GE1001, GE1002, GE1003, GE1004

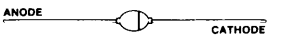
File Number **2161**

1-A, High-Speed, High-Efficiency Glass-Passivated Junction Silicon Rectifiers

Features:

- *Glass passivated junction*
- *Ultra-fast recovery times*
- *Low forward voltage drop, high-current capability*
- *Low reverse current leakage*
- *High surge current capability*

TERMINAL DESIGNATIONS



DO-204AP

92CS-43475

The GE/RCA GE1001, GE1002, GE1003, and GE1004 are ultra-fast-recovery silicon rectifiers (t_{rr} = 35 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 DO-204AP package.

MAXIMUM RATINGS, *Absolute-Maximum Values; for single-phase, 60-Hz, half-wave resistive or inductive loads *:*

	GE1001	GE1002	GE1003	GE1004	
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. (9.5 mm); T_A = 55°C, ... I_O	1				A
MAXIMUM PEAK SURGE (NON-REPETITIVE) FORWARD CURRENT:					
For 8.3 ms half sine wave, superimposed on rated load, ... I_{FSM}	30				A
OPERATING JUNCTION AND STORAGE TEMPERATURE, ... T_j, T_{stg}	-65 to +175				°C

* For capacitive load derate current by 20%.

GE1001, GE1002, GE1003, GE1004

ELECTRICAL CHARACTERISTICS, At Ambient Temperature (T_A) = 25°C Unless Otherwise Specified

CHARACTERISTIC		LIMITS FOR ALL TYPES MIN.	LIMITS FOR ALL TYPES TYP.	LIMITS FOR ALL TYPES MAX.	UNITS
Maximum Instantaneous Forward-Voltage Drop: At 1 A	V_F	—	—	0.95	V
Maximum Reverse Current: At maximum dc reverse (blocking) voltage, T_A = 25°C	I_R	—	—	2	μA
T_A = 150°C		—	—	50	
Maximum Reverse Recovery Time: At I_F = 0.5 A, I_R = 1 A, I_{rr} = 0.25 A	t_{rr}	—	—	35	ns
Typical Junction Capacitance: At frequency = 1 MHz and applied reverse voltage = 4 V	C_J	—	45	—	pF
Thermal Resistance: Junction-to-Ambient (At lead lengths of 0.375 in. (9.5 mm)	$R_{\theta JA}$	—	—	65	°C/W

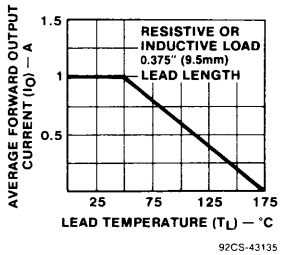


Fig. 1 - Maximum average forward output current characteristic.

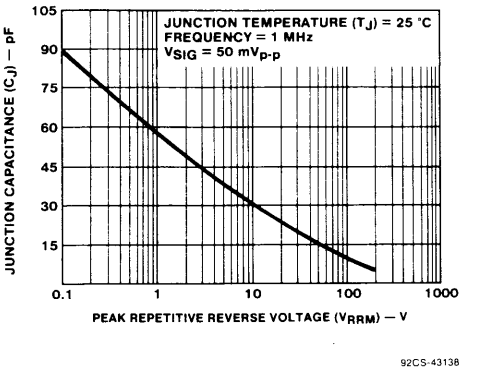


Fig. 2 - Maximum peak surge non-repetitive forward current characteristic.

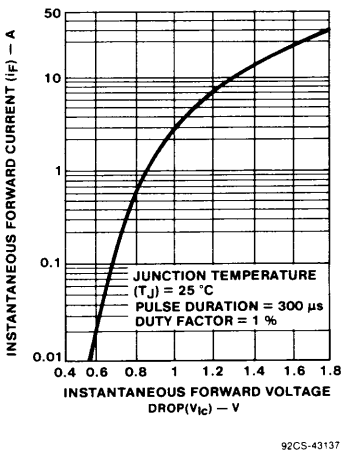


Fig. 3 - Typical instantaneous forward current characteristic.

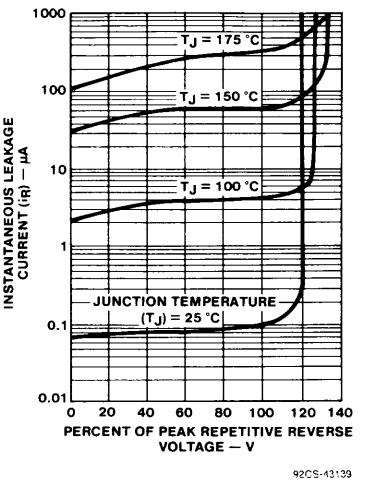


Fig. 4 - Typical reverse leakage current characteristics.

