

General description

These dual monolithic silicon surge protection diodes are designed for applications requiring transient overvoltage protection capability. They are intended for use in voltage and ESD sensitive equipment. as computers, printers, business machines, communication systems, medical equipment and other applications. Their bi-directional double ESD design protects two separate lines using only one package. These devices are ideal for situations where board space is at a premium.

Features and benefits

- Protect for two I/O lines with bi-directional
- Reverse stand-off voltage: 60V Max
- Low Capacitance: 10 pF(typ)
- Low leakage current: nA Level
- IEC 61000-4-2 (ESD Air): $\pm 30\text{kV}$
- IEC 61000-4-2 (ESD Contact): $\pm 30\text{kV}$
- IEC61000-4-5(Lightning 8/20 μs): 7.0A

Application information

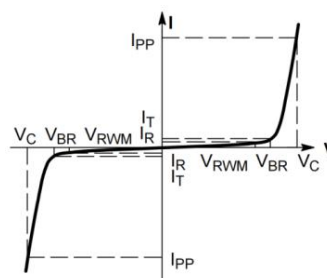
- High-power POE Ethernet
- E-bike & low-speed vehicle signal ports
- Outdoor security & access control devices
- Off-grid PV & energy storage communication ports
- Other low-voltage differential circuits

Schematic & Pin configuration

Simplified outline	Graphic symbol

Portion Electronics Parameter

Symbol	Parameter
I_{PP}	Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Working Peak Reverse Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	V_{BR} Test Current



