File E214100
Project 09CA17097

February 5, 2010

REPORT

on

COMPONENT - Non-Optical Isolating Devices - Component

Analog Devices Inc
WILMINGTON , MA 01887

Recognized Company: Analog Devices Inc

DESCRIPTION

PRODUCT COVERED:

USR – Single Protection Non-Optical Isolator, Models ADuM2200xRIZ, ADuM2201xRIZ, ADuM2210xRIZ, ADuM2210xRWZ, ADuM2211xRIZ, ADuM2211xRWZ, ADuM2250AWIZ, ADuM2251ARIZ, ADuM2400xRIZ, ADuM2401xRIZ, ADuM2402xRIZ, ADuM3160BRWZ, ADuM3211xRZ, ADuM4160BRWZ, ADuM440xARWZ, ADuM440xBRWZ, ADuM440xCRWZ, ADuM4400xRIZ, ADuM4401xRIZ, ADuM4402xRIZ, ADuM6000, ADuM6000ARIZ, ADuM6132xARWZ, ADuM620x, ADuM620xARWZ, ADuM620xCRWZ, ADuM6200xRIZ, ADuM6201xRIZ, ADuM6202xRIZ, ADuM640x, ADuM640xARQZ, ADuM640xARWZ, ADuM640xCRQZ, ADuM640xCRWZ, ADuM6400xRIZ, ADuM6400xRWZ, ADuM6401xRIZ, ADuM6401xRWZ, ADuM6402xRIZ, ADuM6402xRWZ, ADuM6403xRIZ, ADuM6403xRWZ, ADuM6404xRIZ, ADuM6404xRWZ, ADuM7234BRQZ, **ADuM724x**, ADuM7410BRWZ, ADuM7410BRQZ, ADuM744xARQZ, ADuM744xBRQZ, ADuM744xCRQZ, ADuM7510BRWZ, ADuM7510BRQZ, where "x" in the model number may be any alpha/numeric designation. All models may have additional suffixes.

ELECTRICAL RATINGS **(at 25˚C ambient) ($)::**

*	Current (mA)		Power (mW)			Max Operating Temp **(Tmoa)**	Max Junction Temp **(Tj)**	Max Storage Temp **(Ts)**
Model	Encoder	Decoder	Encoder	Decoder	Isolation Voltage	(˚C)	(˚C)	(˚C)
ADuM2200xRIZ	4.6	2.8	25.3 @ 10 Mbps	15.4 @ 10 Mbps	5000	105	150	150
ADuM2201xRIZ	3.4	4.0	18.7 @ 10 Mbps	15.4 @ 10 Mbps	5000	105	150	150
ADuM2210xRIZ					5000	105	150	150
ADuM2210xRWZ	4.6	2.8	25.3 @ 10 Mbps	15.4 @ 10 Mbps	5000	105	150	150
ADuM2211xRIZ					5000	105	150	150
ADuM2211xRWZ	3.4	4.0	18.7 @ 10 Mbps	15.4 @ 10 Mbps	5000	105	150	150
ADuM2250AWIZ	8.7	35	30.2 @ 800 kbps	39.5 @ 800 kbps	5000	105	150	150
ADuM2251ARIZ	2.8	36	15.4 @ 800 kbps	45 @ 800 kbps	5000	105	150	150
ADuM2400xRIZ	100	25	550 @ 90 Mbps	137 @ 90 Mbps	5000	105	150	150
ADuM2401xRIZ	82	43	451 @ 90 Mbps	236 @ 90 Mbps	5000	105	150	150
ADuM2402xRIZ	62	62	341 @ 90 Mbps	341 @ 90 Mbps	5000	105	150	150
ADuM3160BRWZ	8	8	40	40 @ 12Mbps	2500	105	150	150
ADuM3211xRZ	3.4	4	18.7 @ 10 Mbps	15.4 @ 10 Mbps	2500	105	150	150
ADuM4160BRWZ	8	8	40	40 @ 12Mbps	5000	105	150	150

($) - For ambient temperatures higher than 25˚C and up to Tmoa, refer to manufacturer's specifications and/or thermal derating curve data for complete electrical ratings.

