



THE DATASHEET OF ESD8024MNTAG



ESD8024

Transient Voltage Suppressors

Low Capacitance ESD Protection for High Speed Data

The ESD8024 transient voltage suppressor is designed specifically to protect Low Voltage Differential Signals (LVDS) for LCD panels. Ultra-low capacitance and low ESD clamping voltage make this device an ideal solution for protecting voltage sensitive data lines. The integrated 24 lines of protection offers a simplified solution with premier performance for LVDS applications.

Features

- Full Function LVDS Solution
- 4 pF Max, I/O to GND
- Protection for the Following IEC Standards:
IEC 61000-4-2 Level 4 (± 8 kV Contact)
- UL Flammability Rating of 94 V-0
- This is a Pb-Free Device

Typical Applications

- LVDS

MAXIMUM RATINGS ($T_J = 25^\circ\text{C}$ unless otherwise noted)

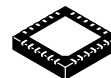
Rating	Symbol	Value	Unit
Operating Junction Temperature Range	T_J	-55 to +125	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^\circ\text{C}$
Lead Solder Temperature – Maximum (10 Seconds)	T_L	260	$^\circ\text{C}$
IEC 61000-4-2 Contact (ESD)	ESD	± 30	kV
IEC 61000-4-2 Air (ESD)	ESD	± 30	kV
Maximum Peak Pulse Current 8 x 20 μs @ $T_A = 25^\circ\text{C}$	I_{pp}	20	A

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.



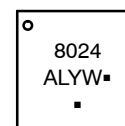
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QFN24
CASE 485L

MARKING DIAGRAM



8024 = Specific Device Code
A = Assembly Location
L = Wafer Lot
Y = Year
W = Work Week
▪ = Pb-Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping
ESD8024MNTAG	QFN24 (Pb-Free)	4000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

See Application Note AND8308/D for further description of survivability specs.

ESD8024

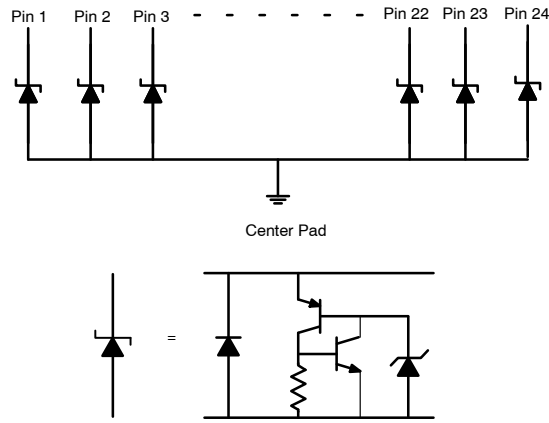
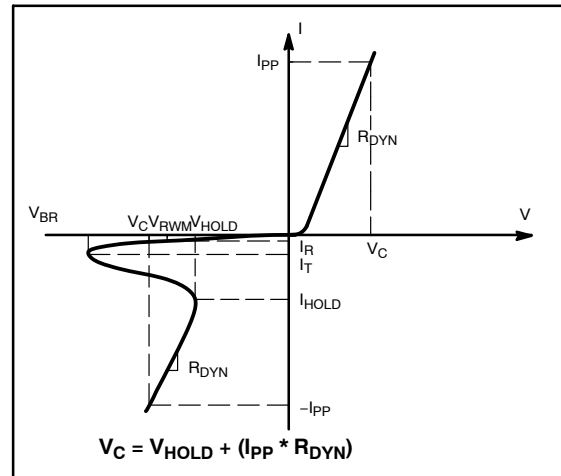


Figure 1. Pin Schematic

ELECTRICAL CHARACTERISTICS

($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter
V_{RWM}	Working Peak Voltage
I_R	Maximum Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
V_{HOLD}	Holding Reverse Voltage
I_{HOLD}	Holding Reverse Current
R_{DYN}	Dynamic Resistance
I_{PP}	Maximum Peak Pulse Current
V_C	Clamping Voltage @ I_{PP} $V_C = V_{HOLD} + (I_{PP} * R_{DYN})$



ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse Working Voltage	V_{RWM}	All Pins (1-24) to GND (Note 1)			2.5	V
Forward Voltage	V_F	$I_F = 10 \text{ mA}$, GND to All Pins (1-24)	0.5	0.85	1.1	V
Breakdown Voltage	V_{BR}	$I_T = 1 \text{ mA}$, All Pins (1-24) to GND	5.5	7.0	9.0	V
Reverse Leakage Current	I_R	$V_{RWM} = 2.5 \text{ V}$, All Pins (1-24) to GND			0.5	μA
Holding Reverse Voltage	V_{HOLD}	I/O Pin to GND	1	1.5		V
Holding Reverse Current	I_{HOLD}	I/O Pin to GND		50		mA
Clamping Voltage	V_C	$I_{PP} = 1 \text{ A}$, All Pins (1-24) to GND (8 x 20 μs pulse)			4.0	V
Clamping Voltage	V_C	$I_{PP} = 10 \text{ A}$, All Pins (1-24) to GND (8 x 20 μs pulse)			7.0	V
Clamping Voltage	V_C	$I_{PP} = 15 \text{ A}$, All Pins (1-24) to GND (8 x 20 μs pulse)			8.0	V
Clamping Voltage	V_C	IEC61000-4-2, $\pm 8 \text{ kV}$ Contact	See Figures 2 and 3			V
Junction Capacitance	C_J	$V_R = 0 \text{ V}$, $f = 1 \text{ MHz}$ between I/O Pins			2.0	pF
Junction Capacitance	C_J	$V_R = 0 \text{ V}$, $f = 1 \text{ MHz}$ between I/O Pins and GND			4.0	pF