GE1001, GE1002, GE1003, GE1004

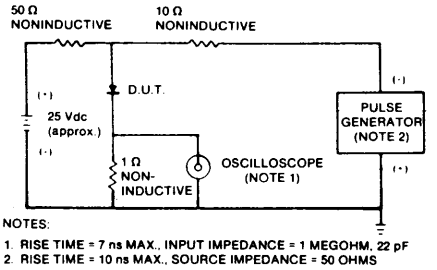


Fig. 5 - Reverse-recovery time test circuit.

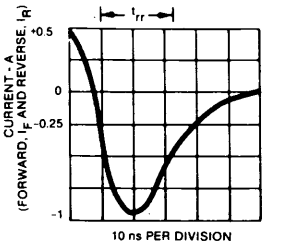


Fig. 6 - Reverse-recovery time waveform.

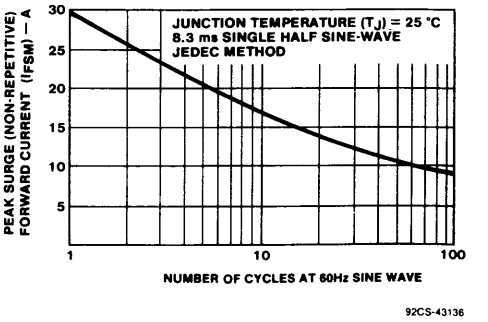


Fig. 7 - Typical junction capacitance characteristic.

File Number **2165**

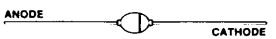
GE1101, GE1102, GE1103, GE1104

2.5-A, High-Speed, High-Efficiency Glass-Passivated Junction Silicon Rectifiers

Features:

- *Glass passivated junction*
- *Ultra-fast recovery times*
- *Low forward voltage drop, high-current capability*
- *Low reverse leakage current*
- *High surge current capability*

TERMINAL DESIGNATIONS



DO-204AP

92CS-43475

The GE/RCA GE1101, GE1102, GE1103, and GE1104 are ultra-fast recovery silicon rectifiers (t_{rr} = 35 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 DO-204AP package.

4

MAXIMUM RATINGS, *Absolute-Maximum Values; for single-phase, 60Hz, half-wave resistive or inductive loads*:*

		GE1101	GE1102	GE1103	GE1104	
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. (9.5 mm); T_A = 55°C,	I_O	2.5				A
MAXIMUM PEAK SURGE (NON-REPETITIVE) FORWARD CURRENT: For 8.3 ms half sine wave, superimposed on rated load,	I_{FSM}	50				A
OPERATING JUNCTION AND STORAGE TEMPERATURE,	T_J, T_{stg}	-65 to +175				°C

*For capacitive load derate current by 20%.

GE1101, GE1102, GE1103, GE1104

ELECTRICAL CHARACTERISTICS, At Ambient Temperature (T_A) = 25°C Unless Otherwise Specified

CHARACTERISTICS		LIMITS FOR ALL TYPES MIN.	TYP.	MAX.	UNITS
Maximum Instantaneous Forward-Voltage Drop: At 2A	V_F	—	—	0.95	V
Maximum Reverse Current: At maximum DC reverse (blocking) voltage, T_A = 25°C	I_R	—	—	2	μA
T_A = 150°C		—	—	50	
Maximum Reverse Recovery Time: At I_F = 0.5A, I_R = 1A, I_{rr} = 0.25A	t_{rr}	—	—	35	ns
Typical Junction Capacitance: At frequency = 1 MHz and applied reverse voltage = 4V	C_J	—	45	—	pF
Thermal Resistance: Junction-to-Ambient at 0.375 in. (9.5 mm) lead length.	$R\theta_{JA}$	—	60	—	°C/W

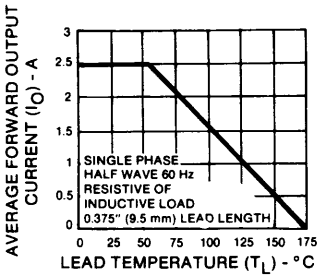


Fig. 1 - Maximum average forward output current characteristic.

