3.5-Inch Solid-State SCSI Flash Drive with Capacities from 128MB to 8GB

1.0 DESCRIPTION

The SimpleTech SCSI drive is a high-performance, solid-state SCSI-2 device packaged in a 3.5-inch form factor with a 50-pin connector. While the media is different (the SimpleTech drive stores data in a flash memory array instead of magnetic or optical disks), the interface and form factor allow for drop-in replacement or upgrade to legacy systems.

Since there are no moving parts, the SimpleTech SCSI-2 flash drive is highly resistant to shock, vibration, temperature and altitude extremes. This virtually eliminates the need for shock mounting, fans, and other mechanical sub-assemblies that can adversely affect system reliability and availability.

The solid-state drive also provides faster random access to data than conventional disk drives. Since the data is stored in memory chips, the drive has no moving parts, thus seek time and latency associated with rotating media are virtually eliminated.

SimpleTech flash drives are designed for and excel in the following high-availability applications:

Telecommunications and Internetworking
- Routers and Switches
- DSLAMs
- Blade Servers
- Computer Telephony Systems
- Alternatives to RAID Systems

Military/COTS
- Avionics and other On-Board Computing
- Telemetry Systems
- Field Communications Devices

Other
- Industrial Workstations
- Medical Equipment
- Test and Measurement Systems
- Mobile Computers

1.1 Features

- Capacities from 128MB to 8GB
- Standard Drive Form Factor of 3.5-Inch
- 50-Pin Non-Shielded Low Density Connector
- SCSI-2 Low Voltage Differential (LVD) or Single-Ended (SE) Interface
- Jumper Selected Termination if Drive is at End of SCSI Chain
- ID Jumpers Allows SCSI ID of 0 to 7
- +5V DC using Standard PC Power Supply Cables
- Available in Commercial, Extended, and Industrial Operating Temperature Ranges

1.2 Ordering Information

Part Number* .... **Capacity**
- SLFLDSN-128C(E/I) 128MB
- SLFLDSN-256C(E/I) 256MB
- SLFLDSN-512C(E/I) 512MB
- SLFLDSN-640C(E/I) 640MB
- SLFLDSN-768C(E/I) 768MB
- SLFLDSN-1GBC(E/I) .... 1 GB
- SLFLDSN-2GBC(E/I) 2GB
- SLFLDSN-3GBC(E/I) 3GB
- SLFLDSN-4GBC(E/I) 4GB
- SLFLDSN-8GBD(E/I)** 8GB

* Part numbers with the "E" suffix have an Extended Operating Temperature Range; part numbers with the "I" suffix have an Industrial Operating Temperature Range; and, part numbers without the "E" or "I" suffix have a Commercial Operating Temperature Range.

** Coming Soon.

1.3 Specifications Overview

- Operating Temperature Range
  - Commercial .... 0°C to +70°C
  - Extended .... -25°C to +85°C
  - Industrial .... -40°C to +85°C
- Form Factor 3.5-inch
  - Height 0.625-inch
  - Width 4.000-inch
  - Depth 5.427-inch
  - Weight .... 18 oz (510 g)
- SCSI-2 Interface .... 50-Pin SE or LVD
- Formatted Capacity .... Up To 4GB
- MTBF .... TBD

- Access Time .... < 120 μs
- SCSI-2 Burst Data Transfer Rates .... 10 MB/s
- Voltage Requirements .... +5V DC
- Data Retention System .... Flash Memory Array
- Read Rate .... 5.4 MB/s
- Write Rate .... 4.6 MB/s
- Standby Current (Typical) .... 280 mA
- Read Current (Typical) .... 630 mA
- Write Current (Typical) .... 750 mA
- Shock .... TBD
- Vibration .... TBD

