

SCHOTTKY DIODE ARRAY

SDA32

ISSUE 2 – JANUARY 1998

DEVICE DESCRIPTION

The SDA32 Schottky Barrier Diode Array is designed to reduce reflection noise on high speed parallel data lines.

The device helps suppress transients caused by transmission line reflections, cross talk and switching noise.

The SDA32 consists of an array of 16 high speed Schottky diode pairs suitable for clamping to Vcc and / or Gnd.

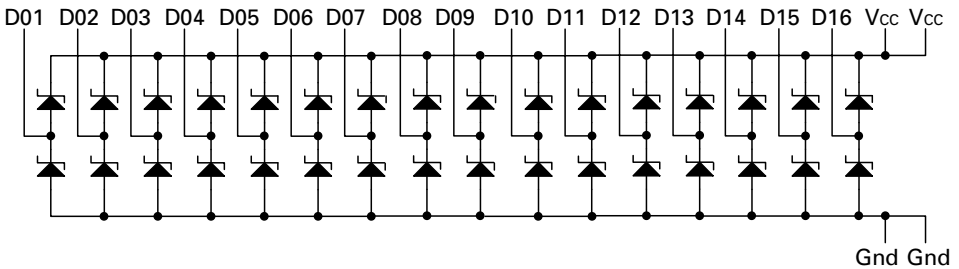
FEATURES

- Reduced reflection noise
- Repetitive peak forward current - 200mA
- 16 diode pairs
- SO20 and DIL20 packages

APPLICATIONS

- Termination of data lines
- Protection of memory devices

SCHEMATIC DIAGRAM



SDA32

ABSOLUTE MAXIMUM RATING (at $T_{amb}=25^{\circ}\text{C}$ unless otherwise stated)*

| | |
|---|------------------------------|
| Steady-State Reverse Voltage | 7V |
| Continuous Forward Current | 50mA(1) 170mA(2) |
| Repetitive Peak Forward Current (3) | 200mA(1) 1A(2) |
| Continuous Total Power Dissipation (4) (SO and DIL packages) | 625mW |
| Operating Free-air Temperature Range | 0 to 70°C |
| Storage Temperature Range | -65 to 150°C |

* Stresses beyond those listed above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated under the recommended operating conditions is not implied. Exposure to absolute maximum rated conditions for extended periods of time may affect device reliability.

Note:

- (1) Any D terminal from Gnd or to V_{CC}
- (2) Total through all Gnd or V_{CC} terminals
- (3) These values apply for $t_W=100\mu\text{s}$, duty cycle $\leq 20\%$
- (4) For operation above 25°C , derate linearly at the rate of $6.25\text{mW}/^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS (at $T_{amb}=25^{\circ}\text{C}$ unless otherwise stated)

Single-Diode Operation

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITIONS |
|------------------------|----------|------|------|------|---------------|-----------------------------------|
| Static Forward Voltage | V_F | | 0.85 | 1.05 | V | To V_{CC} , $I_F=18\text{mA}$ |
| | | | 1.05 | 1.3 | V | To V_{CC} , $I_F=50\text{mA}$ |
| | | | 0.75 | 0.95 | V | From Gnd, $I_F=18\text{mA}$ |
| | | | 0.95 | 1.2 | V | From Gnd, $I_F=50\text{mA}$ |
| Peak Forward Voltage | V_{FM} | | 1.45 | | V | $I_F=200\text{mA}$ |
| Static Reverse Current | I_R | | | 6 | μA | To V_{CC} , $V_R=7\text{V}$ |
| | | | | 5 | μA | From Gnd, $V_R=7\text{V}$ |
| Total Capacitance | C_T | | 6 | 16 | pF | $V_R=0$, $f=1\text{MHz}$ |
| | | | 4 | 6 | pF | $V_R=2\text{V}$, $f=1\text{MHz}$ |

Note:

(5) Test conditions and limits apply separately to each of the diodes. The diodes not under test are open circuited during the measurement of these characteristics.

