

DATA SHEET		Date	Mar.8,2001
Model	CBS504805/28	Temp.	25 °C
Test	Static electricity immunity test 静電気放電試験	Humid.	40 %Rh
		Tested by	S.Kinoshita

# 1. Method — according to EN61000-4-2 —

## (1) Points to be applied voltage

電圧印加箇所

1) Input pin／Output pin／Case pin

入力ピン／出力ピン／ケースピン

## (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) 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

## (5) Contact discharge method

接触放電で実施

Test levels of EN61000-4-2

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

# 2. Conditions

(1) Input : DC48V

(2) Output : Rated output

(3) Ambient temp. : 25±10°C

# 3. Conditions of Acceptability

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

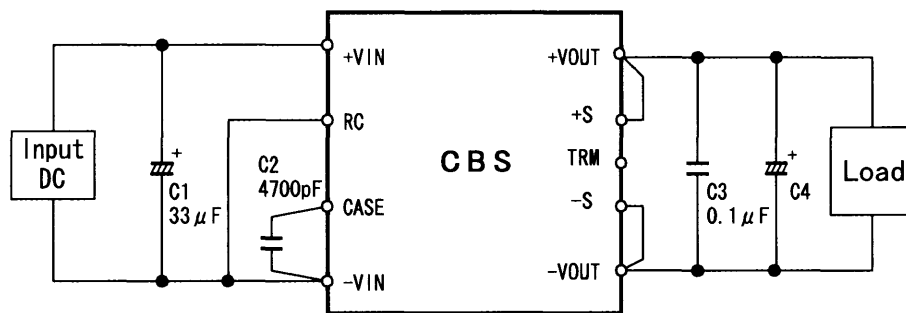
EN50082-2(EN61000-4-2 レベル2)を満足すること

# 4. Result

No.	Level	Voltage [kV]	Polarity	Pin to be tested						
				+VIN	-VIN	+VOUT,+S	-VOUT,-S	Case pin	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



C4 : CBS504805    2200  $\mu$  F 10V Electrolytic capacitor  
 CBS504828    220  $\mu$  F 35V Electrolytic capacitor

Fig. Testing circuitry

DATA SHEET		Date	Mar.14,2001
Model	CBS2004805/12/28	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 ENV50140 —

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 ENV50140

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

## 2. Conditions

(1) Input : DC48V

(2) Output : Rated output

(3) Ambient temp. : 25±10°C

(4) Testing circuitry : Fig.1

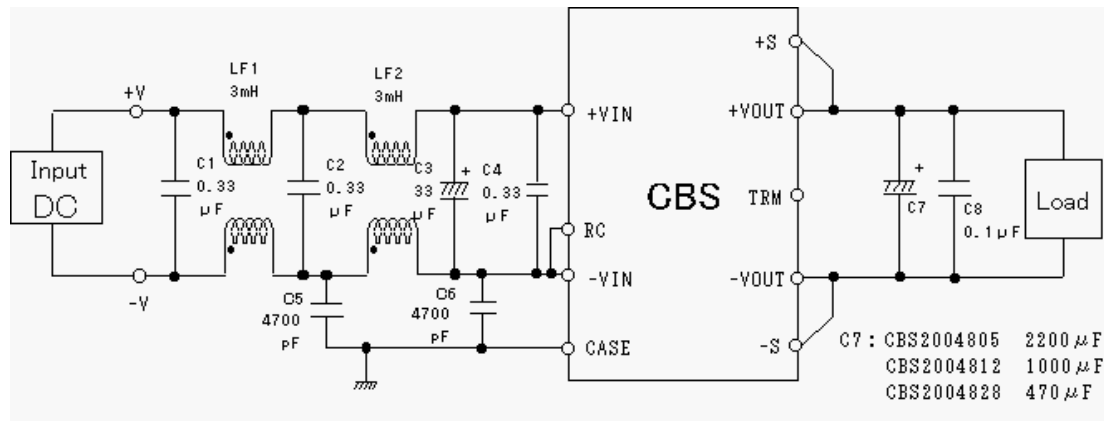


Fig.1 Testing circuitry

## 3. Conditions of Acceptability

According to EN50082-2 (ENV50140 Level 3)

