

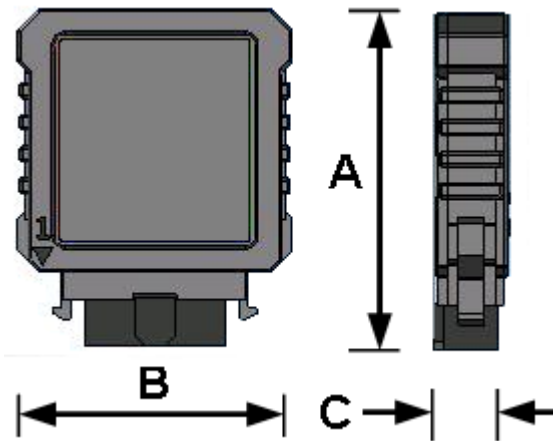
# TS512M~4GUFM-V

512M~4GB USB Flash Module(Vertical)

## Description

Transcend USB Flash Module, available in memory capacities from 512MB – 4GB. A USB Flash Module is ideal for use in the harsh environments where Industrial PCs, Set-Top Boxes and other systems are used.

## Outline



## Features

- RoHS compliant products
- Hi-Speed USB 2.0 compliant; backward compatible with USB 1.1
- True Plug and Play functionality
- Fully compatible with devices and Operating Systems (OS) that support the USB standard
- 8032 8-bit Micro-controller with enhanced feature
  - 4 clocks per instruction cycle
  - Embedded RAM and ROM
- Leading 0.18um CMOS technology, 1.8 Volt low power core operation
- Lower Power Consumption
- Fully compliant with open industry standards
- Write protection switch

## System Requirement

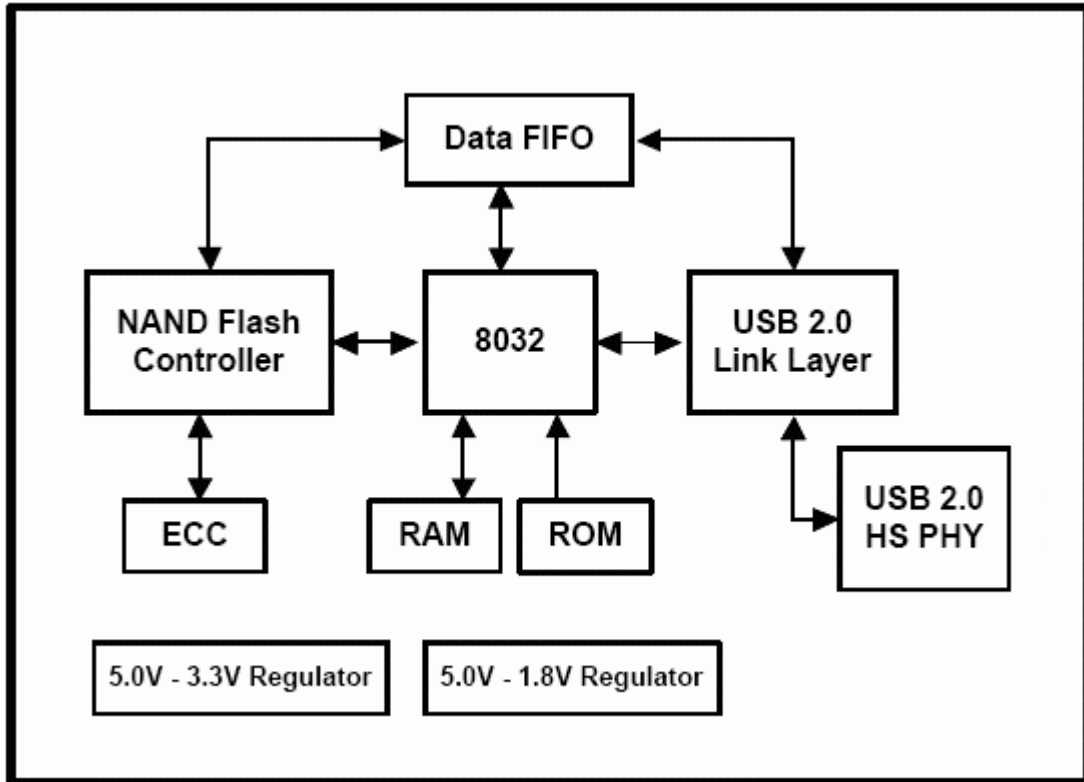
- Hardware: An available 10-pin USB port (pitch = 2.54mm) on motherboard
- Operating System: Windows® 98SE, Windows® Me, Windows® 2000, Windows® XP, and Linux™ Kernel 2.4 or later

## Dimensions

Side	Millimeters	Inches
A	31.80 ± 1.00	1.25 ± 0.04
B	26.00 ± 1.00	1.02 ± 0.04
C	7.00 ± 1.00	0.28 ± 0.04

