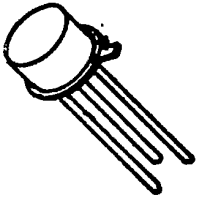


# 5R0/52 THRU 15R0/52 1 AMP EPION II HIGH SPEED RECTIFIER 50-150 VOLTS



14830 Valley View Avenue  
La Mirada, California 90638  
(213) 921-9660  
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FAX 213-921-2396

## CASE STYLE L JEDED TO-52



## FEATURES

- RADIATION TOLERANT
- ULTRA FAST RECOVERY 9 NSEC MAX
- REVERSE VOLTAGE TO 150 VOLTS
- LOW FORWARD VOLTAGE DROP 450 MV AVERAGE
- LOW REVERSE LEAKAGE
- HERMETICALLY SEALED
- SINGLE CHIP CONSTRUCTION
- 200°C OPERATING, GOLD EUTECTIC DIE ATTACH, ULTRASONIC ALUMINUM WIRE BONDS

## MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage and DC Blocking Voltage	$V_{RM}$ (rep) $V_R$		Volts
5R0/52		50	
7R0/52		70	
10R0/52		100	
12R0/52		125	
15R0/52		150	
RMS Reverse Voltage	$V_r$		Volts
5R0/52		35	
7R0/52		50	
10R0/52		70	
12R0/52		90	
15R0/52		110	
Half Wave Rectified Forward Current, Averaged Over Full Cycle (Resistive Load, 60Hz, Sine Wave, $T_C = 55^\circ\text{C}$ )	$I_0$	1	Amps
Peak Repetitive Forward Current ( $T_C = 55^\circ\text{C}$ , 8.3 ms Pulse, Allow Junction to Reach Equilibrium Between Pulses)	$I_{FM}$ (rep)	10	Amps
Peak Surge Current ( $T_C = 55^\circ\text{C}$ , Superimposed on Rated Current at Rated Voltage, 8.3 ms Pulse)	$I_{FM}$ (surge)	50	Amps
Operating and Storage Temperature	$T_J, T_{stg}$	-65 to +200	°C

## THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	50	°C/W

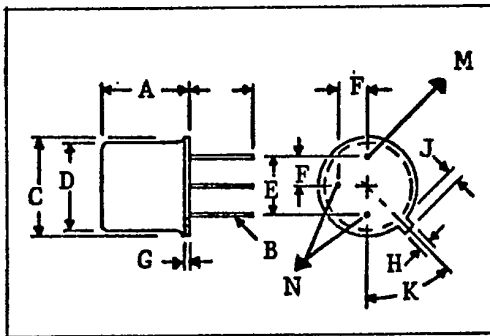
**ELECTRICAL CHARACTERISTICS**

Characteristics	Symbol	Value	Unit
Max Full Cycle Forward Voltage Drop, Averaged Over Full Cycle, ( $I_D$ (Max), 60 Hz, Square Wave, $T_C = 55^\circ\text{C}$ )	$V_{F(AV)}$	.45	Vdc
Max Instantaneous Forward Drop ( $I_F = 1$ Adc, $T_C = 25^\circ\text{C}$ , 300 $\mu\text{s}$ Pulse)	$V_F$	.9	Vdc
Max Full Cycle Reverse Leakage Current, Averaged Over Full Cycle, (Rated $V_R$ , 60Hz, Square Wave, $T_C = 100^\circ\text{C}$ )	$I_{R(AV)}$	100	$\mu\text{A}$ dc
Max Reverse Leakage Current (Rated $V_R$ , $T_C = 25^\circ\text{C}$ )	$I_R$	10	$\mu\text{A}$ dc
Max Junction Capacitance ( $V_R = 10$ V, $T_C = 25^\circ\text{C}$ )	$C_J$	15	pf

**REVERSE RECOVERY CHARACTERISTICS**

Characteristics	Symbol	Min	Typ	Max	Unit
Reverse Recovery Time ( $I_F = 500\text{ma}$ , $I_R = 1\text{A}$ , $I_{RR} = 250\text{ma}$ )	$t_{rr}$	--	6	9	ns

