

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

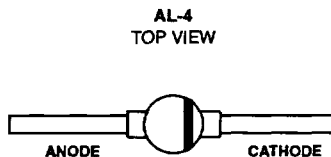
### Description

The A315A, A315B, A315F, and A315G are ultra-fast recovery silicon rectifiers ( $t_{RR} = 35\text{ns max.}$ ) 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



### 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); $T_A = 55^\circ\text{C}$ .....	$I_O$ 3	3	3	3	A
Maximum Peak Surge (Non-Repetitive) Forward Current					
For 8.3ms Half Sine Wave, Superimposed on Rated Load,	135	135	135	135	A
$T_L = 55^\circ\text{C}$ .....	$I_{FSM}$				
Operating Junction and Storage Temperature .....	$T_J, T_{STG}$ -65 to +175	-65 to +175	-65 to +175	-65 to +175	$^\circ\text{C}$

NOTE:

1. For capacitive load derate current by 20%.

## Specifications A315 Series

### Electrical Specifications $T_A = +25^\circ\text{C}$ , 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, $T_A = +25^\circ\text{C}$	$I_R$	-	-	3	$\mu\text{A}$
At Maximum DC Reverse (Blocking) Voltage, $T_A = +150^\circ\text{C}$	$I_R$	-	-	50	$\mu\text{A}$
Maximum Reverse Recovery Time At $I_F = 0.5\text{A}$ , $I_R = 1\text{A}$ , $I_{RR} = 0.25\text{A}$	$t_{RR}$	-	-	35	ns
Typical Junction Capacitance At Frequency = 1MHz and Applied Reverse Voltage = 4V	$C_J$	-	100	-	pF

### Typical Performance Curves

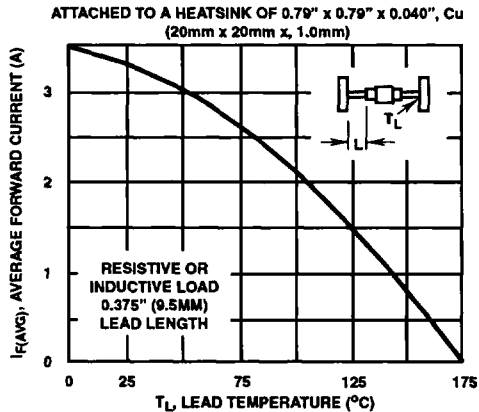


FIGURE 1. MAXIMUM AVERAGE FORWARD OUTPUT CURRENT CHARACTERISTIC

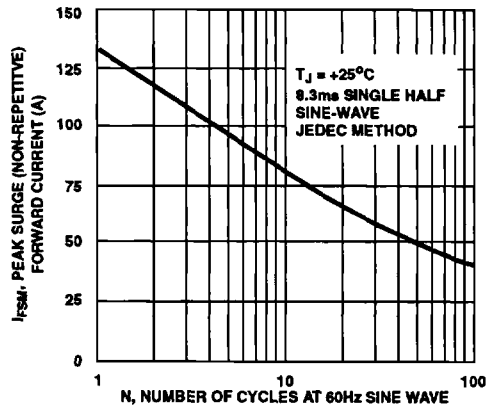


FIGURE 2. MAXIMUM PEAK SURGE (NON-REPETITIVE) FORWARD CURRENT CHARACTERISTIC

Typical Performance Curves (Continued)

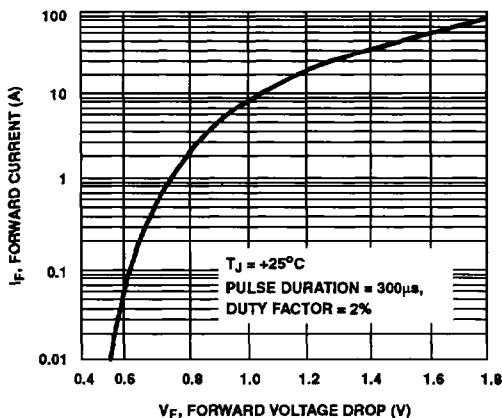


FIGURE 3. TYPICAL INSTANTANEOUS FORWARD CURRENT CHARACTERISTIC

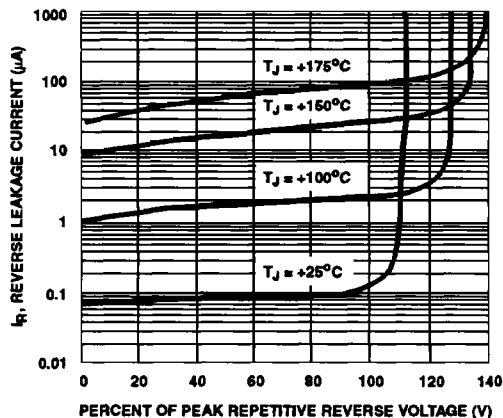


FIGURE 4. TYPICAL REVERSE LEAKAGE CURRENT CHARACTERISTICS

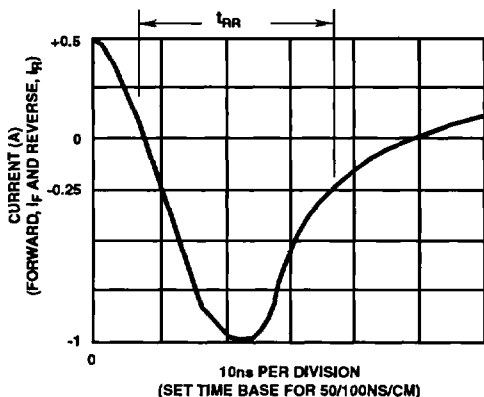


FIGURE 5. REVERSE-RECOVERY TIME WAVEFORM

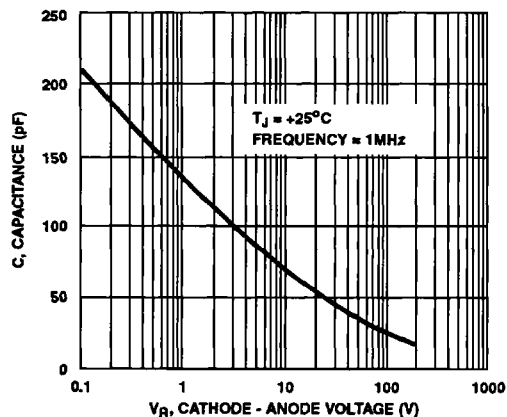
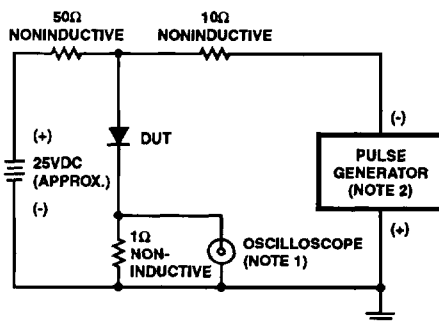


FIGURE 6. TYPICAL JUNCTION CAPACITANCE CHARACTERISTIC



- 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