TOSHIBA

Toshiba 29VH27E Service Manual

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18

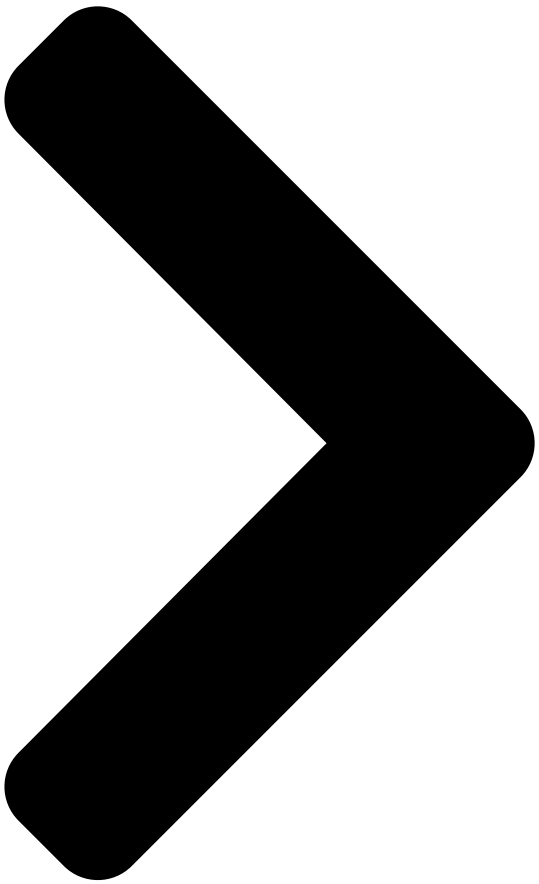
169
170
171

-

Table of Contents

-

Bookmarks



050-200332
TOSHIBA
SERVICE MANUAL

COLOUR TELEVISION

29VH27E

AK52 Chassis

PRINTED IN UK. 2003 C

Table of Contents

Next Page

Chapters

Sm52-Drx_If 3

Sm52-Philips_If 60

Related Manuals for Toshiba 29VH27E

TV Toshiba 29V24E2 Service Manual

Ak37 chassis (97 pages)

TV Toshiba 29V24F Service Manual

(91 pages)

TV Toshiba 29V24E1 Service Manual

(102 pages)

TV Toshiba 29VH14P Service Manual

(70 pages)

TV Toshiba CPBRO2005Eu Catalog

Home cinema catalogue 2005-6 (21 pages)

TV Toshiba 29VH27D Service Manual

Ak52 chassis (158 pages)

TV Toshiba 29V13P Service Manual

Color television (14 pages)

TV Toshiba 29VH36 Owner's Manual

(16 pages)

TV Toshiba 29VZ6DE, Service Manual

(47 pages)

TV Toshiba 29CZ6DA Owner's Manual

Color television (20 pages)

TV Toshiba 29CZ5DE Service Manual

S5es series (50 pages)

TV Toshiba 23L1350UC User Manual

Integrated high definition led television (123 pages)

TV Toshiba 29CJZ5SR Service Manual

(52 pages)

TV Toshiba 29PB201 Operating Instructions Manual

Colour television with remote control (31 pages)

TV Toshiba 29SF6SH Service Manual

D3es chassis (36 pages)

TV Toshiba 29A3DE Schematic Diagram

(6 pages)

Summary of Contents for Toshiba 29VH27E

Page 1: Colour Television

050-200332 TOSHIBA SERVICE MANUAL COLOUR TELEVISION 29VH27E AK52 Chassis PRINTED IN UK. 2003 C...

Page 2 SM52-DRX_IF...

Page 3: Table Of Contents

TABLE OF CONTENTS 1.INTRODUCTION..... 1 2.TUNER.....1 3.IF PART (DRX 3960A) ..... 1 4.VIDEO SWITCH TEA6415.....2 5.MULTI STANDARD SOUND PROCESSOR ..... 2 6.SOUND OUTPUT STAGE WITH TDA7480L ..... 2 7.VERTICAL OUTPUT STAGE WITH TDA8177F.....2 8.VIDEO OUTPUT AMPLIFIER TDA6109.....2 9.POWER SUPPLY (SMPS).....

Page 4 14.11.VPC3230D.....16 14.11.1.General Description .....16 14.11.2.Pin Connections and Short Descriptions .....16 14.12.TDA1308T .....18 14.12.1.General Description .....18 14.12.2.Features.....18 14.12.3.Pinning.....18 14.13.MSP34X1G (MSP3411G) .....18 14.13.1.Description.....18 14.13.2.Features.....19 14.13.3.Pin connections .....20 14.14.TL431.....21 14.14.1.Description.....21 14.14.2.Features.....21 14.14.3.Pin Configurations .....21 14.15.DRX3960A .....22 14.15.1.Introduction.....22 14.15.2.Features.....22 14.15.3.Pin connection and short descriptions .....22 14.16.LM7808 .....23 14.16.1.Description.....23 14.16.2.Features.....23...

Page 5 16.3.VIDEO ALIGNMENTS .....33 16.4.SERVICE ALIGNMENTS.....34 17.BLOCK DIAGRAM .....36 18.CIRCUIT DIAGRAMS.....37...

Page 6: Introduction

1.INTRODUCTION 11AK52 is a 100Hz flicker free colour television capable of driving 28”4:3/16:9, 32” 16:9, 33”4:3 and 29”4:3 real flat picture tubes. The chassis is capable of operation in PAL, SECAM, NTSC (playback) colour standards and multiple transmission standards as B/G, D/K, I/I’, and L/L´. Sound system output is supplying 2x10W (10%THD) for left and right outputs of 8ohm speakers.

Page 7: Video Switch Tea6415

4.VIDEO SWITCH TEA6415 In case of three or more external sources are used, the video switch IC TEA6415 is used. The main function of this device is to switch 8 video-input sources on the 6 outputs. Each output can be switched on only one of each input. On each input an alignment of the lowest level of the signal is made (bottom of sync.