**PHYSICAL DIMENSIONS**

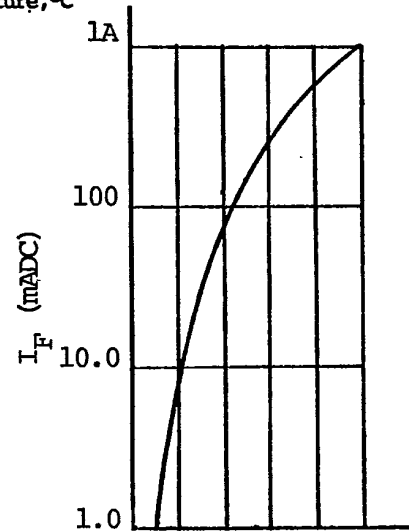
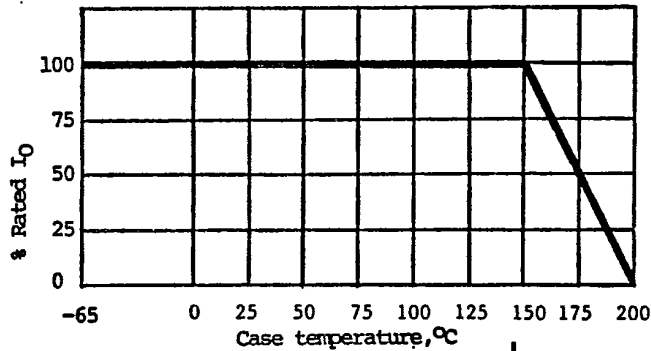


**KEY TO DIMENSIONS:**

(Inches)

- A = .115 - .150
- B = .016 - .021
- C = .209 - .230
- D = .178 - .195
- E = .100 T.P.
- F = .050 T.P.
- G = .030 MAX.
- H = .036 - .046
- J = .028 - .048
- K = 45° T.P.
- M = CATHODE
- N = ANODE

**TYPICAL OPERATING CURVES**



.4 .5 .6 .7 .8 .9

$V_F$  (VDC)

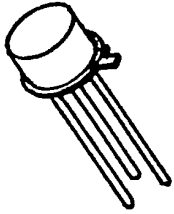


**5R1/52 THRU 15R1/52**  
**3 AMP**  
**EPION II HIGH SPEED RECTIFIER**  
**50-150 VOLTS**

T-03-15



14830 Valley View Avenue  
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 P. O. Box 577  
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 TWX 910-583-4807

**CASE STYLE L****JEDEC TO-52****MAXIMUM RATINGS****FEATURES**

- RADIATION TOLERANT
- ULTRA FAST RECOVERY 15 NSEC MAX
- REVERSE VOLTAGE TO 150 VOLTS
- LOW FORWARD VOLTAGE DROP 450 MV AVERAGE
- LOW REVERSE LEAKAGE
- HERMETICALLY SEALED
- SINGLE CHIP CONSTRUCTION
- 200°C OPERATING, GOLD EUTECTIC DIE ATTACH, ULTRASONIC ALUMINUM WIRE BONDS

Rating		Symbol	Value	Unit
Peak Repetitive Reverse Voltage and DC Blocking Voltage	5R1/52	$V_{RM} (rep)$	50 70 100 125 150	Volts
	7R1/52	$V_R$		
	10R1/52			
	12R1/52			
	15R1/52			
RMS Reverse Voltage	5R1/52	$V_r$	35 50 70 90 110	Volts
	7R1/52			
	10R1/52			
	12R1/52			
	15R1/52			
Half Wave Rectified Forward Current, Averaged Over Full Cycle (Resistive Load, 60Hz, Sine Wave, $T_C = 55^\circ C$ )		$I_0$	3	Amps
Peak Repetitive Forward Current ( $T_C = 55^\circ C$ , 8.3 ms Pulse, Allow Junction to Reach Equilibrium Between Pulses)		$I_{FM} (rep)$	10	Amps
Peak Surge Current ( $T_C = 55^\circ C$ , Superimposed on Rated Current at Rated Voltage, 8.3 ms Pulse)		$I_{FM} (surge)$	50	Amps
Operating and Storage Temperature		$T_J, T_{stg}$	-65 to +200	°C