## Block Diagram

USB Flash Drive controller

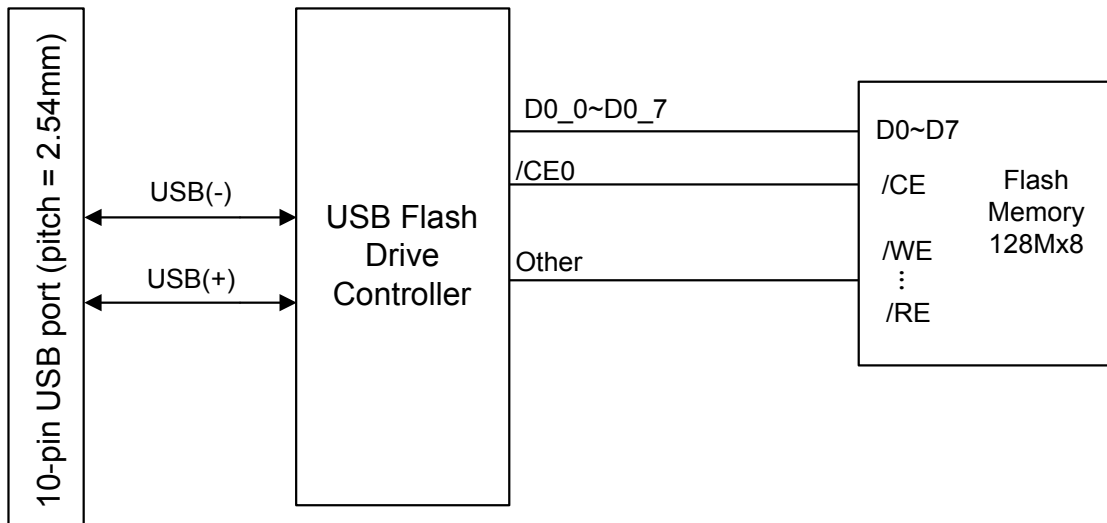


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## Block Diagram

### Flash Memory



# TS512M~4GUFM-V

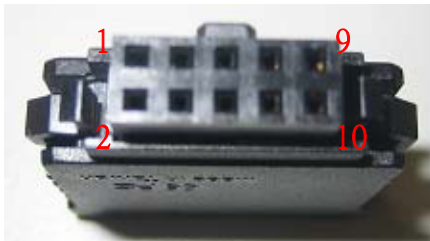
512M~4GB USB Flash Module(Vertical)

## Pinouts

Pin No.	Pin Name
01	VCC
02	NC
03	USB(-)
04	NC
05	USB(+)
06	NC
07	VSS
08	NC
09	NC
10	NC

## Pin Identification

Symbol	Function
USB(-)	USB differential signal:
USB(+)	The pairs are used to transmit Data/Address/Command
VSS	Ground
VCC	USB power input
NC	No connection



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## Specifications

Environment		
Capacity		512MB~4GB
Temperature	Operating	0 °C to 70 °C
	Non-Operating	-40 °C to 85 °C
System Performance	Single-Channel Read	12 MB/sec (Max.)
	Single-Channel Write	8 MB/sec (Max.)
Power Requirement	Voltage	DC 5V ± 10%
Data Retention		10 years
Connector Durability		10,000 times
Erase Cycles		>100,000 times
Certificates		CE, FCC, BSMI

### DC Characteristics

Symbol	Parameter	Min.	Max.	Unit
$V_{IH\_TTL}$	TTL Input High Voltage	2	$0.3+V_{CC3}$	V
$V_{IL\_TTL}$	TTL Input Low Voltage	-0.3	0.8	V
$V_{OH\_TTL}$	TTL Output High Voltage	$0.9V_{CC3}$		V
$V_{OL\_TTL}$	TTL Output Low Voltage		0.45	V
$I_{OH\_TTL}$	TTL Output High Current	-4		mA
$I_{OL\_TTL}$	TTL Output Low Current		4	mA
$V_{IH\_USB}$	USB Input High Voltage for Low-/Full-Speed	2.0		V
$V_{IL\_USB}$	USB Input Low Voltage for Low-/Full-Speed		0.8	V
$V_{I\_USB\_DIFF}$	Differential Input Sensitivity for Low-/Full-Speed	TBD		V
$V_{I\_USB\_CM}$	Differential Common Mode Input Range for Low-/Full-Speed	0.8	2.5	V
$V_{I\_USB\_HSSQ}$	USB High-Speed squelch Input Detection Threshold	0.1	0.15	V
$V_{I\_USB\_HSDSC}$	USB High-Speed disconnect Input Detection Threshold	0.525	0.625	V
$V_{I\_USB\_HSCM}$	USB High-Speed Signaling	-0.05	0.5	V
$V_{OH\_USB}$	USB Output High Voltage for Low-/Full-Speed	2.8	3.6	V
$V_{OL\_USB}$	USB Output Low Voltage for Low-/Full-Speed		0.3	V
$V_{OH\_USB\_HS}$	USB Output High Voltage for High-Speed	0.36	0.44	V
$V_{OL\_USB\_HS}$	USB Output Low Voltage for High-Speed	-0.01	0.01	V
$I_{OH\_USB}$	USB Output High Current for Low-/Full-Speed	-10		mA
$I_{OL\_USB}$	USB Output Low Current for Low-/Full-Speed		10	mA
$I_{OH\_USB\_HS}$	USB Output High Current for High-Speed	-40		mA
$I_{OL\_USB\_HS}$	USB Output Low Current for High-Speed		40	mA

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## AC Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit
TP <sub>ILH</sub>	Input Rising Delay	0.61 (0.8pF)	0.61 (2.4pF)	0.61 (4.8pF)	ns
TP <sub>IHL</sub>	Input Falling Delay	0.61 (0.8pF)	0.61 (2.4pF)	0.61 (4.8pF)	ns
TP <sub>OLH</sub>	Output Rising Delay	0.61 (10pF)	0.61 (30pF)	0.61 (60pF)	ns
TP <sub>OHL</sub>	Output Falling Delay	0.61 (10pF)	0.61 (30pF)	0.61 (60pF)	ns
TR	Output Rising Delay	0.61 (10pF)	0.61 (30pF)	0.61 (60pF)	ns
TF	Output Falling Delay	0.61 (10pF)	0.61 (30pF)	0.61 (60pF)	ns

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