EN50082-2 (ENV50140 レベル3)を満足すること

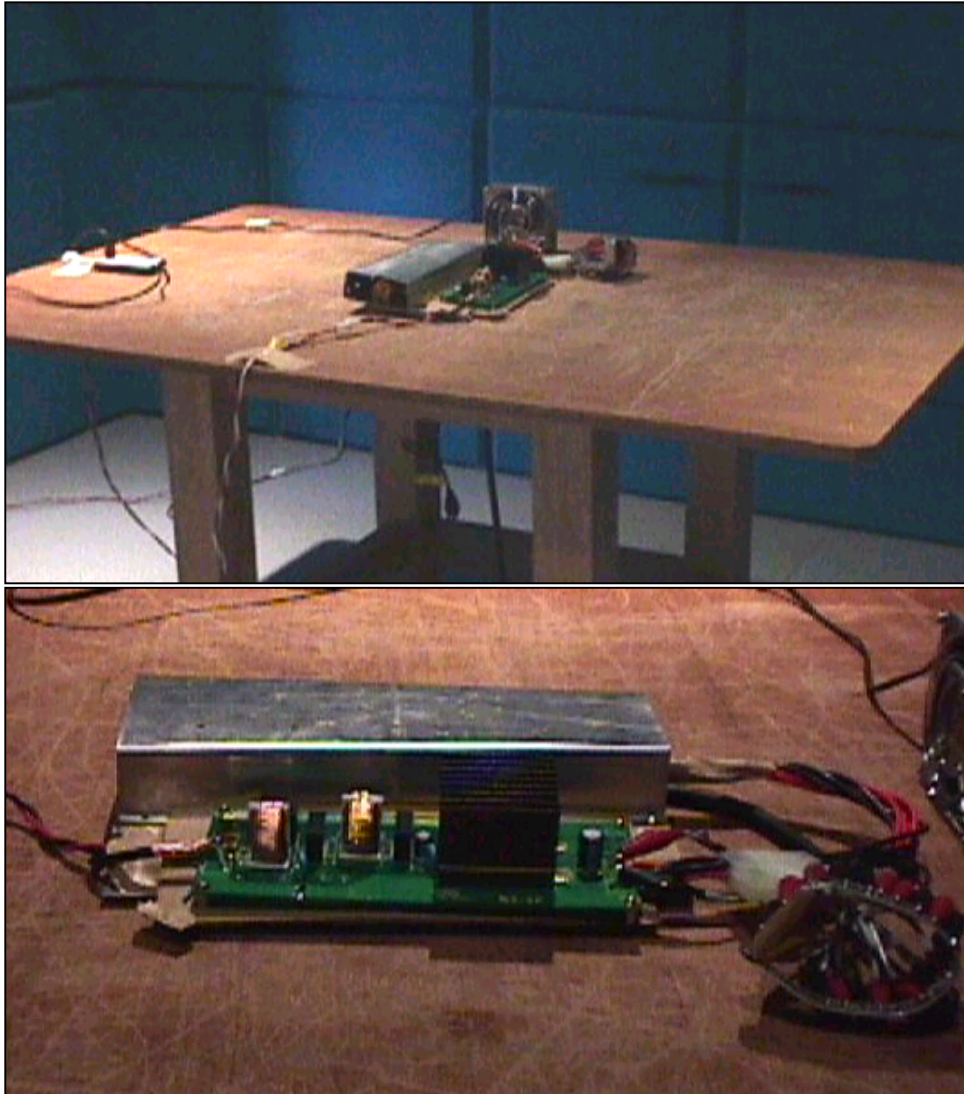
## 4. Result

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

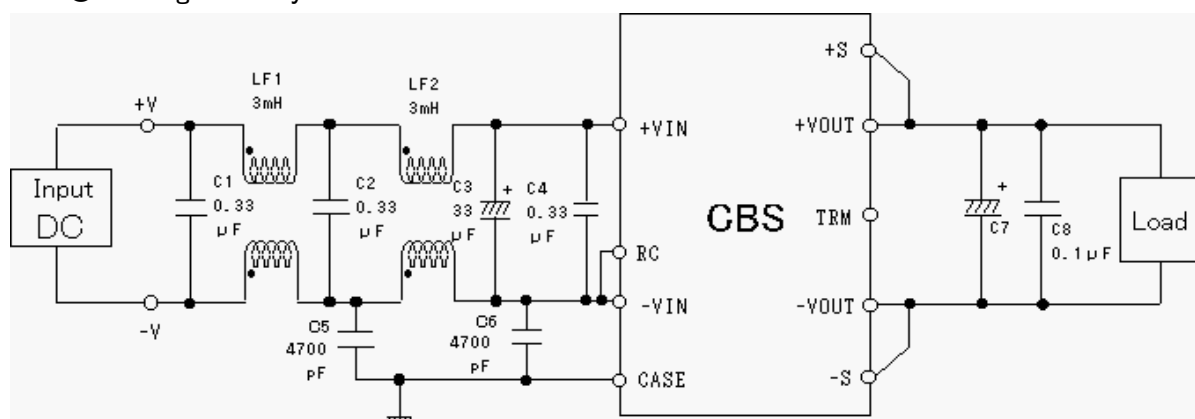
All are satisfactory to item 3: OK

Test : Radiated Susceptability  
 Model Name : CBS 200 48

○Photographs of Test Set-Up



○Testing circuitry



L1, L2 : SC-05-30J (TOKIN)  
 C1, C2, C4 : CFJC22E334M (Nitsuko)  
 C3 : 100V 33 $\mu$ F PMseries (nichicon)  
 C5, C6 : DE1307-640E472M-KH (MURATA)  
 C7 : CBS2004805 10V 2200 $\mu$ F LXZseries (NIPPON CHEMI-CON)  
       CBS2004812 25V 1000 $\mu$ F LXZseries (NIPPON CHEMI-CON)  
       CBS2004828 35V 470 $\mu$ F LXZseries (NIPPON CHEMI-CON)  
 C8 : MDD21H104M (Nitsuko)

Fig. Testing circuitry

DATA SHEET		Date	Mar.8,2001
Model	CBS504805/28	Temp.	25 °C
Test	Electrical fast transient/burst immunity test 電氣的ファーストランシエントバースト試験	Humid.	40 %Rh
		Tested by	S.Kinoshita

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) — グラントプレーン間