Page 8: Power Supply (Smps)

9.POWER SUPPLY (SMPS) The DC voltages required at various parts of the chassis are provided by an SMPS transformer controlled by the IC MC44608, which is designed for driving, controlling and protecting switching transistor of SMPS. The transformer generates 135V for FBT input, +/-14V for audio amplifier, 8V stand by voltage and 8V, 12V and 5V supplies for other different parts of the chassis.

Page 9: Acquisition Features

• 3 X 4Bits RGB-DACs On-Chip • Free Programmable Pixel Clock from 10 MHz to 32MHz • Pixel Clock Independent from CPU Clock • Multinorm H/V-Display Synchronization in Master or Slave Mode 10.7.Acquisition Features • Multi-standard Digital Data Slicer • Parallel Multi-norm Slicing (TTX, VPS, WSS, CC, G+) •...

Page 10: Tda6109

14.1.TDA6109 14.1.1.General Description The TDA6109JF includes three video output amplifiers in one plastic DIL-bent-SIL 9-pin medium power (DBS9MPF) package (SOT111-1), using high-voltage DMOS technology, and is intended to drive the three cathodes of a colour CRT directly. To obtain maximum performance, the amplifier should be used with black- current control.

Page 11: Connections

Electronic Signature – Manufacturer Code: 20h – Device Code: 41h 14.2.3.Connections DIP connections LCC Connections TSOP Connections Signal Names A0-A18 Address Inputs Q0-Q7 Data Outputs Chip Enable Output Enable Program Supply Supply Voltage Ground 14.3.24LC32A 14.3.1.Description The Microchip Technology Inc. 24LC32A is a 4K x 8 (32K bit) Serial

Electrically Erasable PROM capable of operation across a broad voltage range (2.5V to 6.0V).

Page 12: Pin Descriptions

• Schmitt trigger filtered inputs for noise suppression • Output slope control to eliminate ground bounce • 2 ms typical write cycle time, byte or page • Up to eight devices may be connected to the same bus for up to 256K bits total memory •...

Page 13: Pin Definition And Functions

• Tools for greatly simplified software development • 24-Kbyte on-chip reconfigurable DRAM • 44160-bit character ROM • One external crystal for all standards 14.4.2.Pin Definition and functions Pin No. P-LCC-68-1 Symbol Function INTQ Interrupt request output to ext. controller CLK-IO System clock input/output TCSQ/FLD Composite sync output/ field output...

Page 14: Dram 4Mx4

Analog ground SSA2 RGB-GND RGB-ground 0 V digital supply Analog red display output Analog green display output Analog blue display output BLAN Blanking signal open drain output CORQ Contrast reduction open drain output Bi-directional I C Bus clock port Bi-directional I C Bus data port C Bus enable 14.5.DRAM 4MX4...

Page 15: Sda9400

14.6.SDA9400 14.6.1.General Description The SDA9400 is a new component of the Micronas MEGAVISION ® IC set in a 0.35µm embedded DRAM technology (frame memory embedded). The SDA9400 is pin compatible to the SDA9401 (field memory embedded). The SDA9400 comprises all main functionalities of a digital feature box in one monolithic IC.

Page 16: Pin Definition

• Signal manipulations - Insertion of coloured background - Vertical and/or horizontal windowing with four different speed factors - Flash generation (for supervising applications, motion flag readable by I²C bus) - Still frame or field - Support of split screen applications - Multiple picture display - Tuner scan (4 and 16 times for 4:3, 12 times for 16:9 tubes) - Support of multi picture display with PIP or front -end processor with integrated scaler (e.g.

Page 17: Ddp3310

• Output Adjustable between 1.2 V and 37 V • Internal Thermal Overload Protection • Internal Short Circuit Current Limiting Constant with Temperature • Output Transistor Safe–Area Compensation • Floating Operation for High Voltage Applications • Available in Surface Mount D PAK, and Standard 3–Lead Transistor Package •...

Page 18 FIFORD FIFO Read Enable FIFOWR FIFO Write Enable FIFORWR FIFO Write counter reset HOUT Horizontal Drive Output HFLB Hout Horizontal Flyback Input SAFETY GNDO Safety Input VPROT GNDO Vertical protection Input FREQSEL Selection of H-Drive Frequency Range Clock select 40.5 or 27/32 MHz Clock select 27/32 MHz RSW2 Range Switch2, Measurement ADC...

Page 19: Sda5550

14.9.SDA5550 14.9.1.General definition The SDA5550M is a single chip teletext decoder for decoding World System Teletext data as well as Video Programming System (VPS), Program Delivery Control (PDC), and Wide Screen Signalling (WSS) data used for PAL plus transmissions (Line 23). The device provides an integrated general- purpose, fully 8051-compatible...

Page 20: Features

• Variable Flash Rate • Programmable Screen Size (25 Rows x 33...64 Columns) • Flexible Character Matrixes (HxV) 12 x 9...16 • Up to 256 Dynamical Redefinable Characters in standard mode; 1024 Dynamical Redefinable Characters in Enhanced Mode • CLUT with up to 4096 color combinations •...

Page 21: Vpc3230D

• Fully ESD protected 14.10.3.Pinning Input : 2Vpp, Input Current: 1mA, Max : 3mA Data Low level : -0.3V Max: 1.5V, High level : 3.0V : Vcc+0.5V Input : 2Vpp, Input Current: 1mA, Max : 3mA Clock Low level : -0.3V Max: 1.5V, High level : 3.0V Max : Vcc+0.5V...

Page 22

R1/CR1IN VREF Read1/Cr1 Analog Component Input B2/CB2IN VREF Blue2/Cb2 Analog Component Input G2/Y2IN VREF Green2/Y2 Analog Component Input R2/CR2IN VREF Read2/Cr2 Analog Component Input ASGF Analog Shield GND FFRSTWIN LV or GND FIFO Reset Write Input Digital Decoupling Circuitry Supply Voltage SUPCAP SUPPLYD Supply Voltage, Digital Circuitry...

