TYPES 1N914, 1N914A, 1N914B, 1N915, 1N916, 1N916A, 1N916B, 1N917
SILICON SWITCHING DIODES

BULLETIN NO. DL-S 7311954, MARCH 1973

FAST SWITCHING DIODES

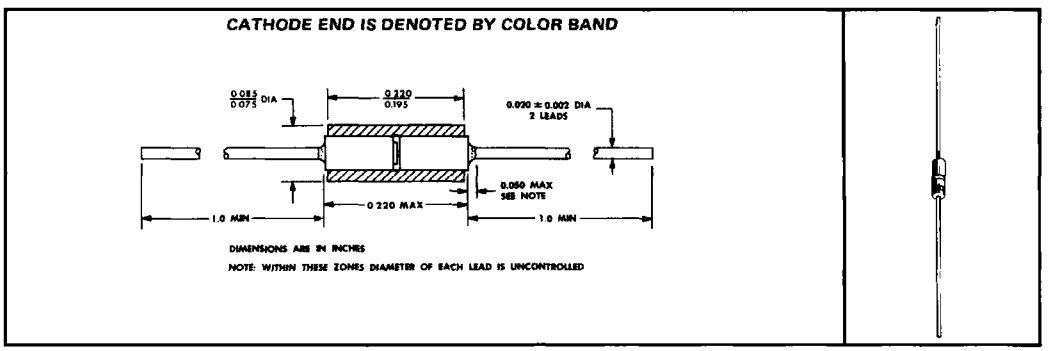
- **Rugged Double-Plug Construction**

Electrical Equivalents

1N914 . . . 1N4148 . . . 1N4531
1N914A . . . 1N4446
1N914B . . . 1N4448
1N916 . . . 1N4149
1N916A . . . 1N4447
1N916B . . . 1N4449

mechanical data

Double-plug construction affords integral positive contacts by means of a thermal compression bond. Moisture-free stability is ensured through hermetic sealing. The coefficients of thermal expansion of the glass case and the dumet plugs are closely matched to allow extreme temperature excursions. Hot-solder-dipped leads are standard.



absolute maximum ratings at specified free-air temperature

		1N914 1N914A 1N914B	1N915	1N916 1N916A 1N916B	1N917	UNIT
Working Peak Reverse Voltage from −65°C to 150°C		75*	50*	75*	30*	V
Average Rectified Forward Current (See Note 1)	at (or below) 25°C	75*	75*	75*	50*	mA
	at 150°C	10*	10*	10*	10*	
Peak Surge Current, 1 Second at 25°C (See Note 2)		500*	500	500*	300	mA
Continuous Power Dissipation at (or below) 25°C (See Note 3)		250*	250	250*	250	mW
Operating Free-Air Temperature Range		−65 to 175				°C
Storage Temperature Range		−65 to 200*				°C
Lead Temperature 1/16 Inch from Case for 10 Seconds		300				°C

NOTES: 1. These values may be applied continuously under a single-phase 60-Hz half-sine-wave operation with resistive load.
2. These values apply for a one-second square-wave pulse with the devices at nonoperating thermal equilibrium immediately prior to the surge.
3. Derate linearly to 175°C free-air temperature at the rate of 1.67 mW/°C.

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*JEDEC registered data

TYPES 1N914, 1N914A, 1N914B, 1N915, 1N916, 1N916A, 1N916B, 1N917
SILICON SWITCHING DIODES

1N914 SERIES AND 1N915

***electrical characteristics at 25°C free-air temperature (unless otherwise noted)**

PARAMETER		TEST CONDITIONS		1N914		1N914A		1N914B		1N915		UNIT
				MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
$V_{(BR)}$	Reverse Breakdown Voltage	I_R = 100 μA		100		100		100		65		V
I_R	Static Reverse Current	V_R = 10 V									25	nA
		V_R = 20 V			25		25		25			
		V_R = 20 V,	T_A = 100°C						3		5	μA
		V_R = 20 V,	T_A = 150°C		50		50		50			
		V_R = 50 V									5	
		V_R = 75 V			5		5		5			
V_F	Static Forward Voltage	I_F = 5 mA						0.62	0.72	0.6	0.73	V
		I_F = 10 mA	See Note 4		1							
		I_F = 20 mA					1					
		I_F = 50 mA									1	
		I_F = 100 mA							1			
C_T	Total Capacitance	V_R = 0,	f = 1 MHz		4		4		4		4	pF

