



Product Overview

PACVGA105: ESD Protection Diodes, VGA Port Companion Circuit

For complete documentation, see the data sheet

Product Description

The PACVGA105 incorporates 7 channels of ESD protection for signal lines commonly found in a VGA port for PCs. ESD protection is implemented with current steering diodes designed to safely handle the high peak surge currents associated with the IEC-61000-4-2 Level-4 ESD Protection Standard ($\pm 8\text{kV}$ contact discharge). When the channels are subjected to an electrostatic discharge, the ESD current pulse is diverted via the protection diodes into the positive supply rails or ground where they may be safely dissipated. The upper ESD diodes for the R, G and B channels are connected to a separate supply rail (V_{RGB}) to facilitate interfacing to graphics controller ICs with low voltage supplies. The remaining channels are connected to the main 5V rail (V_{CC}). The lower diodes for the R, G and B channels are also connected to a dedicated ground pin (GNDA) to minimize crosstalk due to common ground impedance. Two non-inverting buffers are also included in this IC for buffering the HSYNC and VSYNC signals from the graphics controller IC. These buffers will accept TTL input levels and convert them to CMOS output levels that swing between GND and V_{CC} . These drivers have a nominal 60 output impedance to match the characteristic impedance of the HSYNC and VSYNC lines of the video cables typically used. The inputs of these drivers also have high impedance pull-ups (50k Ω nom.) pulling up to the VAUX rail. In addition, the DDC_CLOCK and DDC_DATA channels have 1.8k resistors pulling these inputs up to the main 5V (V_{CC}) rail.

Features

- Seven channels of ESD protection designed to meet IEC-61000-4-2 Level-4 ESD requirements ($\pm 8\text{kV}$ contact discharge)
- Very low loading capacitance from ESD protection diodes at less than 5pF typical
- TTL to CMOS level-translating buffers for the HSYNC and VSYNC lines
- Three independent supply pins (V_{CC} , V_{RGB} and V_{AUX}) to facilitate operation with sub-micron Graphics Controller ICs
- High impedance pull-ups (50k nominal to VAUX) for HSYNC and VSYNC inputs
- Pull-up resistors (1.8k nominal to VCC) for DDC_CLK and DDC_DATA lines

Applications

- ESD protection and termination resistors for VGA (video) port interfaces

End Products

- Digital TV, Set Top Box, PC/Notebook, Gaming

Part Electrical Specifications

Product	Compliance	Status	Interface	Number of Lines	Direction	C Max (pF)	$V_{\text{(BR)}}$ Min (V)	V_{RWM} Max (V)	I_{R} Max (uA)	P_{PK} Max (W)	Package Type
PACVGA105QR	Pb-free Halide free	Active	VGA	7	Unidirectional	10	1.7	5.5	10	0.75	QSOP-16

For more information please contact your local sales support at www.onsemi.com

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