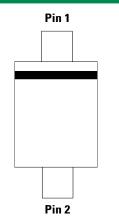


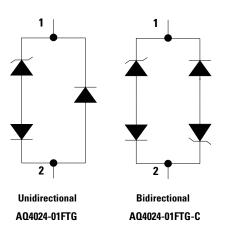
AQ4024 Series 1.3pF, 7A Discrete TVS Diode

Pinout



Cathode polarity for unidirectional only

Functional Block Diagram



Description

The AQ4024 series integrates low capacitance steering diodes with one or two avalanche breakdown diodes for unidirectional or bidirectional protection, respectively, to protect against ESD and lightning induced surge events. These components can safely absorb up to 7A per IEC 61000-4-5 2nd edition (t_p =8/20µs) without performance degradation and a minimum ±30kV ESD per IEC 61000-4-2 International Standard. The low loading capacitance and high surge capability make it ideal for protecting telecommunication ports such as xDSL and other high voltage, high speed legacy interfaces.

🚘 AUTOMOTIVE GRADE 🗧 🖬 RoHS 🧭 GREEN

Features

- ESD, IEC 61000-4-2, ±30kV contact, ±30kV air
- EFT, IEC 61000-4-4, 40A (5/50ns)
- Lightning, IEC 61000-4-5 2^{nd} edition, 7A (t_p=8/20µs)
- Low capacitance of 1.3pF (@V_R=0V)
- Low leakage current

- Unidirectional and bidirectional configuration
- Small SOD323 package fits 0805 footprints
- AEC-Q101 qualified
- Moisture Sensitivity Level(MSL -1)
- Halogen free, lead free and RoHS compliant

Applications

- xDSL Interfaces
- RS-232
- RS-485
- Power Ports
- Security Equipment
- Instrumentation
- Medical Equipment
- Computers and Peripherals
- CAN Bus protection
- Automotive applications

Life Support Note:

Not Intended for Use in Life Support or Life Saving Applications

The products shown herein are not designed for use in life sustaining or life saving applications unless otherwise expressly indicated.

Absolute Maximum Ratings

Symbol	Parameter	Value	Units
I _{pp}	Peak Current (t _p =8/20µs)	7	A
P _{Pk}	Peak Pulse Power ($t_p = 8/20 \mu s$)	350	W
T _{OP}	Operating Temperature	-40 to 150	°C
T _{STOR}	Storage Temperature	-55 to 150	°C

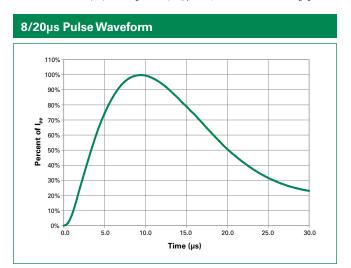
CAUTION: Stresses above those listed in "Absolute Maximum Ratings" may cause permanent damage to the component. This is a stress only rating and operation of the component at these or any other conditions above those indicated in the operational sections of this specification is not implied.

Electrical Characteristics (T _{op} =25°C)						
Parameter	Symbol	Test Conditions	Min	Тур	Мах	Units
Reverse Standoff Voltage	V _{RWM}	$I_{R} \le 1\mu A$ with Pin 1 to Pin 2			24	V
Breakdown Voltage	V _{BD}	I_{T} =1mA with Pin 1 to Pin 2	26			V
Leakage Current	ILEAK	V_{R} =24V with Pin 1 to Pin 2			0.5	μA
Clamp Voltage ¹ V _c	V _c	I_{pp} =1A, t_p =8/20µs, Fwd		34		V
		I_{pp} =2A, t_p =8/20µs, Fwd		36		V
		I _{pp} =5A, t _p =8/20µs, Fwd		43		V
		I_{pp} =7A, t_p =8/20µs, Fwd		48		V
Dynamic Resistance ²	R _{DYN}	TLP t_p =100ns, Pin 1 to Pin 2		0.7		Ω
ESD Withstand Voltage ¹	V _{ESD}	IEC 61000-4-2 (Contact Discharge)	±30			kV
		IEC 61000-4-2 (Air Discharge)	±30			kV
Diode Capacitance ¹	C _D	Reverse Bias=0V, f=1MHz, Pin 1 to Pin 2		1.3	2	pF

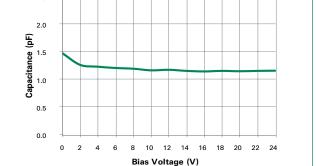
Note:

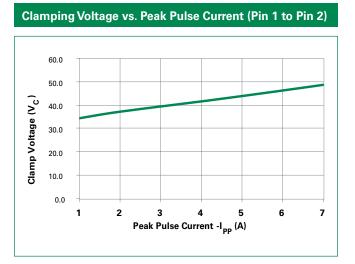
1. Parameter is guaranteed by design and/or component characterization.