**THERMAL CHARACTERISTICS**

Characteristics	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	16	°C/W

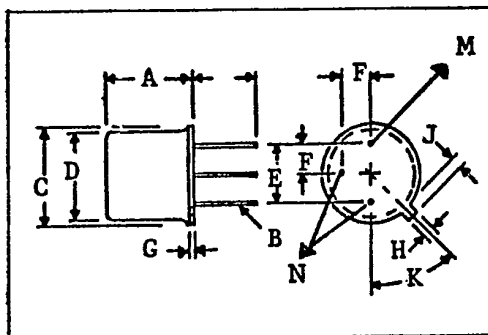
**ELECTRICAL CHARACTERISTICS**

Characteristics	Symbol	Value	Unit
Max Full Cycle Forward Voltage Drop, Averaged Over Full Cycle. ( $I_O$ (Max), 60.Hz Square Wave, $T_C = 55^\circ\text{C}$ )	$V_{F(AV)}$	.45	Vdc
Max Instantaneous Forward Drop ( $I_F = 3$ Adc, $T_C = 25^\circ\text{C}$ , 300 $\mu\text{s}$ Pulse)	$V_F$	.9	Vdc
Max Full Cycle Reverse Leakage Current, Averaged Over Full Cycle. (Rated $V_R$ , 60Hz, Square Wave, $T_C = 100^\circ\text{C}$ )	$I_{R(AV)}$	200	$\mu\text{A}$ dc
Max Reverse Leakage Current (Rated $V_R$ , $T_C = 25^\circ\text{C}$ )	$I_R$	20	$\mu\text{A}$ dc
Max Junction Capacitance ( $V_R = 10$ V, $T_C = 25^\circ\text{C}$ )	$C_J$	35	pf

**REVERSE RECOVERY CHARACTERISTICS**

Characteristics	Symbol	Min	Typ	Max	Unit
Reverse Recovery Time ( $I_F = 500\text{ma}$ , $I_R = 1\text{A}$ , $I_{RR} = 250\text{ma}$ )	$t_{rr}$	--	10	15	ns

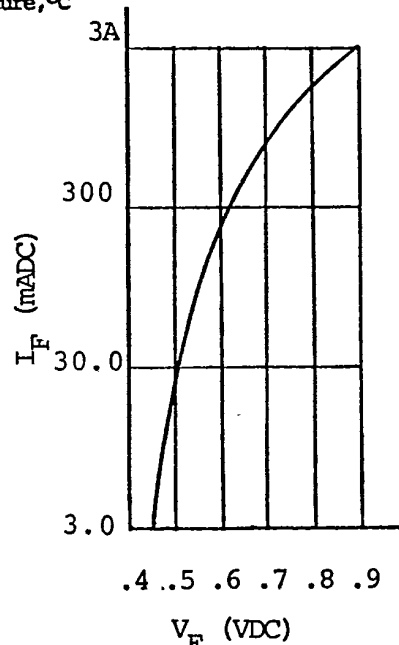
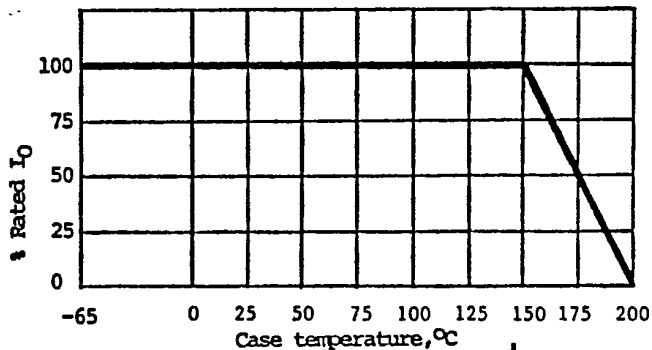
**PHYSICAL DIMENSIONS**



