



A114 Series

1A, 50V - 600V Diodes

December 1993

Features

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

Description

The Harris A114A, A114B, A114C, A114D, A114E, A114F, and A114M are fast-recovery silicon rectifiers ($t_{RR} = 200\text{ns}$ 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 JEDEC Style DO-204 package.

Package

JEDEC STYLE DO-204
TOP VIEW



Symbol



Absolute Maximum Ratings

For Single Phase, 60Hz, Half-Wave Resistive or Inductive Loads (Note 1)

	A114F	A114A	A114B	A114C	A114D	A114E	A114M	UNITS
Maximum Peak (Repetitive)								
Reverse Voltage V_{RRM}	50	100	200	300	400	500	600	V
Maximum RMS Input								
(Supply) Voltage V_{RMS}	35	70	140	210	280	350	420	V
Maximum DC Reverse								
(Blocking) Voltage $V_{R(DC)}$	50	100	200	300	400	500	600	V
Maximum Average Forward Output Current								
Lead Length = 0.375in. (9.5mm);								
$T_A = -55^\circ\text{C}$ I_O	1	1	1	1	1	1	1	A
Maximum Peak Surge (Non-Repetitive)								
Forward Current:								
For 8.3ms Half Sine Wave,								
Superimposed on Rated Load I_{FSM}	30	30	30	30	30	30	30	A
Operating Junction and								
Storage Temperature T_J, T_{STG}					-65 to +175			$^\circ\text{C}$

NOTE:

1. For capacitive load derate current by 20%.

Specifications A114 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 1A	V_F	-	-	1.3	V
Maximum Full-Load Reverse Current At Average Full-Cycle, Lead Length = 0.375 in. (9.5mm) $T_A = +25^\circ\text{C}$	I_R	-	-	1	μA
At Average Full-Cycle, Lead Length = 0.375 in. (9.5mm) $T_A = +150^\circ\text{C}$	I_R	-	-	100	μA
Maximum DC Reverse Current at Maximum DC Reverse (Blocking) Voltage	I_R	-	-	2	μA
Maximum Reverse Recovery Time At $I_F = 0.5\text{A}$, $I_R = 1\text{A}$, $I_{RR} = 0.25\text{A}$	t_{RR}	-	-	150 (Note 1)	μs
Typical Junction Capacitance At Frequency = 1MHz and Applied Reverse Voltage = 4V	C_J	-	10	-	pF

NOTE:

1. 200ns for A115M

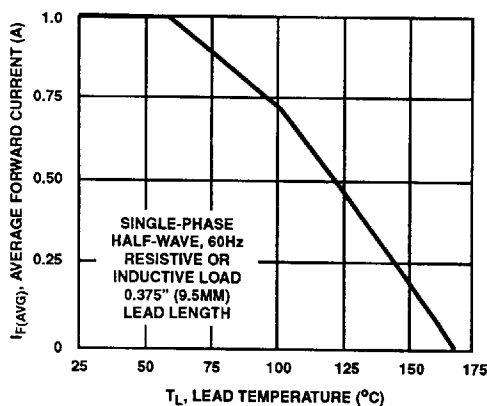
Typical Performance Curves

FIGURE 1. MAXIMUM AVERAGE FORWARD OUTPUT CURRENT CHARACTERISTIC

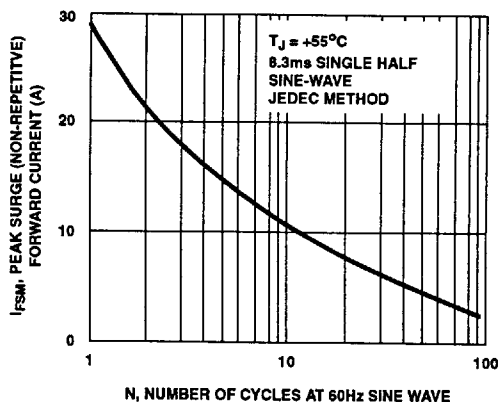


FIGURE 2. MAXIMUM PEAK SURGE (NON-REPETITIVE) FORWARD CURRENT CHARACTERISTIC

A114 Series

Typical Performance Curves (Continued)

