FAIRCHILD
SEMICONDUCTOR®

SPT9402

TRIPLE VIDEO DRIVER

FEATURES

- Triple Video Line Driver Chip
- R_L=150 Ω (75 Ω Back-Terminated Cable)
- Power-Down Standby Mode
- Very Small 5.0 x 4.4 mm Package
- Low Power Dissipation: 95 mW
- Flat Response f_{IN} = 100 kHz to 10 MHz (typical)
- Crosstalk -40 dB (Typical)
- Single +5 Volt Power Supply

APPLICATIONS

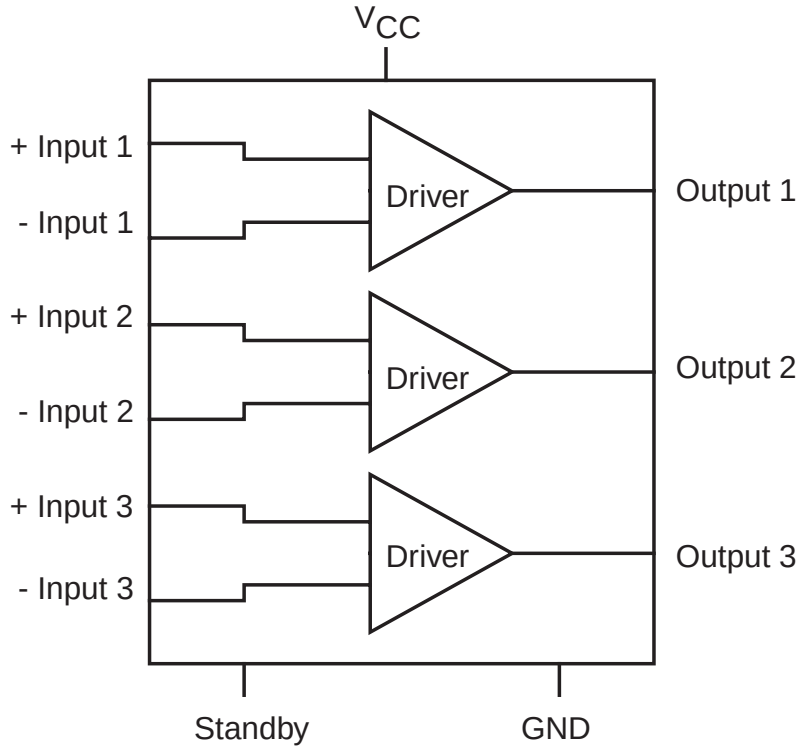
- RGB Video Line Driver Applications
- Video Line Driver for RGB Encoders
- Digital Video Tape Recorders
- Video Cassette Recorders
- PC Multimedia
- Consumer Video

GENERAL DESCRIPTION

The SPT9402 is a triple video line driver chip that takes standard video signals as analog inputs and provides buffered analog outputs for driving 150 Ω loads (75 Ω back-terminated cables). The standard video input signals (1 V_{P-P}) are typically amplified 6 dB using external components to produce a 2 V_{P-P} into an AC-coupled 150 Ω load. (See the typical interface circuit diagram.)

The SPT9402 features a standby mode which draws only 113 µW of power. Nominal power dissipation (no input) is typically 95 mW. It requires a single +5 V supply, operates over the commercial temperature range (0 to +70 °C) and is available in a very small (5.0 x 4.4 mm) 12-lead Shrink Small Outline Package (SSOP).

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS (Beyond which damage may occur)[1] 25 °C

Supply Voltages
V_{CC} ..... +6.0 V
Maximum Power Dissipation
P_D ..... 350 mW
Thermal Impedance (T_A=+25 °C and above)
Θ_{CA} ..... 2.8 mW/°C

Temperature
Operating Temperature ..... 0 to +70 °C
Storage Temperature ..... -55 to +150 °C

Note: 1. Operation at any Absolute Maximum Rating is not implied. See Electrical Specifications for proper nominal applied conditions in typical applications.

ELECTRICAL SPECIFICATIONS

T_A = +25 °C, V_{CC} = +5.0 V, V_{IN} = 1.0 V_{P-P} video signal, voltage gain of +2, R_L = 150 Ω, unless otherwise specified.

