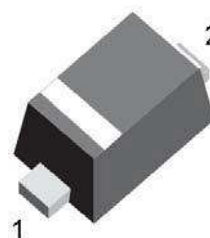


## ESD PROTECTION DIODE

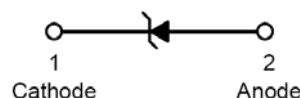
### Features:

- Small SOD-923F Package
- Unidirectional Configurations
- Low Leakage
- Fast Response Time < 1 ns
- Protects One Power or I/O Port
- ESD Rating of Class 3 (>16KV) per Human Body Model
- ESD Protection to IEC 61000-4-2 Level 4
- RoHS Compliant in Lead-Free Versions



### Mechanical Data:

- Communication Systems & Cellular Phones
- Personal Digital Assistant (PDA)
- Digital Cameras
- Power Supplies



### Absolute Maximum Ratings

Parameter	Symbol	Value	Units
IEC 61000-4-2 (ESD) Contact		±30	kV
ESD Voltage	Per Human Body Model	16	kV
	Per Machine Model	400	V
Total Power Dissipation on FR-5 Board (Note 1) @ T <sub>A</sub> =25°C	P <sub>D</sub>	150	Mw
Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to 150	°C
Lead Solder Temperature – Maximum (10 Second Duration)	T <sub>L</sub>	260	°C

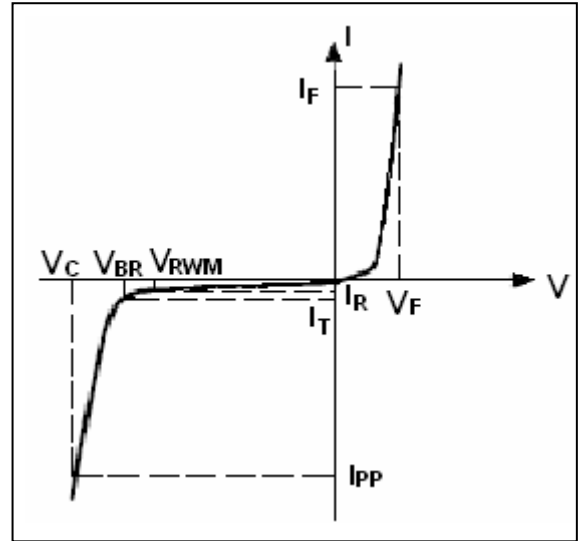
Stresses exceeding Maximum Ratings may damage the device. Maximum Rating are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. FR-5 = 1.0\*0.75\*0.62 in.

**Electrical Characteristics**

Ratings at 25°C ambient temperature unless otherwise specified.

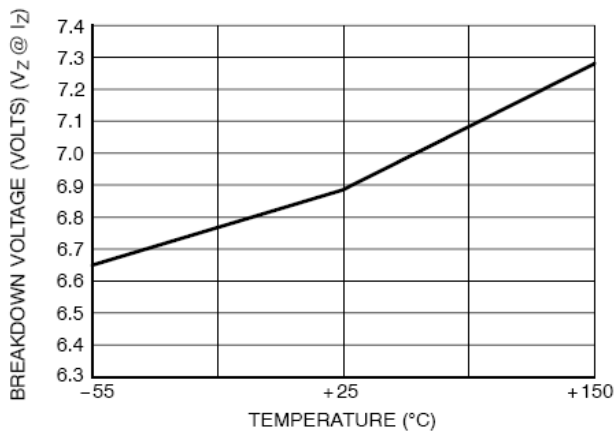
Symbol	Parameter
$I_{PP}$	Maximum Reverse Peak Pulse Current
$V_C$	Clamping Voltage @ $I_{PP}$
$V_{RWM}$	Working Peak Reverse Voltage
$I_R$	Maximum Reverse Leakage Current @ $V_{RWM}$
$I_T$	Test Current
$V_{BR}$	Breakdown Voltage @ $I_T$
$I_F$	Forward Current
$V_F$	Forward Voltage @ $I_F$



