Item No.	Designator	Quantity	Value	Part Number	Manufacturer	Description	Package	Not Mounted
1	C1, C7	2	330 uF	450MXH330	RUBYCON	Aluminum Electrolytic, 450 V, ±20%		
2	C101	1	220 pF	DE2B3KY221KA3BM02F	MURATA	Disc Ceramic, 250 V, ±10 %		
3	C18, C19, C23, C42, C47, C71-C74, C92-C98, C100, C102	18	100 nF			Ceramic, 25 V, ±10 %	1005	
4	C21	1	18 nF			Ceramic, 25 V, ±10 %	1005	
5	C22	1	1800 pF			Ceramic, 50 V, ±10 %	1005	
6	C24, C55, C58, C60-C62, C67, C70, C99	9	1 uF			Ceramic, 25 V, ±20 %	1005	
7	C25	1	150 nF			Ceramic, 25 V, ±10 %	1005	
8	C26, C59, C75, C76	4	2.2 nF			Ceramic, 50 V, ±10 %	1005	
9	C27, C51	2	220 nF			Ceramic, 25V, ±10 %	1005	
10	C2-C6	5	1500 uF	25ZLQ1500MEFC10X25	RUBYCON	Aluminum Electrolytic, 25 V, ±20 %		
11	C30	1	470 nF	LE474-M	OKAYA	Polypropylene Film, 275 V, ±10 %		
12	C31, C32, C63, C64	4	2.2 nF	DE2E3KY222MN3AM02F	MURATA	Disc Ceramic, 250 V , ±20 %		
13	C33, C65	2	2.2 uF	890324026034CS	WURTH	Polypropylene Film, 275 V, ±10 %		
14	C34, C36	2	4.7 pF			Ceramic, 50 V, ±0.1 pF	1005	
15	C35, C37	2	47 nF			Ceramic, 25 V, ±10 %	1005	
16	C38, C39	2	1.2 nF			Ceramic, 50 V, ±10 %	1005	
17	C40	1	120 nF			Ceramic, 25 V, ±10 %	1608	
18	C41	1	1 uF			Ceramic, 25 V, ±10 %	2012	
19	C43, C45, C80, C81	4	1 nF			Ceramic, 50 V, ±10 %	1005	
20	C44, C46	2	3.3 nF			Ceramic, 25 V, ±10 %	1005	
21	C48	1	22 uF			Ceramic, 25 V, ±10 %	3216	
22	C49	1	470 nF			Ceramic, 25 V, ±10 %	1005	
23	C50	1	2.7 nF			Ceramic, 50 V, ±10 %	1005	
24	C52	1	220 nF	LE224-M	OKAYA	Polypropylene Film, 275 V, ±10 %		
25	C66	1	10 uF			Ceramic, 25 V, ±20 %	1608	
26	C78, C79	2	100 pF	DE2B3KY101KA3BM02F	MURATA	Disc Ceramic, 250 V, ±10 %		
27	C82-C91	10	10 uF			Ceramic, 25 V, ±10 %	3216	
28	fan1	1		9CRB0412P5S201	SANYO DENKI	Counter Rotating FAN		
29	CN1	1	15 A	AC-P05CP24	ECHO ELECTRIC	250 V		
30	CN10	1		A2-2PA-2.54DSA	HIROSE			
31	CN2-CN5	4	3 A	A2-1PA-2.54DSA	HIROSE	200 V		
32	CN6, CN7	2		OP-1100	OSADA			
33	CN8	1		5045-02A	MOLEX			
34		1		51191-0200	MOLEX		Housing (for CN8)	