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

入力ピン(-VIN) — グラントプレーン間

3) Between case pin and ground plane

ケースピン — グラントプレーン間

4) Between output pin and ground plane

出力ピン — グラントプレーン間

(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	X
Voltage peak[kV]	0.5	1	2	4	Special
Repetition rate [kHz]	5	5	5	2.5	Special

2. Conditions

(1) Input : DC48V

(2) Output : Rated output

(3) Ambient temp. : 25±10°C

3. Conditions of Acceptability

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

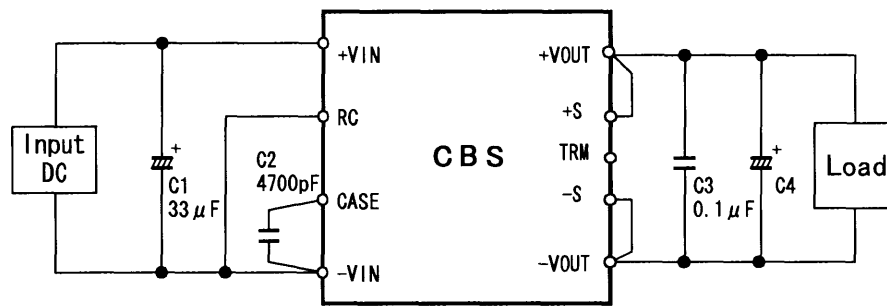
EN50082-2(EN61000-4-4 レベル3)を満足すること

4. Result

No.	Level	Voltage [kV]	Polarity	Pin to be tested					
				+VIN	-VIN	+VOUT,+S	-VOUT,-S	Case pin	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



C4 : CBS504805 2200  $\mu$ F 10V Electrolytic capacitor  
CBS504828 220  $\mu$ F 35V Electrolytic capacitor

Fig. Testing circuitry

DATA SHEET		Date	2001/3/7
Model	CBS504828	Temp.	25 °C
Test	Surge immunity test サージ・immunity試験	Humid.	40 %Rh
		Tested by	H.Senda

