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Project 10CA22556

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REPORT

On

COMPONENT - NON-OPTICAL ISOLATING DEVICES

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DESCRIPTION

PRODUCT COVERED:

* USR - Single Protection Non-Optical Isolator, Models ADuM148xARSZ, ADuM148xBRSZ, ADuM148xCRSZ, **ADuM228x**, **ADuM347x**, **ADuM347xARWZ**, **ADuM347xCRWZ**, **ADuM348x**, **ADuM447x**, **ADuM521x**, **ADuM621x**, **ADuM764x**, ADuM3070, ADuM3220, ADuM3221, ADuM3223, **ADuM4070**, ADuM4223, **ADuM5010**, **ADuM6010**, where "x" in the model number may be any alpha/numeric designation. All models may have additional suffixes.

ELECTRICAL RATINGS (at 25°C ambient) (\$):

Model	Current (mA)		Power (mW)		Isolation Voltage (AC)	Max Operating Temp (T _{moa}) (°C)	Max Junction Temp (T _j) (°C)	Max Storage Temp (T _s) (°C)
	Encoder	Decoder	Encoder	Decoder				
ADuM148xARSZ	5.5	1.6	27	8	2500	105	150	150
BRSZ	5.8	5.4	29	27	2500	105	150	150
CRSZ	25.4	7.3	127	36.5	2500	105	150	150
ADuM228x	12	17	84	119 @100Mbps	5000	125	150	150
ADuM348x	3	14	21	98 @25Mbps	3750	125	150	150
ADuM447x	8.75	11	61	77 @25Mbps	5000	105	150	150
ADuM521x (power)	104	3.6	728	25	2500	105	150	150
ADuM521x (data)	0.8	12.3	5.6	61.5 @100Mbps	2500	105	150	150
ADuM621x (power)	104	3.6	728	25	3750	105	150	150
ADuM621x (data)	0.8	12.3	5.6	61.5 @100Mbps	3750	105	150	150
ADuM764x	9	12.2	63	85 @25Mbps	1000	105	150	150
ADuM347x (Power)	570	4	489	20	2500	105	150	150
ARWZ	0.9	11	5	9 @ 1Mbps	5000	105	150	150
CRWZ	6	12	30	16 @ 25Mbps	5000	105	150	150

Model	Current (mA)		Power (mW)		Isolation Voltage (AC)	Max Operating Temp (T _{moa}) (°C)	Max Junction Temp (T _j) (°C)	Max Storage Temp (T _s) (°C)
	Encoder	Decoder	Encoder	Decoder				
ADuM3070 CTRL	3	84	21	60	2500	125	150	150
(switches)	1400	84	980	60	2500	125	150	150
ADuM3220	1.7	17	8.5	306 @ 2Mbps	2500	105	150	150
ADuM3221	1.7	17	8.5	306	2500	105	150	150
ADuM3223	3	84	21 @ 1.7Mbps	1680 @ 1.7Mbps	3000	125	150	150
ADuM4070	5	8.5	35	60	5000	105	150	150
ADuM4223	3	84	21 @ 1.7Mbps	1680 @ 1.7Mbps	5000	125	150	150
ADuM5010	104	3.6	728	25	2500	105	150	150
ADuM6010	104	3.6	728	25	3750	105	150	150

(§) - For ambient temperatures higher than 25°C and up to T_{moa}, refer to manufacturer's specifications and/or thermal derating curve data for complete electrical ratings.

GENERAL:

These devices are non-optical isolators consisting of an 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.

CNR indicates this product was investigated under the Canadian Certification Notice, CSA Component Acceptance Service No. 5A.

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. If the maximum operating (ambient) temperature exceeds the rating noted in the ratings table, additional means should be used to determine if the maximum junction temperature of the device is 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.

CONSTRUCTION DETAILS:

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

MODELS ADuM148xCRSZ, ADuM347x, and ADuM347xCRWZ

General - Models ADuM148xCRSZ, ADuM347x, and ADuM347xCRWZ represent Models ADuM148xARSZ, ADuM148xBRSZ, **ADuM3070**, **ADuM3223**, ADuM347xARWZ, and **ADuM4223**.

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** with 0.017 mm minimum thickness. This provides isolation between coils.
5. Insulation Encapsulant - Epoxy Type **G600C** by Sumitomo.

MODELS ADuM3220 and ADuM3221

General - Models ADuM3220 and ADuM3221 are similar to ADuM148x and ADuM347x, except as noted below.

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

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MODEL ADuM228x

General - Model ADuM228x is representative of Models ADuM348x, ADuM447x, ADuM4070, and these models are similar to Models ADuM148xCRSZ, ADuM347x, and ADuM347xCRWZ, except as noted below.

4. Insulation Transformer Compound Coupling - Polyimide film Type I-8124HR by Asahi Kasei EMD with 0.017 mm minimum through insulation thickness. This material provides isolation between coils.

MODEL ADuM6010

General - Model ADuM6010 is representative of Models ADuM5010, and these models are similar to Models ADuM148xCRSZ, ADuM347x, and ADuM347xCRWZ, except as noted below.

4. Insulation Transformer Compound Coupling - Polyimide film Type BL-130B by Asahi Kasei EMD with 0.021 mm minimum through insulation thickness. This material provides isolation between coils.

MODELS ADuM521x and ADuM621x

General - Models ADuM521x and ADuM621x are represented by the combined results of Models ADuM228x and ADuM6010. They are also similar to Models ADuM148xCRSZ, ADuM347x, and ADuM347xCRWZ, except as noted below.

4. Insulation Transformer Compound Coupling - Polyimide film by Asahi Kasei EMD as noted in the following table.

Location	Material Model	Through Insulation Thickness, mm
Power coils	BL-130B	0.021
Data coils	I-8124HR	0.017

MODEL ADuM764x

General - Model ADuM764x is similar to Models ADuM148xCRSZ, ADuM347x, and ADuM347xCRWZ, except as noted below.

4. Insulation Transformer Compound Coupling - The isolation barrier is provided with 0.00238 mm thickness of silicon dioxide (SiO₂) between the transformer coils. This device is located within the Decoder Chip.