

## 3.5" IDE Flash Drive - I35CF

### GENERAL DESCRIPTION

- The Adtron I35CF Flash IDE drives offer capacities from 64MB to 2GB in a standard 3.5" IDE disk drive form factor.
- The I35CF offers integrated Master and Slave storage with independent capacities for each.

### APPLICATIONS

- Telecommunication switches
- Network routers
- Information kiosks
- Display systems
- Instrumentation
- Factory automation
- Robotics

### FEATURES

- Standard 3.5" IDE drive form factor
- Standard IDE 40-pin connector and interface
- No software drivers required for full IDE disk emulation
- Configures as a single Master or Slave IDE device, or combination Master and Slave IDE device
- Solid-state reliability to replace hard disks in applications where extreme temperature, shock and vibration prohibit use of traditional rotating media
- Standard 512 byte sectors with reliability ensured by ECC defect management similar to IDE hard disk drives
- Lower power, no noise, and lower profile compared to traditional rotating media
- Available in commercial (0 to +70°C), enhanced (-25 to +75 °C), and industrial (-40 to +85°C) operating temperature ranges
- Standard Warranty: 3 years



**PIN CONFIGURATION**
**Table 1: 40-Pin IDE Connector Pinout**

Pin #	Signal	Signal	Pin #
1	-RESET	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	[KEY]
21	DMARQ	22	GND
23	-IOWR	24	GND
25	-IORD	26	GND
27	-IORDY	28	CSEL
29	-DMACK	30	GND
31	INTRQ	32	-IOIS16
33	A1	34	-PDIAG
35	A0	36	A2
37	-CS0	38	-CS1
39	-DASP	40	GND

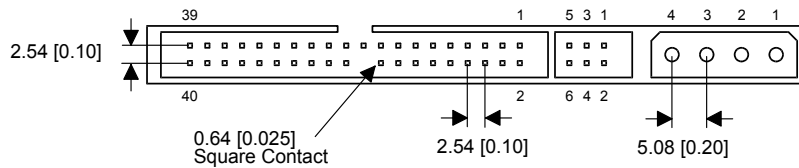
"-" indicates signal is active low.

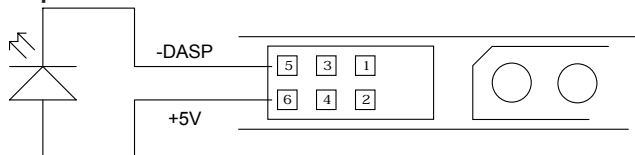
**Table 2: Power Connector Pinout**

Pin #	Description
1	Not Connected
2	Ground
3	Ground
4	+5V

**Table 3: IDE Jumper Pinout**

Pin #	Signal
1	IDE CSEL
2	CARD #2 M/S
3	CARD #1 M/S
4	GND
5	-DASP
6	RES TO +5V

**Figure 1: I35CF PINOUT**

**Figure 2: Jumper Descriptions**

**Figure 3: Remote LED Description**


**IDE SIGNAL DESCRIPTION**

Table 4: IDE Signals

Signal Name	Dir	Pin	Description
A2-A0	I	33, 35, 36	A2-A0 are used to select the one of eight registers in the Task File.
-CS0, -CS1	I	37, 38	-CS0 is the chip select for the task file registers while -CS1 is used to select the Alternate Status Register and the Device Control Register.
CSEL	I	28	This internally pulled-up signal is used to configure this device as a Master or a Slave. When the pin is grounded, this device is configured as a Master. When the pin is open, this device is configured as a Slave.
D15-D00	I/O	18, 16, 14, 12, 10, 8, 6, 4, 3, 5, 7, 9, 11, 13, 15, 17	All Task File operations occur in byte mode on the low order bus D00-D07 while all data transfers are 16 bit using D00-D15.
-DASP	I/O	39	This input/output is the Disk Active/Slave Present signal in the Master/Slave handshake protocol.
-DMARQ	O	21	DMA transfer request.
-DMACK	I	29	DMA request acknowledge.
-IOWR	I	23	The I/O Write strobe pulse is used to clock I/O data on the Card Data bus into the Drive controller registers when the Drive is configured to use the I/O interface. The clocking will occur on the negative to positive edge of the signal (trailing edge).
-IORD	I	25	This is an I/O Read strobe generated by the host. This signal gates I/O data onto the bus from the Drive.
-IORDY	O	27	This output signal may be used as IORDY.
-IOIS16	O	32	This output signal is asserted low when this device is expecting a word data transfer cycle.
-PDIAG	I/O	34	This input/output is the Pass Diagnostic signal in the Master/Slave handshake protocol.
-RESET	I	1	This input pin is the active low hardware reset from the host.
GND	--	2, 19, 22, 24, 26, 30, 40	Ground
Key	--	20	This pin is keyed so that the drive can only be connected with the cable pin 1 to drive pin 1.