## 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 : DC48V

(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 earth : 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

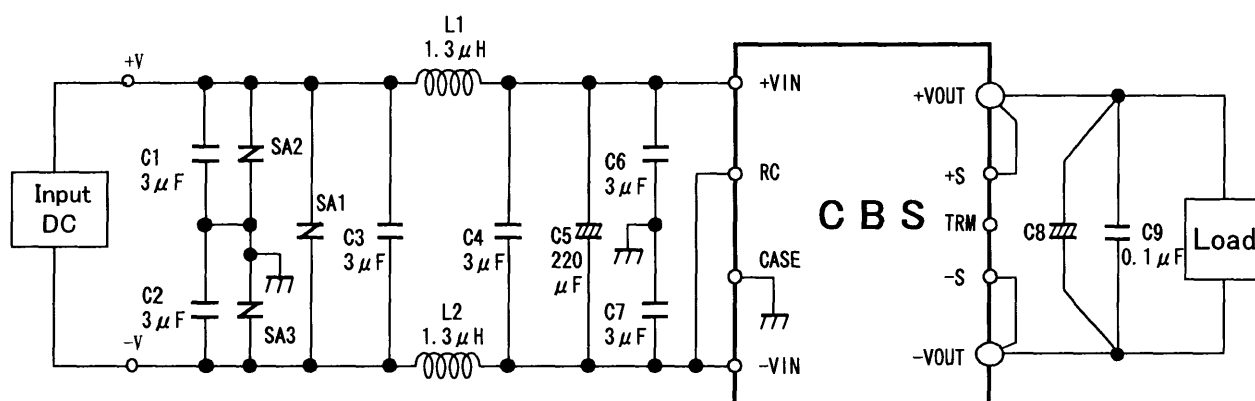
## 4. Result

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

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

All are satisfactory to item 3: OK

## 5. Testing circuitry



- L1, L2 : ETQP6F1R3LFA (MATSUSHITA)  
 C1, C2, C3, C5, C6, C7 : CY55Y5P2A305M (TOKIN)  
 C4 : 80V 220  $\mu$ F PFseries (nichicon)  
 C8 : CBS504803, 05 10V 2200  $\mu$ F LXZseries (NIPPON CHEMI-CON)  
       CBS504812, 15 25V 470  $\mu$ F LXZseries (NIPPON CHEMI-CON)  
       CBS504824, 28 35V 220  $\mu$ F LXZseries (NIPPON CHEMI-CON)  
 SA1 : ERZV10D101 (MATSUSHITA)  
 SA2, SA3 : ERZV07D820 (MATSUSHITA)  
 C9 : MDD21H104M (Nitsuko)

Fig. Testing circuitry



DATA SHEET		Date	2001/3/7
Model	CBS504805	Temp.	25 °C
Test	Surge immunity test サージ・immunity試験	Humid.	40 %Rh
		Tested by	H.Senda

## 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 : DC48V

(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 earth : 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

