HARRIS SEMICONDUCTOR

A315 Series

December 1993

3A, 50V - 200V Ultrafast Diodes

Features

- **Glass Passivated Junction**
- **Ultra-Fast Recovery Times**
- **Low Forward Voltage Drop, High-Current Capability**
- **Low Leakage Current**
- **High Surge Current Capability**

Description

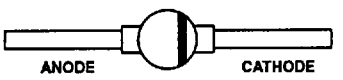
The A315A, A315B, A315F, and A315G are ultra-fast recovery silicon rectifiers (t_{RR} = 35ns max.) featuring low forward voltage drop, high-current capability. They use glass passivated epitaxial construction.

These rectifiers are intended for TV deflection, inverter, high-frequency power supplies, energy recovery, and output rectification.

These types are supplied in unitized-glass hermetically-sealed AL-4 package.

Package

AL-4
TOP VIEW



Symbol

Absolute Maximum Ratings

Supply Frequency of 60Hz, Resistive or Inductive Loads (Note 1)

		A315F	A315A	A315G	A315B	UNITS
Maximum Peak Repetitive Reverse Voltage	V_{RRM}	50	100	150	200	V
Maximum RMS Input (Supply) Voltage	V_{RMS}	35	70	105	105	V
Maximum DC Reverse (Blocking) Voltage	$V_{R(DC)}$	50	100	150	200	V
Maximum Average Forward Current Lead Length = 0.375 in. (9.5mm); T_A = 55°C	I_O	3	3	3	3	A
Maximum Peak Surge (Non-Repetitive) Forward Current For 8.3ms Half Sine Wave, Superimposed on Rated Load, T_L = 55°C	I_{FSM}	135	135	135	135	A
Operating Junction and Storage Temperature	T_J, T_{STG}	-65 to +175	-65 to +175	-65 to +175	-65 to +175	°C

NOTE:

1. For capacitive load derate current by 20%.

File Number **2163.1**

Electrical Specifications T_A = +25°C, Unless Otherwise Specified

PARAMETERS	SYMBOL	LIMITS FOR ALL TYPES			UNITS
		MIN	TYP	MAX	
Maximum Instantaneous Forward-Voltage Drop At 3A	V_F	-	-	0.95	V
Maximum Reverse Current At Maximum DC Reverse (Blocking) Voltage, T_A = +25°C	I_R	-	-	3	µA
At Maximum DC Reverse (Blocking) Voltage, T_A = +150°C	I_R	-	-	50	µA
Maximum Reverse Recovery Time At I_F = 0.5A, I_R = 1A, I_{RR} = 0.25A	t_{RR}	-	-	35	ns
Typical Junction Capacitance At Frequency = 1MHz and Applied Reverse Voltage = 4V	C_J	-	100	-	pF

Typical Performance Curves

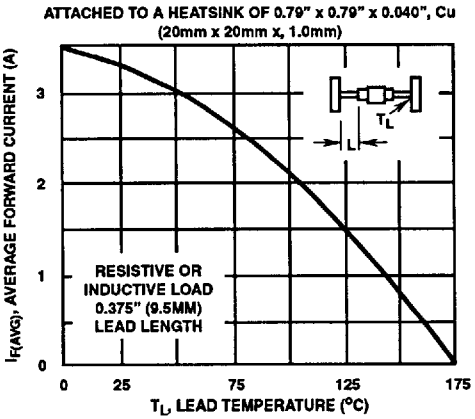


FIGURE 1. MAXIMUM AVERAGE FORWARD OUTPUT CURRENT CHARACTERISTIC

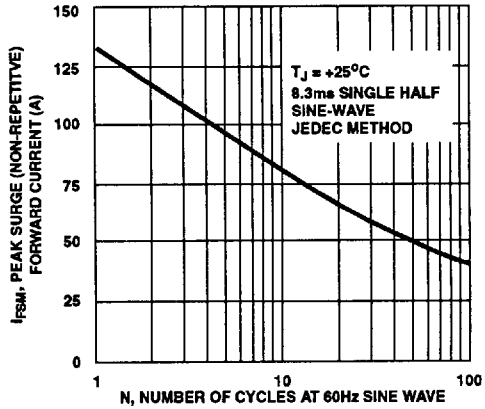


FIGURE 2. MAXIMUM PEAK SURGE (NON-REPETITIVE) FORWARD CURRENT CHARACTERISTIC

Typical Performance Curves (Continued)