1.4 Package Dimensions

**Screw specifications for mounting:
Tap 6-32 with intrusion 0.150 in max.
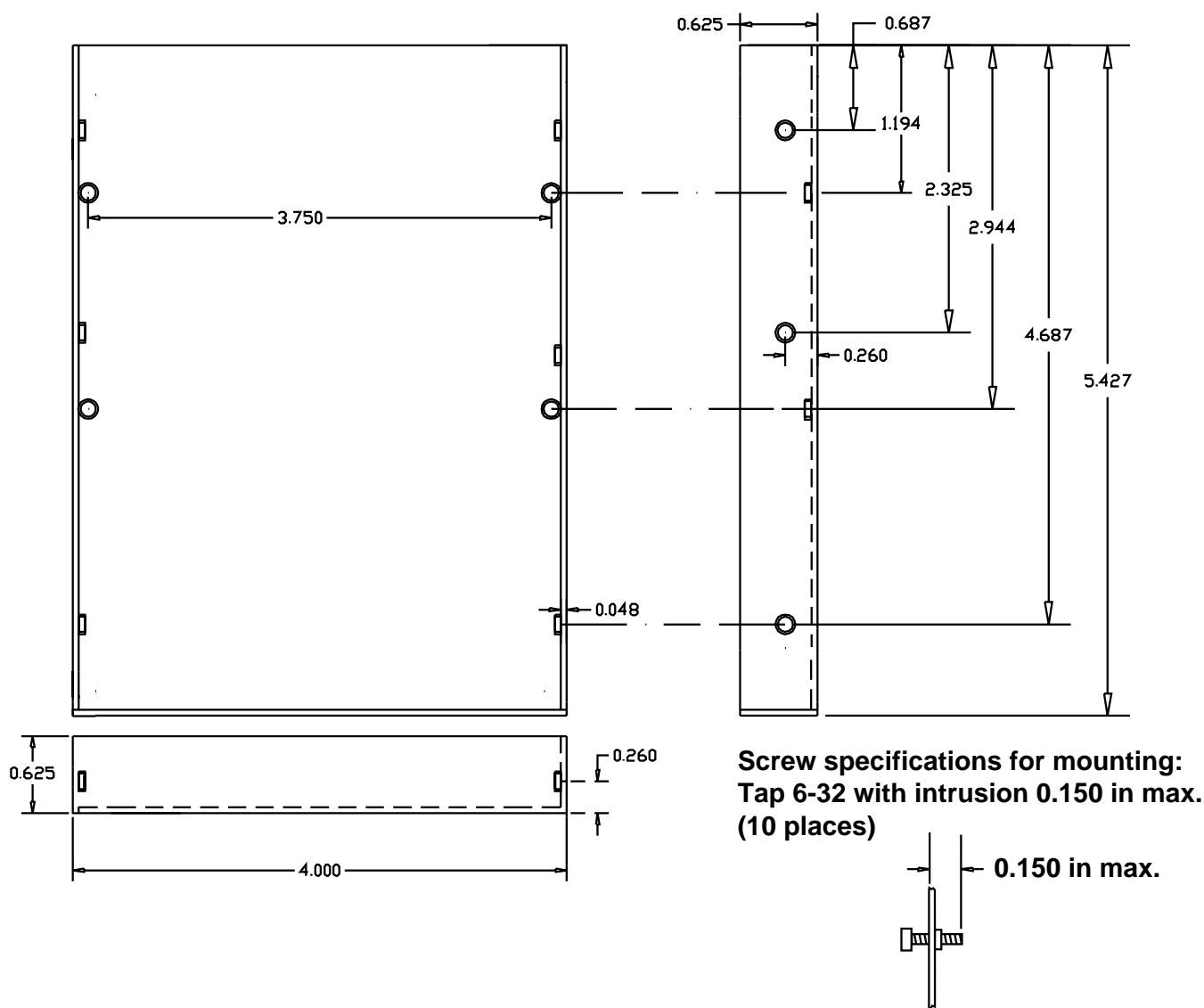(10 places)**

0.150 in max.