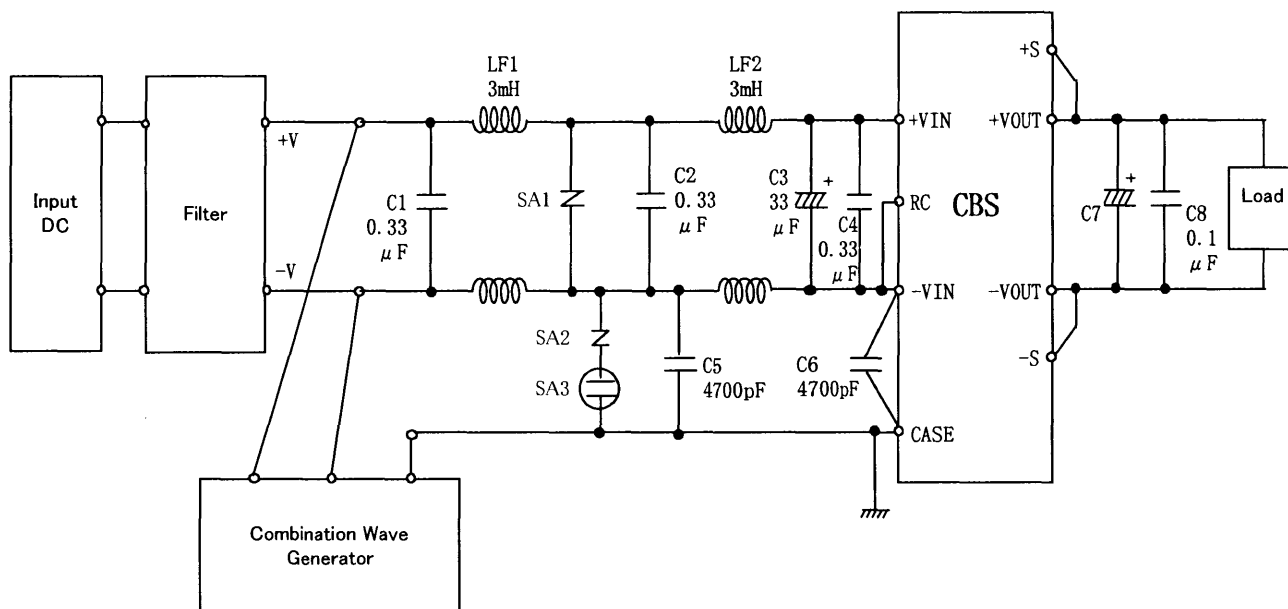
## 4. Result

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

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

All are satisfactory to item 3: OK

## 5. Testing circuitry



- L1、L2 : SC-05-30J (TOKIN)  
 C1、C2、C4 : CFJC22E3334M (Nitsuko)  
 C3 : 100V 33 μF PMseries (nichicon)  
 C5、C6 : DE1307-640E472M-KH (MURATA)  
 C7 : CBS504803,05 10V 2200 μF LXZseries (NIPPON CHEMI-COM)  
       CBS504812,15 25V 470 μF LXZseries (NIPPON CHEMI-COM)  
       CBS504824,28 35V 220 μF LXZseries (NIPPON CHEMI-COM)  
 C8 : MDD21H104M (Nitsuko)  
 SA1、SA2 : ERZV10D101 (MATSUSHITA)  
 SA3 : DSA-302MA (MITSUBISHI)

Fig. Testing circuitry

DATA SHEET		Date	Mar.14,2001
Model	CBS2004805/12/28	Temp.	25 °C
Test	Immunity to conducted disturbances, induced by radio-frequency fields 伝導性無線周波数電磁界イミュニティ試験	Humid.	40 %Rh
		Tested by	K.Kinoshita

1. Method — according to ENV50141 —

(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 ENV50141

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

2. Conditions

(1) Input : DC48V

(2) Output : Rated output

(3) Ambient temp. : 25±10°C

(4) Testing circuitry : Fig.1

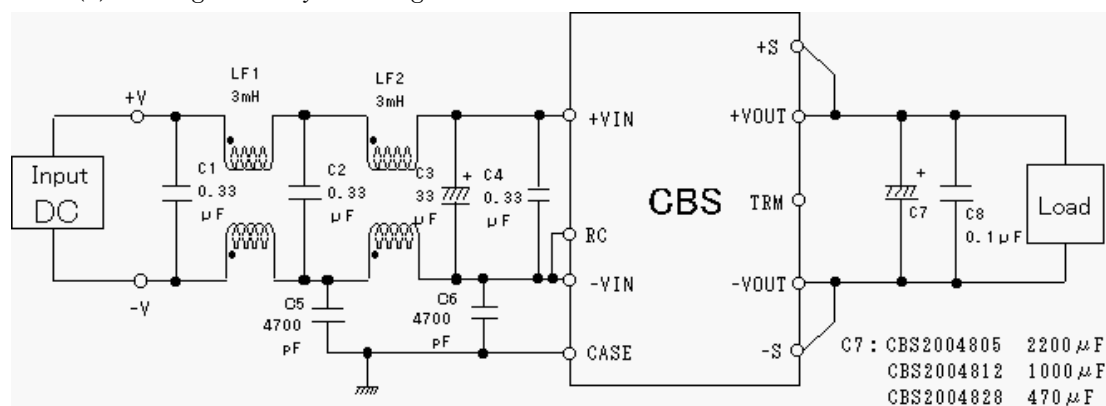


Fig.1 Testing circuitry

3. Conditions of Acceptability

According to EN50082-2 (ENV50141 Level 3) – IEC1000-4-6

EN50082-2(ENV50141 レベル3) – IEC1000-4-6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

