AOZ8530

8-Line EMI Filter with Integrated ESD Protection

General Description

The AOZ8530 is an 8-line device integrating EMI filtering with ESD protection for each line. It is designed to suppress unwanted EMI/RFI signals and provide electro-static discharge (ESD) protection in portable electronic equipment. This state-of-the-art device utilizes AOS leading edge Trench Vertical Structure $[TVS]^2$ ™ technology for superior clamping performance and filter attenuation over the full operating display range. The AOZ8530 has been optimized for protection of color LCD displays and CCD camera lines in cellular phones and other portable consumer electronic devices.

The AOZ8530 consists of eight identical circuits comprised of TVS diodes for ESD protection, and a inductor–capacitor network for EMI/RFI filtering providing a cutoff frequency at 450MHz for high speed data lines. An inductor value of 17nH and a capacitance value of 16pF are used to achieve greater than -30dB attenuation at 1.0GHz. The TVS diodes provide effective suppression of ESD voltages in excess of ±30kV (air discharge) and ±24kV (contact discharge). This exceeds IEC 61000-4-2, level 4 ESD immunity test.

The AOZ8530 comes in an RoHS compliant, 1.2mm x 3.5mm, 0.4mm pitch DFN package and is rated over a -40°C to +85°C ambient temperature range.

Features

- 8 lines for EMI filtering and ESD protection:
  - Exceeds IEC 61000-4-2, level 4 (ESD) immunity test
  - ±30kV (air discharge) and ±24kV (contact discharge)
- Trench Vertical Structure $[TVS]^2$ ™ based technology used to achieve excellent ESD clamping & filter performance over the full operating display range
- Cutoff frequency: 450MHz
- Filter performance:
  - -30dB attenuation at 1.0GHz
  - -25dB attenuation from 800MHz to 5.0GHz
- Low operating voltage: 5.0V
- Capacitance stability over wide range of voltages and temperatures
- DFN package: 1.2mm x 3.5mm, 0.4mm pitch
- Pb-Free device
- Green product

Applications

- EMI filtering and ESD protection for data lines
- LCD displays, camera interface, I/O interface
- Portable handheld devices, cell phones,
- PDA phones

Typical Application

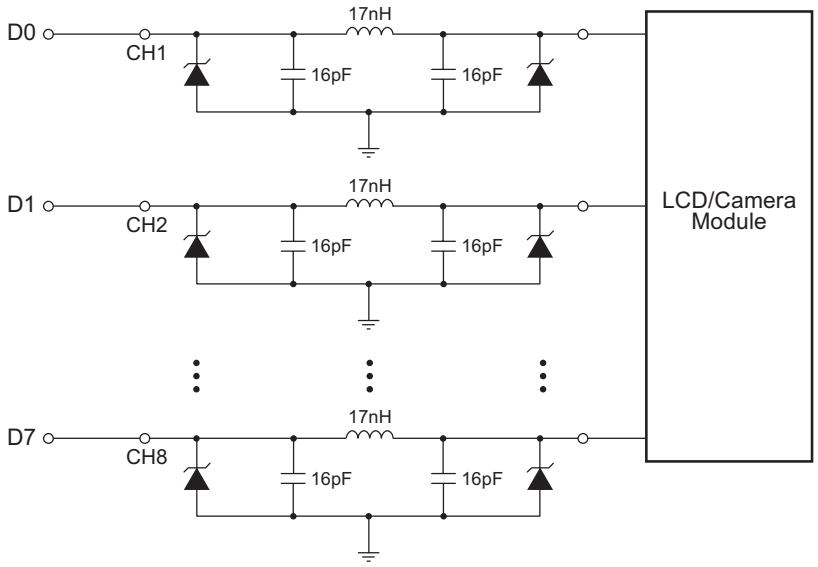


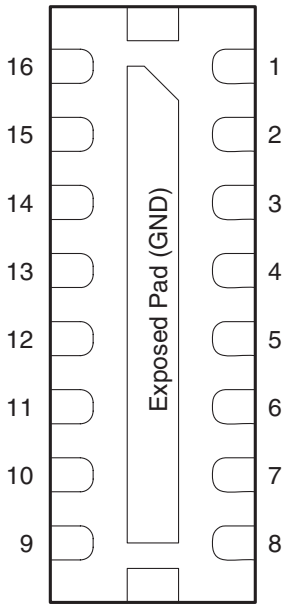
Figure 1.