Item No.	Designator	Quantity	Value	Part Number	Manufacturer	Description	Package	Not Mounted
35	D1, D2	2		TRS8E65F	TOSHIBA			
36	D12-D14, D30-D33	7		1SS352(TPH3,F)1-1E1A	TOSHIBA			
37	D16-D19	4		CMF01	TOSHIBA			
38	D20, D21, D34, D35	4		CMH01	TOSHIBA			
39	D22-D29	8		TBAT54	TOSHIBA			
40	D3	1		GSIB2580	VISHAY			
41	D36-D47, D51-D58	20		CUS01(TE85L,Q)	TOSHIBA			
42	D48	1		BAS316	TOSHIBA			
43	D50	1		MMSZ4699T1G	ON Semiconductor			
44	D8, D9	2		CRG04	TOSHIBA			
45	F1	1	15 A	0215015.MXEP	Littelfuse			
46	FB1, FB2	2		FBMJ3216HS800-T	TAIYO YUDEN			
47	HS1-HS4	4		HOLE2.8	-		Through Hole	
48	IC1	1		HF81	MPS			
49	IC10	1		UCC28950PWR	TEXAS			
50	IC11	1		TLV70433DBVT	TEXAS			
51	IC13-IC16	4		TLP2767	TOSHIBA			
52	IC2, IC6, IC7	3		UCC27524AD	TEXAS			
53	IC20	1		ALKG8210	PANASONIC			
54	IC21-IC24	4		TC7SZ04FU	TOSHIBA			
55	IC3	1		UCC28070A	TEXAS			
56	IC4, IC5	2		UCC27714DR	TEXAS			
57	IC8	1		TPS2412D	TEXAS			
58	L1, L2	2	230 uH/ 350 uH (Rated Current/Idc=0)	THN23/14V-08231	TMP		29 × 18	
59	L11, L12	2	13 mH	SCF27-10-1300	TOKIN	10 A	34.5 × 25.5	
60	L3	1	Terminals are shorted by 22AWG Cable			22AWG Cable		
61	L5, L6	2	3.5 uH	TR-AG1341	TOKYO SEIDEN	90 A, ±25 %		
62	Q1, Q2	2		TK25N60X	TOSHIBA			
63	Q15-Q24	10		TPHR9003NC	TOSHIBA			
64	Q3-Q6	4		TK25N60X5	TOSHIBA			
65	Q7-Q14, Q25-Q28	12		TPH3R70APL	TOSHIBA			
66	R1, R89, R91, R92, R94, R95	6	1 M			100 mW, ±5 %	1608	
67	R100	1	124 k			100 mW, ±1 %	1608	
68	R101	1	187 k			100 mW, ±1 %	1608	

Item No.	Designator	Quantity	Value	Part Number	Manufacturer	Description	Package	Not Mounted
69	R102	1	30 k			100 mW, ±1 %	1608	
70	R114, R115	2	2.2			500 mW, ±5 %	3225	
71	R116, R118, R120-R125	8	1			100 mW, ±5 %	1608	
72	R126, R127, R132-R137	8	0			500mW	3216	
73	R138	1	10_5W-FUSE	RF-5-4 10ΩJ	TAKMAN			
74	R149-R152, R227, R228	6	680			100 mW, ±1 %	1608	
75	R178, R179	2	300 k			1 W, ±5 %	6432	
76	R18, R20, R23, R24, R212-R215	8	3.01			500 mW, ±1 %	3216	
77	R185	1	20			250 mW, ±5 %	3216	
78	R19, R21, R22, R25, R28, R29, R31, R33, R71, R73	10	10 k			100 mW, ±5 %	1608	
79	R194-R197	4	620			100 mW, ±1 %	1608	
80	R199	1	680			1 W, ±1 %	6432	
81	R2, R90	2	23.2 k			100 mW, ±1 %	1608	
82	R42	1	9.09 k			100 mW, ±1 %	1608	
83	R43-R45	3	2.37 k			100 mW, ±1 %	1608	
84	R62, R69, R110-R113, R117, R153-R157, R160, R163, R166, R204-R206, R216-R219	22	0			100 mW	1608	
85	R47	1	8.25 k			100 mW, ±1 %	1608	
86	R49	1	22.6			100 mW, ±1 %	1608	
87	R51, R52	2	22 k			100 mW, ±1 %	1608	
88	R53, R104, R186-R193	10	100 k			100 mW, ±5 %	1608	
89	R54	1	15 k			100 mW, ±5 %	1608	
90	R56	1	127 k			10 0mW, ±1 %	1608	
91	R57	1	100 k			100 mW, ±1 %	1608	
92	R6	1	2.2			100 mW, ±5 %	1608	
93	R60	1	47 k			100 mW, ±5 %	1608	
94	R61	1	330			125 mW, ±5 %	1608	
95	R63, R130, R172, R173	4	100			125 mW, ±5 %	1608	