## JUMPER DESCRIPTION

Table 5

Signal Name	Dir	Pin	Description
IDE CSEL	I	1	Cable select signal from the IDE host controller
CARD #2 M/S	I	2	Card #2 M/S signal
CARD #1 M/S	I	3	Card #1 M/S signal
GND	-	4	Ground
-DASP	O	5	Drive Active/Slave Present - active low signal indicates activity
RES TO +5V	-	6	180Ω resistor to +5V. Used with -DASP to connect an external LED

## ABSOLUTE MAXIMUM RATINGS

Table 6

Parameter	Symbol	Value	Unit	Note
Vcc	Vcc	-0.3 to +6.7	V	
All input/output voltages	Vin, Vout	-0.3 to Vcc+0.3	V	Vin, Vout min= -2.0V for pulse width ≤20ns
Storage temperature range	Tstg	-50 to +90	°C	

## RECOMMENDED OPERATING CONDITIONS

Table 7

Parameter	Symbol	Min	Typ	Max	Unit
Vcc	Vcc	4.5	5	5.5	V
Commercial operating temperature	Ta	0	25	60	°C
Enhanced operating temperature	Ta	-25	—	75	°C
Industrial operating temperature	Ta	-40	—	85	°C

## ENVIRONMENTAL

Table 8

Parameter	Operating Condition
Humidity	85% 85°C relative humidity, noncondensing
Altitude (Note 1)	21,336m (70,000ft.)
Operating Shock (Note 2)	20G @ 11ms
Operating Vibration-random (Note 3)	11G (15-2000Hz)

Note 1: Testing in accordance with MIL-STD-810F, Method 500.4

Note 2: Testing in accordance with MIL-STD-810F, Method 516.5

Note 3: Testing in accordance with MIL-STD-810F, Method 514 (Category: 12. Jet and 14. Helicopter)

Note 4: Device under test was 192MB.

**POWER REQUIREMENTS** (Note 4)

Table 9

Parameter	Value	Unit
Standby current	< 0.001	A
Read current (sustained)	0.045 (max)	A
Write current (sustained)	0.075 (max)	A

**PHYSICAL CHARACTERISTICS**

Table 10

Parameter	Value
Height	12.7mm [0.500"] max
Width	101.5mm [3.995"]
Depth	146.1mm [5.750"]
Weight (Note 4)	154g [5.43 oz.]

**PERFORMANCE**

Table 11

Item	Performance
Start up times (Reset to Ready)	100 ms (max)
Start up times (Sleep to Idle)	2 ms (max)
Data Transfer Rate to/from Host	Up to 8 MBytes/s (burst)
Controller overhead (Command to DRQ)	2 ms (max)
Data Transfer Cycle End to Ready (Sector Write)	2 ms (typical)

**RELIABILITY**

Table 12

Item	Value
Data Reliability	<1 non-recoverable error in 10 <sup>14</sup> bits read
Write Endurance Per Sector	Minimum: 300,000 write/erase cycles Typical: >1,000,000 write/erase cycles
Read Endurance	Unlimited
Data Retention	10 years @ 25°C

**CAPACITANCE (TA = 25°C, F = 1MHZ)**

Table 13

Parameter	Symbol	Min	Typ	Max	Unit	Test Conditions
Input Capacitance	Cin	—	—	15	pF	(Vin=0V)
Output Capacitance	Cout	—	—	15	pF	(Vout=0V)

