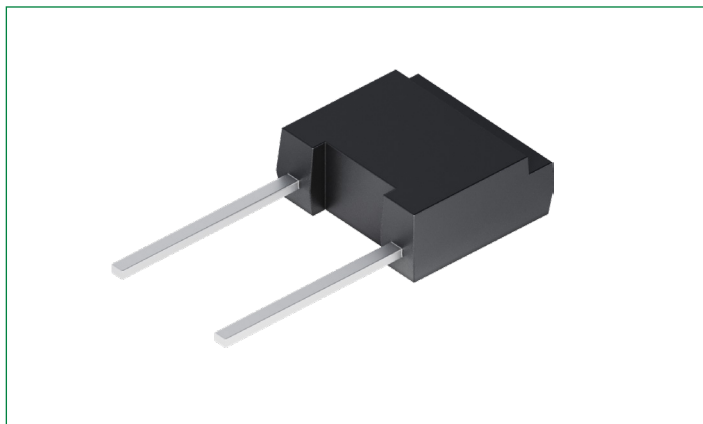


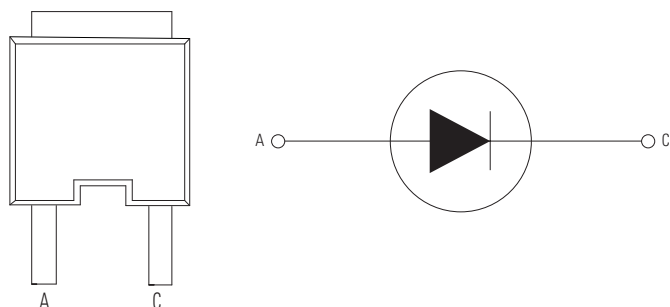
DSA1

Avalanche Diode

IEC60747



Pinout Diagram



A: Anode; **C:** Cathode

Description

The DSA1 series avalanche diodes are high-voltage devices featuring controlled avalanche capability, planar passivated chip technology, and surge-current robustness. With voltage ratings up to 1800 V and operating temperatures up to +150 °C, the DSA1 family is well suited for high-voltage rectification, power supplies, DC motor field circuits, and industrial power conversion applications.

Features:

- High blocking voltage capability up to 1800 V
- Controlled avalanche operation for transient energy absorption
- Plastic through-hole package
- Planar passivated chip technology
- Operating junction temperature up to +150 °C

Advantages:

- Supports high-voltage circuit designs
- Protects against transient overvoltages
- Reduces board space and assembly effort
- Enhances long-term reliability
- Suitable for harsh environments

Applications:

- Low power rectifiers
- Field supply for DC motors
- Power supplies
- High voltage rectifiers

Product Summary

Characteristic	Value	Unit
V_{RRM}	1200–1800	V
$I_{F(RMS)}$	7	A
I_{FAVM}	2.3	A

Type	V_{RSM} (V)	$V_{(BR)min}$ (V)	V_{RRM} (V)
DSA1-12D	1300	1300	1200
DSA1-16D	1700	1750	1600
DSA1-18D	1900	1950	1800

Maximum Ratings ($T_{vj} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)

Symbol	Characteristics	Conditions	Value	Units
$I_{F(RMS)}$	R.M.S Forward Current	$T_{vj} = T_{vj(max)}$	7	A
$I_{F(AV)}$	Average Forward Current	$T_{amb} = 45\text{ }^{\circ}\text{C}$; $R_{th(j-a)} = 38\text{ K/W}$; 180° sine	2.3	A
		$T_{amb} = 45\text{ }^{\circ}\text{C}$; $R_{th(j-a)} = 80\text{ K/W}$; 180° sine	1.3	A
P_{RSM}	Non-Repetitive Surge Reverse Power Dissipation	$T_{vj(max)}$; $t_p = 10\text{ }\mu\text{s}$	1.6	kW
I_{FSM}	Non-Repetitive Surge Forward Current	$T_{vj} = 45\text{ }^{\circ}\text{C}$; $t_p = 10\text{ ms}$ (50 Hz), sine	110	A
		$T_{vj} = 45\text{ }^{\circ}\text{C}$; $t_p = 8.3\text{ ms}$ (60 Hz), sine	118	
		$T_{vj} = 150\text{ }^{\circ}\text{C}$; $t_p = 10\text{ ms}$ (50 Hz), sine	100	A
		$T_{vj} = 150\text{ }^{\circ}\text{C}$; $t_p = 8.3\text{ ms}$ (60 Hz), sine	104	
I^2t	I^2t Value for Fusing	$T_{vj} = 45\text{ }^{\circ}\text{C}$; $t_p = 10\text{ ms}$ (50 Hz), sine	60	A^2s
		$T_{vj} = 45\text{ }^{\circ}\text{C}$; $t_p = 8.3\text{ ms}$ (60 Hz), sine	58	
		$T_{vj} = 150\text{ }^{\circ}\text{C}$; $t_p = 10\text{ ms}$ (50 Hz), sine	50	A^2s
		$T_{vj} = 150\text{ }^{\circ}\text{C}$; $t_p = 8.3\text{ ms}$ (60 Hz), sine	45	
T_{vj}	Virtual Junction Temperature Range	–	–40 to +150	$^{\circ}\text{C}$
T_{stg}	Storage Temperature Range	–	–40 to +150	$^{\circ}\text{C}$