Item No.	Designator	Quantity	Value	Part Number	Manufacturer	Description	Package	Not Mounted
96	R64, R65, R66, R98, R99	5	6.8 k			100 mW, ±5 %	1608	
97	R67, R81, R85, R169, R170	5	1 k			125 mW, ±5 %	1608	
98	R7, R8	2	33			500 mW, ±5 %	3225	
99	R72, R74, R108, R109	4	5.11			500 mW, ±1 %	3216	
100	R75	1	49.9			125 mW, ±1 %	1608	
101	R76, R105	2	100 k			250 mW, ±1 %	3216	
102	R77, R106	2	1 k			3 W, ±5 %		
103	R79, R80	2	75 k			500 mW, ±1 %	3225	
104	R82, R86	2	1.78 k			100 mW, ±1 %	1608	
105	R83, R87	2	3.56 k			100 mW, ±1 %	1608	
106	R9	1	2 k			100 mW, ±5 %	1608	
107	R93, R103	2	115 k			100 mW, ±1 %	1608	
108	R96	1	3.9 k			100 mW, ±5 %	1608	
109	R97	1	3.65 k			100 mW, ±1 %	1608	
110	RV1	1	560 V	TND14V-561KB00AAA0	NIPPON CHEMICON			
111	T2, T3	2	1:200	P009-203	PONY			
112	T4	1	1:100	PE-63587	PULSE			
113	T5, T6	2	20:1:1	TR-AN0536	TOKYO SEIDEN			
114	TP1-TP15, TP17-TP40, TP44	40		HK-2-S	MAC8			
115	TP41, TP42	2		LC-22-S-BLACK	MAC8			
116	TP43, TP45	2		LC-22-S-WHITE	MAC8			
901	C20, C77	2	100 pF			Ceramic, 50 V, ±5 %	1608	Not Mounted
902	C53, C54, C56, C57	4	220 pF			Ceramic, 50 V, ±5 %	1608	Not Mounted
903	D49	1		CRZ15	TOSHIBA			Not Mounted
904	R46, R48, R55, R58, R59, R70, R171, R174-R177, R180-R182, R184, R198, R207-R209, R220-R225	25	0			100 mW	1608	Not Mounted
905	R50	1	825 k			100 mW, ±1 %	1608	Not Mounted
906	R78, R107, R128, R129	4	1 k			3 W, ±5 %		Not Mounted
907	R200-R203	4	680			1W,±1%	6432	Not Mounted
908	R210, R211	2	6.8 k			100 mW, ±5 %	1608	Not Mounted

TR-AN0536-X11A

Specifications

Transformer (12V-67A)

Model : AN0536

TOKYO SEIDEN CO., LTD.

Head office	4-28-21, Miyamae, Suginami-ku, Tokyo 168-0081	TEL.+81 3-3332-6666	FAX.+81 3-3332-6672
Nagano office	1216, Aokubo, Ueda-shi, Nagano 386-0155	TEL.+81 268-35-0555	FAX.+81 268-35-2895
Nagoya office	4-30, Kurokawahondori, Nagoya Kita-ku, Aichi 462-0841	TEL.+81 52-991-9351	FAX.+81 52-991-9350

TR-AN0536-X11A

1. Introduction

This product is the main high-frequency transformer used for the converter circuit in the server power supply unit.

