

ICND2200——Key of mini LED, HDR, and Super Fine Pitch LED Panel

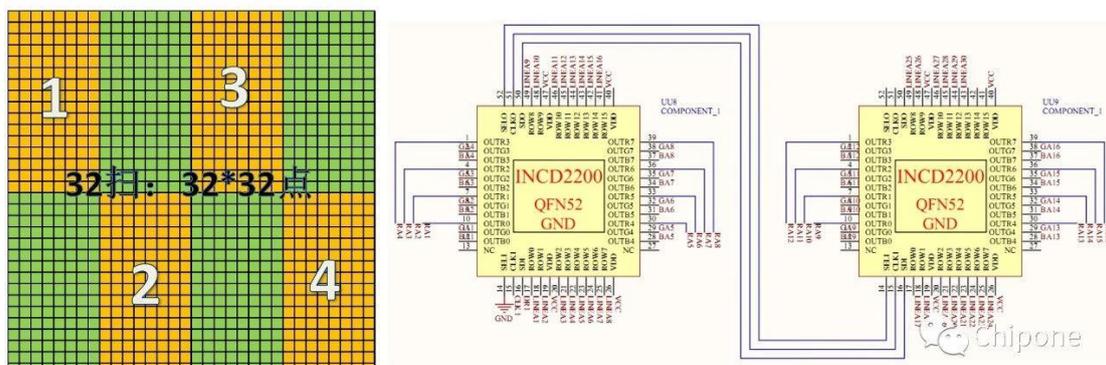
Foreword

As fast development of super fine pitch and mini LED (COB) LED video wall, PCB design challenge is increasing due to lots of SMD devices and space limitation. At the same time, it is difficult to have excellent display quality. Especially high contrast interference is the main and difficult problem to solve. System reliability is possible to become unstable. A new structure at LED driver IC side is urgently needed to overcome these challenges. **CHIPONE ICND2200** has innovative distribution multiplexing structure which is dedicated design for super fine pitch, mini LED (COB) and HDR LED video wall. Compared to traditional structure, ICND2200 brings many advantages.