PARAMETERS	TEST CONDITIONS	TEST LEVEL	SPT9402 MIN	SPT9402 TYP	SPT9402 MAX	UNITS
Power Supply						
Supply Current (I_{CC})	No Input	I		19	27	mA
V_{CC} Voltage		IV	4.5	5.0	5.5	V
Power Dissipation		I		95	135	mW
Standby Current	Pin 2 Grounded	I		22.5	50	µA
Standby Power Dissipation	Pin 2 Grounded	I		113	250	µW
Digital Input						
Digital Input (Low)	Standby Pin 2	I	0.0	0.1	0.3	V
Digital Input (High)	Standby Pin 2	I	1.8	2.0	V_{CC}	V
Dynamic Performance						
Voltage Gain	f_{IN} = 1 MHz	I	5.7	6.0	6.3	dB
Total Harmonic Distortion	f_{IN} = 1 kHz	I		0.2	1.0	%
Open Loop Gain		V		40		dB
Bandwidth		V		20		MHz
Slew Rate		V		70		V/µs
Frequency Response	f_{IN} = 1 to 5 MHz	V		-0.9		dB
Cross Talk	f_{IN} = 1 MHz	V		-40		dB

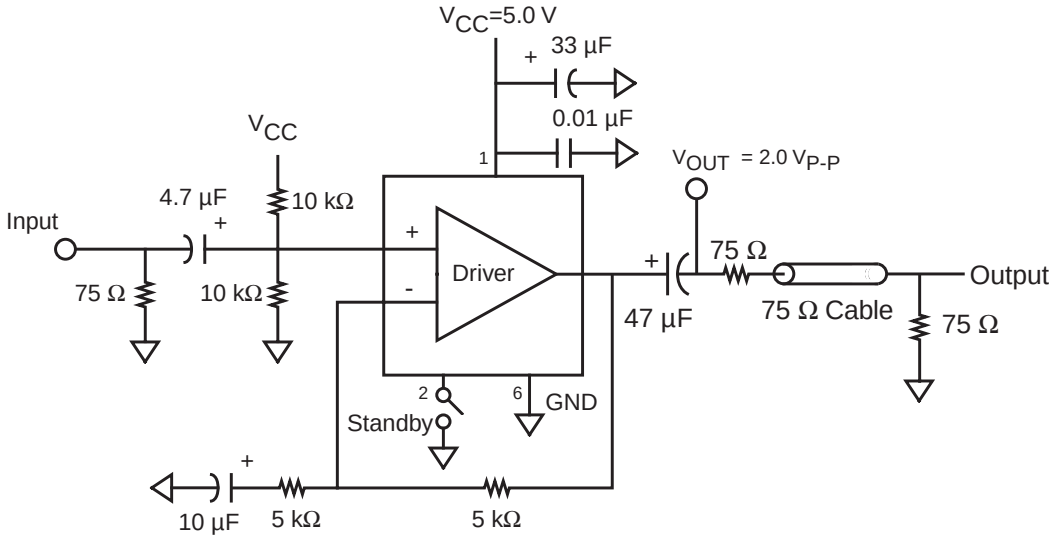
TEST LEVEL CODES

All electrical characteristics are subject to the following conditions:

All parameters having min/max specifications are guaranteed. The Test Level column indicates the specific device testing actually performed during production and Quality Assurance inspection. Any blank section in the data column indicates that the specification is not tested at the specified condition.