Ordering Information

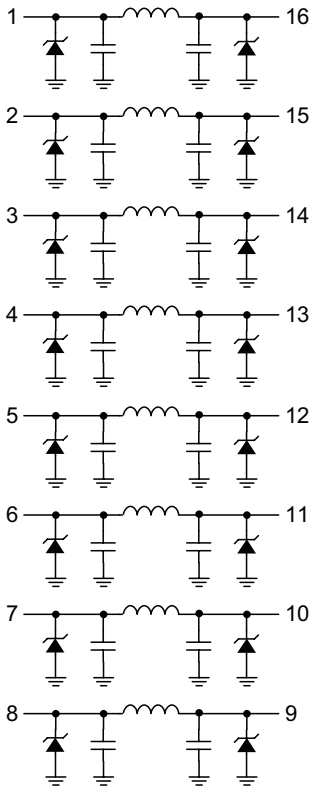
Part Number	Ambient Temperature Range	Package	Environmental
AOZ8530DI	-40°C to +85°C	DFN-16	RoHS Compliant Green Product

AOS Green Products use reduced levels of Halogens, and are also RoHS compliant.
Please visit www.aosmd.com/web/quality/rohs_compliant.jsp for additional information.

Pin Configuration



DFN-16
(Bottom View)



Top View

Pin Description

Pin Number	Pin Name	Pin Function
1,16	CH 1	Channel 1 Connections
2, 15	CH 2	Channel 2 Connections
3, 14	CH 3	Channel 3 Connections
4, 13	CH 4	Channel 4 Connections
5, 12	CH 5	Channel 5 Connections
6, 11	CH 6	Channel 6 Connections
7, 10	CH 7	Channel 7 Connections
8, 9	CH 8	Channel 8 Connections
Exposed Pad	GND	Common Ground Connection

Absolute Maximum Ratings

Exceeding the Absolute Maximum ratings may damage the device.

Parameter	Rating
Storage Temperature (T_S)	-65°C to +150°C
ESD Rating per IEC61000-4-2, contact(1)	±24kV
ESD Rating per IEC61000-4-2, air(1)	±30kV
ESD Rating per Human Body Model(2)	±30kV

Notes:

1. IEC 61000-4-2 discharge with $C_{Discharge}$ = 150pF, $R_{Discharge}$ = 330Ω.
2. Human Body Discharge per MIL-STD-883, Method 3015 $C_{Discharge}$ = 100pF, $R_{Discharge}$ = 1.5kΩ.

Electrical Characteristics

T_A = 25°C unless otherwise specified.

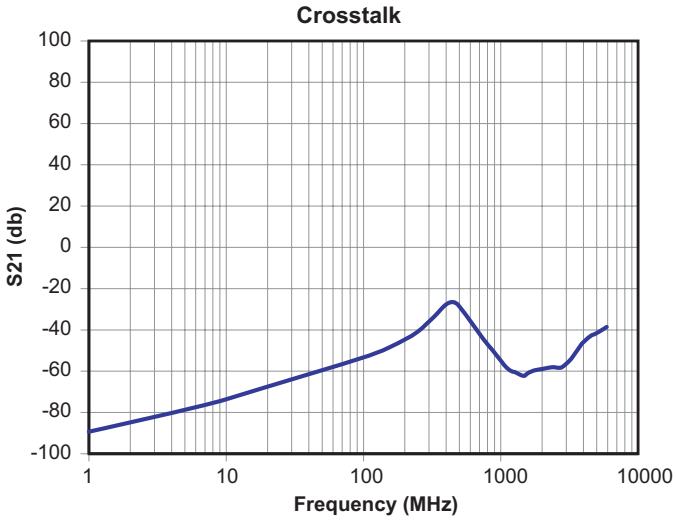
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Units
V_{RWM}	Reverse Working Voltage	(3)			5.0	V
V_{BR}	Reverse Breakdown Voltage	I_T = 1mA(4)	6	7	8	V
I_R	Reverse Leakage Current	V_{RWM} = 3.3V			0.1	µA
V_{CL}	Signal Clamp Voltage	I_{LOAD} = 1A, positive clamp(5)(6) I_{LOAD} = 1A, negative clamp(5)(6)			10.0 -2	V
		I_{LOAD} = 5A, positive clamp(5)(6) I_{LOAD} = 5A, negative clamp(5)(6)			11.0 -2.5	
		I_{LOAD} = 12A, positive clamp(5)(6) I_{LOAD} = 12A, negative clamp(5)(6)			12.0 -2.75	
L_{CH}	Inductance			17		nH
C_{CH}	Capacitance	C1, C2(6)		16	18	pF
f_C	Cut-off Frequency	Measured with 50Ω source and 50Ω load termination at -6dB		450		MHz
	Attenuation from 800MHz to 5.0GHz	V_R = 0V Measured with 50Ω source and 50Ω load termination		-25		dB

Notes:

