

SSDI Solid State Devices, Incorporated



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NEW EPION ION-IMPLANTED DIODES NOW AVAILABLE FROM SSDI

T-03-09
T-03-11

Solid State Devices, Inc. makes the world's only available ion-implanted semiconductors, with all standard catalog items available for off-the-shelf delivery. SSDI's breakthrough in semiconductor construction permits an unusual combination of features not obtainable with diodes and rectifiers manufactured by other processes. These include extremely fast turn-on and reverse recovery times, exceptionally low power dissipation (one-sixth to one-half the conventional voltage drop) and high current pulse handling capability, both continuous and surge. Applications for these diodes and rectifiers include clamps, shunts, high frequency switching, miniaturized power supplies, core memories, modulators and other applications where the combination of high speed, high current-carrying capability and low forward voltage drop is important.

behavior. Because maximum impurity concentration is just below the crystal surface (depths of a few hundred angstroms), forward and reverse recovery characteristics are improved by the inability of the thin implanted junction to store carriers. In the actual manufacture of Epion implanted semiconductors, a lower temperature can be used for doping, or implanting the ions, than is necessary with other methods. Dopants are directionally placed in the crystal lattice with virtually no lateral migration. This provides low surface spreading resistance for high pulse current capability and fast forward recovery. Further high speed characteristics are achieved without requiring gold doping or other forms of crystal degradation. SSDI's ultra-high speed characteristics are achieved without affecting radiation resistance.

WHY ION-IMPLANTATION? The Epion implantation of ions into semiconductor crystal surfaces is a new method of controlling electrical

The Epion diodes described in this catalog are available for immediate delivery. If you have special requirements, please contact SSDI.

DIODES EPION™

Epion implanted silicon-diodes are hermetically sealed with weldable gold-plated leads.

HSA/18

V_{f1} = 250 mV max. (A)
200 to 600 mA

ELECTRICAL CHARACTERISTICS @ 25°C

T _r	Forward Recovery**	0.5 NSec Max.
T _r	Reverse Recovery*	3 NSec Max.
V _f	Forward Threshold @ 1 mA	0.225 Volt Max.
P	Power Dissipation***	500 mw Max.
I _{urge}	Surge Current 1 μSec	50 Amps Max.
J, T _{stg}	Operating and Storage Temp.	-65°C to +200°C

*Lower Forward Voltages Available, Consult Factory

TYPE NO. PRV, V _f , I _r , I _s	PRV VOLTS	MAX	I _s @	I _s @	I _s @	I _s @	I _s @
		I _r @ .5 PRV μA	P = 500 mw mA	P = 500 mw mA	P = 500 mw mA	P = 500 mw mA	P = 500 mw mA
5A1 ()	50	10	200	300	400	500	600
5A2 ()	50	20	200	300	400	500	600
5A5 ()	50	50	200	300	400	500	600
7A1 ()	75	10	200	300	400	500	600
7A2 ()	75	20	200	300	400	500	600
7A5 ()	75	50	200	300	400	500	600
10A1 ()	100	10	200	300	400	500	600
10A2 ()	100	20	200	300	400	500	600
10A5 ()	100	50	200	300	400	500	600

HSB/18

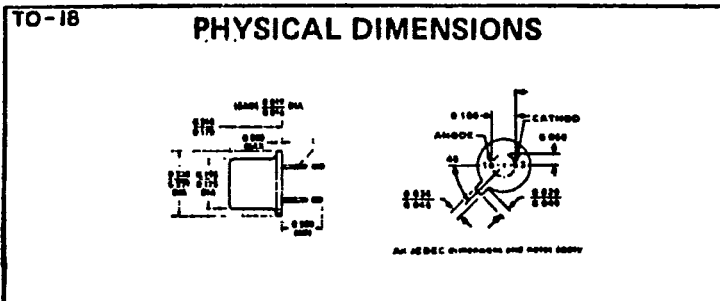
V_{f1} = 325 mV max. (B)
200 to 600 mA

ELECTRICAL CHARACTERISTICS @ 25°C

T _r	Forward Recovery**	0.5 NSec Max.
T _r	Reverse Recovery*	3 NSec Max.
V _f	Forward Threshold @ 1 mA	0.325 Volt Max.
P	Power Dissipation***	500 mw Max.
I _{urge}	Surge Current 1 μSec	50 Amps Max.
J, T _{stg}	Operating and Storage Temp.	-65°C to +200°C

TYPE NO. PRV, V _f , I _r , I _s	PRV VOLTS	MAX.	I _s @	I _s @	I _s @	I _s @	I _s @
		I _r @ .5 PRV μA	P = 500 mw mA	P = 500 mw mA	P = 500 mw mA	P = 500 mw mA	P = 500 mw mA
5B1 ()	50	10	200	300	400	500	600
5B2 ()	50	20	200	300	400	500	600
5B5 ()	50	50	200	300	400	500	600
7B1 ()	75	10	200	300	400	500	600
7B2 ()	75	20	200	300	400	500	600
7B5 ()	75	50	200	300	400	500	600
10B1 ()	100	10	200	300	400	500	600
10B2 ()	100	20	200	300	400	500	600
10B5 ()	100	50	200	300	400	500	600

* I_F = .1A, I_R = .1A, I_{RR} = 10mA.
** Measured 10% to 10% above quiescent.
*** 25°C free air mounted 1/16" from package.



Ordering Information: first digit indicates PRV, letter indicates forward voltage drop at 1 mA, second digit indicates leakage at half the PRV, and the last digit indicates the forward voltage for a power dissipation of 500 mw at the rated current. Example: 5A15/18 - this is a 50 volt device, with a V_f at 1 mA of 225 mV, I_r (leakage) is 10 uA at .5 PRV (which is 25 V), plus a forward voltage of 1 V maximum at 500 mA current handling capacity. The /18 indicates the TO 18 package.