MAX14File E351759
Project 4787193788

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REPORT

on

COMPONENT - Nonoptical Isolating Devices - Component

Maxim Integrated Products
SAN JOSE, CA 95134-1813

DESCRIPTION

PRODUCT COVERED:

USR, CNR – Single Protection, Non-Optical Isolator, Models MAX14852, MAX14853, MAX14854, MAX14855¸ MAX14856¸ MAX14857, MAX14858, MAX14859, MAX14878, MAX14878AWA, MAX14879, MAX14880, MAX14882, MAX14938, MAX14939, MAX14940, MAX14941, MAX14942¸ MAX14943, MAX14945, MAX14948, MAX22025, **MAX22025F**, MAX22026, **MAX22026F**, MAX22027, **MAX22027F**, MAX22028, **MAX22028F**, MAXM22510GLH, MAXM22511GLH. May be followed by additional letters and/or numbers.

USR – Single Protection, Non-Optical Isolator, Models MAX14946, MAX14949. May be followed by additional letters and/or numbers.

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 Trans-mission Rate (Mbps) |
|---|---|---|---|---|---|---|---|---|---|
| | Encoder (Side 1) | Decoder (Side 2) | Encoder (Side 1) | Decoder (Side 2) | | | | | |
| MAX14852 | 4 | 11 | 22 | 60 | 2750 | 105 | 150 | 150 | 0.5 |
| MAX14853 | 41 | 11 | 226 | 60 | 2750 | 105 | 150 | 150 | 0.5 |
| MAX14854 | 6 | 53 | 33 | 292 | 2750 | 105 | 150 | 150 | 25 |
| MAX14855 | 142 | 53 | 781 | 292 | 2750 | 105 | 150 | 150 | 25 |
| MAX14856 | 4 | 11 | 22 | 60 | 5000 | 105 | 150 | 150 | 0.5 |
| MAX14857 | 41 | 11 | 226 | 60 | 5000 | 105 | 150 | 150 | 0.5 |
| MAX14858 | 6 | 53 | 33 | 292 | 5000 | 105 | 150 | 150 | 25 |
| MAX14859 | 142 | 53 | 781 | 292 | 5000 | 105 | 150 | 150 | 25 |
| MAX14878 | 0.35 | 25 | 1.92 | 137 | 5000 | 125 | 150 | 150 | 1 |
| MAX14878AWA | 0.35 | 25 | 1.92 | 137 | 4000 | 125 | 150 | 150 | 1 |
| MAX14879 | 0.35 | 25 | 1.92 | 137 | 2750 | 125 | 150 | 150 | 1 |
| MAX14880 | 0.35 | 25 | 1.92 | 137 | 5000 | 125 | 150 | 150 | 1 |
| MAX14882 | 4.68 | 29.38 | 25.74 | 161.59 | 5000 | 125 | 150 | 150 | 1 |
| MAX14938 | 6 | 145 | 33 | 798 | 2750 | 105 | 150 | 150 | 20 |
| MAX14939 | 6 | 145 | 33 | 798 | 2750 | 105 | 150 | 150 | 20 |
| MAX14940 | 242 | 145 | 1331 | 798 | 2750 | 105 | 150 | 150 | 20 |
| MAX14941 | 6 | 145 | 33 | 798 | 5000 | 105 | 150 | 150 | 20 |
| MAX14942 | 6 | 145 | 33 | 798 | 5000 | 105 | 150 | 150 | 20 |
| MAX14943 | 242 | 145 | 1331 | 798 | 5000 | 105 | 150 | 150 | 20 |
| MAX14945 | 114 | 174 | 627 | 957 | 2750 | 85 | 150 | 150 | 0.5 |
| MAX14946 | 272 | 174 | 1496 | 957 | 2750 | 85 | 150 | 150 | 0.5 |
| MAX14948 | 114 | 174 | 627 | 957 | 5000 | 85 | 150 | 150 | 0.5 |
| MAX14949 | 272 | 174 | 1496 | 957 | 5000 | 85 | 150 | 150 | 0.5 |
| MAX22025 | 0.37 | 31 | 5.87 | 162.75 | 3500 | 85 | 150 | 150 | 0.5 |
| **MAX22025F** | **0.37** | **31** | **5.87** | **162.75** | **3500** | **85** | **150** | **150** | **0.5** |
| MAX22026 | 0.37 | 47 | 5.87 | 246.75 | 3500 | 85 | 150 | 150 | 16 |
| **MAX22026F** | **0.37** | **47** | **5.87** | **246.75** | **3500** | **85** | **150** | **150** | **16** |
| MAX22027 | 0.37 | 32 | 5.87 | 162.75 | 3500 | 85 | 150 | 150 | 0.5 |
| **MAX22027F** | **0.37** | **32** | **5.87** | **162.75** | **3500** | **85** | **150** | **150** | **0.5** |
| MAX22028 | 0.37 | 47 | 5.87 | 246.75 | 3500 | 85 | 150 | 150 | 16 |
| **MAX22028F** | **0.37** | **47** | **5.87** | **246.75** | **3500** | **85** | **150** | **150** | **16** |
| MAXM22510GLH | 103 | N/A# | 370.8 | N/A# | 2500 | 105 | 125 | 125 | 0.5 |
| MAXM22511GLH | 103 | N/A# | 370.8 | N/A# | 2500 | 105 | 125 | 125 | 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.
(#) - The power VDDA is supplied to the Data side. Indicated power ratings are at VDDA = 3.6V. For Cable side an on-chip DC-DC and LDO provides power and a regulated output voltage VDDB=3.3V maximum, and as such there is no external voltage supply drawing current on VDDB.