2. Transmission Line Pulse (TLP) test setting : Std.TDR(50Ω),tp=100ns, tr=0.2ns ITLP and VTLP averaging window: start 1=70ns to end t2=80ns



Capacitance vs. Reverse Bias (Pin 1 to Pin 2)

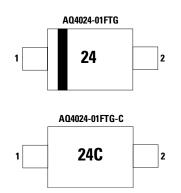




Soldering Parameters

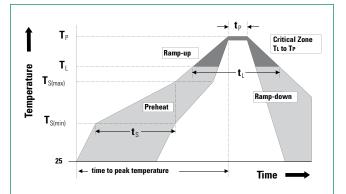
Reflow Condition		Pb – Free assembly	
Pre Heat	- Temperature Min (T _{s(min)})	150°C	
	- Temperature Max (T _{s(max)})	200°C	
	- Time (min to max) (t _s)	60 – 180 secs	
Average ram	3°C/second max		
T _{s(max)} to T _L - Ramp-up Rate		3°C/second max	
Reflow	- Temperature (T _L) (Liquidus)	217°C	
	- Temperature (t _L)	60 - 150 seconds	
Peak Temperature (T _P)		260 ^{+0/-5} °C	
Time within 5°C of actual peak Temperature (t _p)		20 - 40 seconds	
Ramp-down Rate		6°C/second max	
Time 25°C to peak Temperature (T _P)		8 minutes Max.	
Do not exceed		260°C	

Part Marking System



Ordering Information			
Part Number	Package	Marking	Min. Order Qty.
AQ4024-01FTG	SOD323	24	3000
AQ4024-01FTG-C	SOD323	24C	3000

Transmission Line Pulsing (TLP) Plot (Pin 1 to Pin2) 25 20 TLP Current (A) 15 10 5 0 0 10 20 30 40 50 TLP Volts (V)



Product Characteristics

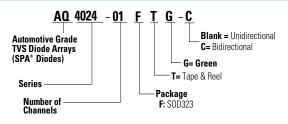
Lead Plating	Matte tin	
Lead Material Copper Alloy		
Lead Coplanarity	0.0004 inches (0.102mm)	
Substrate material Silicon		
Body Material	Molded Compound	
Flammability	UL Recognized compound meeting flammability rating V-0	

Notes :

1. All dimensions are in millimeters

Arrunnensions are in minimeters
Dimensions include solder plating.
Dimensions are exclusive of mold flash & metal burr.

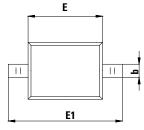
Part Numbering System

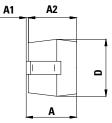


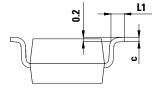


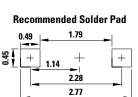
TVS Diode Arrays (SPA® Diodes) Lightning Surge Protection- AQ4024 Series

Package Dimensions -SOD323





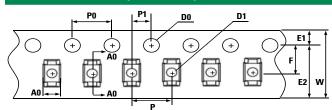


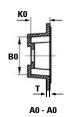


Unit: mm

	SOD323			
Symbol	Millimeters		Inc	hes
	Min	Max	Min	Max
Α	0.80	1.00	0.031	0.039
A1	0.00	0.10	0.000	0.004
A2	0.80	0.90	0.031	0.035
b	0.25	0.35	0.010	0.014
С	0.08	0.15	0.003	0.006
D	1.20	1.40	0.047	0.055
E	1.60	1.80	0.063	0.071
E1	2.50	2.70	0.098	0.106
L1	0.25	0.40	0.010	0.016

Embossed Carrier Tape & Reel Specification - SOD323







Symbol	Millimeters	
A0	1.46+/-0.10	
B0	2.90+/-0.10	
w	8.0+0.3/-0.10	
D0	1.50+0.10	
D1	0.45min/1.15max	
E1	1.75+/-0.10	
E2	-	
F	3.50+/-0.10	
PO	4.00+/-0.10	
Р	4.00+/-0.10	
P1	2.00+/-0.05	
КО	1.25+/-0.10	
Т	0.254+/-0.02	

ACCESS HOLE, Ref.

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