

December 1993

6A, 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

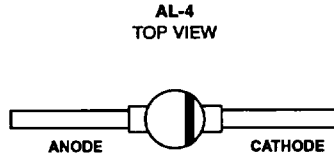
Description

The GE1301, GE1302, GE1303, and GE1304 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)

	GE1301	GE1302	GE1303	GE1304	UNITS
Maximum Peak Repetitive Reverse Voltage	50	100	150	200	V
Maximum RMS Input (Supply) Voltage	35	70	105	140	V
Maximum DC Reverse (Blocking) Voltage	50	100	150	200	V
Maximum Average Forward Output Current Lead Length = 0.375 in. (9.5mm); $T_A = +55^\circ\text{C}$	6	6	6	6	A
Maximum Peak Surge (Non-Repetitive) Forward Current For 8.3ms Half Sine Wave, Superimposed on Rated Load	150	150	150	150	A
Operating Junction and Storage Temperature	-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 GE1301, GE1302, GE1303, GE1304

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 2A	V_F	-	-	0.975	V
Maximum Reverse Current					
At Maximum DC Reverse (Blocking) Voltage, $T_A = +25^\circ\text{C}$	I_R	-	-	5	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	-	100	-	pF
Thermal Resistance					
Junction-to-Lead at 0.375 in. (9.5mm)	$R_{\theta JA}$	-	16	-	$^\circ\text{C/W}$

Typical Performance Curves

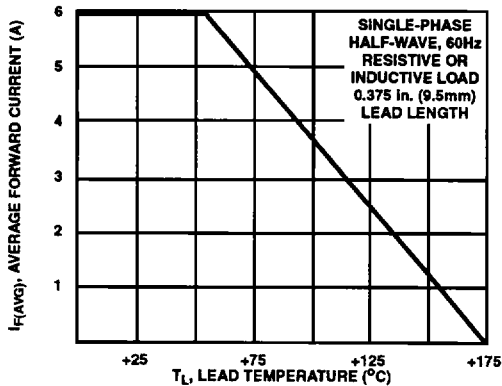


FIGURE 1. MAXIMUM AVERAGE FORWARD OUTPUT CURRENT CHARACTERISTIC

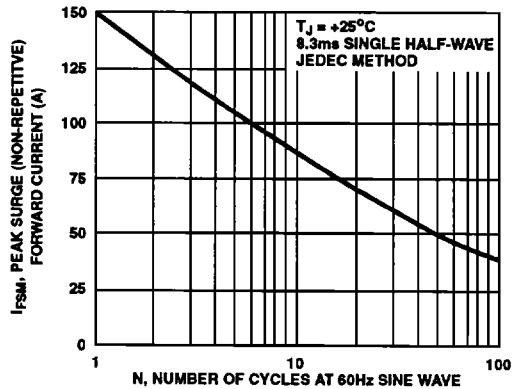


FIGURE 2. MAXIMUM PEAK SURGE (NON-REPETITIVE) FORWARD CURRENT CHARACTERISTIC

Typical Performance Curves (Continued)

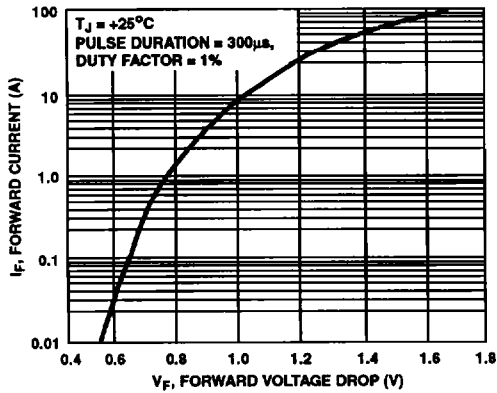


FIGURE 3. TYPICAL INSTANTANEOUS FORWARD CURRENT CHARACTERISTIC

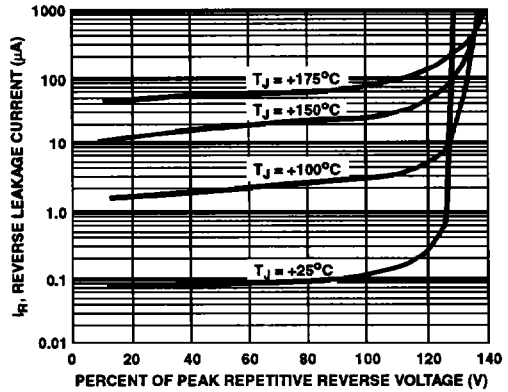


FIGURE 4. TYPICAL REVERSE LEAKAGE CURRENT CHARACTERISTICS

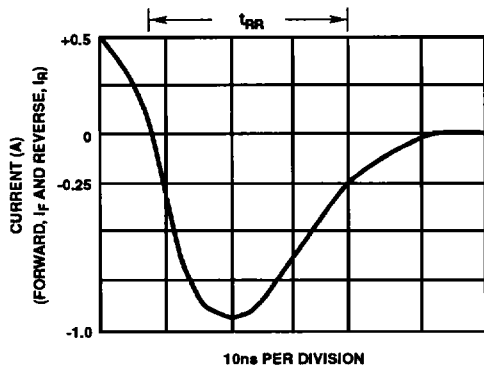


FIGURE 5. REVERSE-RECOVERY TIME WAVEFORM

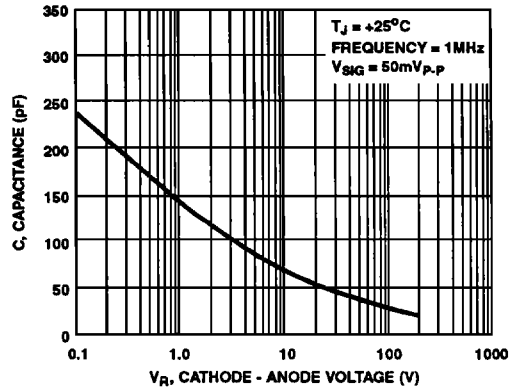
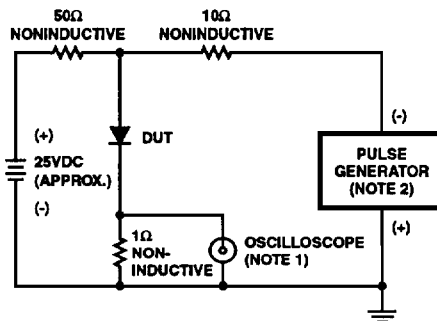


FIGURE 6. TYPICAL JUNCTION CAPACITANCE CHARACTERISTIC



- 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