

File E214100
Project 4787329678

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REPORT

on

COMPONENT - Nonoptical Isolating Devices

ANALOG DEVICES INC
WILMINGTON, MA

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DESCRIPTION

PRODUCT COVERED:

USR Single Protection Non-Optical Isolator, Models ADM2481, ADM2482E, ADM2483, ADM2484E, ADM2485, ADM2486, ADM2487E, ADM2490E, ADM2491E, ADM2582E, ADM2587E, ADM2682E, ADM2687E, ADM3052, ADM3053, ADM3054, ADUM1100, ADUM1200, ADUM1201, ADUM1210, ADuM1220, ADUM1223, ADUM1230, ADUM1233, ADUM1234, ADUM1250, ADUM1251, ADUM1280, ADUM1281, ADUM1285, ADUM1286, ADUM1300, ADUM1301, ADUM1310, ADUM1311, ADUM1400, ADUM1401, ADUM1402, ADUM1410, ADUM1411, ADUM1412, ADUM1510, ADUM2200, ADUM2201, ADUM2210, ADUM2211, ADUM2250, ADUM2251, ADUM2280, ADUM2281, ADUM2285, ADUM2286, ADUM2400, ADUM2401, ADUM2402, ADUM3100, ADUM3160, ADUM3200, ADUM3201, ADUM3210, ADUM3211, ADUM3220, ADUM3221, ADUM3223, ADUM3300, ADUM3301, ADUM3400, ADUM3401, ADUM3402, ADUM3440, ADUM3441, ADUM3442, ADuM4070, ADUM4160, ADUM4190, ADUM4223, ADUM4400, ADUM4401, ADUM4402, ADUM4470, ADUM4471, ADUM4472, ADUM4473, ADUM5000, ADUM5200, ADUM5201, ADUM5202, ADUM5230, ADUM5240, ADUM5241, ADUM5242, ADUM5400, ADUM5401, ADUM5402, ADUM5403, ADUM5404, ADUM6000, ADUM6132, ADUM6200, ADUM6201, ADUM6202, ADUM6400, ADUM6401, ADUM6402, ADUM6403, ADUM6404, ADUM7234, ADUM7240, ADUM7241.

MAXIMUM RATINGS PER CHANNEL (at 25°C ambient) (\$):

Model	Current (mA)		Power (mW)		Isolation Voltage at 60 sec Vrms	Max Operating Ambient Temp (°C)	Max Junction Temp (°C)	Max Storage Temp (°C)	Max Data Rate, Mbps
	Side 1 Transmitter	Side 2 Receiver	Side 1 Transmitter	Side 2 Receiver					
ADM2481	2.5	3.5	12.5	18.5	2500	85	100	150	1
ADM2482E	6.5	70	120	215	2500	105	125	150	16
ADM2483	2.5	3.5	12.5	18.5	2500	85	100	150	1
ADM2484E	6	60	30	230	5000	105	125	150	1
ADM2485	6.5	70	60	230	2500	85	125	150	16
ADM2486	5.4	6.6	24	31	2500	85	100	150	20
ADM2487E	6.5	70	120	215	2500	105	125	150	1
ADM2490E	6	60	30	230	5000	105	125	150	16
ADM2491E	6	60	30	230	5000	105	125	150	16
ADM2582E	150	100	600	500	2500	85	125	150	16
ADM2587E	150	100	600	500	2500	85	125	150	1
ADM2682E	180	55	600	182	5000	85	125	150	16
ADM2687E	140	40	460	132	5000	85	125	150	1
ADM3052	3	75	15	500	5000	85	130	150	1
ADM3053	170	100	850	525	2500	85	130	150	1
ADM3054	3	75	15	375	5000	125	150	150	1
ADUM1100	14	2.8	77	15.4	2500	125	150	150	100
ADUM1200	13	3.4	72	19	2500	125	150	150	25
ADUM1201	8	8	44	44	2500	125	150	150	25
ADUM1210	5.5	2	31	11	2500	125	150	150	10
ADuM1220	7	42	39	506	2500	105	150	150	10
ADUM1223	9	44	50	506	2500	105	150	150	10

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MAXIMUM RATINGS PER CHANNEL (at 25°C ambient) (\$): cont.