Page 23: Tda1308T

I2CSEL C Bus Address Select ISGND SUPPLYA Signal Ground for Analog Input, connect to GND SUPPLYA Supply Voltage, Analog Front-End SUPF VOUT Analog Video Output Chroma/Analog Video 5 Input VIN1 Video 1 Analog Input VIN2 Video 2 Analog Input VIN3 Video 3 Analog Input VIN4 Video 4 Analog Input...

Page 24: Features

“PANORAMA” algorithm. These TV sound processing ICs include versions for processing the multi- channel television sound (MTS) signal conforming to the standard recommended by the Broadcast Television Systems Committee (BTSC). The DBX noise reduction, or alternatively, Micronas Noise Reduction (MNR) is performed alignment free. Other processed standards are the Japanese FM-FM multiplex standard (EIA -J) and the FM Stereo Radio standard.

Page 25: Pin Connections

14.13.3.Pin connections NC = not connected; leave vacant LV = if not used, leave vacant X = obligatory; connect as described in circuit diagram DVSS: if not used, connect to DVSS AHVSS: connect to AHVSS Connection Pin No. Pin Name Type Short Description (if not used)

Page 26: Tl431

CAPL_A Volume capacitor AUX SC1_OUT_L SCART output 1, left SC1_OUT_R SCART output 1, right VREF Reference ground 1 SC2_OUT_L SCART output 2, left SC2_OUT_R SCART output 2, right Not connected Not connected DACM_SUB Subwoofer output Not connected DACM_L Loudspeaker out, left DACM_R Loudspeaker out, right VREF2...

Page 27: Drx3960A

14.15.DRX3960A 14.15.1.Introduction The Digital Receiver Front -end DRX 3960A performs the entire multi-standard Quasi Split Sound (QSS) TV IF processing, AGC, video demodulation, and generation of the second sound IF (SIF) with only one SAW filter. The IC is designed for applications in TV sets, VCRs, PC cards, and TV tuners. The alignment-free DRX 3960A needs no special external components.

Page 28: Lm7808

CVBS AVDD_DAC CVBS Output REF_SW AVDD_DAC Reference frequency switch AVDD_DAC SIF output AVDD_DAC DAC supply (+5V) AVSS_DAC DAC ground TEST_EN DVDD Test enable RESETQ DVDD Reset I2C_SDC DVDD C data I2C_SCL DVDD C clock DVDD_CAP Digital supply capacitor DVDD Digital supply (+3.3V) DVSS Digital ground DVSS_CAP...

Page 29: Tda8177F

14.18.TDA8177F 14.18.1.Description Designed for monitors and high performance TVs, the TDA8177F vertical deflection booster can handle flyback voltage up to 70V. More than this it is possible to have a flyback voltage, which is more than the double of the supply (Pin 2). This allows to decrease the power consumption or to decrease the flyback time for a given supply voltage.

Page 30: Applications

Output Current 1.5A Line Regulation 0.015% (typical) Load Regulation 0.1% (typical) 14.19.3.Applications SCSI-2 Active Terminator High Efficiency Linear Regulators Battery Charger Post Regulation for Switching Supplies Constant Current Regulator Microprocessor Supply 14.19.4.Connection Diagrams 14.20.MC44608 14.20.1.Description The MC44608 is a high performance voltage mode controller designed for off–line converters. This high voltage circuit that integrates the start–up current source and the oscillator capacitor, requires few external components while offering a high flexibility and reliability.

Page 31: Pin Connections

14.20.3.Pin Connections 14.20.4.Pin Function description Name Description Demag The Demag

pin offers 3 different functions: Zero voltage crossing detection (50mV), 24mA current detection and 120mA current detection. The 24mA level is used to detect the secondary reconfiguration status and the 120mA level to detect an Over Voltage status called Quick OVP.

Page 32: Tda7480L

General features: CTR offered in 9 groups Isolation materials according to UL94-VO Pollution degree 2 (DIN/VDE 0110 / resp. IEC 664) Climatic classification 55/100/21 (IEC 68 part 1) Special construction: Therefore, extra low coupling capacity of typical 0.2pF, high Common Mode Rejection Low temperature coefficient of CTR G = Leadform 10.16 mm;...

Page 33: Features

14.23.2.Features Low voltage requirement Biphase transmission technique Single pin oscillator Test mode facility 14.23.3.Pinning Mnemonic Function X7 (IPU) sense input from key matrix SSM (I) sense mode selection input Z0-Z3 (IPU) sense inputs from key matrix MDATA (OP3) generated output data modulated with 1/12 the oscillator frequency at a 25% duty factor DATA (OP3) generated output information 9-13...

Page 34: Focus Adjustments

15.4.FOCUS ADJUSTMENTS Inputs AC power PAL B/G test pattern via RF input. Outputs Picture tube drive. Display Picture Action Select TV mode and tune to the signal. Adjust focus potantiometer (the upper pot on the rear side of the FBT transformer) for optimum focusing drive.

Page 35: Ak52 Chassis Production Service Mode Adjustments

16.AK52 CHASSIS PRODUCTION SERVICE MODE ADJUSTMENTS 16.1.PRELIMINARY All system, geometry and white balance alignments are performed in production service mode. Before starting the production mode alignments, make sure that all manual adjustments are done correctly. To start production mode alignments enter the MAIN MENU and then press the digits 1, 6, 7 and 5 respectively.

Page 36

Check and readjust V-SHIFT item if the adjustment becomes improper after some other geometric adjustments are done. Min. Value: -128 Max. Value: Recommended Value: V-SIZE Change Vertical Size by pressing Left/Right buttons till horizontal black lines on both the upper and lower part of the test pattern become very close to the upper and lower horizontal sides of picture tube and nearly about to disappear.

Page 37

Change Bow by pressing Left/Right buttons till the vertical lines especially ones close to the left and right sides will of equal and symmetrical bending, i.e. they together will neither be towards left side nor right side. Check and readjust BOW item if the adjustment becomes improper after some other geometric adjustments are done.