Note 1: Testing in accordance with MIL-STD-810F, Method 500.4

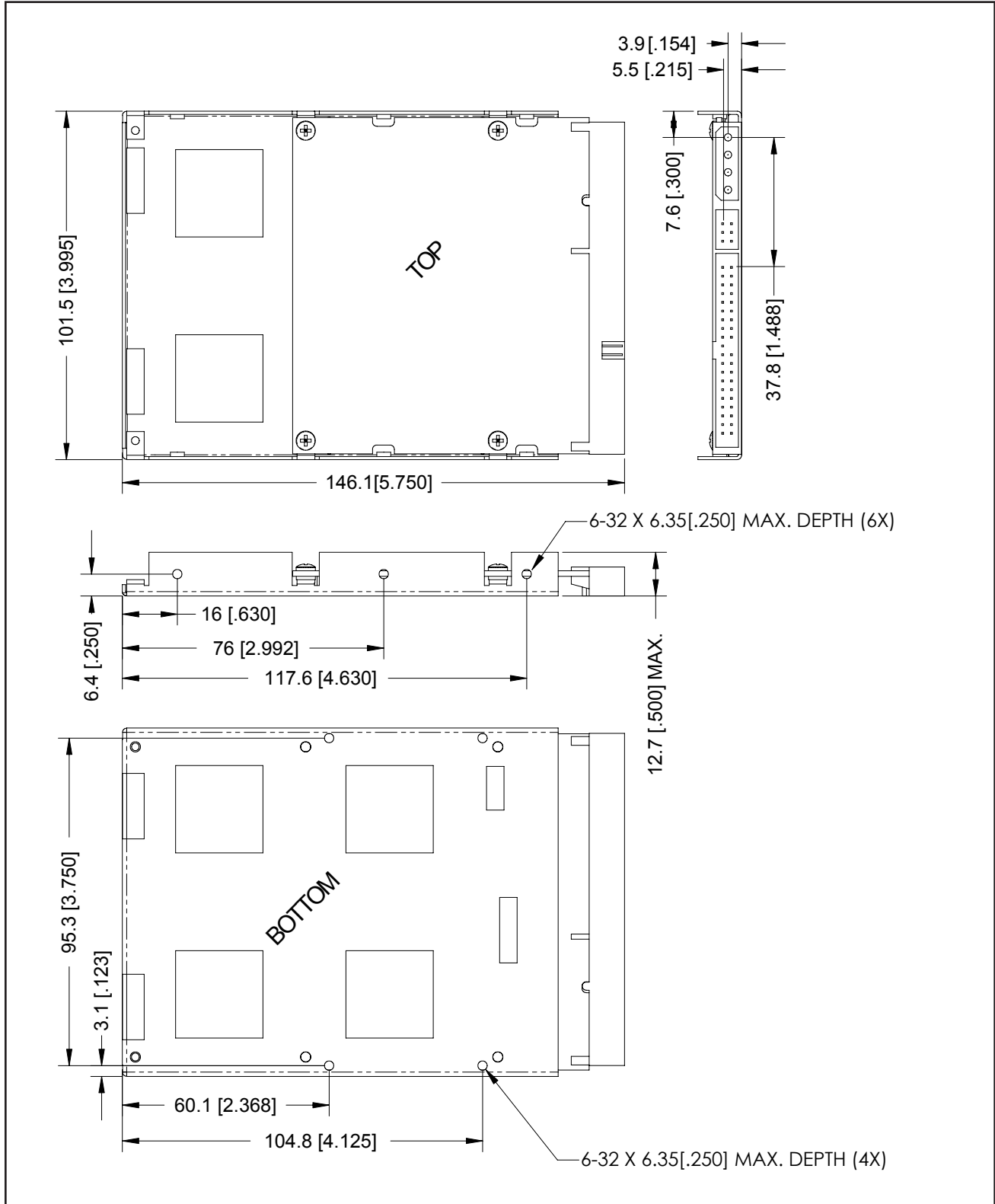
Note 2: Testing in accordance with MIL-STD-810F, Method 516.5

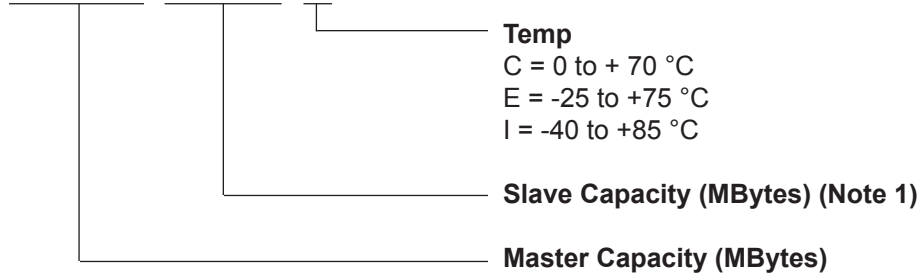
Note 3: Testing in accordance with MIL-STD-810F, Method 514 (Category: 12. Jet and 14. Helicopter)

Note 4: Device under test was 192MB.

### PACKAGE DIMENSIONS

Refer to the figure below for enclosure and mounting dimensions of the I35CF 3.5" Flash Drive. Dimensions shown in mm[inches].



**ORDERING INFORMATION**
**I35CF-Mxxxx Syyyy T 01**


Note 1: For slave configuration (special order), contact Adtron Sales.

<b>Model Number</b>	<b>Master Capacity</b>	<b>Write / Read Rates (MBytes/sec)</b>
I35CF-M64SXC01	64MB	1.5 / 1.5
I35CF-M96SXC01	96MB	1.5 / 1.5
I35CF-M128SXC01	128MB	1.5 / 1.5
I35CF-M160SXC01	160MB	1.5 / 1.5
I35CF-M192SXC01	192MB	3.0 / 1.5
I35CF-M224SXC01	224MB	3.0 / 1.5
I35CF-M256SXC01	256MB	3.0 / 1.5
I35CF-M320SXC01	320MB	3.0 / 1.5
I35CF-M448SXC01	448MB	3.0 / 1.5
I35CF-M512SXC01	512MB	3.0 / 1.5

Capacities available up to 2GB. Contact Adtron Sales at 602-735-0300.

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