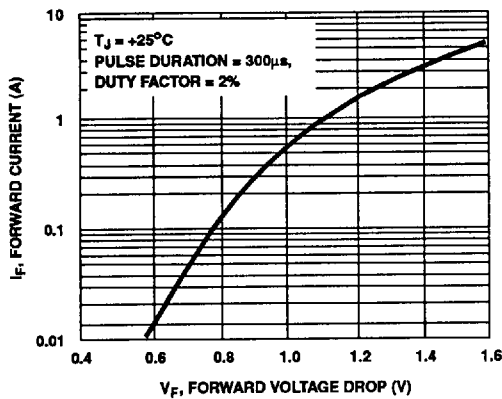


FIGURE 3. TYPICAL INSTANTANEOUS FORWARD CURRENT CHARACTERISTIC

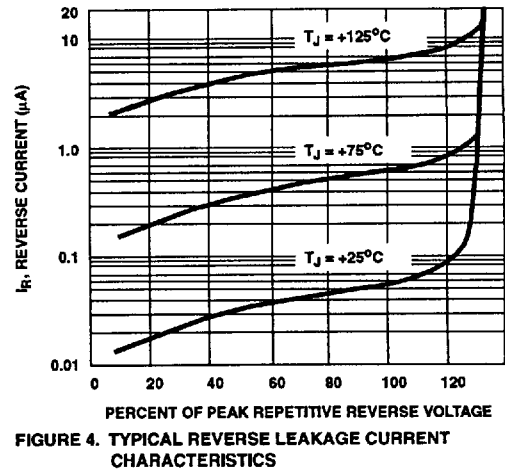


FIGURE 4. TYPICAL REVERSE LEAKAGE CURRENT CHARACTERISTICS

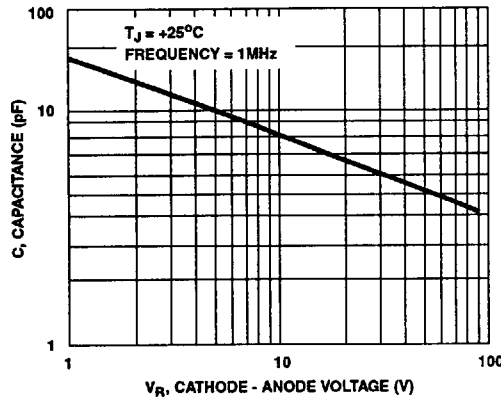


FIGURE 5. TYPICAL JUNCTION CAPACITANCE CHARACTERISTIC

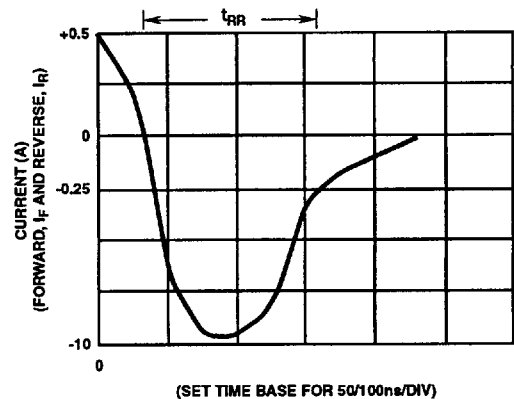
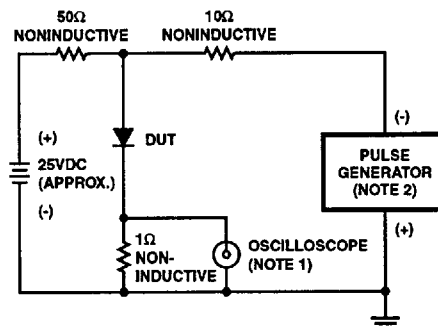


FIGURE 6. REVERSE-RECOVERY TIME WAVEFORM



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