Page 38: Video Alignments

Recommended Value: TXTV Change TXTV by pressing Left/Right buttons to adjust the proper vertical size of Teletext screen. Check and readjust TRPEZ item if the adjustment becomes improper after some other geometric adjustments are done. Min. Value: Max. Value: Recommended Value: 16.3.VIDEO ALIGNMENTS Switch the program to colour bar test pattern.

Page 39: Service Alignments

YDFS Enter a SECAM B/G colour and black-white bar test pattern via RF. Adjust Y-Delay SECAM till the colour transients on the colour bar of the pattern become as sharper and colours between transients do not mix with each other as possible. Min.

Page 40

PRESCALER GROUP Press GREEN button in order to access this group of items. : This adjustment is to determine the pre-amplifier gain of MSP for German stereo Set to 27. NICAM : This adjustment is to determine the pre-amplifier gain of MSP for Nicam Set to 61.

Page 41: Block Diagram

17.BLOCK DIAGRAM MAIN TUNER DRX 3960 (PLL) GENERAL BLOCK DIAGRAM OF 11 AK 52 150V/160V +22V +14V SMPS PIP TUNER +14V(audio) DRX 3960 MC 44608 Feature Box Module (PLL) (MOTOROLA) -14V(audio) PIP OPTION ACTIVE PFC MC 33260 +3.3V (MOTOROLA) +3.3V (ST-BY) +2.5V(ST-BY) 24W32 D0-D7...

Page 42: Circuit Diagrams

18.CIRCUIT DIAGRAMS 11ak52e3-VIDEO...

Page 43 11ak52e3-2...

Page 44 11ak52e3-3...

Page 45 11ak52e3-4...

Page 46 11fb2a1—1...

Page 47 11fb2a1—2...

Page 48 11fb2a1—3...

Page 49 11fb2a1—4...

Page 50 11uk06-1...

Page 51 11txt52-3...

Page 52 11rs52...

Page 53 11fav19a4...

Page 54 11ir2872 11tk109...

Page 55 11sb18-3...

Page 56 11tk117 11tk118...

Page 57 11tp52-1...

Page 58 11df41j-2...

Page 59 SM52-PHILIPS_IF...

Page 60 TABLE OF CONTENTS 1.INTRODUCTION..... 1
2.TUNER.....1 3.IF PART (TDA9885/86) ..... 1 4.VIDEO SWITCH
TEA6415.....2 5.MULTI STANDARD SOUND PROCESSOR 2 6.SOUND
OUTPUT STAGE WITH TDA7480L ..... 2 7.VERTICAL OUTPUT STAGE WITH
TDA8177F.....2 8.VIDEO OUTPUT AMPLIFIER TDA6109.....3 9.POWER SUPPLY
(SMPS).....

Page 61 14.11.1.General Description .....17 14.11.2.Pin Connections and Short
Descriptions .....17 14.12.TDA1308T .....19 14.12.1.General Description
.....19 14.12.2.Features.....19 14.12.3.Pinning.....19
14.13.MSP34X1G (MSP3411G) .....19 14.13.1.Description.....19
14.13.2.Features.....20 14.13.3.Pin connections 20
14.14.TL431.....22 14.14.1.Description.....22
14.14.2.Features.....22 14.14.3.Pin Configurations 22
14.15.TDA9885/86 .....22 14.15.1.Introduction.....22
14.15.2.Features.....22 14.15.3.Pin Configurations 23 14.16.LM7808
.....23 14.16.1.Description.....23 14.16.2.Features.....23
14.17.TDA8177F .....24 14.17.1.Description.....24...

Page 62: Introduction

1.INTRODUCTION 11AK52 is a 100Hz flicker free colour television capable of driving 28”4:3/16:9, 32” 16:9, 33”4:3 and 29”4:3 real flat picture tubes. The chassis is capable of

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Page 63: Video Switch Tea6415

4.VIDEO SWITCH TEA6415 In case of three or more external sources are used, the video switch IC TEA6415 is used. The main function of this device is to switch 8 video-input sources on the 6 outputs. Each output can be switched on only one of each input. On each input an alignment of the lowest level of the signal is made (bottom of sync.

Page 64: Video Output Amplifier Tda6109

8.VIDEO OUTPUT AMPLIFIER TDA6109 The TDA6109 includes three video output amplifiers in order to drive the three cathodes of a colour picture tube directly. To obtain maximum performance, the amplifier is used with black-current control. 9.POWER SUPPLY (SMPS) The DC voltages required at various parts of the chassis are provided by an SMPS transformer controlled by the IC MC44608, which is designed for driving, controlling and protecting switching transistor of SMPS.

Page 65: Rom Characters

10.6.ROM Characters • Shadowing • Contrast Reduction • Pixel by Pixel Shiftable Cursor With up to 4 Different Colours • Support of Progressive Scan and 100 Hz. • 3 X 4Bits RGB-DACs On-Chip • Free Programmable Pixel Clock from 10 MHz to 32MHz •...

Page 66: Ic Descriptions

K9356M: Standard B/G, D/K, I, L Features TV IF audio filter with pass band for sound carriers at 32,40 MHz (D/K, L), 32,90 MHz (I) and 33,40 MHz (B/G) Terminal and Pin configuration are the same with K3953M K9656M: Standard B/G, D/K, I, L/L'...

Page 67: 27W401

14.2.27W401 14.2.1.Description The M27W401 is a low voltage 4 Mbit EPROM offered in the two ranges UV (ultra violet erase) and OTP (one time programmable). It is ideally suited for microprocessor systems requiring large data or program storage and is organized as 524,288 by 8 bits. The M27W401 operates in the read mode with a supply voltage as low as 2.7V at –40 to 8??C temperature range.

Page 68: 24Lc32A

Signal Names A0-A18 Address Inputs Q0-Q7 Data Outputs Chip Enable Output Enable Program Supply Supply Voltage Ground 14.3.24LC32A 14.3.1.Description The Microchip Technology Inc. 24LC32A is a 4K x 8 (32K bit) Serial Electrically Erasable PROM capable of operation across a broad voltage range (2.5V to 6.0V). It has been developed for advanced, low power applications such as personal communications or data acquisition.