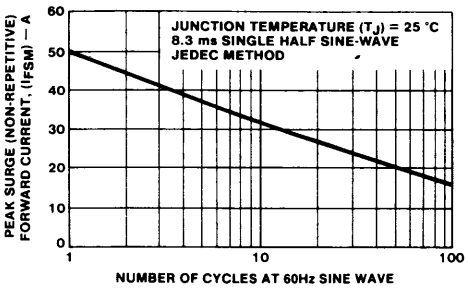


Fig. 2 - Maximum peak surge non-repetitive forward current characteristic.

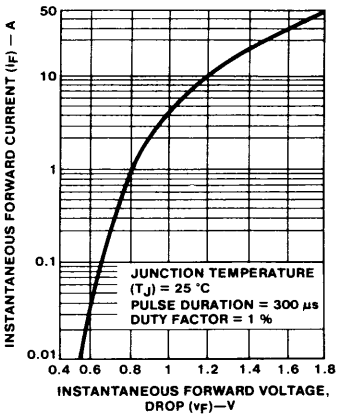


Fig. 3 - Typical instantaneous forward current characteristic.

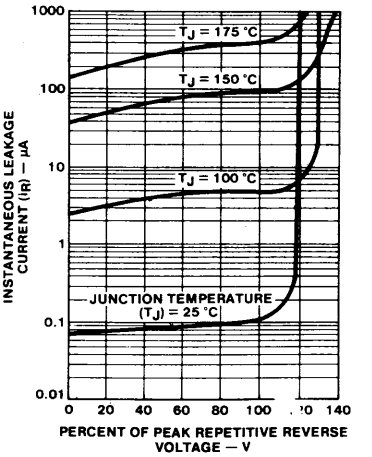


Fig. 4 - Typical reverse leakage current characteristics.

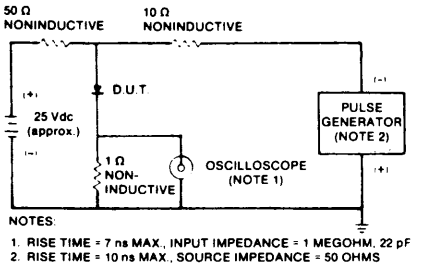


Fig. 5 - Reverse-recovery time test circuit.

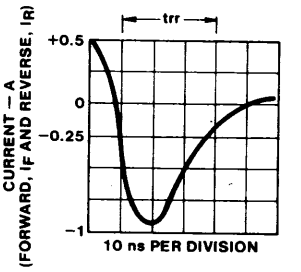


Fig. 6 - Reverse-recovery time waveform.

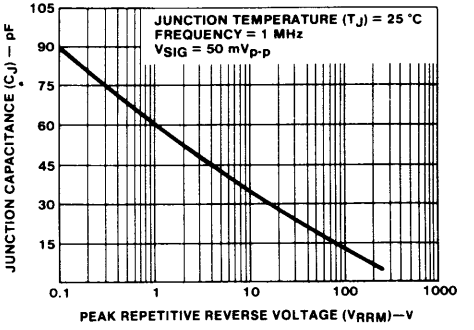


Fig. 7 - Typical junction capacitance characteristic.

GE1301, GE1302, GE1303, GE1304

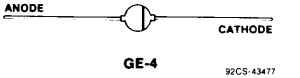
File Number **2166**

6-A, High-Speed, High-Efficiency Glass-Passivated Junction Silicon Rectifiers

Features:

- *Glass passivated junction*
- *Ultra-fast recovery times*
- *Low forward voltage drop, high-current capability*
- *Low leakage current*
- *High surge current capability*

TERMINAL DESIGNATIONS



GE-4

92CS-43477

The GE/RCA GE1301, GE1302, GE1303, and GE1304 are ultra-fast recovery silicon rectifiers (t_{rr} = 35 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 GE-4 package.

MAXIMUM RATINGS, *Absolute-Maximum Values; for single-phase, 60Hz, half-wave resistive or inductive loads*:*

		GE1301	GE1302	GE1303	GE1304	
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. (9.5 mm); T_A = 55°C,	I_O	6				A
MAXIMUM PEAK SURGE (NON-REPETITIVE) FORWARD CURRENT:						
For 8.3 ms half sine wave, superimposed on rated load,	I_{FSM}	150				A
OPERATING JUNCTION AND STORAGE TEMPERATURE,	T_J, T_{stg}	−65 to +175				°C

*For capacitive load derate current by 20%.