*MAXIMUM RATINGS **(at 25°C) ($):**

Model	Current (mA)		Power (mW)		Isolation Voltage	Max Operating (Ambient) Temp (°C)	Max Junction Temp (°C)	Max Storage Temp (°C)
ADuM440xARWZ	0.9	20	5	30 @ 90 Mbps	5000	105	150	150
ADuM440xBRWZ	2.9	21	15	35 @ 90 Mbps	5000	105	150	150
ADuM440xCRWZ	25	29	125	73 @ 90 Mbps	5000	105	150	150
ADuM4400xRIZ	100	36	550 @ 90 Mbps	198 @ 90 Mbps	5000	105	150	150
ADuM4401xRIZ	82	46	451 @ 90 Mbps	253 @ 90 Mbps	5000	105	150	150
ADuM4402xRIZ	62	62	341 @ 90 Mbps	341 @ 90 Mbps	5000	105	150	150
ADuM6000 (Power)	290	100	1450	500 @ 25Mbps	5000	105	150	150
ADuM6000ARIZ	290	-80	1305	-400	5000	105	150	150
ADuM6132xARWZ	350	22	2	275@ 1 Mbps	3750	85	150	150
ADuM620x (Power)	290	100	1450	500 @ 25Mbps	5000	105	150	150
ADuM620xARWZ	0.45	6	2.5	4.5 @ 1Mbps	5000	105	150	150
ADuM620xCRWZ	3	6	15	7	5000	105	150	150
ADuM6200xRIZ	300	-74	1350 @ 25 Mbps	-370 @ 25 Mbps	5000	105	150	150
ADuM6201xRIZ	298	-72	1341 @ 25 Mbps	-360 @ 25 Mbps	5000	105	150	150
ADuM6202xRIZ	296	-70	1332 @ 25 Mbps	-35 @ 25 Mbps	5000	105	150	150
ADuM640x (Power)	290	100	1450	500 @ 25 Mbps	5000	105	150	150
ADuM640xARQZ (data)	0.9	11	5	9 @ 1Mbps	5000	105	150	150
ADuM640xARWZ	0.9	11	5	9 @ 1Mbps	5000	105	150	150
ADuM640xCRQZ (data)	6	12	30	16 @ 25Mbps	5000	105	150	150
ADuM640xCRWZ	6	12	30	16 @ 25Mbps	5000	105	150	150
ADuM6400xRIZ	309	-69	1390 @ 25 Mbps	-345 @ 25 Mbps	5000	105	150	150
ADuM6400xRWZ	309	-69	1390 @ 2 Mbps	-345 @ 25 Mbps	5000	105	150	150
ADuM6401xRIZ	307	-67	1382 @ 25 Mbps	-335 @ 25 Mbps	5000	105	150	150
ADuM6401xRWZ	307	-67	1382 @ 25 Mbps	-335 @ 25 Mbps	5000	105	150	150