Page 69: Sda5275

This pin must be connected to either V or V . If tied to V , normal memory operation is enabled (read/write the entire memory 000-FFF). If tied to V , WRITE operations are inhibited. The entire memory will be write-protected. Read operations are not affected. +2.5V to 6V Power Supply Ground 14.4.SDA5275...

Page 70: Dram 4Mx4

N.C. Not connected N.C. Not connected + 5 V digital supply N.C. Not connected + 3 V reference voltage input N.C. Not connected + 5 V digital supply External DRAM-address External DRAM-address External DRAM-address External DRAM-address External DRAM-address External DRAM-address External DRAM-address External DRAM-address External DRAM-address...

Page 71: General Description

data outputs prior to applying input data. If a LATE WRITE or READ-MODIFY-WRITE is attempted while keeping OE# LOW, no write will occur, and the data outputs will drive read data from the accessed location. The four data inputs and the four data outputs are routed through four pins using common I/O, and pin direction is controlled by WE# and OE#.

Page 72: Pin Definition

• Two different representations of input chrominance data - 2‘s complement code - Positive dual code • Flexible input sync controller • Flexible compression of the input signal - Digital vertical compression of the input signal (1.0, 1.25, 1.5, 1.75, 2.0, 3.0, 4.0) - Digital horizontal compression of the input signal (1.0, 2.0, 4.0) •...

Page 73: Lm317T

(for CCIR 656, see input data format) RESET I/TTL System reset. The RESET input is low active. In order to ensure correct operation a "Power On Reset" must be performed. The RESET pulse must have a minimum duration of two clock periods of the system clock CLK1.

Page 74: Pin Connection And Short Descriptions

– soft limiter (gamma correction) – color transient improvement – programmable RGB matrix – picture frame generator – two analog RGB/Fast-Blank inputs. The DDP 3310B is a single-chip digital Display and Deflection Processor designed for high-quality back- Deflection processing – scan velocity modulation output –...

Page 75: Sda5550

VRD/BCS DAC Reference, Beam Current Safety FBLIN1 GNDO Fast-Blank1 Input RIN1 GNDO Analog Red1 Input GIN1 GNDO Analog Green1 Input BIN1 GNDO Analog Blue1 Input FBLIN2 GNDO Fast-Blank2 Input RIN2 GNDO Analog Red2 Input GIN2 GNDO Analog Green2 Input BIN2 GNDO Analog Blue2 Input TEST...

Page 76: Features

14.9.2.Features General • Feature selection via special function register • Simultaneous reception of TTX, VPS, PDC, and WSS (line 23) • Supply Voltage 2.5 and 3.3 V External Crystal and Programmable clock speed Single external 6MHz crystal, all necessary clocks are generated internally CPU clock speed selectable via special function registers.

Page 77: Tea6415C

Acquisition Features • Multistandard Digital Data Slicer • Parallel Multi-norm Slicing (TTX, VPS, WSS, CC, G+) • Four Different Framing Codes Available • Data Caption only Limited by available Memory • Programmable VBI-buffer • Full Channel Data Slicing Supported • Fully Digital Signal Processing •...

Page 78: Pin Connections And Short Descriptions

Ground Output 5.5Vpp, Min : 4.5Vpp Output 5.5Vpp, Min : 4.5Vpp Output 5.5Vpp, Min : 4.5Vpp Output 5.5Vpp, Min : 4.5Vpp Output 5.5Vpp, Min : 4.5Vpp Ground Input Max : 2Vpp, Input Current : 1mA, Max : 3mA 14.11.VPC3230D 14.11.1.General Description The VPC 323xD is a high-quality, single-chip video front-end, which is targeted for 4:3 and 16:9, 50/60-...

Page 79

FFWE FIFO Write Enable FFRSTW FIFO Reset Write/Read FFRE FIFO Read Enable FFOE FIFO Output Enable CLK20 IN/OUT Main Clock output 20.25 MHz Pad Decoupling Circuitry GND Pad Decoupling Circuitry Supply Voltage SUPPA LLC2 Double Clock Output LLC1 IN/OUT Clock Output SUPPLYD Supply Voltage, LLC Circuitry SUPLLC...

Page 80: Tda1308T

14.12.TDA1308T 14.12.1.General Description The TDA1308 is an integrated class AB stereo headphone driver contained in an SO8 or a DIP8 plastic package. The device is fabricated in a 1 mm CMOS process and has been primarily developed for portable digital audio applications. It gets its input from two analog audio outputs (DACA_L and DACA_R) of MSP3411G.

Page 81: Features

14.13.2.Features 3D-PANORAMA virtualizer (approved by Dolby Laboratories) with noise generator PANORAMA virtualizer algorithm Standard Selection with single I C transmission Automatic Standard Detection of terrestrial TV standards/Automatic Carrier Mute function Automatic Sound Selection (mono/stereo/bilingual), new registers MODUS, STATUS Two selectable sound IF (SIF) inputs Interrupt output programmable (indicating status change) Loudspeaker / Headphone channel with volume, balance, bass, treble, loudness Loudspeaker

channel with MDB (Micronas Dynamic Bass)

Page 82

I2S_WS IN/OUT S word strobe I2S_CL IN/OUT S clock I2C_DA IN/OUT C data I2C_CL IN/OUT C data Not connected STANDBYQ Stand-by (low -active) ADR_SEL C bus address select D_CTR_I/O_0 IN/OUT D_CTR_I/O_0 D_CTR_I/O_1 IN/OUT D_CTR_I/O_1 Not connected Not connected Not connected Audio clock output AUD_CL_OUT (18.432 MHz)

Page 83: Pin Configurations

Not connected Not connected I2S_DA_IN2 S2-data input DVSS Digital ground DVSS Digital ground DVSS Digital ground DVSUP Digital power supply 5V DVSUP Digital power supply 5V DVSUP Digital power supply 5V ADR_CL ADR clock 14.14.TL431 14.14.1.Description The TL431 is a 3-terminal adjustable shunt voltage regulator providing a highly accurate 1 % band gap reference.