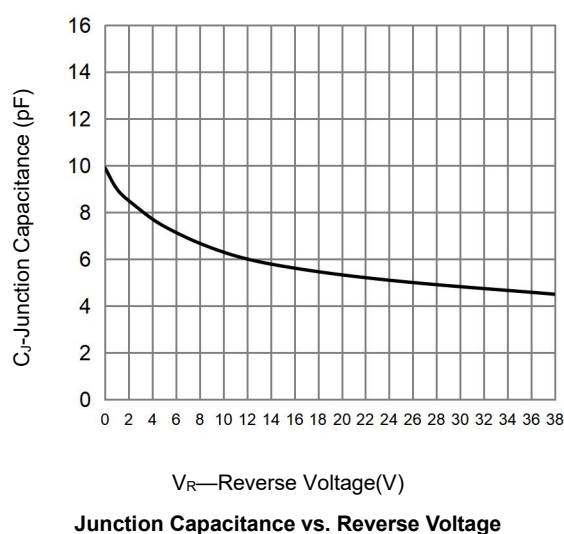
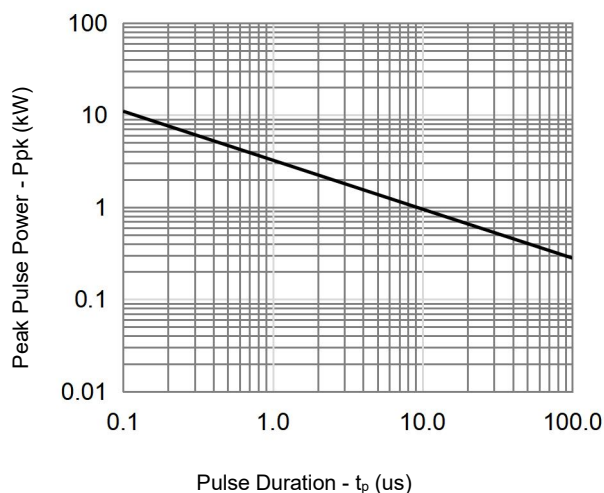
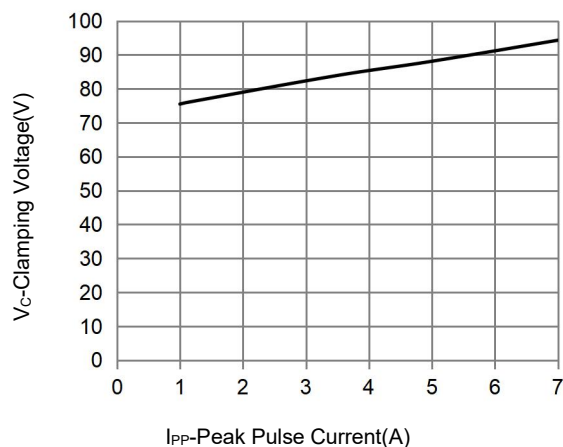
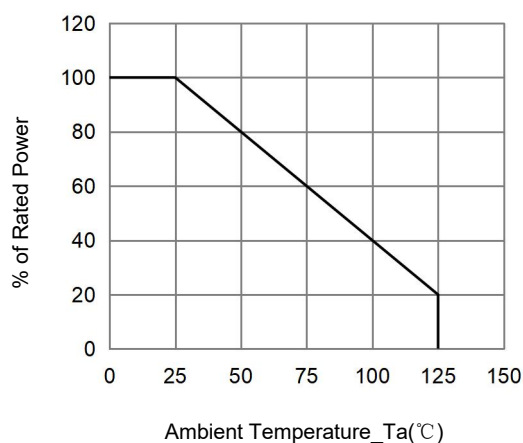
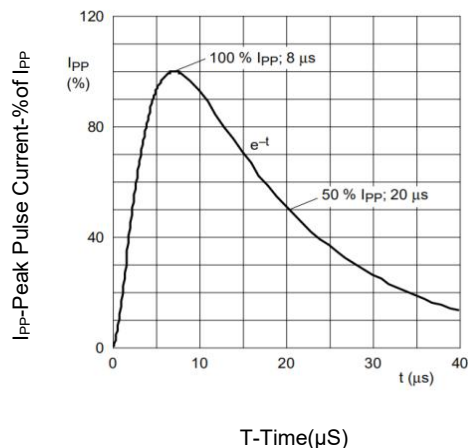
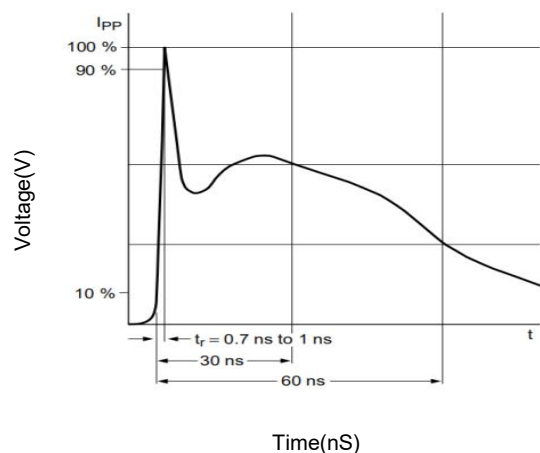
Maximum Ratings ($T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power ($T_p = 8/20\mu\text{s}$)	P_{PPM}	700	W
Rated Peak Pulse Current ($T_p = 8/20\mu\text{s}$)	I_{PPM}	7	A
ESD voltage IEC 61000-4-2 (air discharge)	V_{ESD}	30	kV
ESD voltage IEC 61000-4-2 (contact discharge)	V_{ESD}	30	kV
Maximum lead temperature for soldering during 10s	T_L	260	$^{\circ}\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^{\circ}\text{C}$
Operating Temperature Range	T_J	-40 to +125	$^{\circ}\text{C}$

Electrical Characteristics ($T_A = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