**KEY TO DIMENSIONS:**

- (Inches)
- A = .115 - .150
  - B = .016 - .021
  - C = .209 - .230
  - D = .178 - .195
  - E = .100 T.P.
  - F = .050 T.P.
  - G = .030 MAX
  - H = .036 - .046
  - J = .028 - .048
  - K = 45° T.P.
  - M = CATHODE
  - N = ANODE

**TYPICAL OPERATING CURVES**





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# HSR-3B

T-03-17

## 8 AMP EPION™ HIGH SPEED RECTIFIER

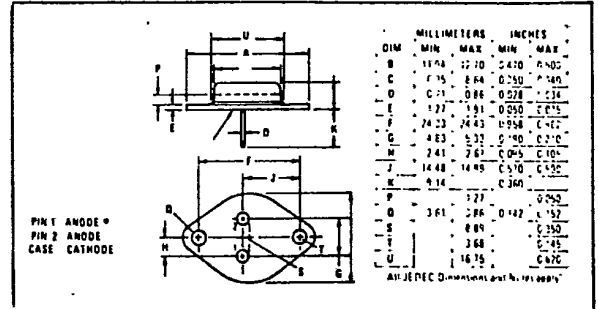
*Epion is an exclusive SSDI ion implantation process*

### FEATURES

- LOW FORWARD VOLTAGE DROP 450 MV AVERAGE
- ULTRA FAST REVERSE RECOVERY 20 NSEC MAX.
- LOW REVERSE LEAKAGE
- EXCEPTIONAL EFFICIENCY
- HIGH SURGE CURRENT
- HERMETICALLY SEALED
- RADIATION HARDENED

### PHYSICAL DIMENSIONS

In accordance with JEDEC (TO 66) outline



### MAXIMUM RATINGS

\*Parallel Anode available – Special order HSR-3BD

Rating	Symbol	Value	Unit
Peak Repetitive Reverse Voltage and DC Blocking Voltage	$V_{RM (rep)}$		Volts
	$V_R$		
	2R3B	20	
	3R3B	30	
	4R3B	40	
	5R3B	50	
	7R3B	70	
	10R3B	100	
RMS Reverse Voltage	$V_r$		Volts
	2R3B	15	
	3R3B	20	
	4R3B	30	
	5R3B	35	
	7R3B	50	
	10R3B	70	
	12R3B	90	
Average 1/2-Wave Rectified Forward Current (Resistive Load, 60 Hz, $T_C = 55^\circ C$ )	$I_O$	8	Amp
Peak Repetitive Forward Current ( $T_C = 100^\circ C$ )	$I_{FM (rep)}$	32	Amp
Peak Surge Current ( $T_C = 100^\circ C$ , Superimposed on Rated Current at Rated Voltage)	$I_{FM (surge)}$		Amp
Operating Temperature	$T_J$	-65 to +175	$^\circ C$
Storage Temperature	$T_{stg}$	-65 to +200	$^\circ C$

**THERMAL CHARACTERISTICS**

Characteristics	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.0	$^{\circ}C/W$

**ELECTRICAL CHARACTERISTICS**

Characteristics	Symbol	Value	Unit
Max Full Cycle Average Forward Voltage Drop, 1/2 Wave ( $I_O$ (Max), rated $V_r$ , 60 Hz, $T_C = 55^{\circ}C$ )	$V_{F(AV)}$	.45	Volts
Max Instantaneous Forward Voltage Drop ( $I_F = 8$ Amps, $T_J = 25^{\circ}C$ )	$V_F$	.9	Volts
Max Full Cycle Average Reverse Current ( $I_O$ (Max), rated $V_r$ , 60 Hz, $T_C = 100^{\circ}C$ )	$I_{R(AV)}$	1.0	mA
Max DC Reverse Current (Rated $V_R$ , $T_C = 25^{\circ}C$ )	$I_R$	100	$\mu a$

**REVERSE RECOVERY CHARACTERISTICS**

Characteristics	Symbol	Min	Typ	Max	Unit
Reverse Recovery Time ( $I_F = .5$ Amp to 1 Amp, .1 Amp)	$t_{rr}$	-	15	20	ns

**TYPICAL OPERATING CURVES**