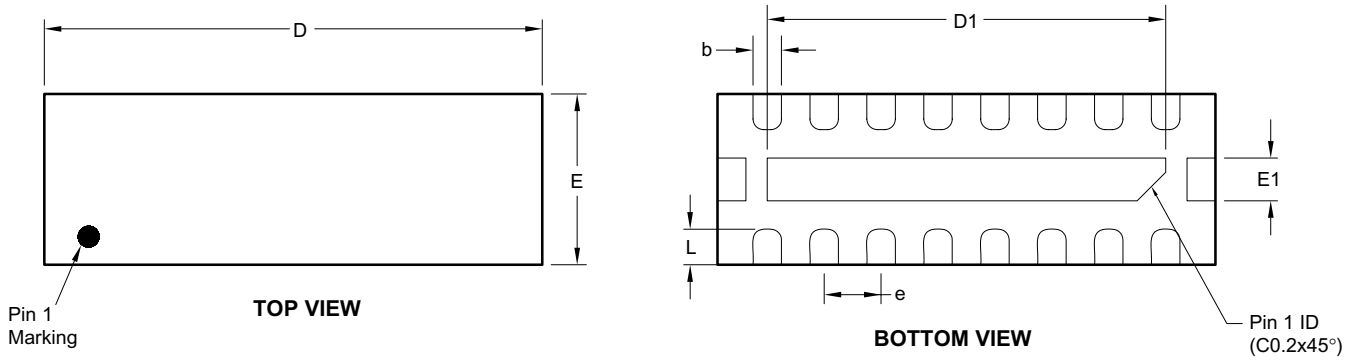
3. The working peak reverse voltage, V_{RWM}, should be equal to or greater than the DC or continuous peak operating voltage level.
4. V_{BR} is measured at the pulse test current I_T.
5. Measurements performed using a 100ns Transmission Line Pulse (TLP) system.
6. Guaranteed by design. Not 100% tested in production.

Typical Performance Characteristics

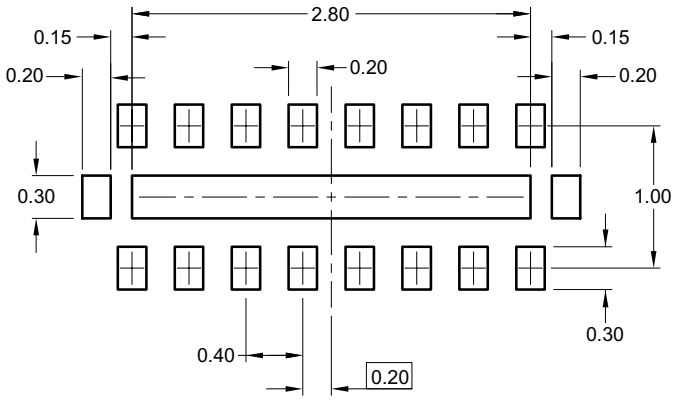




Package Dimensions, DFN 3.5 x 1.2, 16L



RECOMMENDED LAND PATTERN



Dimensions in millimeters

Symbols	Min.	Nom.	Max.
A	0.50	0.55	0.60
A1	0.00	—	0.05
A3		0.152 Ref.	
b	0.15	0.20	0.25
D	3.45	3.50	3.55
D1	2.75	2.80	2.85
E	1.15	1.20	1.25
E1	0.25	0.30	0.35
e		0.40 BSC	
L	0.20	0.25	0.30

Dimensions in inches

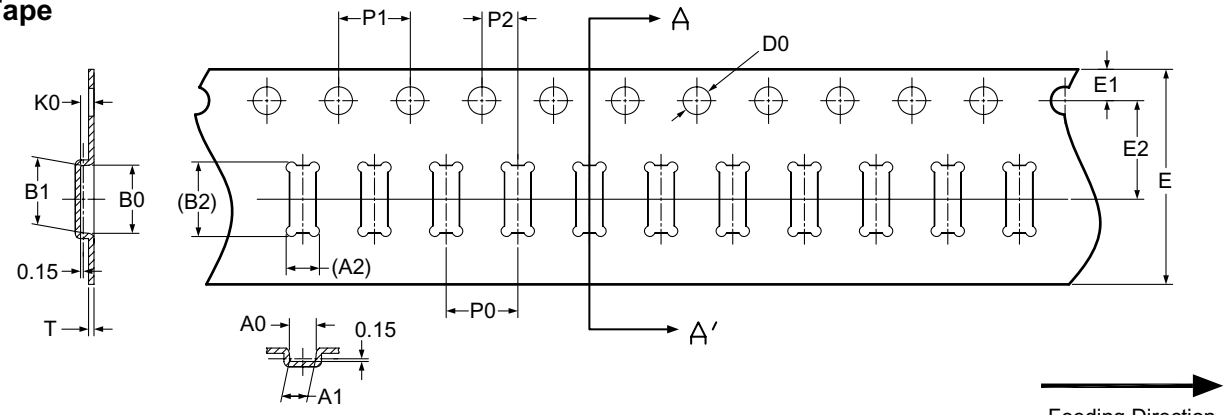
Symbols	Min.	Nom.	Max.
A	0.020	0.022	0.024
A1	0.000	—	0.002
A3		0.006 Ref.	
b	0.006	0.008	0.010
D	0.136	0.138	0.140
D1	0.108	0.110	0.112
E	0.045	0.047	0.049
E1	0.010	0.012	0.014
e		0.016 BSC	
L	0.008	0.010	0.012

Notes:

1. All dimensions are in millimeters. Angles is degree.
2. Warpage shall not exceed 0.10mm.
3. Marking is for package orientation reference only.