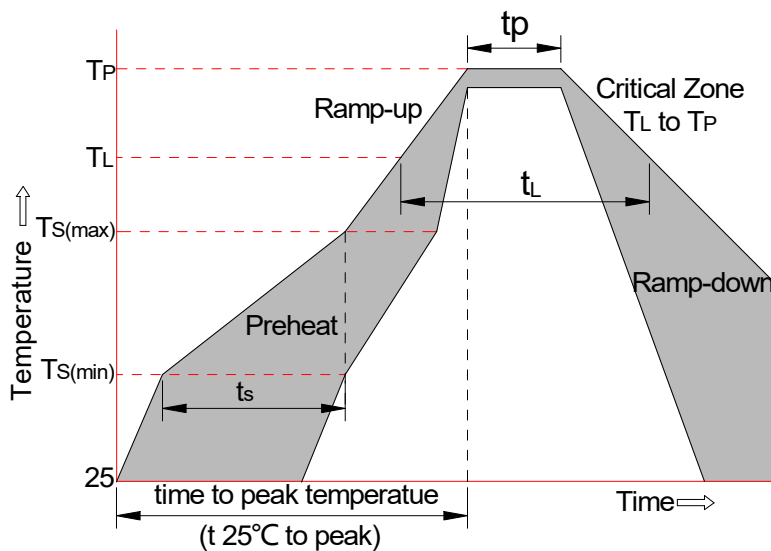
Parameter	Symbol	Min	Typ	Max	Unit	Condition
Reverse Working Voltage	V_{RWM}	--	--	60	V	
Breakdown Voltage	V_{BR}	68	--	78	V	$I_T = 1\text{mA}$
Leakage Current I_{Leak}	I_R	--	--	100	nA	$V_{RWM} = 60\text{V}$
Clamping Voltage	V_C	--	76	--	V	$I_{PP} = 1\text{A}, T_p = 8/20\mu\text{s}$
Clamping Voltage	V_C	--	94	100	V	$I_{PP} = 7\text{A}, T_p = 8/20\mu\text{s}$
Junction Capacitance	C_j	--	10	15	pF	$V_R = 0\text{V}, f = 1\text{MHz}$ (Pin 1 or 2 to 3)
Junction Capacitance	C_j	--	4.5	6.0	pF	$V_R = 38\text{V}, f = 1\text{MHz}$ (Pin 1 or 2 to 3)

Typical Performance Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise Specified)

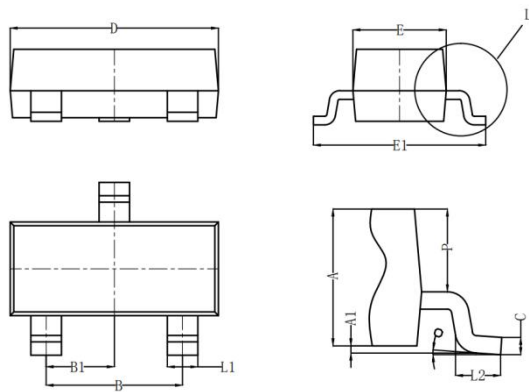


Soldering Parameters

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 ramp up rate (Liquid us Temp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6°C/sec. Max
xTime 25°C to Peak Temp (T_P)		8 min. Max
Do not exceed		+260°C

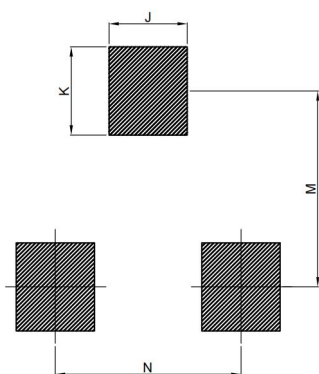


Package Outline Dimensions (SOT23)



SYMBOL	MILLIMETERS		
	MIN	TYP	MAX
A	0.900	1.000	1.1100
A1	0.000	0.050	0.100
L1	0.350	0.400	0.500
C	0.100	0.110	0.120
D	2.800	2.900	3.000
E	1.250	1.300	1.350
E1	2.250	2.400	2.550
B	1.800	1.900	2.000
B1	0.950 Typ		
L2	0.200	0.350	0.450
P	0.550	0.575	0.600

Soldering Footprint (mm)



SYMBOL	MILLIMETERS	
	MIN	MAX
J	0.75	0.85
K	0.85	0.95
M	1.95	2.05
N	1.85	1.95

Ordering information

Package	Reel Size	Packaging (pcs)
SOT23	7 Inch	3000/Tape & Reel