TLS8204

102 x 68 Dot Matrix

STN Segment/Common Driver with Controller

Precautions for light: Light has the effect of causing the electrons of semiconductor to move and may change the characteristics of semiconductor devices. For this reason, it is necessary to take account of effective protection measures for the packages (such as COB, COG, TCP and COF, etc) causing chip to be exposed to a light environment in order to isolate the projection of light on any part of the chip, including top, bottom and the area around the chip. Follow the precautions below when using this product:
1) During the design stage, it is necessary to notice and confirm the light sensitivity and preventive measures for using IC on substrate (PCB, Glass or Film) or product.
2) Test and inspect the product under an environment free of light source penetration.
3) Confirm that all surfaces around the IC will not be exposed to light source.

Contents

INTRODUCTION

The TLS8204 is a low power single-chip driver IC with embedded controller for dot matrix Mono STN LCDs. It contains 170 high voltage driving output circuits and is capable of driving maximum 102 segments, 67 commons with 1 icon LCD panel. In addition to low power COM and SEG drivers, the TLS8204 contains all necessary circuits for high voltage LCD power supply, bias voltage generation, timing generation and dot-matrix display data memory.

The TLS8204 contains an on-chip 102×68 = 6,936 bits display data RAM while supporting both parallel and serial MPU interfaces: 8 bits 6800/8080 series parallel interface and 4-line/3-line serial peripheral interface.

Featuring build-in booster and voltage follower capacitors, the TLS8204 requires the fewest peripheral passive components so that the total cost of the display system can be minimized.

FEATURES

‣ Driver outputs:

· 102 segments / 67 common + 1 ICON common (1/68 duty)
· 102 segments / 32 common + 1 ICON common (1/33 duty)
· 102 segments / 16 common + 1 ICON common (1/17 duty)
(1/33 duty and 1/17 duty are under partial mode)

‣ On-chip display data RAM with the capacity of 102×68=6936 bits

‣ Multiple MPU interfaces selectable:

· 6800 series parallel interface
· 8080 series parallel interface
· 4-line Serial Peripheral interface (4-line SPI)
· 3-line Serial Peripheral interface (3-line SPI)

‣ Multiple command functions:

· Display start line set enabling a vertical scroll function
· Segment/Common output mode select
· Display normal/reverse mode, display all points on/off mode
· Partial mode with start COM selectable
· Read-modify-write mode
· LCD bias set, LCD operation voltage regulator ratio set, static indicator set.

‣ On-chip power supply circuits with booster and voltage follower capacitor built-in

· On-chip LCD driving voltage generator or external power supply selectable
· On-chip DC-DC booster with programmable booster ratio: 2x, 3x, 4x, 5x
· On-chip oscillator for display clock or external clock selectable
· Supports 220-steps of contrast
· Adjustable LCD driving voltage bias ratio: 1/4~1/11
· Thermal gradient = -0.11%/℃

‣ Power supply voltage:

VDD = 1.8 - 3.3V (power for logic)
VDD2 = 2.4 - 3.3V (power for analog)
VLCD = 4.0 - 10.5 V (programmable LCD driving voltage)

‣ Package type: COG