2. Model name

AN0536

3. Specification

1	Turns ratio	Primary 20 : Secondary 1:1
2	Circuit diagram	Please refer to the drawing.
3	Secondary output	12V DC - 67A
4	Insulation class	F
5	Frequency	60kHz～100kHz
6	Core	PC95 PQ35/35 (TDK or its equivalent)
7	Cooling method	Forced-air cooling (Cooling fan)
8	Withstand voltage	Primary winding－Core : 3000V AC 1 minute Secondary winding－Core : 500V AC 1 minute
9	Winding wire	Primary winding : Triple insulated wire (Litz wire) Secondary winding : PEW
10	Product dimensions	W:40mm×D:38mm×H:37mm ※For details, please refer to the drawing.

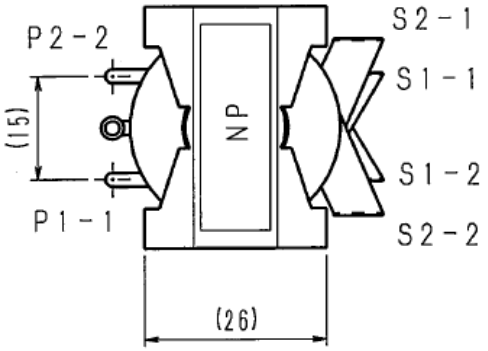
4. Guarantee

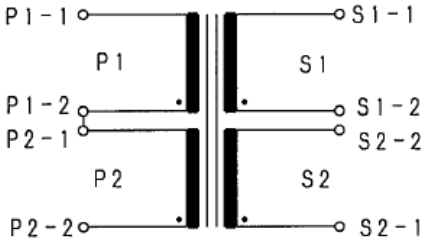
(1) The term of a guarantee of our products is one year from a date of shipping.
(2) Where normal usage according to notes of the user instruction is carried out, when it breaks down within the term of a guarantee, we repair product for free.
(3) In the following case, within the term of a guarantee, we repair product for a fee.
a) It is a case where it is dealt with unsuitably, a case of accident or damage which took place by the mistake in usage.
It is a case where repair or adaptation is carried out except our company.
b) It is a case where it is broken down or damaged by a transportation, drop, etc., after purchasing.
c) It is a case where the difference on appearance occurred after a purchase. (Scratch of a case, etc.)
d) It is a case where a cause is in the outside, such as fire, pollution, abnormal voltage, earthquake, thunder, storm and flood damages, other natural disasters.
e) It is a case where consumables are exhausted and exchange is required.
f) In addition, it is a case of the trouble or damage which is not the range of the responsibility of our company.
(4) A repair of a product is carried out at our factory in Japan.
About transportation cost of repair, even if it's in free repair period, the customer bears the cost of transportation to Japan.
(5) After repairing a product, when the trouble related to a repair point and a repair occurs within three months after supplying, we repair again for free.
(6) After starting usage, the alteration by specifications varying is dealt with as a repair article.
(7) To the loss (Damage to the connected equipment, a malfunction of a product which were produced, a man day compensation, etc.) generated in secondary by the trouble and damage to product, our company does not take responsibility.
(8) The trouble that produced after mounting customize products in a customer's product cannot perform an estimation in only our company.
It corresponds on deliberations including a fee.

TOKYO SEIDEN CO., LTD.