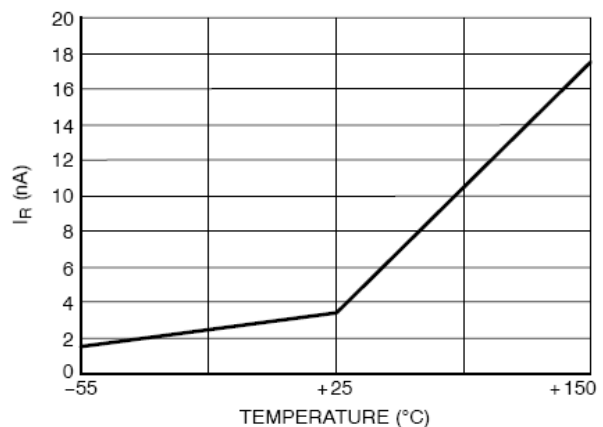
**Electrical Characteristics** Ratings at 25°C ambient temperature unless otherwise specified.

Device	Device Marking	$V_{RWM}$ (V)	$I_R$ (uA) @ $V_{RWM}$	$V_{BR}$ (V) @ $I_T$ (Note 2)	$I_T$ (mA)	$I_{PP}$ (A) (Note 2)	$V_C$ (V) @ Max $I_{PP}$ (Note 3)	$P_{PK}$ (W) (8*20 $\mu$ s)	C (pF)
		Max	Max	Min		Max	Max	Typ	Typ
KWESD9X3V3	A	3.3	2.5	5.0	1.0	9.8	10.4	102	80
KWESD9X5V	B	5.0	1.0	6.2	1.0	8.7	12.3	107	65
KWESD9X12V	C	12	1.0	13.5	1.0	5.9	23.7	140	30

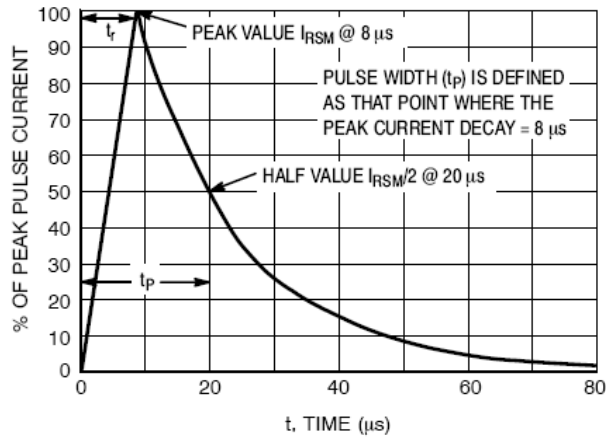
- $V_{BR}$  is measured with a pulse test current  $I_T$  at an ambient temperature of 25°C
- Surge current waveform per Figure 3.



**Figure 1. Typical Breakdown Voltage versus Temperature**



**Fig 2. Typical Leakage Current versus Temperature**

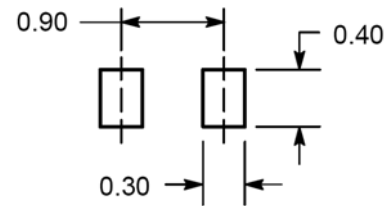
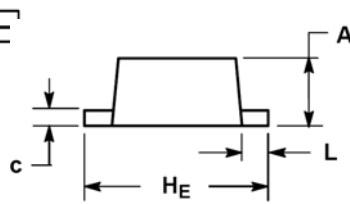
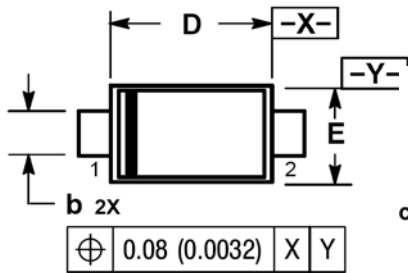


**Figure 3. 8\*20  $\mu s$  Pulse Waveform**

**Package Dimensions**

**SOD-923F**

**SOLDERING FOOTPRINT\***



DIMENSIONS: MILLIMETERS

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.36	0.40	0.43	0.014	0.016	0.017
b	0.15	0.20	0.25	0.006	0.008	0.010
c	0.07	0.12	0.17	0.003	0.005	0.007
D	0.75	0.80	0.85	0.030	0.031	0.033
E	0.55	0.60	0.65	0.022	0.024	0.026
H <sub>E</sub>	0.95	1.00	1.05	0.037	0.039	0.041
L	0.05	0.10	0.15	0.002	0.004	0.006