GE1301, GE1302, GE1303, GE1304

ELECTRICAL CHARACTERISTICS, At Ambient Temperature (T_A) = 25°C Unless Otherwise Specified

CHARACTERISTICS		LIMITS FOR ALL TYPES MIN.	TYP.	MAX.	UNITS
Maximum Instantaneous Forward-Voltage Drop: At 2A	V_F	—	—	0.975	V
Maximum Reverse Current: At maximum DC reverse (blocking) voltage, T_A = 25°C	I_R	—	—	5	μA
T_A = 150°C		—	—	50	
Maximum Reverse Recovery Time: At I_F = 0.5A, I_R = 1A, I_{rr} = 0.25A	t_{rr}	—	—	35	ns
Typical Junction Capacitance: At frequency = 1 MHz and applied reverse voltage = 4V	C_J	—	100	—	pF
Thermal Resistance: Junction- to-Lead at 0.375 in. (9.5 mm)	$R\theta_{JL}$	—	16	—	°C/W

4

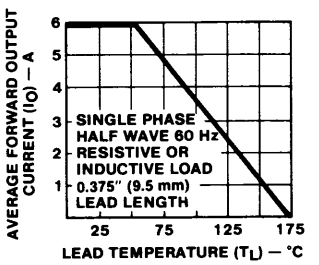


Fig. 1 - Maximum average forward output current characteristic.

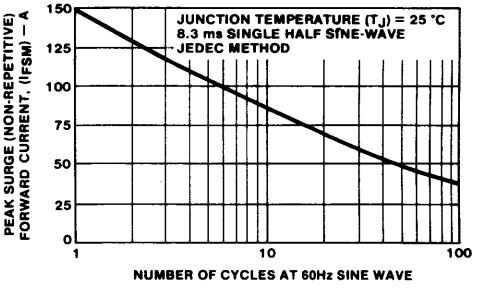


Fig. 2 - Maximum peak surge non-repetitive forward current characteristic.

GE1301, GE1302, GE1303, GE1304

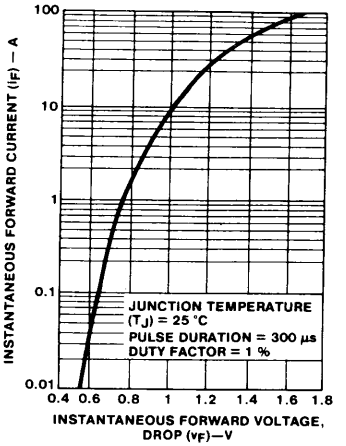


Fig. 3 - Typical instantaneous forward current characteristic.

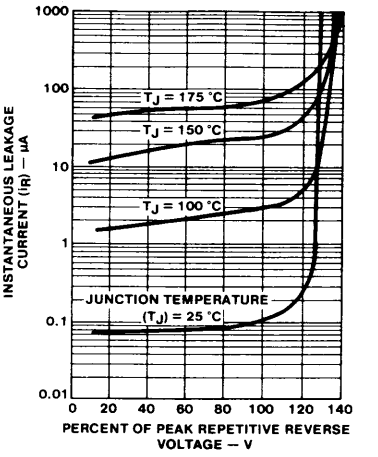


Fig. 4 - Typical reverse leakage current characteristics.

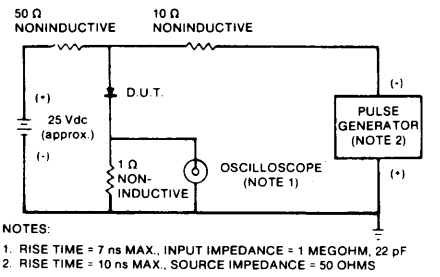


Fig. 5 - Reverse-recovery time test circuit.

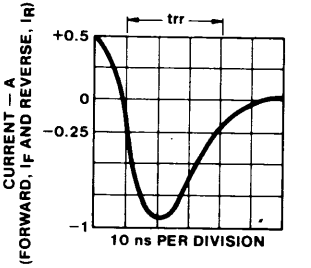


Fig. 6 - Reverse-recovery time waveform.

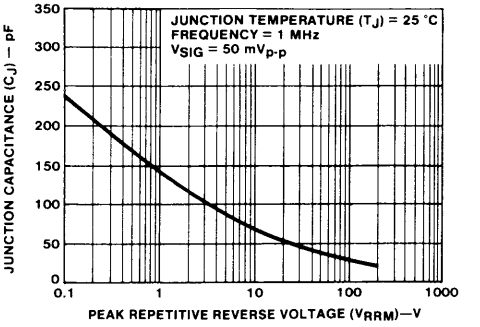


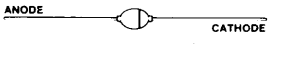
Fig. 7 - Typical junction capacitance characteristic.