Electrical Characteristics - Static ($T_{vj} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)

Symbol	Characteristics	Conditions		Value			Units
				Min.	Typ.	Max.	
I_R	Reverse Current	$T_{vj} = T_{vj(max)}$	$V_R = V_{RRM}$	–	–	0.7	mA
V_F	Forward Voltage	$I_F = 7\text{ A}$	$T_{vj} = 25\text{ }^{\circ}\text{C}$	–	–	1.34	V
$V_{(TO)}$	Threshold Voltage	For power-loss calculation only		–	–	0.8	V
r_T	Slope Resistance	$T_{vj} = T_{vj(max)}$		–	–	67	$\text{m}\Omega$

Thermal Specifications

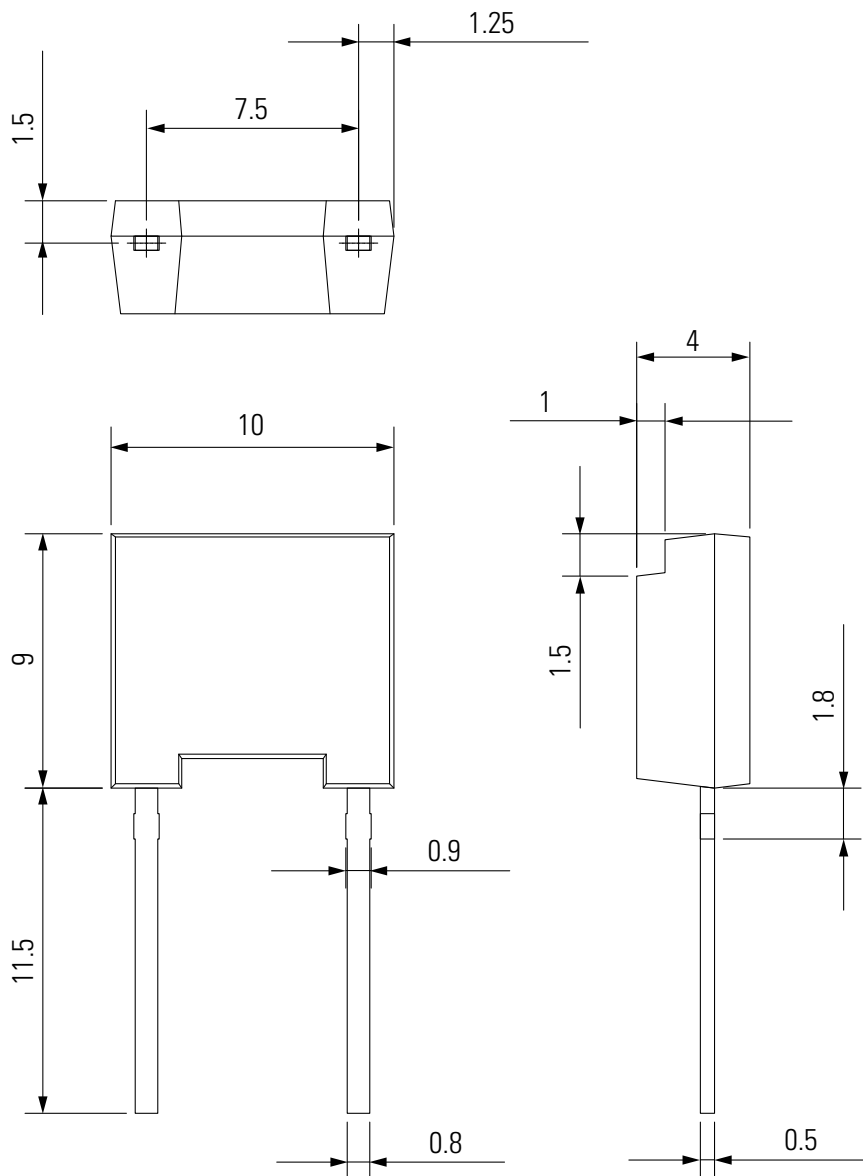
Symbol	Characteristics	Conditions	Value			Unit
			Min.	Typ.	Max.	
$R_{th(j-a)}$	Thermal Resistance Junction To Ambient	Forced Air Cooling with 1.5 m/s; $T_{amb} = 45\text{ }^{\circ}\text{C}$	–	–	38	K/W
		Soldered on to PC board; $T_{amb} = 45\text{ }^{\circ}\text{C}$	–	–	80	K/W

Package

Symbol	Characteristics	Conditions	Value			Unit
			Min.	Typ.	Max.	
G	Weight	–	–	0.8	–	g
d_s	Creepage Distance Along The Surface	–	–	–	8.5	mm
d_A	Clearance Distance In Air	–	–	–	6.7	mm
a	Acceleration	–	–	–	100	m/s^2

Part Outline Drawing

Dimension in mm (1 mm = 0.0394")



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