GENERAL:

These non-optical isolator devices consist of a transmitter coupled to a receiver. The transmitter and receiver are separated by an 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.

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. 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 Differences - All models have identical insulation systems. The only differences between models are the input and output configurations.

MODEL MAX14949

General – Model MAX14949 represents all models in the report, except for models MAXM22510GLH and MAXM22511GLH.

1. Input/Primary Side – FET (CMOS) input.

2. Output/Secondary Side – FET (CMOS) output.

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

4. Casing (Outer Mold) – Type G700LA manufactured by Sumitomo Bakelite Co. Ltd **(except model MAX14878AWA).**

   **Alternate – Same as above except G600 manufactured by Sumitomo Bakelite Co. Ltd (for model MAX14878AWA only)**

5. Isolation Barrier – Silicon Dioxide, manufactured by Maxim Integrated, minimum 15µm through insulation thickness between the input and output circuits.

MODEL MAXM22510GLH

General – Model MAXM22510GLH represents model MAXM22511GLH.

1. Input/Primary Side – FET (CMOS) input.

2. Output/Secondary Side – FET (CMOS) output.

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

4. Casing (Outer Mold) – Type GE100LFCWA manufactured by Hitachi Chemical.

5. Insulation Transformer Compound Coupling – as noted in the following table.

| Location | Material Model | Through Insulation Thickness, mm |
|---|---|---|
| Power Transformer Isolation – Winding 1 | Great Leoflon UTWA-2X | 0.0762 |
| Power Transformer Isolation – Winding 2 | Elektrisola Polysol N180 | 0.23 |
| Data Isolation | SiO2 | 0.015 |

MODEL MAX22025

*General – Model MAX22025 represents **MAX22025F**, MAX22026, **MAX22026F**, MAX22027, **MAX22027F**, MAX22028, **and MAX22028F**.

1. Input/Primary Side – FET (CMOS) input.

2. Output/Secondary Side – FET (CMOS) output.

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

4. Casing (Outer Mold) – Type G600 manufactured by Sumitomo Bakelite Co. Ltd.

5. Isolation Barrier – Silicon Dioxide, manufactured by Maxim Integrated, minimum 15µm through insulation thickness between the input and output circuits.