File Number **2177**

GER4001-GER4007

1-A, Glass-Passivated Junction Silicon Rectifiers

TERMINAL DESIGNATIONS



DO-204AP

92CS-43475

Features:

- *High temperature metallurgically bonded, no compression contacts as found in diode-constructed rectifiers*
- *Glass passivated junction*
- *1A operation at $T_A = 100°C$ with no thermal runaway*
- *Low reverse current*
- *Exceeds environmental standard of MIL-STD-19500*
- *Hermetically sealed package*
- *High temperature soldering: 350°C/10 s/0.375 in. (9.5mm) lead length*

The GE/RCA GER4001-GER4007 are glass-passivated "transient voltage protected," silicon rectifiers intended for general-purpose applications.

These rectifiers will dissipate up to 1000 watts in reverse direction without damage. Voltage transients generated by household or industrial power lines are dissipated.

These rectifiers are supplied in a JEDEC DO-204AP package.

4

MAXIMUM RATINGS, *Absolute-Maximum Values; Supply Frequency of 60Hz, resistive or inductive loads:*

		GER4001	GER4002	GER4003	GER4004	GER4005	GER4006	GER4007	
MAXIMUM PEAK (REPETITIVE) REVERSE VOLTAGE, ...	V_{RRM}	50	100	200	400	600	800	1000	V
MAXIMUM RMS (SUPPLY) VOLTAGE:									
For resistive or inductive loads, ...	V_{RMS}	35	70	140	280	420	560	700	V
MAXIMUM DC REVERSE (BLOCKING) VOLTAGE, ...	$V_{R(DC)}$	50	100	200	400	600	800	1000	V
MAXIMUM AVERAGE FORWARD OUTPUT CURRENT:									
For resistive or inductive loads, T_A = 100°C	I_O	1							A
MAXIMUM PEAK SURGE (NON-REPETITIVE) FORWARD CURRENT:									
For 8.3 ms half sine wave, superimposed on rated load, ...	I_{FSM}	50							A
OPERATING JUNCTION AND STORAGE TEMPERATURE RANGE, ...	T_j, T_{stg}	-65 to +175							°C

GER4001-GER4007

ELECTRICAL CHARACTERISTICS, At Ambient Temperature (T_A) = 25°C Unless Otherwise Specified

CHARACTERISTICS		LIMITS FOR ALL TYPES MIN.	TYP.	MAX.	UNITS
Maximum Instantaneous Forward-Voltage Drop: At 1A	V_F	—	—	1.2*	V
Maximum Full-Load Reverse Current: At average full-cycle, lead length = 0.375 in. (9.5mm), T_A = 100°C	I_R	—	—	200	μA
Maximum Reverse Current: At maximum DC reverse (blocking) voltage	I_R	—	—	2	
Maximum Reverse Recovery Time: At I_F = 0.5A, I_R = 1A, I_{rr} = 0.25A	t_{rr}	—	—	2	μs
Typical Junction Capacitance: At frequency = 1 MHz and applied reverse voltage = 4V	C_J	—	15	—	pF

*1.1 V for GER4003-GER4007.

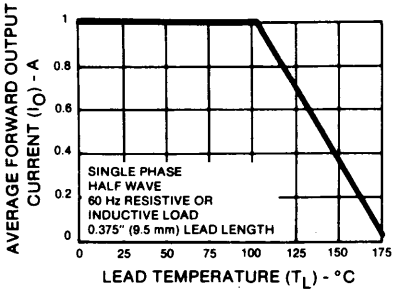


Fig. 1 - Maximum average forward output current characteristic.

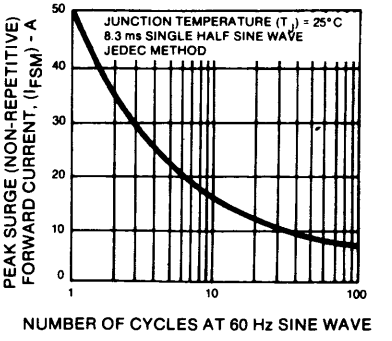


Fig. 2 - Maximum peak surge non-repetitive forward current characteristic.