DIODE ARRAY CIRCUITS

DESCRIPTION

The SG6100/SG6511 and SG6101/SG6510 diode arrays are monolithic, high breakdown, fast switching speed diode arrays. The SG6100/SG6511 is configured with 7 straight through diodes, while the SG6101/SG6510 has 8 straight through diodes.

These two diode array configurations allow the designer maximum flexibility for circuit design and board layout. Since each diode within the array has individual anode and cathode connections the device may be used in a variety of applications. Also, due to the array's monolithic construction the diode electrical parameters are very closely matched.

Both devices are available in ceramic DIP and flatpack and can be processed to Linfinity's S level, JANTXV, JANTX, or JAN equivalent flows.

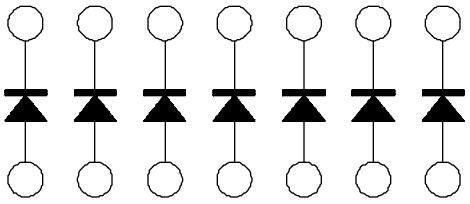
FEATURES

- **75V minimum breakdown voltage**
- **100mA current capability per diode**
- **Switching speeds less than 5ns**
- **Low leakage current < 25nA**

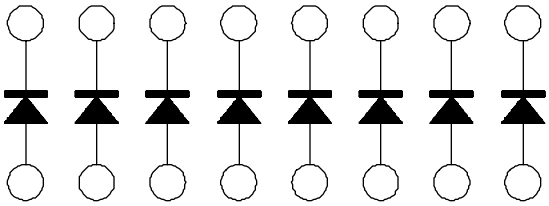
HIGH RELIABILITY FEATURES

- **MIL-S-19500/474 QPL - 1N6100**
  - 1N6101
  - 1N6510
  - 1N6511
- **Equivalent JANS, JANTXV, JANTX, JAN screening available**

CIRCUIT DIAGRAMS



7 - STRAIGHT THROUGH DIODES
SG6100/SG6511



8 - STRAIGHT THROUGH DIODES
SG6101/SG6510

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ABSOLUTE MAXIMUM RATINGS (Note 1 & 2)

Breakdown Voltage (V_{BR}) 75V
Output Current (I_O), T_C = 25°C
Continuous 300mA

Operating Junction Temperature
Hermetic (J, F Packages) ..... 150°C
Storage Temperature Range ..... -65°C to 200°C
Lead Temperature (Soldering, 10 seconds) ..... 300°C

Note 1. Exceeding these ratings could cause damage to the device.
Note 2. Applicable for each diode.

THERMAL DATA

J Package (14 & 16 Pin):
Thermal Resistance-Junction to Case, θ_{JC} ..... 30°C/W
Thermal Resistance-Junction to Ambient, θ_{JA} ..... 80°C/W
F Package (14 Pin):
Thermal Resistance-Junction to Case, θ_{JC} ..... 80°C/W
Thermal Resistance-Junction to Ambient, θ_{JA} ..... 140°C/W
F Package (16 Pin):
Thermal Resistance-Junction to Case, θ_{JC} ..... 70°C/W
Thermal Resistance-Junction to Ambient, θ_{JA} ..... 115°C/W

Note A. Junction Temperature Calculation: $T_J = T_A + (P_D \times \theta_{JA})$.
Note B. The above numbers for θ_{JC} are maximums for the limiting thermal resistance of the package in a standard mounting configuration. The θ_{JA} numbers are meant to be guidelines for the thermal performance of the device/pc-board system. All of the above assume no ambient airflow.

RECOMMENDED OPERATING CONDITIONS (Note 3)

Operating Ambient Temperature Range
SG6100 ..... -55°C to 150°C
SG6101 ..... -55°C to 150°C
SG6511 ..... -55°C to 150°C
SG6510 ..... -55°C to 150°C

Note 3. Range over which the device is functional.

ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, these specifications apply for the operating ambient temperature of T_A = 25°C for each diode. Low duty cycle pulse testing techniques are used which maintains junction and case temperatures equal to the ambient temperature.)

Parameter	Test Conditions	SG6100/SG6511 SG6010/SG6510			Units
		Min.	Typ.	Max.	
Breakdown Voltage (V_{BR})	I_R = 5µA, Duty Cycle < 20%	75			V
Forward Voltage (V_F)	Duty Cycle ≤ 2%, 300 µs pulse				
	I_F = 100mA			1.0	V
	I_F = 10mA, T_A = -55°C			1.0	V
Reverse Current (I_R)	V_R = 20V			25	nA
	V_R = 40V			100	nA
	V_R = 40V, T_A = 150°C			50	µA
Capacitance (C) (Note 4)	V_R = 0V, f = 1MHz, Pin-to-pin			4	pf
Forward Recovery Time (t_{fr})					
(Note 4)	I_F = 500mA, $t_r \leq$ 15ns, V_{fr} = 1.8V, R_S = 50Ω			15	ns
Reverse Recovery Time (t_{rr})					
(Note 4)	$I_F = I_R$ = 200mA, i_{rr} = 20mA, R_L = 100Ω			5	ns

Note 4. The parameters, although guaranteed, are not 100% tested in production.

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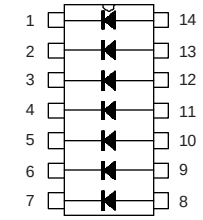
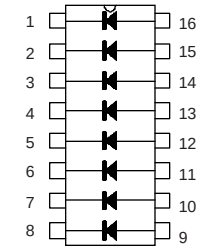
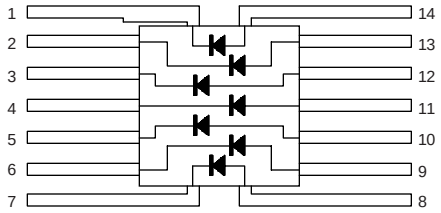
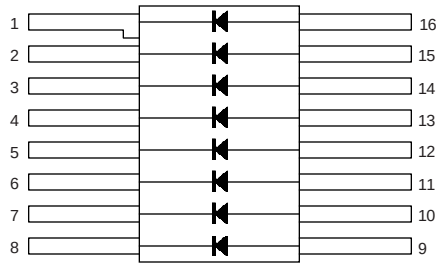
CONNECTION DIAGRAMS & ORDERING INFORMATION (continued)

Package	Part No.	Ambient Temperature Range	Connection Diagram
14-PIN CERAMIC DIP J - PACKAGE	SG6511J (1N6511)	-55°C to 150°C	
16-PIN CERAMIC DIP J - PACKAGE	SG6101J (1N6101)	-55°C to 150°C	
14-PIN CERAMIC FLATPACK F - PACKAGE	SG6100F (1N6100)	-55°C to 150°C	
16-PIN CERAMIC FLATPACK F - PACKAGE	SG6510F (1N6510)	-55°C to 150°C	

Note 1. Consult factory for other packages available.
2. All packages are viewed from the top.
3. Consult factory for JAN, JANTX, JANTXV product availability.

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