Model	Current (mA)		Power (mW)		Isolation Voltage at 60 sec Vrms	Max Operating Ambient Temp (°C)	Max Junction Temp (°C)	Max Storage Temp (°C)	Max Data Rate, Mbps
	Side 1 Transmitter	Side 2 Receiver	Side 1 Transmitter	Side 2 Receiver					
ADUM1230	8	44	44	506	2500	105	150	150	10
ADUM1233	9	44	50	506	2500	105	150	150	10
ADUM1234	9	44	50	506	2500	105	150	150	10
ADUM1250	5	5	27.5	27.5	2500	105	150	150	1
ADUM1251	6	4.7	33	26	2500	105	150	150	1
ADUM1280	25	15	138	83	3000	125	150	150	100
ADUM1281	19	19	104	104	3000	125	150	150	100
ADUM1285	25	15	138	83	3000	125	150	150	100
ADUM1286	19	19	104	104	3000	125	150	150	100
ADUM1300	77	18	423	99	2500	125	150	150	90
ADUM1301	57	37	313	203	2500	125	150	150	90
ADUM1310	9	3	50	17	2500	105	150	150	10
ADUM1311	5.7	4.3	32	24	2500	105	150	150	10
ADUM1400	100	25	550	138	2500	125	150	150	90
ADUM1401	82	43	451	236	2500	125	150	150	90
ADUM1402	62	62	341	341	2500	125	150	150	90
ADUM1410	12	4	66	22	2500	105	150	150	10
ADUM1411	7.6	5.3	42	29	2500	105	150	150	10
ADUM1412	6.5	6.5	36	36	2500	105	150	150	10
ADUM1510	12	4.5	66	25	2500	105	150	150	10
ADUM2200	4.6	2.8	25.3	15.4	5000	105	150	150	10
ADUM2201	3.4	4.0	18.7	15.4	5000	105	150	150	10
ADUM2210	4.6	2.8	25.3	15.4	5000	105	150	150	10
ADUM2211	3.4	4.0	18.7	15.4	5000	105	150	150	10
ADUM2250	5	5	27.5	27.5	5000	125	150	150	1
ADUM2251	6	4.7	33	26	5000	125	150	150	1
ADUM2280	25	15	138	83	5000	125	150	150	100
ADUM2281	19	19	104	104	5000	125	150	150	100
ADUM2285	25	15	138	83	5000	125	150	150	100
ADUM2286	19	19	104	104	5000	125	150	150	100
ADUM2400	100	25	550	137	5000	105	150	150	90
ADUM2401	82	43	451	236	5000	105	150	150	90
ADUM2402	62	62	341	341	5000	105	150	150	90
ADUM3100	14	2.8	77	15.4	2500	125	150	150	50
ADUM3160	8	8	44	44	2500	105	150	150	12
ADUM3200	10	3.9	55	22	2500	125	150	150	25
ADUM3201	6.8	8.3	38	46	2500	125	150	150	25
ADUM3210	4.6	2.8	26	16	2500	125	150	150	10
ADUM3211	3.4	4	19	22	2500	105	150	150	10

MAXIMUM RATINGS PER CHANNEL (at 25°C ambient) (\$): cont.