Multiple-Diode Operation

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITIONS |
|----------------------------|--------|------|------|------|------|------------------------------|
| Internal Crosstalk Current | I_X | | 0.8 | 2 | mA | Total $I_F=1\text{A}$ (6) |
| | | | 0.02 | 0.2 | mA | Total $I_F=198\text{mA}$ (6) |

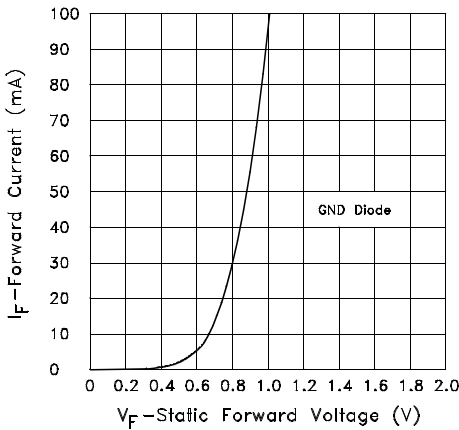
Note:

(6) I_X is measured under the following conditions with one diode static, and all others switching. Switching diodes: $t_W=100\mu\text{s}$, duty cycle=0.2; static diode; $V_R=5\text{V}$. The static diode input current is the internal crosstalk current I_X .

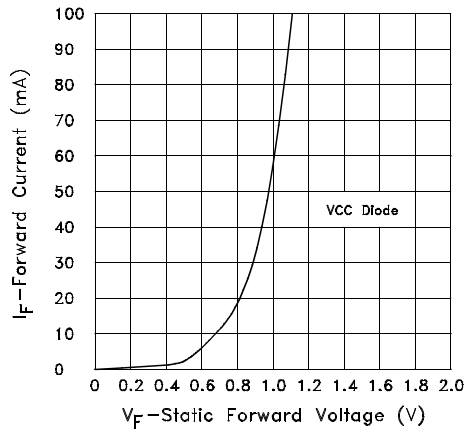
SWITCHING CHARACTERISTICS (over operating free-air temperature range)

| PARAMETER | SYMBOL | MIN. | TYP. | MAX. | UNIT | CONDITIONS |
|-----------------------|----------|------|------|------|------|--|
| Reverse Recovery Time | t_{rr} | | 8 | 16 | ns | $I_F=10\text{mA}$ $I_{R(REC)}=1\text{mA}$ $I_{RM(REC)}=10\text{mA}$ $R_L=100\Omega$ |

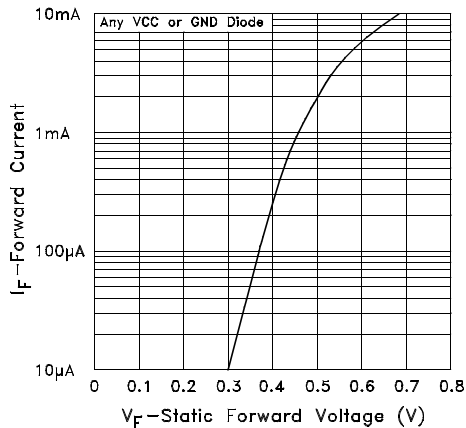
TYPICAL CHARACTERISTICS



I_F vs V_F Characteristic



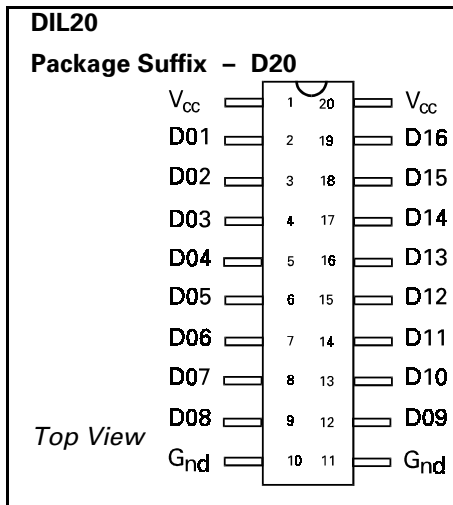
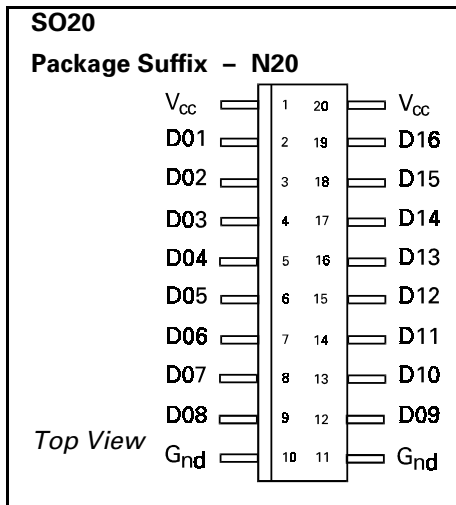
I_F vs V_F Characteristic



Low I_F vs V_F Characteristic

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CONNECTION DIAGRAMS



ORDERING INFORMATION

| Part Number | Package | Part Mark |
|-------------|---------|-----------|
| SDA32N20 | SO20 | SDA32 |
| SDA32D20 | DIL20 | SDA32 |