



ENGINEERING DATA - DIODE GENERAL DESCRIPTION FOR 1/2" PRESS-FIT DIODES

The **Renard** series of press-fit diodes with minimum continuous rating from 25, 30, 35 to 50 amp forward current are double diffused junction silicon power diodes designed for use in automotive alternators. Renard ratings are 25, 30, 35 and 50 amps average forward current and up to 200 volts peak reverse.

RENARD's newly developed diode base tests to a 70-90 case hardness compared to all others 30-60 rating. This greatly aids in preventing case distortion during installation which can damage the silicon chips, or internal solder connections.

Also, our newly designed knurl on the case helps prevent loose installations due to a poor "grab" by the diode.

These features provide a tighter fit and better heat dissipation with less risk of damage. The diode is a hermetically sealed press-fit package, similar to the jedec DO21 case. Both positive (forward, cathode to case) and negative (reverse, anode to case) polarity are available.

INSTALLATION PROCEDURES:

MOUNTING PROCEDURE - 1/2" PRESS-FIT DIODE

This unit is designed for press fitting into a heat sink with the following notes of caution:

1. Recommended diameter of hole is .499" $\pm$.001.
2. The diode's pressing surface must be parallel with the heat sink surface at all times.
3. The insertion tool's flat surface must be evenly distributed around the perimeter on the top of the case and must be the only area to contact the diode flange. Never contact the seal area when pressing in.
4. Maximum insertion force is 1200 pounds. No sharp blows should be used when pressing a diode. Failure to insert in this manner will result in damage to the diode and/or cause it to be loose.
5. When soldering a lead to the diode a heat damper should be used. Temperatures should not exceed 250°C when soldering.

Note: Failure to insert in this manner will result in damage to the diode and/or cause it to be loose.

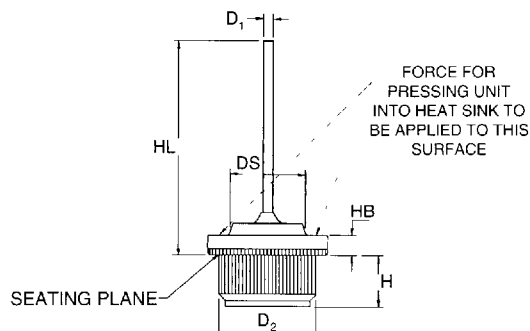


UNIVERSAL TYPE DIODES

STRAIGHT LEAD UNIVERSAL TYPE DIODES

DIMENSIONS

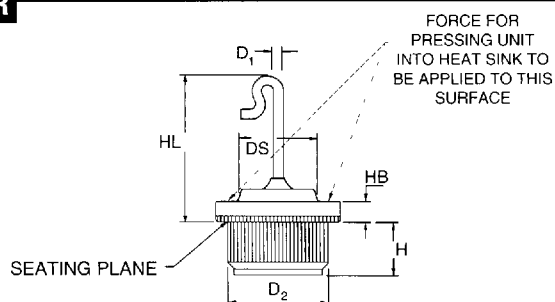
SYM.	INCHES		MILLIMETERS		PART NUMBER
	MIN.	MAX.	MIN.	MAX.	
D ₁	.049	.051	1.245	1.295	7700
H	.255	.275	6.47	6.98	7701
D ₂	.502	.506	12.75	12.86	7720
HL	1.050	1.135	26.67	28.82	7721
DS	--	.395	--	10.04	7760
HB	.095	.105	2.42	2.66	7761
					7780
					7781



HOOK LEAD DIODES FOR CHRYSLER

DIMENSIONS

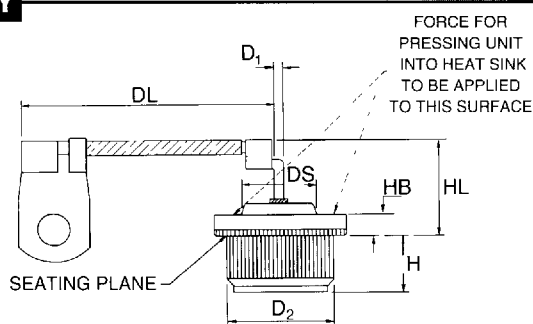
SYM.	INCHES		MILLIMETERS		PART NUMBER
	MIN.	MAX.	MIN.	MAX.	
D ₁	.049	.051	1.245	1.295	7800
H	.255	.275	6.47	6.98	7801
D ₂	.502	.506	12.75	12.86	7820
HL	.615	.645	15.62	16.38	7821
DS	--	.395	--	10.04	7860
HB	.095	.105	2.42	2.66	7861