Page 84: Pin Configurations

• 4 MHz reference frequency input [signal from Phase-Locked Loop (PLL) tuning system] or operating as crystal oscillator • VIF Automatic Gain Control (AGC) detector for gain control, operating as peak sync detector for negative modulated signals and as a peak white detector for positive modulated signals •...

Page 85: Tda8177F

14.17.TDA8177F 14.17.1.Description Designed for monitors and high performance TVs, the TDA8177F vertical deflection booster can handle flyback voltage up to 70V. More than this it is possible to have a flyback voltage, which is more than the double of the supply (Pin 2). This allows to decrease the power consumption or to decrease the flyback time for a given supply voltage.

Page 86: Applications

Line Regulation 0.015% (typical) Load Regulation 0.1% (typical) 14.18.3.Applications SCSI-2 Active Terminator High Efficiency Linear Regulators Battery Charger Post Regulation for Switching Supplies Constant Current Regulator Microprocessor Supply 14.18.4.Connection Diagrams 14.19.MC44608 14.19.1.Description The MC44608 is a high performance voltage mode controller designed for off–line converters. This high voltage circuit that integrates the start–up current source and the oscillator capacitor, requires few external components while offering a high flexibility and reliability.

Page 87: Pin Connections

14.19.3.Pin Connections 14.19.4.Pin Function description Name Description Demag The Demag pin offers 3 different functions: Zero voltage crossing detection (50mV), 24mA current detection and 120mA current detection. The 24mA level is used to detect the secondary reconfiguration status and the 120mA level to detect an Over Voltage status called Quick OVP.

Page 88: Tda7480L

General features: CTR offered in 9 groups Isolation materials according to UL94-VO Pollution degree 2 (DIN/VDE 0110 / resp. IEC 664) Climatic classification 55/100/21 (IEC 68 part 1) Special construction: Therefore, extra low coupling capacity of typical 0.2pF, high Common Mode Rejection Low temperature coefficient of CTR G = Leadform 10.16 mm;...

Page 89: Features

14.22.2.Features Low voltage requirement Biphase transmission technique Single pin oscillator Test mode facility 14.22.3.Pinning Mnemonic Function X7 (IPU) sense input from key matrix SSM (I) sense mode selection input Z0-Z3 (IPU) sense inputs from key matrix MDATA (OP3) generated output data modulated with 1/12 the oscillator frequency at a 25% duty factor DATA (OP3) generated output information 9-13...

Page 90: Ak52 Chassis Manual Adjustments Procedure

15.AK52 CHASSIS MANUAL ADJUSTMENTS PROCEDURE 15.1.PRELIMINARY Before starting with the alignment procedure, make sure that all the potentiometers on the chassis and also screen and focus pots are in the medium position. 15.2.SYSTEM VOLTAGE ADJUSTMENTS Inputs AC power (220V 50Hz) PAL B/G test pattern via RF (PAL I test pattern for PAL I TV’s, SECAM D/K pattern, SECAM L/L’/K’...

Page 91: Preliminary

16.1.PRELIMINARY All system, geometry and white balance alignments are performed in production service mode. Before starting the production mode alignments, make sure that all manual adjustments are done correctly. To start production mode alignments enter the MAIN MENU and then press the digits 1, 6, 7 and 5 respectively.

Page 92 Recommended Value: V-SIZE Change Vertical Size by pressing Left/Right buttons till horizontal black lines on both the upper and lower part of the test pattern become very close to the upper and lower horizontal sides of picture tube and nearly about to disappear. Check and readjust V-SIZE item if the adjustment becomes improper after some other geometric adjustments are done.

Page 93 Max. Value: Recommended Value: TRPEZ Change Trapezium by pressing Left/Right buttons till vertical lines, especially lines at the sides of the picture frame became parallel to the both sides of picture tube as close as possible. Check and readjust TRPEZ item if the adjustment becomes improper after some other geometric adjustments are done. Min.

Page 94: Video Alignments

Min. Value: Max. Value: Recommended Value: 16.3.VIDEO ALIGNMENTS Switch the program to colour bar test pattern. Press GREEN button to access this group of item. Select the parameter by pressing up/down buttons. Adjust the parameter by pressing left/right buttons. Store the settings by pressing OK button.

Page 95: Service Alignments

YDFN Enter an NTSC colour and black-white bar test pattern via RF. Adjust Y-Delay NTSC till the colour transients on the colour bar of the pattern become as sharper and colours between transients do not mix with each other as possible. Min.

Page 96 OPTIONS GROUP Press BLUE button in order to access this group of items. 0.HPHONE : ON/OFF 1.CRT : 4:3 / 16:9 2.SVHS : ON/OFF 3.f(IF) : always set to 38.9 4.Türk. : Turkish menu ON/OFF 5.VGA : ON/OFF 6.FRONT : Front AV ON/OFF 7.DPL : ON/OFF 8.VD...

Page 97: Block Diagram

17.BLOCK DIAGRAM Saw Filter Sound GENERAL BLOCK DIAGRAM OF 11 AK 52 150V/160V MAIN TUNER +22V 9885/86 (PLL) +14V SMPS +14V(audio) MC 44608 Feature Box Module (MOTOROLA) -14V(audio) ACTIVE PFC MC 33260 +3.3V (MOTOROLA) +3.3V (ST-BY) PIP TUNER 9885/86 +2.5V(ST-BY) (PLL) 24W32 D0-D7...

Page 98: Circuit Diagrams

18.CIRCUIT DIAGRAMS 11ak52b4-VIDEO...

Page 99 11ak52b4-2...

Page 100 11ak52b4-3...

Page 101 11ak52b4-4...

Page 102 11fb2a3—1...

Page 103 11fb2a3—2...

Page 104 11fb2a3—3...

Page 105 11fb2a3—4...

Page 106 11uk06-1...

Page 107 11txt52-4...

