

TDA19989BET

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Datasheet

Datasheet confidential

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150 MHz pixel rate HDMI 1.4 transmitter with 3 x 8-bit video inputs and CEC support

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General description [Hide](#)

TDA19989BET is a very low power and very small size High-Definition Multimedia Interface (HDMI) v. 1.4 transmitter. It is backward compatible DVI 1.0 and can be connected to any DVI 1.0 and HDMI sink.

This device is primarily intended for mobile applications like Digital Video Camera (DVC), Digital Still Camera (DSC), Portable Multimedia Player (PMP), Mobile Phone and Ultra-Mobile Personal Computer (UM PC) where size and very low power are mandatory for battery autonomy. It allows mixing 3 x 8bit RGB or YCbCr video stream with a pixel rate up to 150 MHz together with one S/PDIF or two I2Sbus audio streams with an audio sampling rate up to 192 kHz.

In order to be compatible with most applications, TDA19989BET integrates a full programmable input formatter and color space conversion block. The video input formats accepted are YCbCr 4:4:4 (up to 3 x 8-bit), YCbCr 4:2:2 semiplanar (up to 2 x 12-bit) and YCbCr 4:2:2 compliant with ITU656 (up to 1 x 12-bit). In case of ITU656like format, the input pixel clock can be made active on one (SDR mode) or both edges (DDR mode). This device provides additional embedded feature like CEC (Consumer Electronic Control). CEC is a single bidirectional wire that transmits CEC commands (like Standby from remote control) over the home appliance network connected through this wire. This eliminates the need of any additional device to handle this feature thus improving BOM (Bill Of Materials) of the whole system and enabling the connected devices (CEC enabled) to be controlled by only one remote control.

TDA19989BET supports xvYCC HDMI 1.4 feature.

It can be switched to very low power Standby or Sleep modes to save power when HDMI is not used. TDA19989BET includes I2Cbus master interface for DDC-bus communication for EDID reading. This device can be controlled or configured via I2Cbus interface.

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Features and benefits [Hide](#)

Compliance:

- DVI 1.0
- HDMI 1.4
- EIA/CEA861B
- CEC (HDMI 1.4)
- SimplayHD

Video:

xvYCC HDMI 1.4 feature
Video formats with a pixel rate up to 150 MHz:

- RGB 4 : 4 : 4
- YCbCr 4 : 4 : 4
- YCbCr 4 : 2 : 2 semiplanar
- YCbCr 4 : 2 : 2 ITU656

Maximum resolution:

- 1080p for TV
- 1600 x 1200 at 60 Hz for PC (UXGA60)
- 720p/1080i in ITU656

Programmable color space converter:

- RGB to YCbCr
- YCbCr to RGB

Programmable input formatter and upsampler/interpolator allows input of any of the 4 : 4 : 4, 4 : 2 : 2 semiplanar, 4 : 2 : 2 ITU656like formats

Horizontal synchronization, vertical synchronization and Data Enable (DE) inputs or VREF, HREF and FREF could be used for input data synchronization

Pixel clock input can be made active on one or both edges (selectable by I2Cbus)

Repetition of video samples as required by HDMI specification

Audio:

2 x I2Sbus 2 channels or one S/PDIF; audio data rate up to 192 kHz

System operation:

- Master DDCbus interface for EDID read
- Controllable via I2Cbus
- Downstream availability through the use of hot plug detect (HPD) and receiver detection (RxSense)

Package:

- TFBGA64
- Size 4.5 x 4.5 x 0.95 mm

Power management:

- External voltage supplies 1.8 V
- Low power
- Flexible power modes

Miscellaneous:

- POR (Power-On Reset)
- Audio and video inputs LV-CMOS 1.8 V compatible and LVCMOS 3.3 V tolerant
- 250 MHz to 1.5 GHz TMDS transmitter operation

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Applications [Hide](#)