Tape & Reel Dimensions, DFN 3.5 x 1.2, 16L

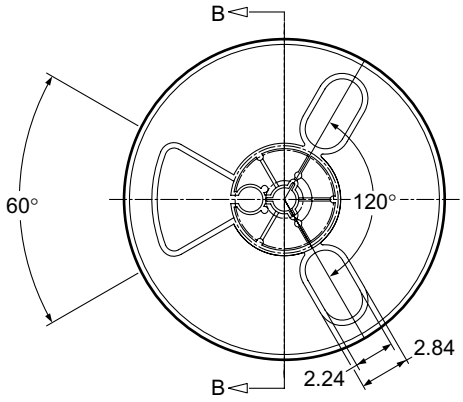
Carrier Tape



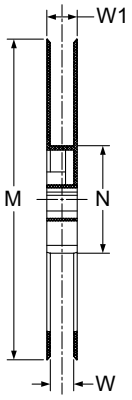
UNIT: mm

Package	T	B0	B1	B2	A0	A1	A2	K0	D0	E	E1	E2	P0	P1	P2
DFN 3.5x1.2	0.30 ±0.05	3.80 ±0.1	3.75 ±0.1	4.16	1.50 ±0.1	1.45 ±0.1	1.86	0.75 ±0.1	ø1.55 ±0.05	12.00 ±0.3	1.75 ±0.1	5.50 ±0.05	4.00 ±0.10	4.0 ±0.1	2.00 ±0.05

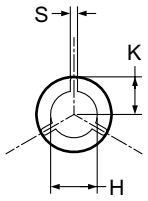
Reel



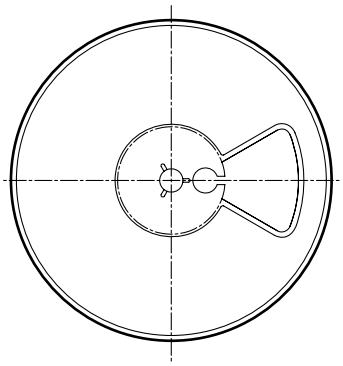
Back View



Section: B-B



Arbor Hole Detail A
Scale 2:1

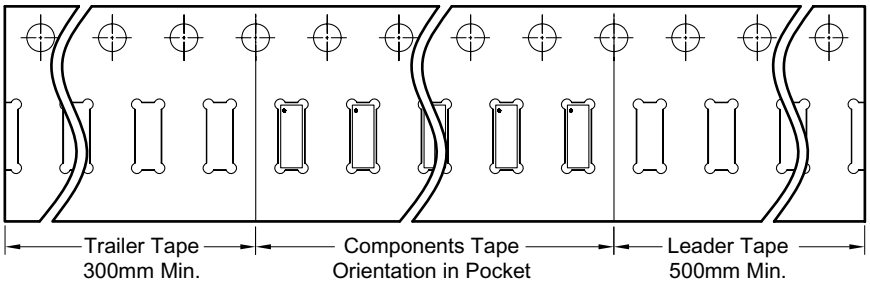


Front View

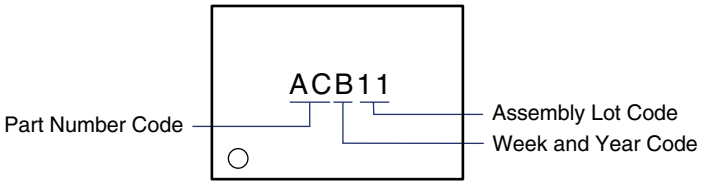
Unit: mm

Tape Size	Reel Size	M	N	W	W1	H	K	S
12mm	ø1800	ø179.0 +1.0	ø60.0 ±0.5	13.0 ±0.5	17.0	ø13.0 ±0.2	10.5 ±0.25	1.8 (Bottom)

Leader / Trailer & Orientation



Package Marking



This data sheet contains preliminary data; supplementary data may be published at a later date.
Alpha & Omega Semiconductor reserves the right to make changes at any time without notice.

LIFE SUPPORT POLICY

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As used herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body or (b) support or sustain life, and (c) whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury of the user.

2. A critical component in any component of a life support, device, or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.