


5R0/52 THRU 15R0/52

1 AMP

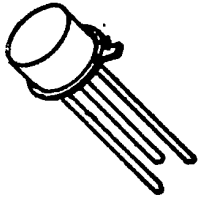
EPION II HIGH SPEED RECTIFIER

50-150 VOLTS



14830 Valley View Avenue
 La Mirada, California 90638
 (213) 921-9660
 TWX 910-583-4807
 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, $T_C = 55^\circ C$)	I_0	1	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	$R_{\theta JC}$	50	°C/W

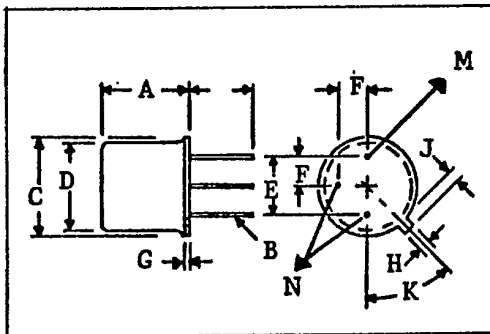
ELECTRICAL CHARACTERISTICS

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 μs 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	μA dc
Max Reverse Leakage Current (Rated V_R , $T_C = 25^\circ\text{C}$)	I_R	10	μA 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

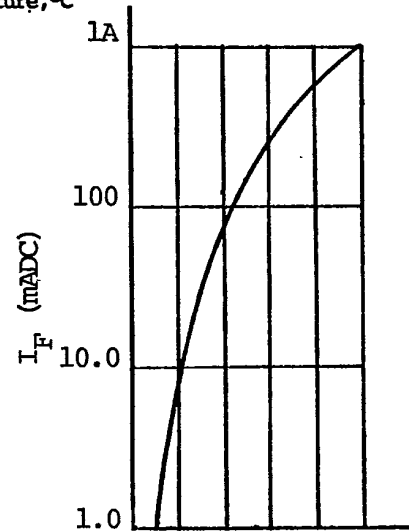
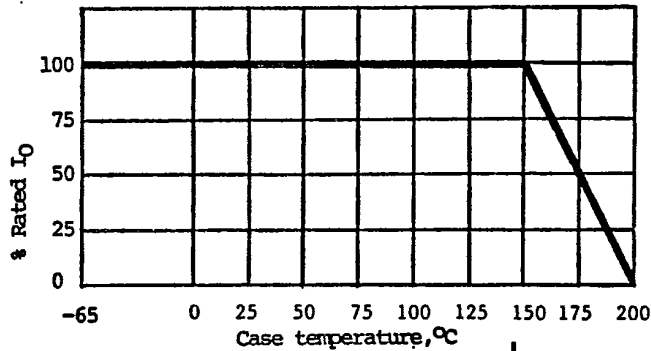


KEY TO DIMENSIONS:

(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

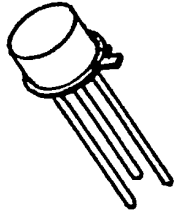
V_F (VDC)



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

T-03-15
SSDI

14830 Valley View Avenue
 La Mirada, California 90638
 P. O. Box 577
 La Mirada, California 90637
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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	$^\circ C$

THERMAL CHARACTERISTICS

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

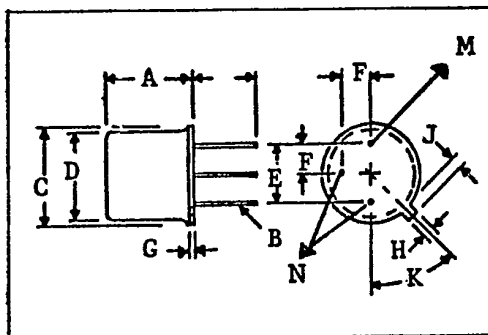
ELECTRICAL CHARACTERISTICS

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 μs 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	μA dc
Max Reverse Leakage Current (Rated V_R , $T_C = 25^\circ\text{C}$)	I_R	20	μA 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

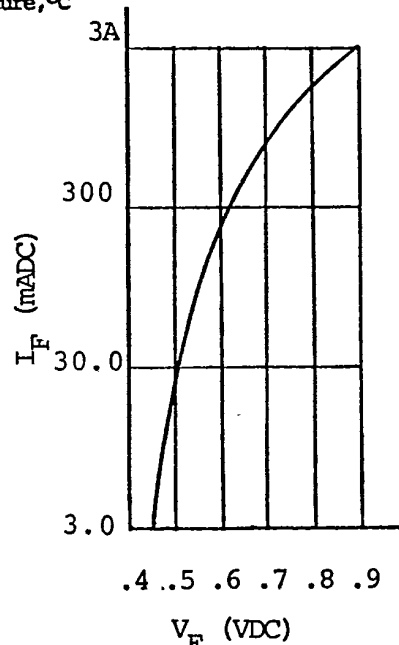
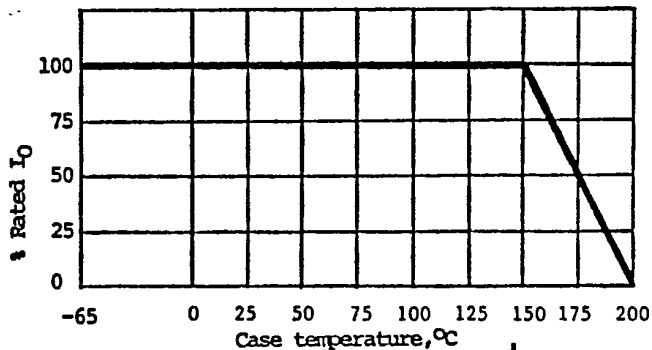
PHYSICAL DIMENSIONS



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

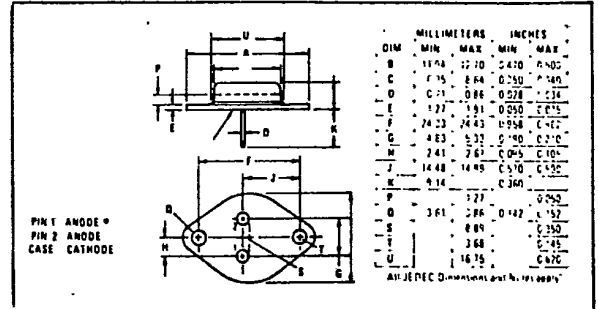
Epion is an exclusive SSDI ion implantation process

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	
15R3B	110		
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_{Jr}	-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	μa

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