- Digital Video Camera (DVC)
- Digital Still Camera (DSC)
- Portable Multimedia Player (PMP)
- Mobile Phone
- Ultra-Mobile Personal Computer (UM PC)

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Parametrics/similar products [Hide](#)

| Type number | Package | package reference code | product status | Output number | HDMI v: | video | Max video pixel Rate (GHz) | High Bit Rate Audio | HDCP | CEC | Video Upscale | HDMI 1.4a: 3D | HDMI 1.4a: Adobe RGB | HDMI 1.4a: ARC | I/O | Supply voltage (V) | Total power Operation mode typical(W) |
|-------------|--------------------|------------------------|----------------|---------------|---------|----------------------------|----------------------------|---------------------|------|-----|---------------|---------------|----------------------|----------------|---------|--------------------|---------------------------------------|
| TDA19989BET | SOT962-3 (TFBGA64) | TFBGA64 | Production | 1 | 1.4a | 1080p 50/60 Hz 8-bit color | 150 | no | no | yes | no | yes | yes | no | RGB/YUV | 1.8 V | at 1080p:140 |

Similar products

TDA19989BET links to the similar products page containing an overview of products that are similar in function or related to the type number(s) as listed on this page. The similar products page includes products from the same catalog tree(s), relevant selection guides and products from the same functional category.

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Pricing/ordering/availability [Hide](#)

| Type number | Ordering code(12NC) | Orderable part number | Region | Distributor | In stock | Order quantity | Inventory date | Buy online | Samples |
|----------------|---------------------|-----------------------|--------|-------------------|----------|----------------|----------------|----------------------------|---------------|
| TDA19989BET/C1 | 9352 921 96518 | TDA19989BET/C1,518 | | | | | | | not available |
| TDA19989BET/C1 | 9352 921 96551 | TDA19989BET/C1,551 | NA | MOUSER ELECTRONIC | 250 | | 4/2/2011 | Buy online | Order samples |
| | | | NA | MOUSER ELECTRONIC | 250 | | 4/2/2011 | Buy online | |
| TDA19989BET/C1 | 9352 921 96557 | TDA19989BET/C1,557 | | | | | | | not available |

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Products/packages [Hide](#)

| Type number | Orderable part number | Ordering code (12NC) | Product status | Package | Packing | Marking | ECCN |
|----------------|-----------------------|----------------------|-------------------|--------------------|-----------------------------------|------------------|------|
| TDA19989BET/C1 | TDA19989BET/C1,518 | 9352 921 96518 | Volume production | SOT962-3 (TFBGA64) | Reel Dry Pack, SMD, 13" | Standard Marking | |
| TDA19989BET/C1 | TDA19989BET/C1,551 | 9352 921 96551 | Volume production | SOT962-3 (TFBGA64) | Tray Dry Pack, Bakeable, Single | Standard Marking | |
| TDA19989BET/C1 | TDA19989BET/C1,557 | 9352 921 96557 | Volume production | SOT962-3 (TFBGA64) | Tray Dry Pack, Bakeable, Multiple | Standard Marking | |

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Quality/reliability/chemical conten [Hide](#)

| Type number | Orderable part number | Chemical content | RoHS | Leadfree conversion date | RHF | IFR (FIT) | MTBF (hours) | MSL | MSL LF |
|----------------|-----------------------|------------------|------|--------------------------|-----|-----------|--------------|-----|--------|
| TDA19989BET/C1 | TDA19989BET/C1,518 | TDA19989BET/C | | Always Pb-free | | | | NA | 3 |
| TDA19989BET/C1 | TDA19989BET/C1,551 | TDA19989BET/C | | Always Pb-free | | | | NA | 3 |
| TDA19989BET/C1 | TDA19989BET/C1,557 | TDA19989BET/C | | Always Pb-free | | | | NA | 3 |

Quality and reliability disclaimer

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Disclaimers [Hide](#)

- [General product disclaimer](#)
- [Quality and reliability disclaimer](#)