Model	Current (mA)		Power (mW)		Isolation Voltage at 60 sec Vrms	Max Operating Ambient Temp (°C)	Max Junction Temp (°C)	Max Storage Temp (°C)	Max Data Rate, Mbps
	Side 1 Transmitter	Side 2 Receiver	Side 1 Transmitter	Side 2 Receiver					
ADUM3220	1.7	60	10	1080	2500	105	150	150	1
ADUM3221	1.7	60	10	1080	2500	105	150	150	1
ADUM3223	2.5	60	14	1080	3000	125	150	150	1
ADUM3300	77	18	423	99	2500	125	150	150	90
ADUM3301	57	37	313	203	2500	125	150	150	90
ADUM3400	100	25	550	138	2500	125	150	150	90
ADUM3401	82	43	451	236	2500	125	150	150	90
ADUM3402	44	62	242	341	2500	125	150	150	90
ADUM3440	220	55	1200	302	2500	125	150	150	150
ADUM3441	165	80	907	440	2500	125	150	150	150
ADUM3442	130	130	715	715	2500	125	150	150	150
ADuM4070	5	8.5	35	60	5000	105	150	150	0
ADUM4160	8	8	44	44	5000	105	150	150	12
ADUM4190	2	5	40	100	5000	125	150	150	0.4
ADUM4223	2.5	60	14	1080	5000	125	150	150	1
ADUM4400	100	36	550	198	5000	105	150	150	90
ADUM4401	82	46	450	253	5000	105	150	150	90
ADUM4402	62	62	341	341	5000	105	150	150	90
ADUM4470	8.75	11	61	77	5000	105	150	150	25
ADUM4471	8.75	11	61	77	5000	105	150	150	25
ADUM4472	8.75	11	61	77	5000	105	150	150	25
ADUM4473	8.75	11	61	77	5000	105	150	150	25
ADUM5000	290	100	1450	500	2500	105	150	150	0
ADUM5200	290	100	1450	500	2500	105	150	150	0
ADUM5201	290	100	1450	500	2500	105	150	150	25
ADUM5202	290	100	1450	500	2500	105	150	150	25
ADUM5230	200	8.5	1000	128	2500	105	150	150	2
ADUM5240	140	3	688	16.5	2500	105	150	150	1
ADUM5241	140	3	688	16.5	2500	105	150	150	1
ADUM5242	140	3	688	16.5	2500	105	150	150	1
ADUM5400	290	100	1450	500	2500	105	150	150	25
ADUM5401	290	100	1450	500	2500	105	150	150	25
ADUM5402	290	100	1450	500	2500	105	150	150	25
ADUM5403	290	100	1450	500	2500	105	150	150	25
ADUM5404	290	100	1450	500	2500	105	150	150	25

MAXIMUM RATINGS PER CHANNEL (at 25°C ambient) (§): cont.

Model	Current (mA)		Power (mW)		Isolation Voltage at 60 sec Vrms	Max Operating Ambient Temp (°C)	Max Junction Temp (°C)	Max Storage Temp (°C)	Max Data Rate, Mbps
	Side 1 Transmitter	Side 2 Receiver	Side 1 Transmitter	Side 2 Receiver					
ADUM6000	290	100	1450	500	5000	105	150	150	0
ADUM6132	350	22	1750	275	2500	85	150	150	2
ADUM6200	300	74	1350	370	5000	105	150	150	25
ADUM6201	298	72	1341	360	5000	105	150	150	25
ADUM6202	296	70	1332	350	5000	105	150	150	25
ADUM6400	309	69	1390	345	5000	105	150	150	25
ADUM6401	307	67	1382	335	5000	105	150	150	25
ADUM6402	305	65	1373	325	5000	105	150	150	25
ADUM6403	302	63	1359	315	5000	105	150	150	25
ADUM6404	301	61	1354	305	5000	105	150	150	25
ADUM7234	3	60	6	585	1000	105	150	150	1
ADUM7240	20	3.6	110	20	1000	125	150	150	25
ADUM7241	12	11	66	61	1000	125	150	150	25

(§) - 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.

GENERAL:

These non-optical isolator devices consist of a transmitter coupled to a receiver. The transmitter and receiver are separated by an [insulating transformer and insulating barrier. Internal chips are connected to lead frames that are molded into the enclosure.

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

Use - For use only in products where the acceptability of the combination is determined by UL LLC.

USR indicates this product was investigated under the UL Standard for Safety for Optical Isolators, UL 1577, Fifth 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 junction temperature 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".

Markings - As specified in the Section General.

MODEL ADM2682E

General Model ADM2682E represents all models, except as noted below.