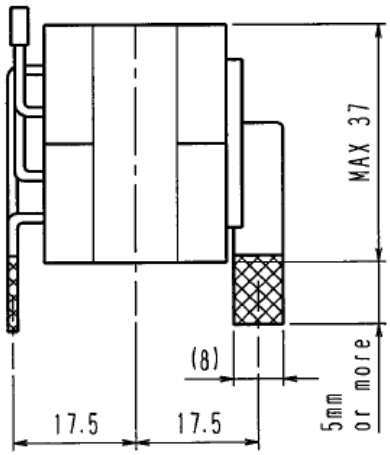
REVISION						
B						
C						
D						

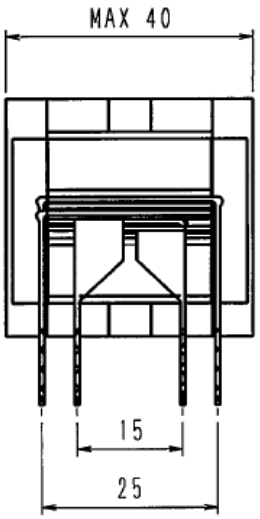
Model name	turns ratio	Secondary output	Frequency	Insulation class	Withstand voltage	Approx. mass
AN0536	Pri. :40T Sec. :2T×2	DC12V-67A	60kHz ~100kHz	F	Pri.-Core:AC3.0kV/min Sec.-Core:AC0.5kV/min	106g





Circuit diagram





APPROVED BY	CHECKED BY	DESIGNED BY	ORDER No.		TITLE
Aug.18.2017	Aug.10.2017	Aug.10,2017	UNIT	SCALE	TRANSFORMER
C.Iwamoto	A.Oomori	M.Koike	mm / kg	1/1	DRAWING No.
TOKYO SEIDEN CO., LTD			THIRD ANGLE DWG.		TR-AN0536-F02A

TR-AG1341-X11A

Specifications

Reactor (3.5μH-67A)

Model : AG1341

TSC TOKYO SEIDEN CO., LTD.

Head office	4-28-21, Miyamae, Suginami-ku, Tokyo 168-0081	TEL.+81 3-3332-6666	FAX.+81 3-3332-6672
Nagano office	1216, Aokubo, Ueda-shi, Nagano 386-0155	TEL.+81 268-35-0555	FAX.+81 268-35-2895
Nagoya office	4-30, Kurokawahondori, Nagoya Kita-ku, Aichi 462-0841	TEL.+81 52-991-9351	FAX.+81 52-991-9350

TR-AG1341-X11A

1. Introduction

This product is high-frequency reactor used for the converter circuit in the server power supply unit.

2. Model name

AG1341

3. Specification

1	Rated current	67A (max90A)
2	High-frequency ripple current	15Ap-p at120kHz
3	Inductance	3.5μH ± 25% (at 0A)
4	Circuit voltage	22V DC max
5	Insulation class	F
6	Frequency	120kHz～200kHz
7	Core	PC95 PQ35/35 (TDK or its equivalent)
8	Copper loss	7W (at120kHz) (design value)
9	Cooling method	Forced-air cooling (Cooling fan)
10	Withstand voltage	Winding－Core : 500V AC 1 minute
11	Winding wire	PEW
12	Product dimensions	W:42mm×D:40mm×H:37mm ※For details, please refer to the drawing.