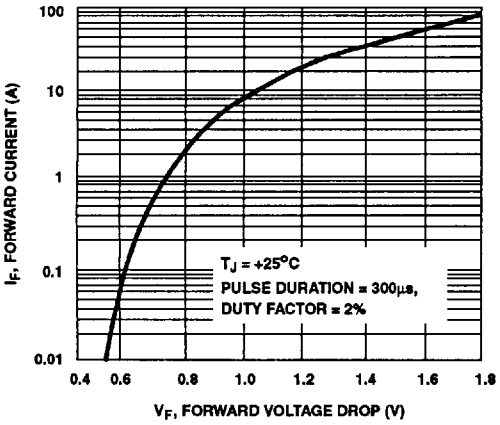


FIGURE 3. TYPICAL INSTANTANEOUS FORWARD CURRENT CHARACTERISTIC

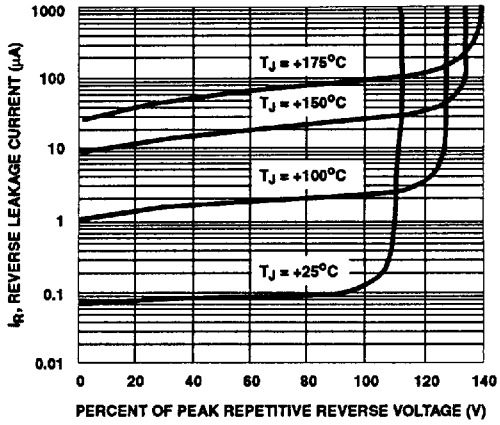


FIGURE 4. TYPICAL REVERSE LEAKAGE CURRENT CHARACTERISTICS

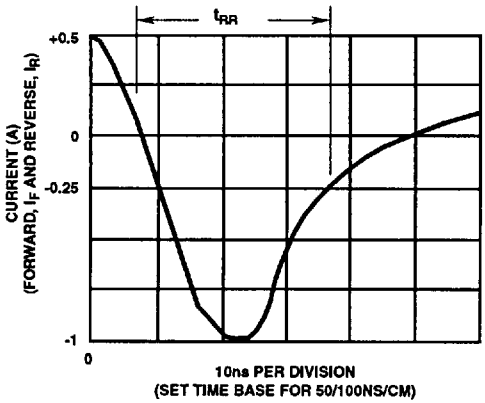


FIGURE 5. REVERSE-RECOVERY TIME WAVEFORM

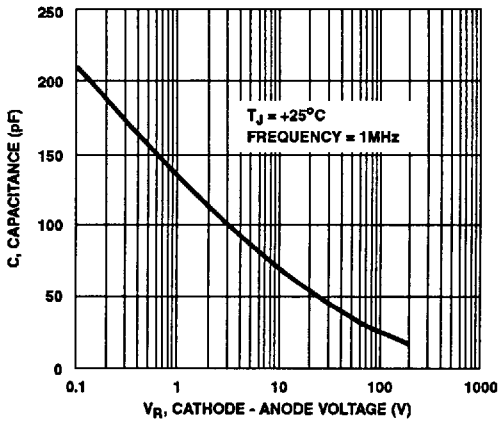
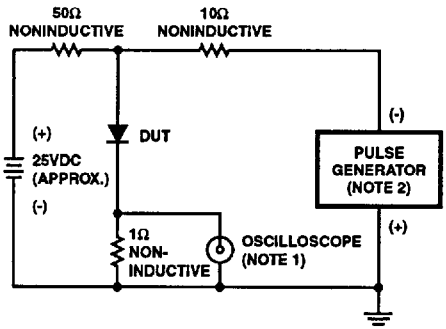


FIGURE 6. TYPICAL JUNCTION CAPACITANCE CHARACTERISTIC



NOTES:
1. RISE TIME = 7ns MAX., INPUT IMPEDANCE = 1MΩ, 22pF
2. RISE TIME = 10ns MAX., SOURCE IMPEDANCE = 50Ω

FIGURE 7. REVERSE-RECOVERY TIME TEST CIRCUIT