Page 108 11rs52...

Page 109 11fav19a4...

Page 110 11ir2872 11tk109...

Page 111 11sb18-3...

Page 112 11tk117 11tk118...

Page 113 11tp52-1...

Page 114 11df41j-2...

Page 115 Schematics...

Page 116 AK52-1...

Page 121 AK52-B2...

Page 126 AK52-B4...

Page 131 FB52-A1...

Page 137 FB52-A3...

Page 142 TP52-1...

Page 144 TXT52...

Page 146 Parts List...

Page 147 BILL OF MATERIAL LIST 10020236 2919 TOSHIBA TOSHIBA 29VH27E(AK52)SILVER COMPONENT MATERIAL UNIT POSITION NUMBER 20048248 SNOW BOX ASSY.2980/81/85/86 1,000 . 20043519 SNOW BOX 2980-81 TOP 1,000 . 60000011 EPS 0,584 20043520 SNOW BOX 2980-81 BOTTOM 1,000 . 60000011 EPS 0,584 20085283 EXPEND KIT AK28 (2980/81) V.0...

Page 148 35000224 SCREW C SK ZN YFMB 2.9*9.5 6,000 . 40009351 SPONGE - bracketspeaker 128X77 (55-Kg/m3) 1,000 . 50011720 LABEL HIGH END 1,000 . 20110214 SPK.ASSY.2985/86 W/TWT (AK37)(L) 1,000 . 20082948 BRACKET SPEAKER - 128X77 (2985/86) (I) 1,000 . 60000018 COPOLYMER POLYPROPYLENE 0,041 60000022 MASTERBATCH (BLACK) 0,410...

Page 149 60000895 PAINT SILVER 022-6485 (SU BAZLI)L8341413 0,002 35000013 SPRING ON/OFF SWITCH 1,000 . 20118276 CONT.PNL.D.2919RF SILVER/P 1,000 . 20111546 CONTROL PANEL DOOR 2919RF EKO.GRAY (I) 1,000 . 60000008 HIPS (NATURAL) 0,027 60001195 MASTERBATCH EKO.GRAY GR 3216 SE1 0,270 60000895 PAINT SILVER 022-6485 (SU BAZLI)L8341413 0,002 20119802 MD.ASY.TK133+LD09-2919 5SW AK52 1,000 .

Page 150 35000212 SCREW S C ZNSY YSMB 2.9*13 3,000 . 35000224 SCREW C SK ZN YFMB 2.9*9.5 8,000 . 35000235 SCREW P C ZN AKBR 7*32 4,000 . 35004572 SCREW P C AgSYF YSB 4x20 12,000 . 40000026 EJECTOR CLIP-CLAP 1,000 . 40000082 FOOT RUBBER 8410/11 2,000 .

Page 151 35000180 SCREW C ZN YSMB M3*6 1,000 . 30001855 SOCKET CRT NARROWNECK W/GND 1,000 PL900A 30000452 RES CF 1/4W 10R J 2,000 R923 R929 30000459 RES CF 1/4W 100R J 3,000 R920 R921 R928 30000466 RES CF 1/4W 1K J 3,000 R917 R924 R925...

Page 152 30021483 RES CC 1W 2.2K K 1,000 R933 30021532 SPARK GAP 1500V 1,000 SG905 30021902 PCB 11TP52E 1,000 . 30000205 CAP CER 150PF 50V J SL 1,000 C919 30000295 CAP CER 100NF 50V Z F 1,000 C917 30000330 CAP CER 4.7NF 50V K B 1,000 C904

30000352 CAP EL 100UF 16V M 1,000 C918...

Page 153 35000181 SCREW C ZN YSMB M3*8 1,000 . 35006413 HEATSINK SMPS AK45 1,000 . 70000074 SILICON (GRES) 0,010 20085393 HE.ASY.33-DIODE UF5407 (33/52) 1,000 D805 30001964 FERRITE BAR 5*8 1,000 . 30007681 DIODE UF5407 3A/800V 150A 1,000 . 35004134 HEATSINK DIODE (2) 1,000 .

Page 154 20108354 DIODE BRIDGE GBU4M 4A/1000V 150A(FORMLU) 1,000 D810 30007758 DIODE BRIDGE GBU4M 4A/1000V 150A 1,000 . 20108636 HE.ASY.52A-LM1086 3.3 1.5A 15AK14/15 ORT 1,000 . 30019617 IC LDO LM1086 3.3V/1.5A TO220 1,000 IC812 35000142 HEATSINK 15AK14/15 15/TP ORTAK 1,000 . 35000158 NUT C ZN BOTTOM M3 1,000 .

Page 155 30006743 TRF. HORIZONTAL DRIVER 15AK17-17" 1,000 TR100 30006909 CAP EL 100UF M 250V 2,000 C816 C115 30007757 COIL INJECTION EW 6MH AK28 1,000 L101 30007771 FIXED COIL 100UH 1,000 L100 30009366 DIODE UF5402 3A/200V 150A 3,000 D803 D804 D824 30009833 CABL 1P/100 SIS 1,000 KX22 30009846 CABL 1P/40 SIS 2,000 PL418-PL4PL420-PL4.

Page 156 30000353 CAP EL 100UF 25V M 2,000 C133 C136 30001452 TR BC327 2,000 Q107 Q109 30001453 TR BC337 2,000 Q110 Q111 30000294 CAP SMD 100NF 50V K (0805) 2,000 C137 C138 30009699 DIODE ZENER SMD BZT55C12 2,000 D121 D122 30012641 RES SMD 1/16W 10K J (0603) 1,000 R151 30012657 RES SMD 1/16W 1K J (0603) 1,000 R168...

Page 157 30000481 RES CF 1/4W 1M J 1,000 R804 30000515 RES CF 1/4W 15R J 1,000 R429 30000531 RES CF 1/4W 15K J 1,000 R186 30000541 RES CF 1/4W 1.5M J 1,000 R146 30000564 RES CF 1/4W 18K J 1,000 R126 30000583 RES CF 1/4W 220R J 1,000 R105 30000622 RES CF 1/4W 270R J...