ILL. 1.

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 by Asahi Kasei EMD as noted in the following table.

Location	Material Model	Through Insulation Thickness, um
Data coils 1M	I-8124ER	17
Power coils 2M	I-8124ER	11
Power coils 3M	I-8124ER	11
Power coils 3MT	I-8124ER	19.5

model	data	power
ADM2481	1M	--
ADM2482E	1M	--
ADM2483	1M	-
ADM2484E	1M	-
ADM2485	1M	-
ADM2486	1M	-
ADM2487E	1M	-
ADM2490E	1M	-
ADM2491E	1M	-
ADM2582E	1M	3M
ADM2587E	1M	3M
ADM2682E	1M	3MT
ADM2687E	1M	3MT
ADM3052	1M	-
ADM3053	1M	3M
ADM3054	1M	-
ADUM1100	1M	-
ADUM1200	1M	-
ADUM1201	1M	-

model	data	power
ADUM1210	1M	-
ADUM1220	1M	-
ADUM1223	1M	-
ADUM1230	1M	-
ADUM1234	1M	-
ADUM1250	1M	-
ADUM1251	1M	-
ADUM1280	1M	-
ADUM1281	1M	-
ADUM1285	1M	-
ADUM1286	1M	-
ADUM1300	1M	-
ADUM1301	1M	-
ADUM1310	1M	-
ADUM1311	1M	-
ADUM1400	1M	-
ADUM1401	1M	-
ADUM1402	1M	-
ADUM1410	1M	-
ADUM1411	1M	-
ADUM1412	1M	-
ADUM1510	1M	-
ADUM2200	1M	-
ADUM2201	1M	-
ADUM2210	1M	-
ADUM2211	1M	-
ADUM2250	1M	-
ADUM2251	1M	-
ADUM2280	1M	-
ADUM2281	1M	-
ADUM2285	1M	-
ADUM2286	1M	-
ADUM2400	1M	-
ADUM2401	1M	-
ADUM2402	1M	-
ADUM3100	1M	-
ADUM3160	1M	-
ADUM3200	1M	-

ADUM3201	1M	-
ADUM3210	1M	-
ADUM3211	1M	-
ADUM3220	1M	-
ADUM3221	1M	-
ADUM3223	1M	-
ADUM3300	1M	-
ADUM3301	1M	-
ADUM3400	1M	-
ADUM3401	1M	-
ADUM3402	1M	-
ADUM3440	1M	-
ADUM3441	1M	-
ADUM3442	1M	-
ADUM4070	1M	-
ADUM4160	1M	-
ADUM4190	1M	-
ADUM4223	1M	-
ADUM4400	1M	-
ADUM4401	1M	-
ADUM4402	1M	-
ADUM4470	1M	-
ADUM4471	1M	-
ADUM4472	1M	-
ADUM4473	1M	-
ADUM5000	-	3M
ADUM5200	1M	3M
ADUM5201	1M	3M
ADUM5202	1M	3M
ADUM5230	-	3M
ADUM5240	-	2M
ADUM5241	-	2M
ADUM5242	-	2M
ADUM5400	1M	3M
ADUM5401	1M	3M
ADUM5402	1M	3M
ADUM5403	1M	3M

ADUM5404	1M	3M
ADUM6000	-	3MT
ADUM6132	1M	3M
ADUM6200	1M	3MT
ADUM6201	1M	3MT
ADUM6202	1M	3MT
ADUM6400	1M	3MT
ADUM6401	1M	3MT
ADUM6402	1M	3MT
ADUM6403	1M	3MT
ADUM6404	1M	3MT

5. Insulation Encapsulant - Epoxy Type G700LY by Sumitomo.

MODEL ADuM7234

General - Represents models ADUM7240, and ADUM7241. Same as Model ADM2682E except as noted below.

4. Isolation Capacitor - The isolation barrier is provided with 2.6 μm thickness of silicon dioxide (SiO_2) between the Silicon-Processed-Integrated capacitor plates. This device is located within the Decoder Chip.