1N916 SERIES AND 1N917

***electrical characteristics at 25°C free-air temperature (unless otherwise noted)**

PARAMETER		TEST CONDITIONS		1N916		1N916A		1N916B		1N917		UNIT
				MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
$V_{(BR)}$	Reverse Breakdown Voltage	I_R = 100 μA		100		100		100		40		V
I_R	Static Reverse Current	V_R = 10 V									50	nA
		V_R = 20 V			25		25		25			
		V_R = 20 V,	T_A = 100°C						3		25	μA
		V_R = 20 V,	T_A = 150°C		50		50		50			
		V_R = 75 V			5		5		5			
V_F	Static Forward Voltage	I_F = 0.25 mA									0.64	V
		I_F = 1.5 mA									0.74	
		I_F = 3.5 mA									0.83	
		I_F = 5 mA						0.63	0.73			
		I_F = 10 mA	See Note 4		1						1	
		I_F = 20 mA					1					
		I_F = 30 mA							1			
C_T	Total Capacitance	V_R = 0,	f = 1 MHz		2		2		2		2.5	pF

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NOTE 4: These parameters must be measured using pulse techniques. t_w = 300 μs, duty cycle ≤ 2%.

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operating characteristics at 25°C free-air temperature

PARAMETER		TEST CONDITIONS	1N914, 1N914A, 1N914B, 1N916, 1N916A, 1N916B		1N915		1N917		UNIT
			MIN	MAX	MIN	MAX	MIN	MAX	
t_{rr}	Reverse Recovery Time	I_F = 10 mA, I_{RM} = 10 mA, i_{rr} = 1 mA, R_L = 100 Ω, See Figure 1 (Condition 1)		8		10*		3*	ns
		I_F = 10 mA, V_R = 6 V, i_{rr} = 1 mA, R_L = 100 Ω, See Figure 1 (Condition 2)		4*					ns
$V_{FM(rec)}$	Forward Recovery Voltage	I_F = 50 mA, R_L = 50 Ω, See Figure 2		2.5*					V
η_r	Rectification Efficiency	V_r = 2 V, R_L = 5 kΩ, C_L = 20 pF, Z_{source} = 50 Ω, f = 100 MHz	45*						%

PARAMETER MEASUREMENT INFORMATION

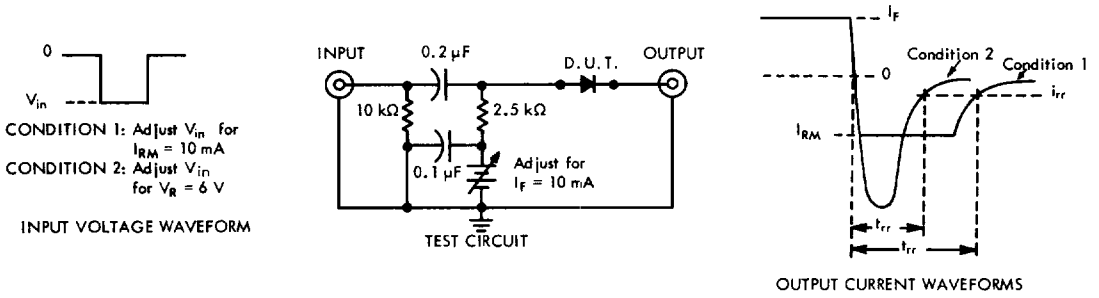

FIGURE 1 — REVERSE RECOVERY TIME

NOTES: a. The input pulse is supplied by a generator with the following characteristics: Z_{out} = 50 Ω, $t_r \leq$ 0.5 ns, t_w = 100 ns.
b. Output waveforms are monitored on an oscilloscope with the following characteristics: $t_r \leq$ 0.6 ns, Z_{in} = 50 Ω.

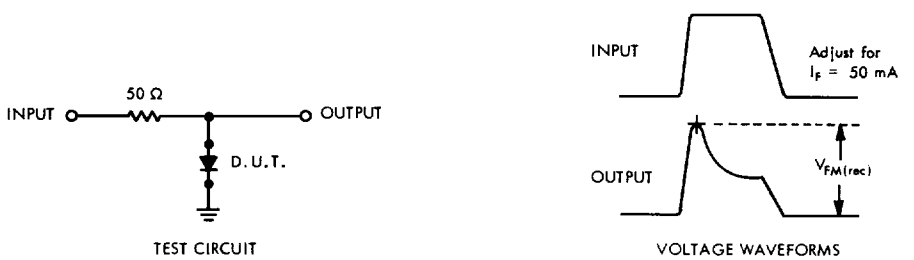

FIGURE 2 — FORWARD RECOVERY VOLTAGE

NOTES: c. The input pulse is supplied by a generator with the following characteristics: Z_{out} = 50 Ω, $t_r \leq$ 30 ns, t_w = 100 ns, PRR = 5 to 100 kHz.
d. The output waveform is monitored on an oscilloscope with the following characteristics: $t_r \leq$ 15 ns, $R_{in} \geq$ 1 MΩ, $C_{in} \leq$ 5 pF.

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