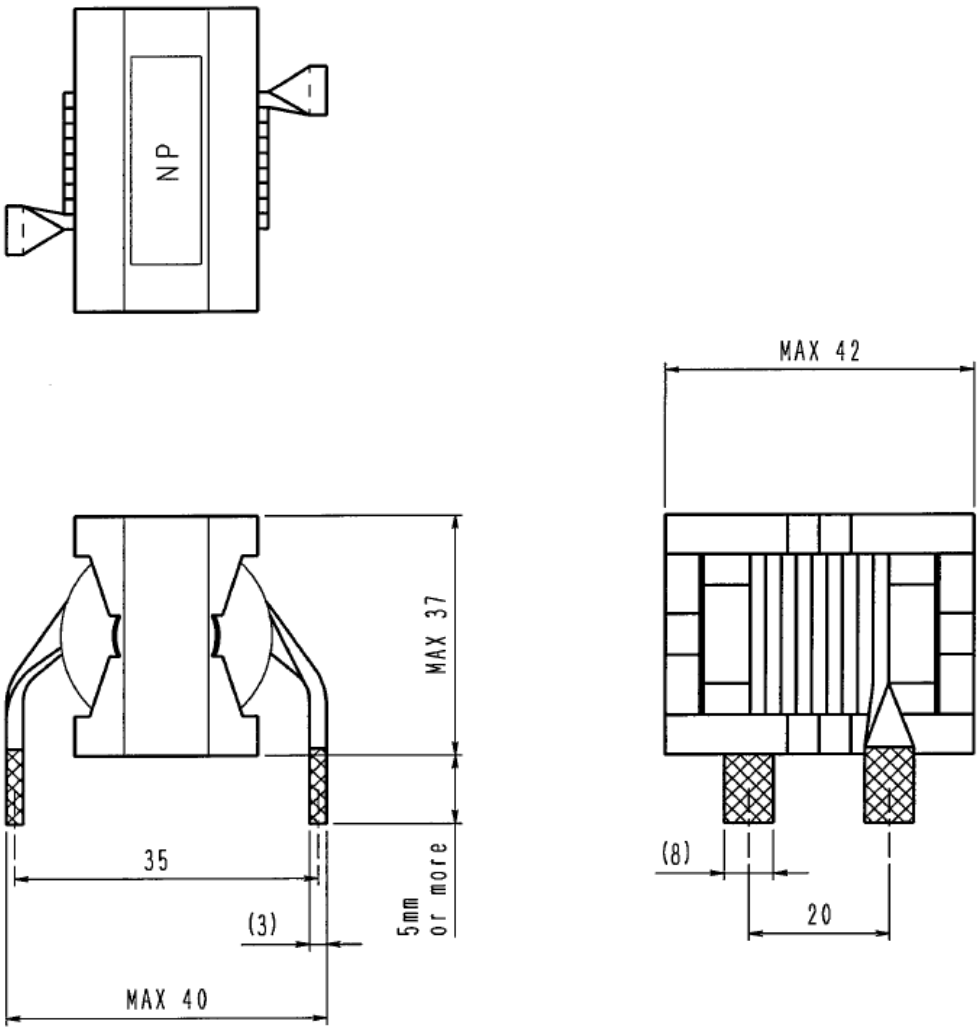
4. Guarantee

(1) The term of a guarantee of our products is one year from a date of shipping.
(2) Where normal usage according to notes of the user instruction is carried out, when it breaks down within the term of a guarantee, we repair product for free.
(3) In the following case, within the term of a guarantee, we repair product for a fee.
a) It is a case where it is dealt with unsuitably, a case of accident or damage which took place by the mistake in usage.
It is a case where repair or adaptation is carried out except our company.
b) It is a case where it is broken down or damaged by a transportation, drop, etc., after purchasing.
c) It is a case where the difference on appearance occurred after a purchase. (Scratch of a case, etc.)
d) It is a case where a cause is in the outside, such as fire, pollution, abnormal voltage, earthquake, thunder, storm and flood damages, other natural disasters.
e) It is a case where consumables are exhausted and exchange is required.
f) In addition, it is a case of the trouble or damage which is not the range of the responsibility of our company.
(4) A repair of a product is carried out at our factory in Japan.
About transportation cost of repair, even if it's in free repair period, the customer bears the cost of transportation to Japan.
(5) After repairing a product, when the trouble related to a repair point and a repair occurs within three months after supplying, we repair again for free.
(6) After starting usage, the alteration by specifications varying is dealt with as a repair article.
(7) To the loss (Damage to the connected equipment, a malfunction of a product which were produced, a man day compensation, etc.) generated in secondary by the trouble and damage to product, our company does not take responsibility.
(8) The trouble that produced after mounting customize products in a customer's product cannot perform an estimation in only our company.
It corresponds on deliberations including a fee.

TOKYO SEIDEN CO., LTD.