Page 158 30006712 FERRITE BEAD 3.5X4.7X0.8 5,000 L105 L106 L417 L418 J130 30009036 RES FUSE 1/2W 0.1R J 1,000 R125 30025350 PCB 11AK52B6 1,000 . 30000069 CAP MKT 1NF 100V J 4,000 C469 C470 C472 C473 30000071 CAP MKT 10NF 63V J 2,000 C405 C466 30000074 CAP MKT 100NF 63V J...

Page 159 30000284 CAP SMD 1NF 50V K R (0805) 1,000 C301 30000294 CAP SMD 100NF 50V K (0805) 10,000 C100 C125 C126 C803 C823 C827 C846 C859 C817 C818 30000309 CAP SMD 2.2NF 50V K R 0805 1,000 C811 30000469 RES SMD 1/10W 1K J 0805 3,000 R827 R834 R850...

Page 160 30012566 CAP SMD 22PF 50V J (0603) 1,000 C965 30012567 CAP SMD 220PF 50V J (0603) 1,000 C852 30012568 CAP SMD 270PF 50V J (0603) 2,000 C406 C426 30012569 CAP SMD 33PF 50V J (0603) 4,000 C952 C955 C959 C960 30012572 CAP SMD 390PF 50V J (0603) 1,000 C962 30012574 CAP SMD 470PF 50V J (0603)

Page 161 30012684 RES SMD 1/16W 330R J (0603) 1,000 R968 30012689 RES SMD 1/16W 39K J (0603) 1,000 R867 30012692 RES SMD 1/16W 4.7K J (0603) 2,000 R106 R185 30012695 RES SMD 1/16W 470R J (0603) 3,000 R845 R864 R993 30012696 RES SMD 1/16W 47K J (0603) 2,000 R120 R967 30012698 RES SMD 1/16W 5.6K J (0603)

Page 162 1,000 . 20101771 MD.SMD.FB52A-VIRTUAL DOLBY&3D PANORAMA 1,000 . 30018653 IC MSP3411G PLQFP64 1,000 IC400 20105455 MD.SMD.FB52A-WO/DVD 1,000 . 20126358 MD.SMD.FB52A3-COMMON(TOSHIBA) 1,000 . 30023510 PCB 11FB52A4 1,000 . 30000068 CAP MKT 1NF 63V K 1,000 C604 30000074 CAP MKT 100NF 63V J...

Page 163 C453 C454 C888 C890 C892 30001285 DIODE 1N4148 SMD 8,000 D401 D402 D403 D600 D601 D602 D604 D750 30001457 TR BC848B SMD 36,000 Q401 Q402 Q600 Q601 Q602 Q603 Q605 Q606 Q610 Q612 Q613 Q614 Q721 Q722 Q723 Q724 Q725 Q726 Q727 Q729...

Page 164 30012572 CAP SMD 390PF 50V J (0603) 4,000 C679 C682 C693 C441 30012573 CAP SMD 47PF 50V J (0603) 1,000 C700 30012574 CAP SMD 470PF 50V J (0603) 1,000 C699 30012576 CAP SMD 56PF 50V J CH (0603) 2,000 C410 C422 30012577 CAP SMD 560PF 50V J (0603) 8,000 C613...

Page 165 30012668 RES SMD 1/16W 220R J (0603) 5,000 R605 R633 R639 R645 R795

30012669 RES SMD 1/16W 22K J (0603) 4,000 R625 R721 R918 R647 30012673 RES SMD 1/16W 270R J (0603) 1,000 R648 30012675 RES SMD 1/16W 2K J (0603) 1,000 R708 30012677 RES SMD 1/16W 3.3K J (0603) 2,000 R752...

Page 166 30018117 CONN HEADER 6P 2.5MM SIDE BD 1,000 PL721 30018410 CONN HEADER 35P 3.0MM SIDE DR 2,000 PL857 PL858 30001841 CONN HEADER 3P 2.5MM SIDE BLACK SD 1,000 PL401 20136915 PR.IC.52-AK52B-IC27W401 TOSHIBA T028 1,000 . 30016491 IC 27W401 1,000 IC721...

Page 167 30009846 CABL 1P/40 SIS 1,000 KX20 20125754 IC 24C32 A065341112143221211 1,000 . 30015382 IC 24C32 3V 1,000 . 20130362 CRT DIFF.KIT AK52B-29"SAM(RF893)130V(TOS 1,000 . 30000094 CAP MKT 220NF 275V M AC 1,000 C802 30000143 CAP MKP 2.2NF 2KV %3.5 1,000 C109 30000162 CAP MKP 470NF 250V J 1,000 C112 30000180 CAP MKP 9.1NF 2000V %3.5...

Page 168 20013018 LBL.BCK.CVR.ASSY (TV) (WO/UL) 1,000 . 50023173 LABEL LOT W/BARCODE (77X256) 1,050 . 70000621 RIBBON 80MM*450MM 1,030 . 20128268 ARTWORK TOSHIBA TOSHIBA 29VH27E (AK52) 1,000 . 20100980 R/C 2143 TOSHIBA CT-841(SILVER/P)(GRAY/S 1,000 . 20096229 R/C 2143 NOBRAND SILVER (F) 1,000 .

Page 169 35000228 SCREW SK C ZNSY YSMB 2.9*9.5 1,000 . 35005007 DOUBLE BATTERY CONTACT UKV-900 TOSHIBA 1,000 . 40005467 LENS RC2040(I) 1,000 . 40010082 RUBBER PAD TRP41 (RC 2143) TOSHIBA 1,000 . 40012344 SPONGE (BATTERY DOOR) (15x31x5mm) 1,000 . 40005299 BATTERY COVER RC2040 SILVER(P) 1,000 .

Page 170 Cabinet Exploded View...

Page 171 TOSHIBA Information Systems (UK) Ltd Consumer Products Division, European Service Centre, Admiralty Way, Camberley, Surrey. GU15 3DT...