FLAG LEAD DIODES FOR DELCO REMY

DIMENSIONS

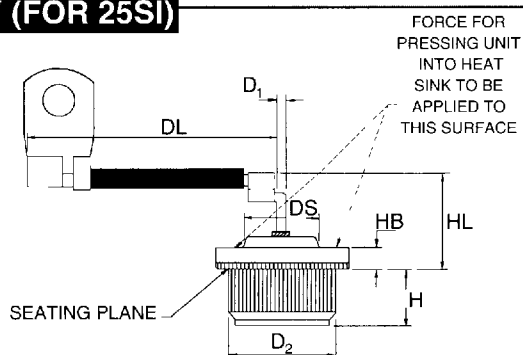
SYM.	INCHES		MILLIMETERS		PART NUMBER
	MIN.	MAX.	MIN.	MAX.	
D ₁	.049	.051	1.245	1.295	7900
H	.255	.275	6.47	6.98	7901
D ₂	.502	.506	12.75	12.86	7920
HL	.410	.540	10.42	13.72	7921
DS	--	.395	--	10.04	7960
HB	.095	.105	2.42	2.66	7961
DL	1.100	1.200	27.94	30.48	



FLAG LEAD DIODES FOR DELCO REMY (FOR 25SI)

DIMENSIONS

SYM.	INCHES		MILLIMETERS		PART NUMBER
	MIN.	MAX.	MIN.	MAX.	
D ₁	.049	.051	1.245	1.295	7980 7981
H	.255	.275	6.47	6.98	
D ₂	.502	.506	12.75	12.86	
HL	.410	.540	10.42	13.72	
DS	--	.395	--	10.04	
HB	.095	.105	2.42	2.66	
DL	1.320	1.350	33.52	34.29	





MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25° C ambient temperature unless otherwise specified.
Single phase, half-wave, 60 HZ, resistive or inductive load

25 amp

RENARD PART NUMBERS	7100, 7101	
		UNITS
Peak Reverse Voltage, Repetitive V_{RRM}	50	Vpk
Maximum RMS Voltage	35	VRMS
DC Reverse Voltage, V_R	50	Vdc
Average Forward Current, I_o at $T_c = 150^\circ\text{C}$ 60 HZ, resistive or inductive load	25	Adc
Peak Forward Surge Current, I_{FM} (surge) 8.3 ms single half sine-wave superimposed on rated load (JEDEC method)	400	Apk
Max. Inst Forward Voltage Drop, V_F at 80 Amp	1.5	Vdc
Maximum Reverse Current I_R at rated DC Reverse Voltage	1	mA
Maximum Reverse Current I_R at Rated DC Reverse Voltage $T_c = 100^\circ\text{C}$	3.0	mA
Maximum thermal resistance, junction to case (single side cooled)	1.2	°C/w
Operating and Storage Temperature Range	-65 to +175	°C

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25° C ambient temperature unless otherwise specified.
Single phase, half-wave, 60 HZ, resistive or inductive load

25 amp

RENARD PART NUMBERS	7700, 7701 7800, 7801 7900, 7901	
Hermetically Sealed		UNITS
Peak Reverse Voltage, Repetitive V_{RRM}	50	Vpk
Maximum RMS Voltage	35	VRMS
DC Reverse Voltage, V_R	50	Vdc
Average Forward Current, I_o at $T_c = 150^\circ\text{C}$ 60 HZ, resistive or inductive load	25	Adc
Peak Forward Surge Current, I_{FM} (surge) 8.3 ms single half sine-wave superimposed on rated load (JEDEC method)	400	Apk
Max. Inst Forward Voltage Drop, V_F at 80 Amp	1.5	Vdc
Maximum Reverse Current I_R at rated DC Reverse Voltage	1	mA
Maximum Reverse Current I_R at Rated DC Reverse Voltage $T_c = 100^\circ\text{C}$	3.0	mA
Maximum thermal resistance, junction to case (single side cooled)	1.2	°C/w
Operating and Storage Temperature Range	-65 to +175	°C



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25° C ambient temperature unless otherwise specified.
Single phase, half-wave, 60 HZ, resistive or inductive load

