

GE1001, GE1002 GE1003, GE1004

December 1993

1A, 50V - 200V Ultrafast Diodes

Features:

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

Description

The GE1001, GE1002, GE1003, and GE1004 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 JEDEC style DO-204 package.

Package

JEDEC STYLE DO-204
TOP VIEW



Symbol



Absolute Maximum Ratings

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

	GE1001	GE1002	GE1003	GE1004	UNITS
Maximum Peak Repetitive Reverse Voltage V_{RRM}	50	100	150	200	V
Maximum RMS Input (Supply) Voltage V_{RMS}	35	70	105	140	V
Maximum DC Reverse (Blocking) Voltage $V_{R(DC)}$	50	100	150	200	V
Maximum Average Forward Output Current Lead Length = 0.375 in. (9.5mm); $T_A = 55^\circ\text{C}$ I_O	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	A
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%.

5
ULTRAFAST
SINGLE DIODES

Specifications GE1001, GE1002, GE1003, GE1004

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	-	-	0.95	V
Maximum Reverse Current					
At Maximum DC Reverse (Blocking) Voltage, $T_A = +25^\circ\text{C}$	I_R	-	-	2	μA
At Maximum DC Reverse (Blocking) Voltage, $T_A = +150^\circ\text{C}$	I_R	-	-	50	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}	-	-	35	ns
Typical Junction Capacitance					
At Frequency 1MHz and Applied Reverse Voltage = 4V	C_J	-	45	-	pF
Thermal Resistance					
Junction-to-Ambient at 0.375 in. (9.5mm) Lead Length	$R_{\theta JA}$	-	-	65	$^\circ\text{C/W}$

Typical Performance Curves

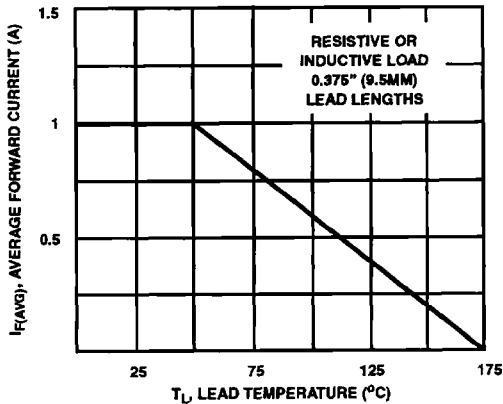


FIGURE 1. MAXIMUM AVERAGE FORWARD OUTPUT CURRENT CHARACTERISTIC

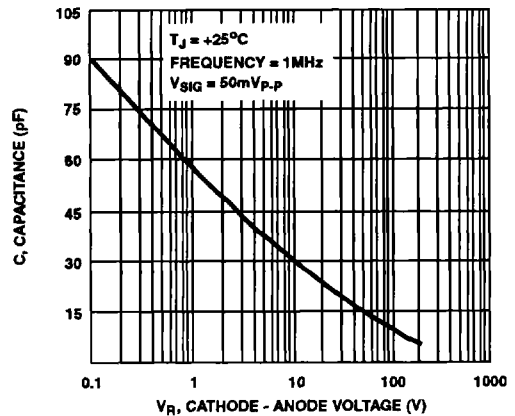


FIGURE 2. JUNCTION CAPACITANCE vs REVERSE VOLTAGE

Typical Performance Curves (Continued)

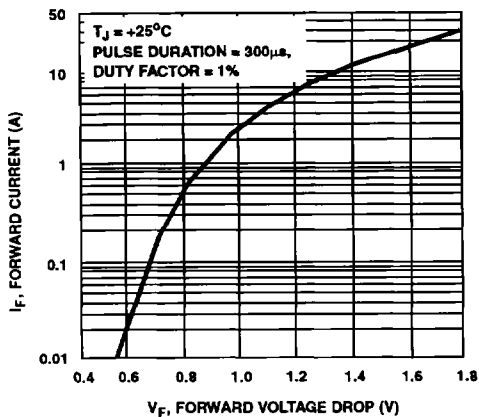


FIGURE 3. TYPICAL INSTANTANEOUS FORWARD CURRENT CHARACTERISTIC

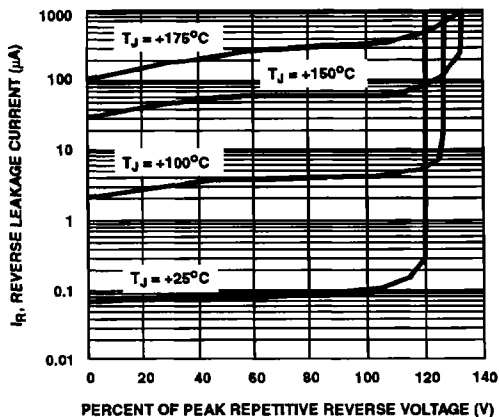


FIGURE 4. TYPICAL REVERSE LEAKAGE CURRENT CHARACTERISTICS

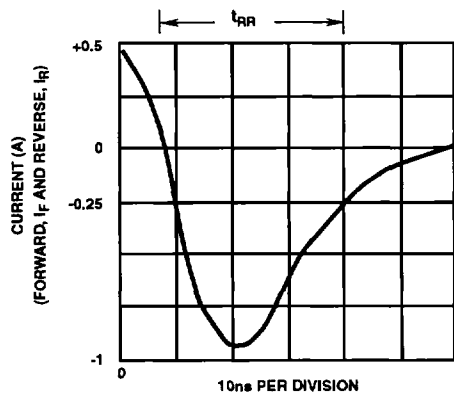


FIGURE 5. REVERSE-RECOVERY TIME WAVEFORM

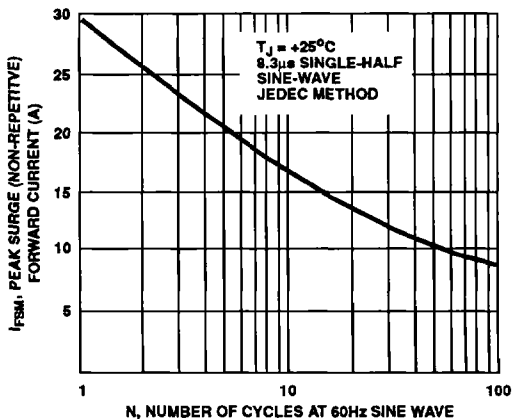
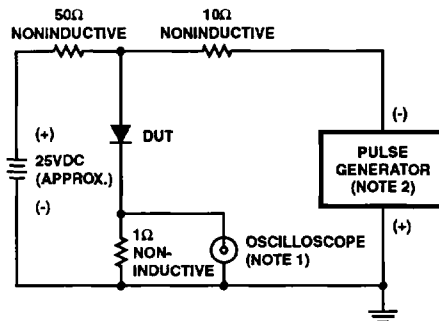


FIGURE 6. PEAK SURGE CAPABILITY vs NUMBER OF CYCLES



- 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