REVISION						
B						
C						
D						

Model name	Inductance	Rated current	High-frequency ripple current	Insulation class	Withstand voltage	Approx. mass
AG1341	3.5μH	67A	15Ap-p at120kHz	F	AC0.5kV/min	146g



APPROVED BY	CHECKED BY	DESIGNED BY	ORDER No.		TITLE
Aug.18.2017	Aug.10.2017	Aug.10.2017	UNIT	SCALE	Reactor
C.Tsuamoto	A.Oomori	M.Koike	mm / kg	1/1	DRAWING No.
TOKYO SEIDEN CO., LTD			THIRD ANGLE DWG.		TR-AG1341-F02A

Terms of Use

This terms of use is made between Toshiba Electronic Devices and Storage Corporation (“We”) and customers who use documents and data that are consulted to design electronics applications on which our semiconductor devices are mounted (“this Reference Design”). Customers shall comply with this terms of use. Please note that it is assumed that customers agree to any and all this terms of use if customers download this Reference Design. We may, at its sole and exclusive discretion, change, alter, modify, add, and/or remove any part of this terms of use at any time without any prior notice. We may terminate this terms of use at any time and for any reason. Upon termination of this terms of use, customers shall destroy this Reference Design. In the event of any breach thereof by customers, customers shall destroy this Reference Design, and furnish us a written confirmation to prove such destruction.

1. Restrictions on usage

1. This Reference Design is provided solely as reference data for designing electronics applications. Customers shall not use this Reference Design for any other purpose, including without limitation, verification of reliability.
2. This Reference Design is for customer's own use and not for sale, lease or other transfer.
3. Customers shall not use this Reference Design for evaluation in high or low temperature, high humidity, or high electromagnetic environments.
4. This Reference Design shall not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable laws or regulations.

2. Limitations

1. We reserve the right to make changes to this Reference Design without notice.
2. This Reference Design should be treated as a reference only. We are not responsible for any incorrect or incomplete data and information.
3. Semiconductor devices can malfunction or fail. When designing electronics applications by referring to this Reference Design, customers are responsible for complying with safety standards and for providing adequate designs and safeguards for their hardware, software and systems which minimize risk and avoid situations in which a malfunction or failure of semiconductor devices could cause loss of human life, bodily injury or damage to property, including data loss or corruption. Customers must also refer to and comply with the latest versions of all relevant our information, including without limitation, specifications, data sheets and application notes for semiconductor devices, as well as the precautions and conditions set forth in the "Semiconductor Reliability Handbook".
4. When designing electronics applications by referring to this Reference Design, customers must evaluate the whole system adequately. Customers are solely responsible for all aspects of their own product design or applications. WE ASSUME NO LIABILITY FOR CUSTOMERS' PRODUCT DESIGN OR APPLICATIONS.
5. No responsibility is assumed by us for any infringement of patents or any other intellectual property rights of third parties that may result from the use of this Reference Design. No license to any intellectual property right is granted by this terms of use, whether express or implied, by estoppel or otherwise.
6. THIS REFERENCE DESIGN IS PROVIDED "AS IS". WE (a) ASSUME NO LIABILITY WHATSOEVER, INCLUDING WITHOUT LIMITATION, INDIRECT, CONSEQUENTIAL, SPECIAL, OR INCIDENTAL DAMAGES OR LOSS, INCLUDING WITHOUT LIMITATION, LOSS OF PROFITS, LOSS OF OPPORTUNITIES, BUSINESS INTERRUPTION AND LOSS OF DATA, AND (b) DISCLAIM ANY AND ALL EXPRESS OR IMPLIED WARRANTIES AND CONDITIONS RELATED TO THIS REFERENCE DESIGN, INCLUDING WARRANTIES OR CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, ACCURACY OF INFORMATION, OR NONINFRINGEMENT.

3. Export Control

Customers shall not use or otherwise make available this Reference Design for any military purposes, including without limitation, for the design, development, use, stockpiling or manufacturing of nuclear, chemical, or biological weapons or missile technology products (mass destruction weapons). This Reference Design may be controlled under the applicable export laws and regulations including, without limitation, the Japanese Foreign Exchange and Foreign Trade Law and the U.S. Export Administration Regulations. Export and re-export of this Reference Design are strictly prohibited except in compliance with all applicable export laws and regulations.

4. Governing Laws

This terms of use shall be governed and construed by laws of Japan.