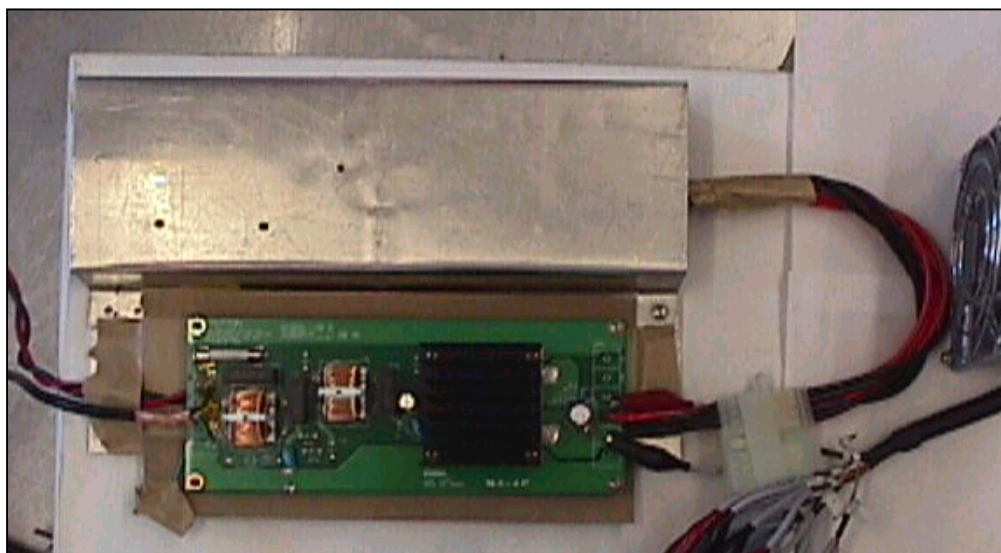
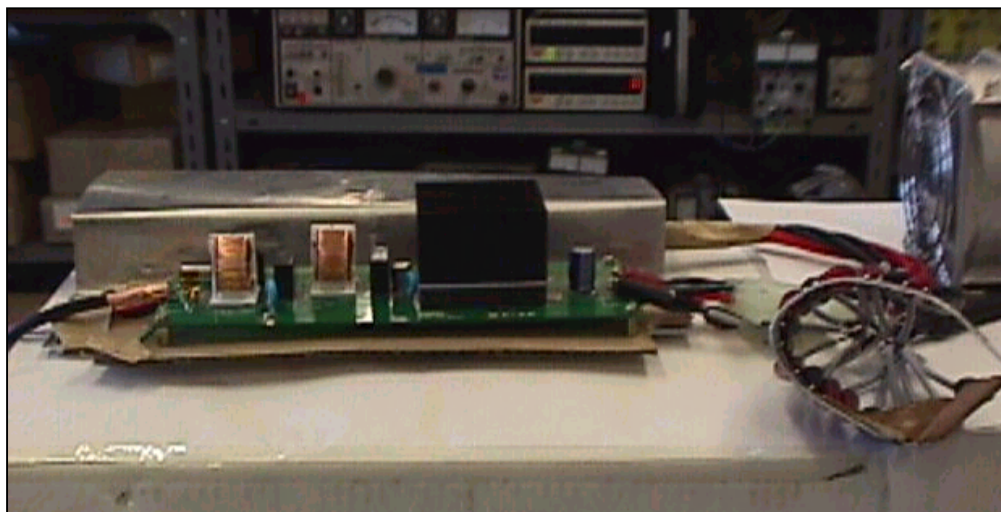
All are satisfactory to item 3: OK

## Conditions

Date 2001/3/12

Test : Conductive Susceptability  
 Model Name : CBS200

## ○Photographs of Test Set-Up



## ○Testing circuitry