Figrue 1.4 Package Dimensions

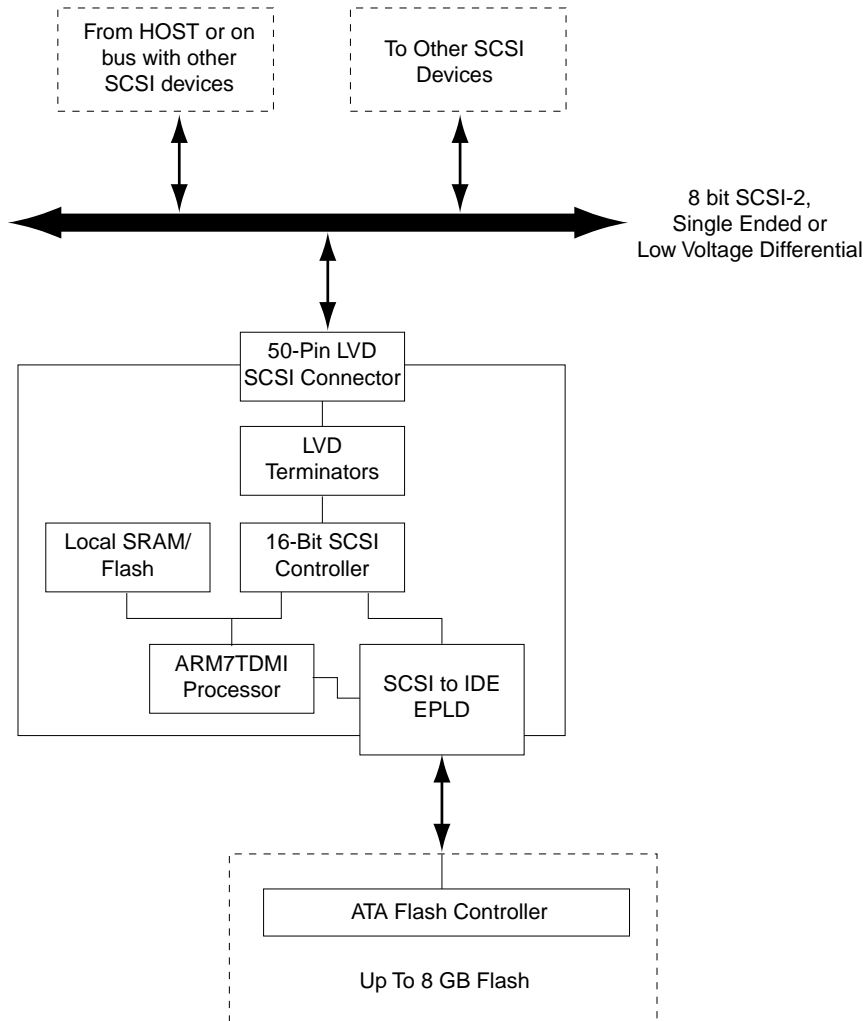## 1.5 SCSI Flash Drive Block Diagram

Figrue 1.5 SCSI Flash Drive Block Diagram

2.0 SMALL COMPUTER SYSTEMS INTERFACE (SCSI)

The SimpleTech Flash SCSI Drive Adapter connects to an initiator via the SCSI interface. The SCSI protocol implemented in the drive conforms to the ANSI X3.131 - 1986 specification, the Common Command Set (CCS) (Revision 4B).

2.1 SE- A cable (Non-Shielded) 50 Pin SCSI Connector Pin Assignment

Table 2.1 SE- A cable (Non-Shielded) 50 Pin SCSI Connector Pin Assignment

Pin Number	Pin Name	Pin Number	Pin Name
1	DB+(0)	2	DB-(0)
3	DB+(1)	4	DB-(1)
5	DB+(2)	6	DB-(2)
7	DB+(3)	8	DB-(3)
9	DB+(4)	10	DB-(4)
11	DB+(5)	12	DB-(5)
13	DB+(6)	14	DB-(6)
15	DB+(7)	16	DB-(7)
17	DP+(0)	18	DP-(0)
19	GND	20	GND
21	DIFFSNS	22	GND
23	NC	24	NC
25	TERMPWR1	26	TERMPWR2
27	GND	28	NC
29	GND	30	GND
31	ATN+	32	ATN-
33	GND	34	GND
35	BSY+	36	BSY-
37	ACK+	38	ACK-
39	RST+	40	RST-
41	MSG+	42	MSG-
43	SEL+	44	SEL-
45	C/D+	46	C/D-
47	REQ+	48	REQ-
49	I/O+	50	I/O-

2.2 Signal Descriptions

BSY+/- (Busy). An OR-tied signal, asserted by the drive, that indicates the bus is being used. It is asserted by the arbitrator during the ARBITRATION phase, and by the initiator and drive during the RESELECTION phase.

SEL+/- (Select). When this signal is asserted by the initiator, along with the drive SCSI ID bit (0 through 7), it causes the selection of the appropriate drive. The -SEL line must be negated by the initiator after the drive asserts the BUSY line in response to a proper selection. It is asserted by the arbitrator in the ARBITRATION phase (initiator or drive), and by the drive during the RESELECTION phase.

C/D+/- (Control/Data). A signal driven by the drive that indicates whether CONTROL or DATA information is on the data bus. Assertion indicates CONTROL.

I/O+/- (Input/Output). A signal driven by the drive that controls the direction of data movement on the data bus. Assertion indicates INPUT to the initiator.

MSG+/- (Message). A signal driven by the drive during the MESSAGE phase.

REQ+/- (Request). A signal driven by the drive that indicates a request for a data transfer.

ACK+/- (Acknowledge). A signal driven by the initiator to indicate acknowledgment for a data transfer.

ATN+/- (Attention). A signal driven by the initiator to indicate the ATTENTION condition, which indicates an initiator request to enter the MESSAGE OUT phase.

RST+/- (RESET). An OR-tied signal that indicates the RESET condition. Assertion by the initiator causes the drive to perform a POWER ON RESET sequence. During this sequence it executes a self-test (self-configuration) and then returns to the IDLE condition. The -RST pulse should be at least 25 microseconds wide to ensure proper reset of the drive microprocessor.

DB+ [0..7] (Data Bit [0..7]). The 8-bit bidirectional data lines are used to transfer data to and from the initiator. Bit 7 is the most significant bit, and bits 0 through 7 are also used as SCSI ID bits during the ARBITRATION, SELECTION and RESELECTION phases.

DP+/- [0] (Data Parity bit [0]). Data parity is odd. Data parity bit 0 represents odd parity for the low byte of the SCSI data bus DB[0..7].

DIFFSNS. This signal is used to sense the bus voltage. If the device is connected to a Single Ended Bus (SE Bus), then the SCSI bus driver reconfigures to support the SE Bus. If the device is connected to a Low Voltage Differential Bus (LVD Bus), then the SCSI bus driver changes to a LVD driver. If the device is connected to a High Voltage Differential Bus (HVD Bus), the device isolates itself.

TERMPWR. This signal supplies bus termination power if the drive is at the end of the SCSI chain. Termination power is jumper selectable.