

TENTATIVE TOSHIBA MOS DIGITAL INTEGRATED CIRCUIT SILICON GATE MOS

128-MBIT, 256-MBIT CMOS NAND E²PROM with Flash Controller

Flash Disk with Protection and Security-Enabling Features

DESCRIPTION

TC58C128A and TC58C256A is a member of DiskOnChipTM flash disk products, which contains monolithic 128-Mbit and 256-Mbit NAND E²PROM and flash controller. It is fully compatible with DiskOnChipTM Millennium Plus (MD2811-D16-V3Q18, MD3831-D16-V3Q18, MD2811-D32-V3 MD3831-D32-V3) of M-Systems

FEATURES

- TC58C128A/TC58C256A require TrueFFSTM software which is supported by M-Systems.
- TrueFFSTM technology for full hard disk emulation
- 16MByte(TC58C128A)/32MByte (TC58C256A) with device cascading option for up to 64MByte/128MByte
- NAND-based flash technology which enables high density and small die size
- Programmable eXecute In Place (XIP) Boot Block (1KB)
- Asynchronous Boot mode to boot CPUs that wake up in burst mode/ (TC58C128A only)
- Data integrity with Reed-Solomon-based Error Detection Code/Error Correction Code (EDC/ECC)
- Configurable interface: simple SRAM-like or multiplexed A/D interface (TC58C128A only)

- Low-voltage power supply
V_{cc}=2.7V to 3.6V
- Dual voltage power supply support
V_{ccq}=2.7V to 3.6V or
V_{ccq}=1.65V to 1.95V (TC58C128A only)
- Deep Power-Down mode for reduced power consumption
Current (Typical):
□ Active: 25mA
□ Deep Power-Down: 10μA
- Package
TSOP148-P-1220-0.50: TC58C128AFT/AFTI,
TC58C256AFT/AFTI
P-TFBGA69-0912A3(A): TC58C1287AXB,
TC58C256AXB

Performance

	32MByte (TC58C256A)	16MByte (TC58C128A)
Burst read/write	20 MB/sec	13.3 MB/sec
Sustained read	3 MB/sec	1.4 MB/sec
Sustained write	1.5 MB/sec	0.55 MB/sec

Note: DiskOnChipTM and TrueFFSTM are trademarks of M-Systems

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Protection and Security-Enabling Features

- Unique Identification (UID) number
- User-configurable One Time Programmable (OTP) area
- Two configurable write and read-protected partitions for data and boot code
- Two levels of hardware data and code protection:
 - Protection Key and LOCK# signal
 - Protected Bad Block Table

Boot Capability

- Programmable Boot Block (1KByte) with XIP capability to replace boot ROM
- Download Engine (DE) for automatic download of boot code from Programmable Boot Block
- Boot capabilities:
 - ☐ CPU initialization
 - ☐ Platform initialization
 - ☐ OS boot

Applications

- Internet set-top boxes, interactive TVs, web browsers
- WBT, thin clients, network computers
- PDAs and smart handsets
- Embedded systems
- Routers, switches, networking equipment
- Point of sale (POS) terminals, industrial PCs

TrueFFS™ Software

- Full hard-disk read/write emulation for transparent file system management
- Identical software for all DiskOnChip™ capacities
- M-Systems provide patented methods to extend flash lifetime, including:
 - ☐ Dynamic virtual mapping
 - ☐ Dynamic and static wear-leveling
- TrueFFS™ is supporting for major OS environments, including:
 - ☐ Windows CE
 - ☐ Linux
 - ☐ VxWorks
 - ☐ Windows Embedded NT 4.0
 - ☐ BE
 - ☐ PSOS+
 - ☐ QNX
 - ☐ Symbian
 - ☐ LynxOS
 - ☐ ATI Nucleus
 - ☐ DOS
- M-Systems support for OS-less environments
- 8KB memory window

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