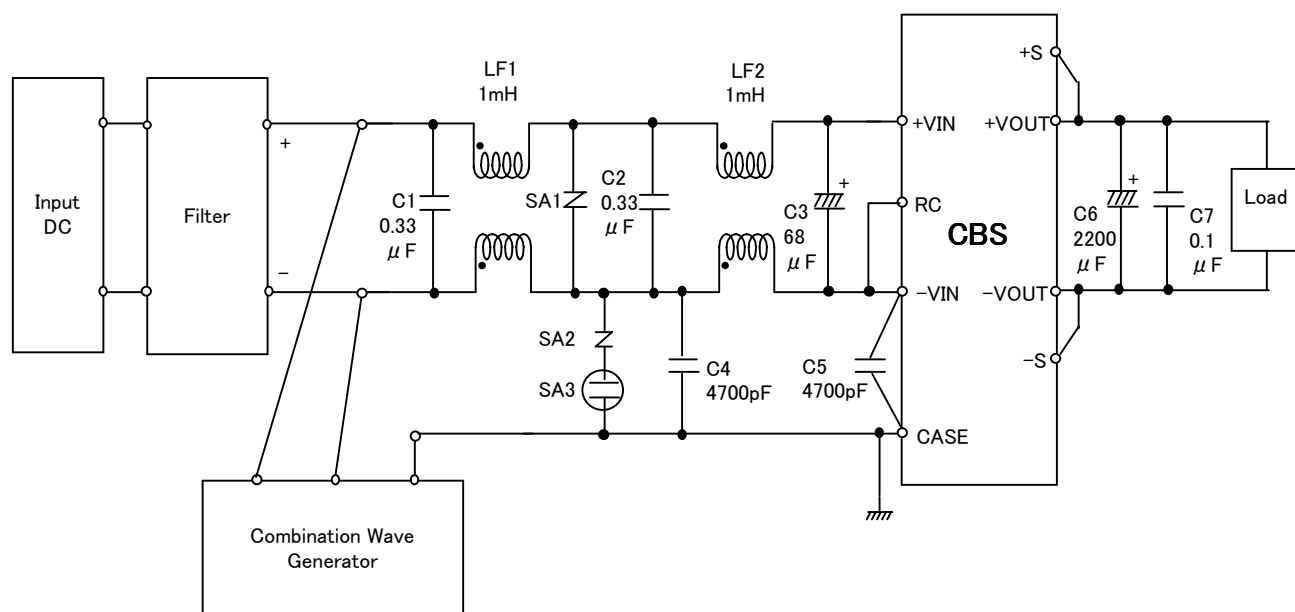
## 4. Result

No.	Voltage [kV]	Polarity	Line (+V) - Line (-V)
1	0.5	+	OK
2		-	OK
3	1	+	OK
4		-	OK
5	2	+	OK
6		-	OK
7	2.4	+	OK
8		-	OK
9	3	+	OK
10		-	OK

No.	Voltage [kV]	Polarity	Line (+V) - Case pin	Line (-V) - Case pin
1	1	+	OK	OK
2		-	OK	OK
3	2	+	OK	OK
4		-	OK	OK
5	4	+	OK	OK
6		-	OK	OK
7	4.8	+	OK	OK
8		-	OK	OK
9	6	+	OK	OK
10		-	OK	OK

All are satisfactory to item 3: OK

5. Testing circuitry



- LF1, LF2 : SC-05-10J (TOKIN)  
 C1, C2 : CFJC22E3334M (Nitsuko)  
 C3 : 50V 68  $\mu$  F PMseries (nichicon)  
 C4, C5 : DE1307-640E472M-KH (MURATA)  
 C6 : 10V 2200  $\mu$  F LXZseries (NIPPON CHEMI-  
 C7 : COM)  
 SA1, SA2 : MDD21H104M (Nitsuko)  
 SA3 : ERZV10D470 (MATSUSHITA)  
 : DSA-302MA (MITSUBISHI)

Fig. Testing circuitry

DATA SHEET		Date	Sep.17,2001
Model	CBS502412	Temp.	25 °C
Test	Immunity to conducted disturbances, induced by radio-frequency fields 伝導性無線周波数電磁界免疫試験	Humid.	40 %Rh
		Tested by	K.Kinoshita

## 1. Method — according to EN61000-4-6 —

### (1) Points to be applied signals

信号印加箇所

1) Between input pin(+V) and input pin(-V)

入力ピン(+V) — 入力ピン(-V)間

### (2) Testing shall be satisfied at the lower levels given below

印加信号はレベル1から3まで順次実施(下表参照)

Test levels of EN61000-4-6

No.	Level	Frequency range 150kHz - 80MHz	
		Voltage level (e.m.f.)	
		Vo[dB(μV)]	Vo[V]
1	1	120	1
2	2	130	3
3	3	140	10
4	X	142	12

## 2. Conditions

- (1) Input : DC24V
- (2) Output : Rated output
- (3) Ambient temp. : 25±10°C
- (4) Testing circuitry : Fig.1

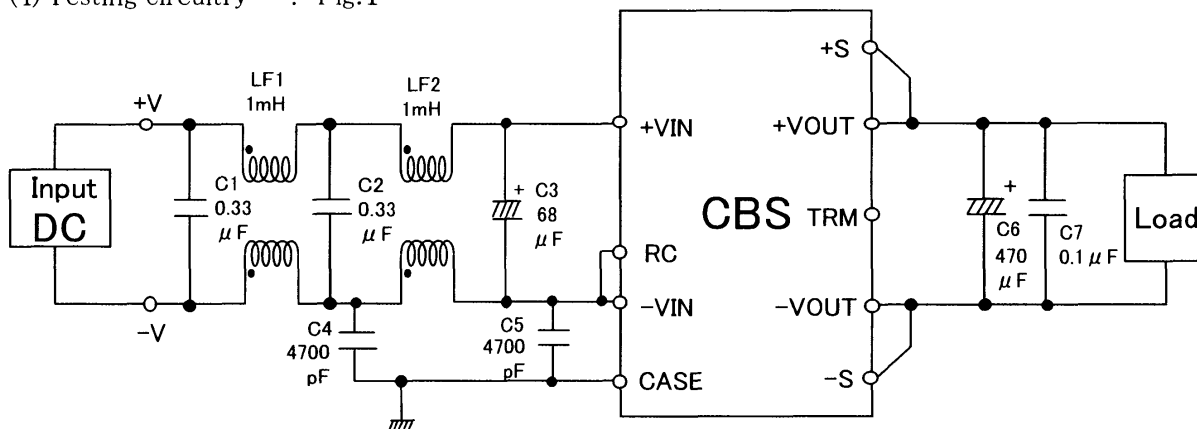


Fig.1 Testing circuitry

## 3. Conditions of Acceptability

According to EN61000-4-6 Level 3

EN61000-4-6 レベル3を満足すること

## 4. Result

No.	Frequency range 150kHz – 80MHz			Result
	Level	Voltage level (e.m.f.)		
		Vo [dB(μ V)]	Vo [V]	
1	1	120	1	OK
2	2	130	3	OK
3	3	140	10	OK
4	Special	142	12	OK

All are satisfactory to item 3: OK