ADuM6402xRIZ	305	-65	1373 @ 25 Mbps	-325 @ 25 Mbps	5000	105	150	150
ADuM6402xRWZ	305	-65	1373 @ 25 Mbps	-325 @ 25 Mbps	5000	105	150	150
ADuM6403xRIZ	302	-63	1359 @ 25 Mbps	-315 @ 25 Mbps	5000	105	150	150
ADuM6403xRWZ	302	-63	1359 @ 25 Mbps	-315 @ 25 Mbps	5000	105	150	150
ADuM6404xRIZ	301	-61	1354 @ 25 Mbps	-305 @ 25 Mbps	5000	105	150	150
ADuM6404xRWZ	301	-61	1354 @ 25 Mbps	-305 @ 25 Mbps	5000	105	150	150
ADuM7234BRZ	1.1	130	6	585@2Mbps	1000	105	150	150
ADuM724x	**28.6**	**28.6**	**200 @ 25 Mbps**	**200 @ 25 Mbps**	**1000**	**125**	**150**	**150**
ADuM7410BRWZ	2	21	10	32@10Mbps	1000	105	150	150
ADuM7410BRQZ	2	21	10	32@10Mbps	1000	105	150	150
ADuM744xARQZ	1.2	21	6	32@1Mbps	1000	105	150	150
ADuM744xBRQZ	4.5	21	23	34@10Mbps	1000	105	150	150
ADuM744xCRQZ	10	22.5	50	41@25Mbps	1000	105	150	150
ADuM7510BRWZ	2	21	10	32@10Mbps	1000	105	150	150
ADuM7510BRQZ	2	21	10	32@10Mbps	1000	105	150	150

($) - For ambient temperatures higher than 25˚C and up to Tmoa, refer to manufacturer's specifications and/or thermal derating curve data for complete electrical ratings for the model.

GENERAL:

These devices are non-optical isolators consisting of a encoder and decoder. The encoder and decoder are separated by a transformer. Internal “chips” are connected to lead frames that are molded into the enclosure.

ENGINEERING CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):

Use - For use only in products where the acceptability of the combination is determined by Underwriters Laboratories Inc.

USR indicates this product was investigated under the UL Standard for Safety for Optical Isolators, UL 1577, Fourth Edition.

Conditions of Acceptability - Each device shall be reviewed with respect to the following conditions of acceptability:

1. The capability of the device to control a load has not been investigated.

2. These devices should be installed in a suitable end product enclosure.

3. The maximum operating (ambient) temperature, as noted in the ratings table, shall not be exceeded.

4. For single protection devices, the insulation to the case has not been evaluated. For double protection devices, the insulation to the case has been evaluated to the isolation voltage specified in the ratings table.

5. In addition to meeting single protection requirements, double protection optical isolators have also been investigated for use in up to 250 V, 50/60 Hz circuits in audio, video, and similar equipment in applications in which breakdown of the optical isolator may result in a risk of fire, electrical shock, or injury to persons.

CONSTRUCTION DETAILS:

General - The product shall be constructed in accordance with the following description. All dimensions are approximate, unless specified as “max” or “min”.

MODEL ADuM3160BRWZ

General – Model ADuM3160BRWZ represents models ADuM4160BRWZ, ADuM440xARWZ, ADuM440xBRWZ, ADuM440xCRWZ ADuM6132xARWZ, ADuM640xARQZ, ADuM640xCRQZ, ADuM7234BRQZ, ADuM7410BRWZ, ADuM7410BRQZ, ADuM744xARQZ, ADuM744xBRQZ, ADuM744xCRQZ, ADuM7510BRWZ, ADuM7510BRQZ, except as noted below.

1. Encoder – FET input.

2. Decoder – FET output.

3. Lead Frame and Bond Wire – Metal employed for current carrying parts shall be of stainless steel, silver, gold, copper, nickel, aluminum, an alloy of the same, or an equivalent material.

4. Insulation Transformer Compound Coupling – Polyimide film, Type I-8124ER by Asahi Kasei EMD. Provides isolation between coils. See table below for minimum thickness.

Models	Minimum Through Insulation Thickness (mm)
ADuM3160BRWZ, ADuM4160BRWZ, ADuM440xARWZ, ADuM440xBRWZ, ADuM440xCRWZ, ADuM6132xARWZ, ADuM640xARQZ (data), ADuM640xCRQZ (data)	0.017
ADuM7234BRZ, ADuM7410BRWZ, ADuM7410BRQZ, ADuM744xARQZ, ADuM744xBRQZ, ADuM744xCRQZ, ADuM7510BRWZ, ADuM7510BRQZ	0.00238

5. Insulation Encapsulant – For wide body package, Epoxy, Type EME-6600H by Sumitomo.

   Alternate – Same as above, except EME-6600 by Sumitomo.