1. TVS devices are normally selected according to the working peak reverse voltage (V_{RWM}), which should be equal or greater than the DC or continuous peak operating voltage level.

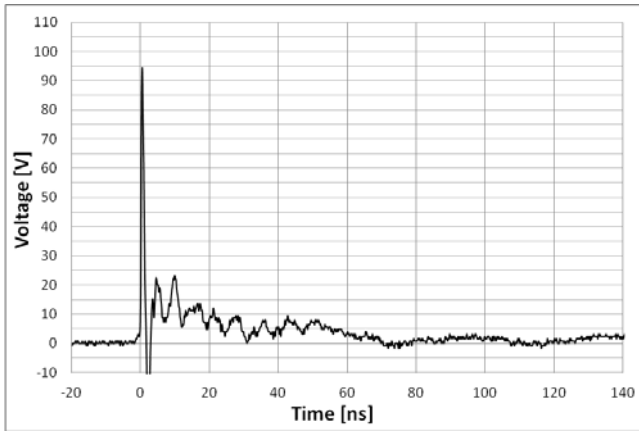


Figure 2. IEC61000-4-2 +8 KV Contact Clamping Voltage

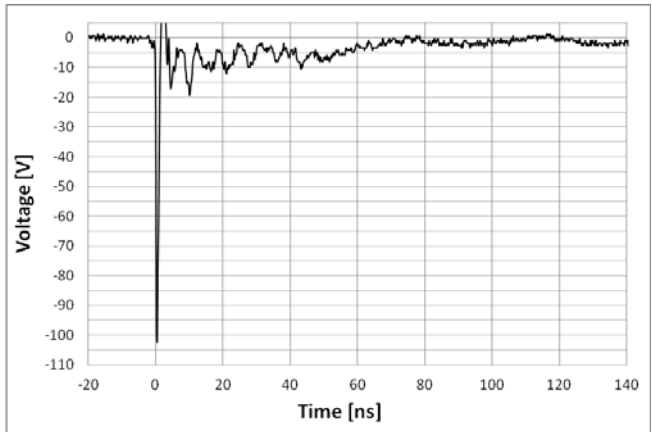


Figure 3. IEC61000-4-2 -8 KV Contact Clamping Voltage

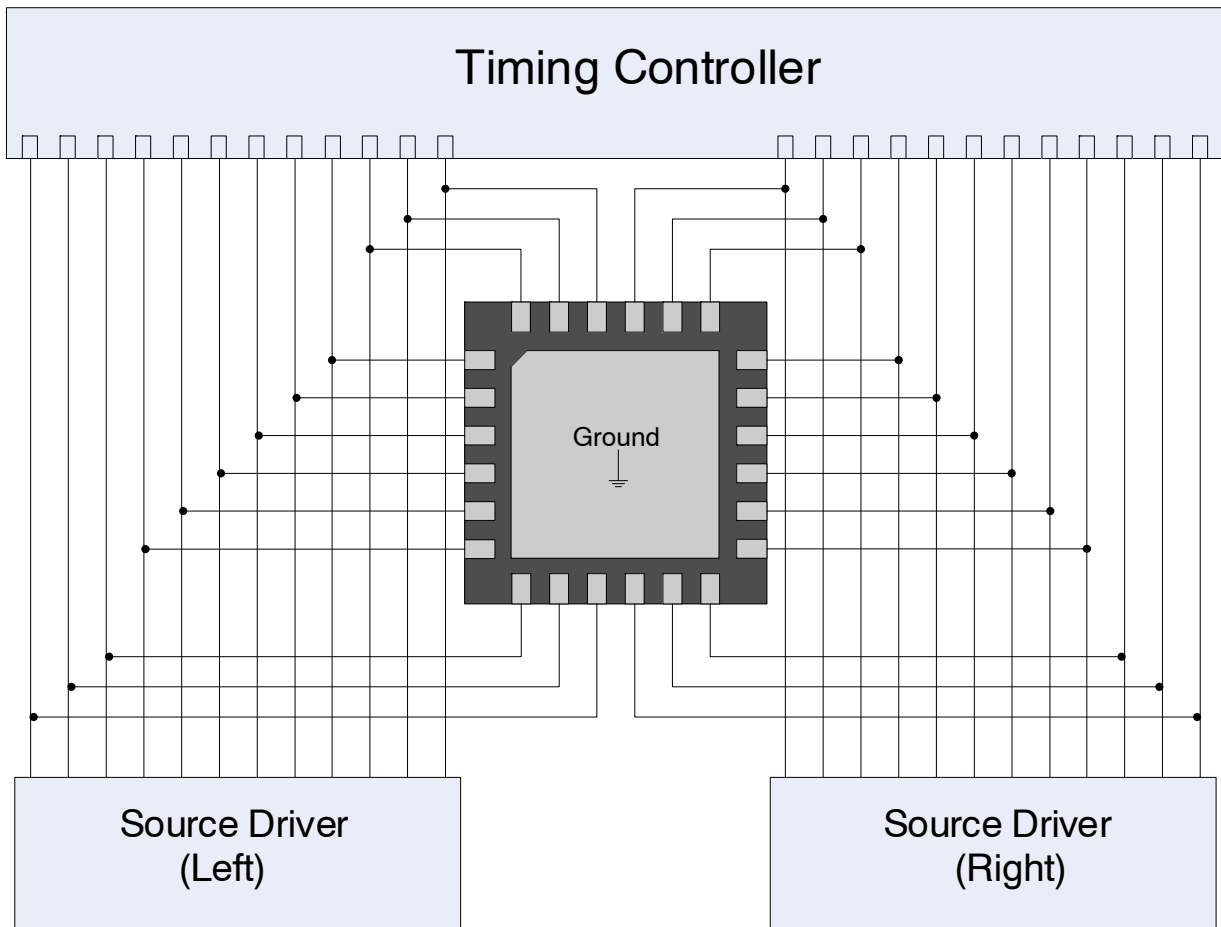
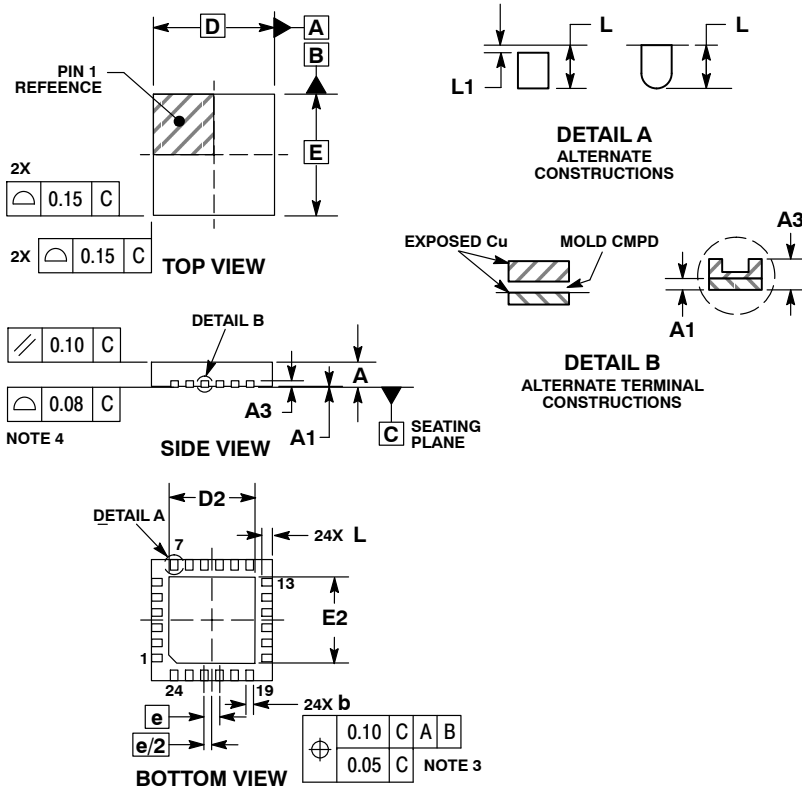


Figure 4. Board Routing Diagram - LVDS Interface

ESD8024

PACKAGE DIMENSIONS

QFN24, 4x4, 0.5P
CASE 485L
ISSUE B

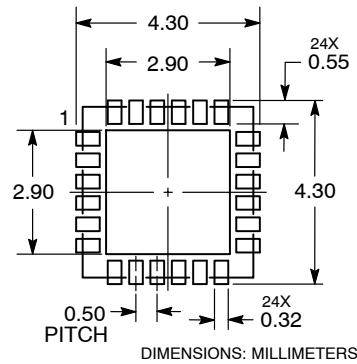


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.25 AND 0.30 MM FROM THE TERMINAL TIP.
4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.

MILLIMETERS		
DIM	MIN	MAX
A	0.80	1.00
A1	0.00	0.05
A3	0.20 REF	
b	0.20	0.30
D	4.00 BSC	
D2	2.70	2.90
E	4.00 BSC	
E2	2.70	2.90
e	0.50 BSC	
L	0.30	0.50
L1	0.05	0.15

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