30 amp

RENARD PART NUMBERS	7720, 7721, 7820 7821, 7920, 7921	
Hermetically Sealed		
		UNITS
Peak Reverse Voltage, Repetitive V_{RRM}	100	Vpk
DC Reverse Voltage, V_R	100	Vdc
Average Forward Current, I_O at $T_C = 150^\circ\text{C}$ 60 HZ, resistive or inductive load	30	Adc
Peak Forward Surge Current, I_{FM} (surge) 8.3 ms single half sine-wave superimposed on rated load (JEDEC method)	200	Apk
Max. Inst Forward Voltage Drop, V_F at 80 Amp	1.3	Vdc
Maximum Reverse Current I_R at rated DC Reverse Voltage	1	mA
Maximum Reverse Current I_R at Rated DC Reverse Voltage $T_C = 100^\circ\text{C}$	3.0	mA
Maximum thermal resistance, junction to case (single side cooled)	1.2	$^\circ\text{C}/\text{w}$
Operating and Storage Temperature Range	-65 to +175	$^\circ\text{C}$

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25° C ambient temperature unless otherwise specified.
Single phase, half-wave, 60 HZ, resistive or inductive load

35 amp

RENARD PART NUMBERS	7760, 7761, 7780, 7781 7980, 7981, 7984, 7985	
Hermetically Sealed		UNITS
Peak Reverse Voltage, Repetitive V_{RRM}	100-200	Vpk
Maximum RMS Voltage	140	VRMS
DC Reverse Voltage, V_R	100-200	Vdc
Average Forward Current, I_O at $T_C = 150^\circ\text{C}$ 60 HZ resistive or inductive load	35	Adc
Peak Forward Surge Current, I_{FM} (surge) 8.3 ms single half sine-wave superimposed on rated load (JEDEC method)	400	Apk
Max. Inst Forward Voltage Drop V_F at 80 Amp	1.18	Vdc
Maximum Reverse Current I_R at rated DC Reverse Voltage	1	mA
Maximum Reverse Current I_R at Rated DC Reverse Voltage $T_C = 100^\circ\text{C}$	3.0	mA
Maximum thermal resistance, junction to case (single side cooled)	1.2	$^\circ\text{C}/\text{w}$
Operating and Storage Temperature Range	-65 to +175	$^\circ\text{C}$



MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

Single phase, half-wave, 60 HZ, resistive or inductive load

50 amp

RENARD PART NUMBERS	7770, 7771 7970, 7971	
Hermetically Sealed		
		UNITS
Peak Reverse Voltage, Repetitive V_{RRM}	200	Vpk
Maximum RMS Voltage	140	VRMS
DC Reverse Voltage, V_R	200	Vdc
Average Forward Current, I_F at $T_C = 150^\circ\text{C}$ 60 HZ, resistive or inductive load	50	Adc
Peak Forward Surge Current, I_{FM} (surge) 8.3 ms single half sine-wave superimposed on rated load (JEDEC method)	400	Apk
Max Inst Forward Voltage Drop, V_F at 80 Amp	1.18	Vdc
Maximum Reverse Current I_R at rated DC Reverse Voltage	1	mA
Maximum Reverse Current I_R at Rated DC Reverse Voltage $T_C = 100^\circ\text{C}$	3.0	mA
Maximum thermal resistance, junction to case (single side cooled)	0.8	$^\circ\text{C}/\text{W}$



AVALANCHE DIODES

An avalanche diode protects against transient spikes and voltage surges that occur in an automobile. The avalanche diode's development for use in rectifier assemblies helps perform two functions:

1. Convert AC current to DC current.
2. If a voltage spike or power surge occurs, the avalanche diode will limit spikes to 24-32 volts. This protects the alternator, onboard computers for fuel, ignition, system control computers and other expensive electronic components that are now used in automobiles.

TESTING AVALANCHE DIODES

An avalanche diode functions and tests differently than regular button diodes. With function and characteristics so different, it is necessary to test the avalanche diode for two different parameters.

First, determine if the diode is functional or not: test it for its Peak Inverse Voltage and reverse current characteristics at 20 volts. The specification for this test is 50 microamps.

Second, test the diode for its avalanche characteristic using 40 volts. If the diode functions correctly, it will limit the voltage to its "avalanche" point. If you are performing the test with a DC voltmeter, voltage should be between 24 to 32 volts across the avalanche diode. If you are using an oscilloscope (with 40 volts applied), the scope trace should be a flat horizontal line between 24 and 32 volts.

For regular diodes, the higher the voltage, the better the diode. This is not true for an avalanche (or zener) diode. An avalanche diode should perform within a specific voltage range. The diode's purpose is to not perform at a higher range but to act as a "voltage limiter," protecting the electrical circuit.

RENARD'S DIOTECTOR digital display button diode tester part #4015 tests specifications and determines if the diode is an avalanche type.