   For smaller package, same as above except type **G600C** by Sumitomo.

MODELS ADuM2200xRIZ, ADuM2201xRIZ, ADuM2210xRIZ, ADuM2210xRWZ, ADuM2211xRIZ, ADuM2211xRWZ, ADuM2250AWIZ, ADuM2251ARIZ, ADuM2400xRIZ, ADuM2401xRIZ, ADuM2402xRIZ, ADuM3211xRZ, ADuM4400xRIZ, ADuM4401xRIZ, ADuM4402xRIZ

General – These models are similar to Model ADuM3160BRWZ, except as noted below.

5. Insulation Encapsulant – Epoxy, Type EME-6600H by Sumitomo.

MODELS ADuM640x and ADuM640xCRWZ

General – Models ADuM640x and ADuM640xCRWZ represent Models ADuM6000, ADuM620x, ADuM620xARWZ, ADuM620xCRWZ, and ADuM640xARWZ, except as noted below.

1. Encoder – FET input.

2. Decoder – FET output.

3. Lead Frame and Bond Wire – Metal employed for current carrying parts shall be of stainless steel, silver, gold, copper, nickel, aluminum, an alloy of the same, or an equivalent material.

4. Insulation Transformer Compound Coupling – Polyimide film as indicated in table below. This provides isolation between coils.

Models	Compound Coupling	Minimum Through Insulation Thickness (mm)
*ADuM6000, ADuM620x, ADuM640x, ADuM620xARWZ, ADuM620xCRWZ, ADuM640xARWZ, ADuM640xCRWZ	Power Transformer Die - BL-130B by Asahi Kasei **EMD**	0.020
	Data Transformer Die - I-8124ER by Asahi Kasei **EMD**	0.017

5. Insulation Encapsulant – Epoxy Type EME-6600 by Sumitomo.

Alternate - Same as above, except Type EME-6600H by Sumitomo.

MODELS ADuM6000ARIZ, ADuM6200xRIZ, ADuM6201xRIZ, ADuM6202xRIZ, ADuM6400xRIZ, ADuM6400xRWZ, ADuM6401xRIZ, ADuM6401xRWZ, ADuM6402xRIZ, ADuM6402xRWZ, ADuM6403xRIZ, ADuM6403xRWZ, ADuM6404xRIZ, ADuM6404xRWZ

General – The above models are similar to Models ADuM640x and ADuM640xCRWZ, except as noted below.

4. Insulation Transformer Compound Coupling – Polyimide film as indicated in table below. This provides isolation between coils.

Models	Compound Coupling	Minimum Through Insulation Thickness (mm)
ADuM6000ARIZ, ADuM6200xRIZ, ADuM6201xRIZ, ADuM6202xRIZ, ADuM6400xRIZ, ADuM6400xRWZ, ADuM6401xRIZ, ADuM6401xRWZ, ADuM6402xRIZ, ADuM6402xRWZ, ADuM6403xRIZ, ADuM6403xRWZ, ADuM6404xRIZ, ADuM6404xRWZ	Power Transformer Die - BL-130B by Asahi Kasei EMD	0.021
	Data Transformer Die - I-8124ER by Asahi Kasei EMD	0.017

5. Insulation Encapsulant – Epoxy Type EME-6600H by Sumitomo.

MODEL ADuM724x

General – Similar to Model ADuM3160BRWZ, except as noted below.

4. Isolation Capacitor - The isolation barrier is provided with 0.0024 mm thickness of silicon dioxide (SiO2) between the Silicon-Processed-Integrated capacitor plates. This device is located within the Decoder Chip.

5. Insulation Encapsulant – Epoxy, Type G600C by Sumitomo.