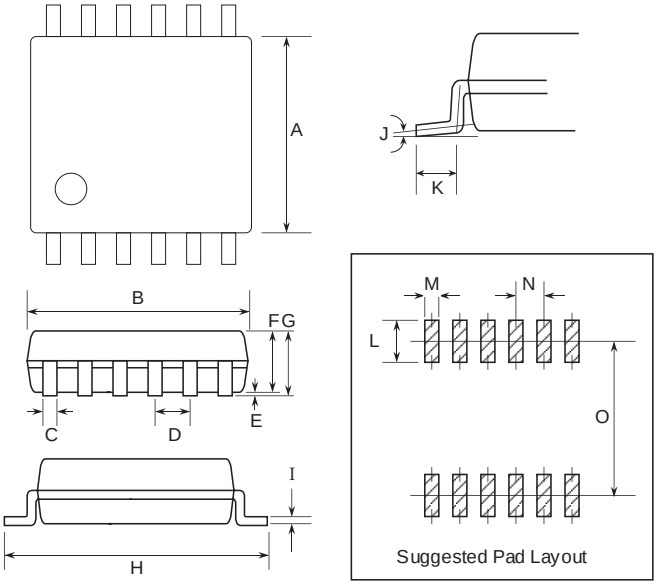
TEST LEVEL	TEST PROCEDURE
I	100% production tested at the specified temperature.
II	100% production tested at T_A = +25 °C, and sample tested at the specified temperatures.
III	QA sample tested only at the specified temperatures.
IV	Parameter is guaranteed (but not tested) by design and characterization data.
V	Parameter is a typical value for information purposes only.
VI	100% production tested at T_A = +25 °C. Parameter is guaranteed over specified temperature range.

Figure 1 - Typical Interface Circuit (1 of 3 Drivers)



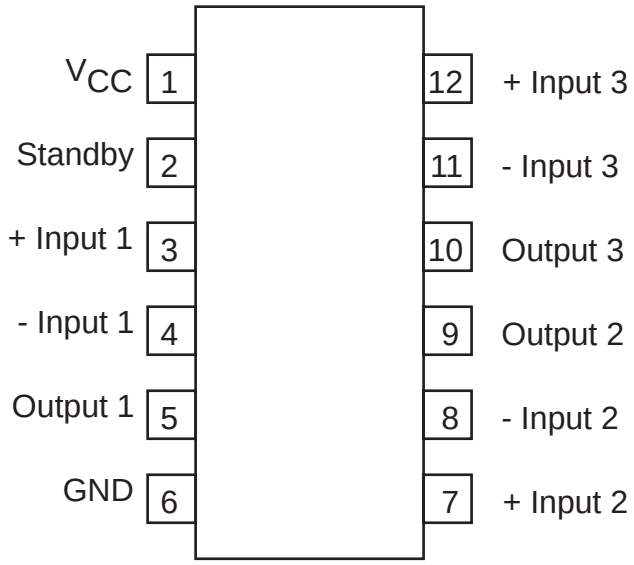
PACKAGE OUTLINE

12-Lead SSOP



SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.165	0.181	4.2	4.6
B	0.189	0.205	4.8	5.2
C	0.012 typ		0.3 typ	
D	0.031 typ		0.8 typ	
E	0.000	0.008	0.0	0.2
F	0.047	0.063	1.2	1.6
G		0.067 max		1.7 max
H	0.264	0.248	6.7	6.3
I	0.004	0.010	0.10	0.25
J	0-10°		0-10°	
K	0.012	0.028	0.3	0.7
L	0.047 typ		1.2 typ	
M	0.016 typ		0.4 typ	
N	0.031 typ		0.8 typ	
O	0.213 typ		5.4 typ	

PIN ASSIGNMENTS



PIN FUNCTIONS

Name	Function
$Input_1$	Channel 1 Signal Input (typically 1 V_{P-P}, AC coupled)
$Input_2$	Channel 2 Signal Input (typically 1 V_{P-P}, AC coupled)
$Input_3$	Channel 3 Signal Input (typically 1 V_{P-P}, AC coupled)
$Output_1$	Channel 1 Output (typically 2.0 V_{P-P}, R_L = 150 Ω, AC coupled)
$Output_2$	Channel 2 Output (typically 2.0 V_{P-P}, R_L = 150 Ω, AC coupled)
$Output_3$	Channel 3 Output (typically 2.0 V_{P-P}, R_L = 150 Ω, AC coupled)
Standby	Power Down Standby Mode Select (Low = Standby, Internal Pull-Up)
V_{CC}	+5.0 V Supply
GND	Ground

ORDERING INFORMATION

PART NUMBER	TEMPERATURE RANGE	PACKAGE TYPE
SPT9402SCR	0 to +70 °C	12-Lead SSOP