

December 1993

1A, 50V - 600V Diodes

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:

- 200ns for A115M

Typical Performance Curves

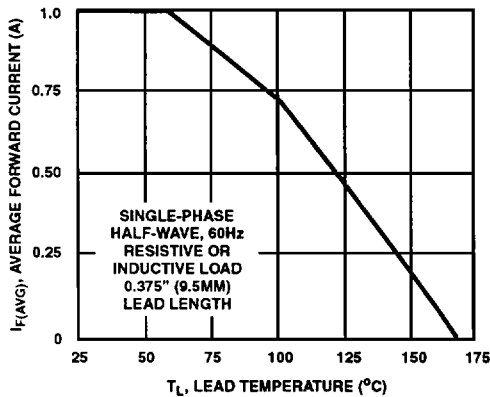


FIGURE 1. MAXIMUM AVERAGE FORWARD OUTPUT CURRENT CHARACTERISTIC

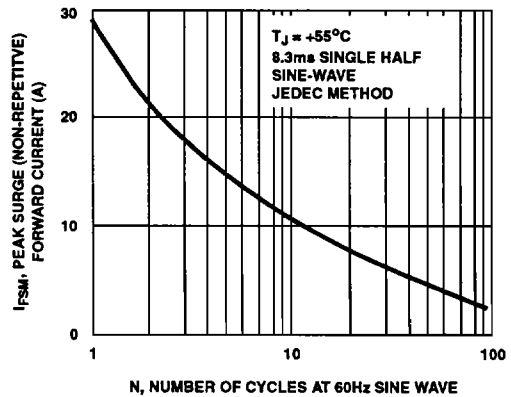


FIGURE 2. MAXIMUM PEAK SURGE (NON-REPETITIVE) FORWARD CURRENT CHARACTERISTIC

4

GENERAL PURPOSE DIODES

Typical Performance Curves (Continued)

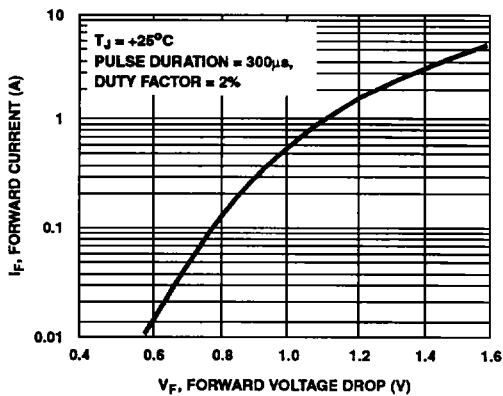


FIGURE 3. TYPICAL INSTANTANEOUS FORWARD CURRENT CHARACTERISTIC

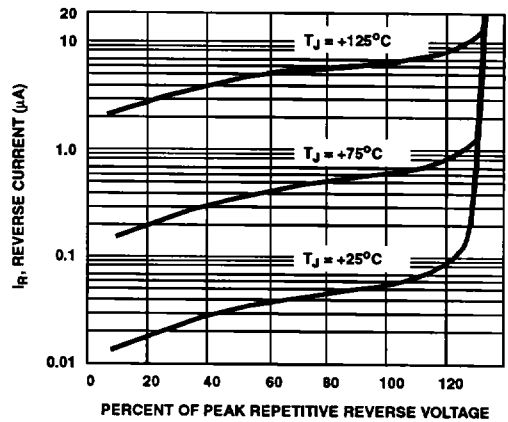


FIGURE 4. TYPICAL REVERSE LEAKAGE CURRENT CHARACTERISTICS

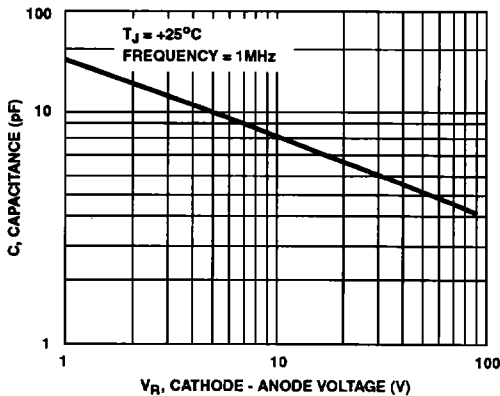


FIGURE 5. TYPICAL JUNCTION CAPACITANCE CHARACTERISTIC

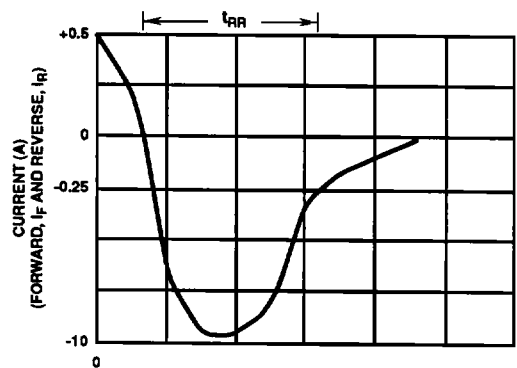
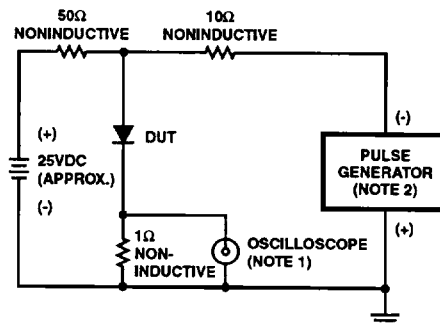


FIGURE 6. REVERSE-RECOVERY TIME WAVEFORM



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