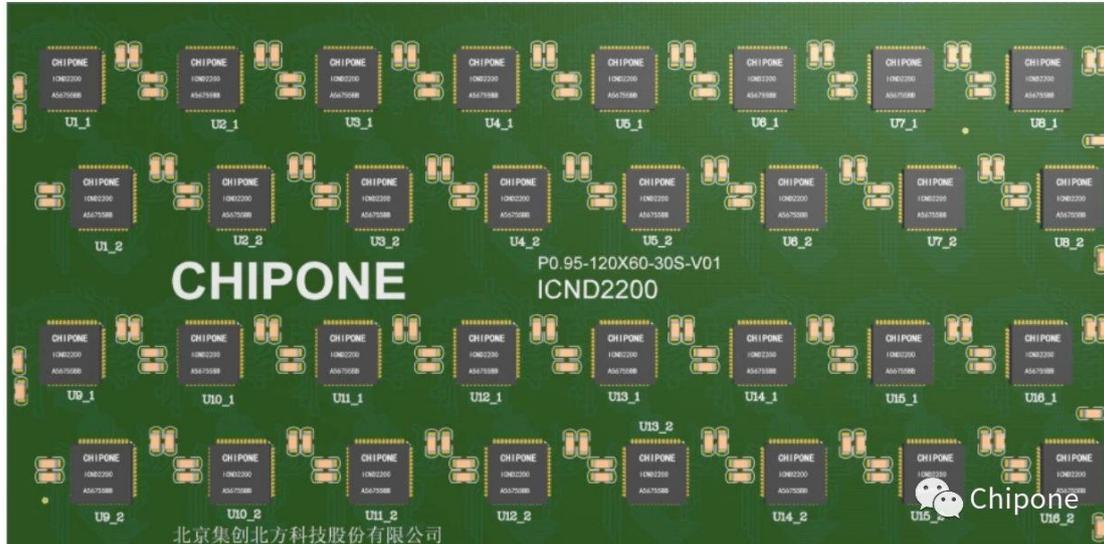
Distribution Multiplexing Structure

ICND2200 is innovative distribution multiplexing and there is 16 PMOSs and 24 constant current channels inside. Through cascade,two ICND2200s can support 32 scan lines. In the future ICND2200 will be updated to support 48 or 64 scan lines. For one ICND2200 and 16 scan lines application,it can control 16x24 LEDs. For two ICND2200s and 32 scan lines application, it can control 32x48 LEDs. In the following figure, it only needs 4 ICND2200s to control 32x32 pixels.



ICND2200 32*32 Pixels Application Block Diagram

ICND2200 is 2-wire transmission and controls automatically scan line. The PCB design challenge becomes lower comparing to traditional multiplexing structure which includes SDI/DCLK/LE/GCLK LED driving signal and A/B/C/D decoder signal. That is the reason why PCB stack can be reduced. Taking pitch 0.9mm and resolution 160*180 as example, the PCB stack of ICND2200 solution is 6 layers and the others need 8 layers at least.



HDR Support

For LED driver, it needs 16bit data depth and 140MHz GCLK under 32 scan lines to support HDR. Actually the display quality of 140MHz GCLK is too worst to apply. Due to flexibility of ICND2200, it only needs one ICND2200, 16 scan lines and 65MHz-70MHz GCLK to achieve HDR request and according to experiment result display quality uniformity is also well. Because of small IC package ICND2200 can be applied to pitch 0.6mm or smaller. In conclusion, ICND2200 is the best HDR solution of super fine pitch and mini LED (COB).

Excellent Display Performance

Owing to distribution multiplexing structure and unique anti-interference technology, ICND2200 can resolve perfectly color difference between two PCBs and high contrast interference which are severe issue in super fine pitch and mini LED (COB) LED panel.



Color Difference Between 2 Modules

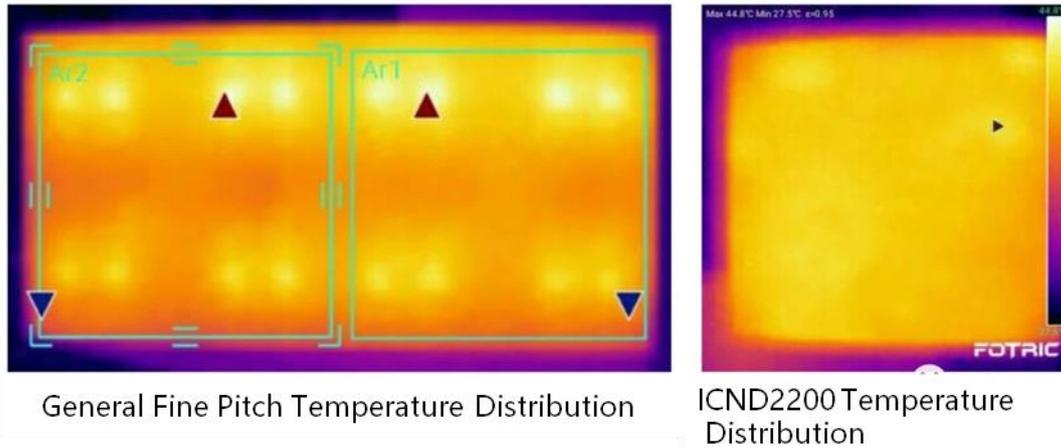


ICND2200 Without Color Difference

Good Uniformity of Temperature Distribution

Another issue in super fine pitch and mini LED (COB) LED panel is the uniformity of temperature distribution. Generally, the driving current of R_LED is higher so that the corresponding driving IC

is hotter. Due to the limitation of traditional driving structure, the uniformity of temperature distribution is unsolvable. ICND2200 is distribution multiplexing which has good uniformity of temperature distribution. With good uniformity of temperature distribution, the reliability of LED panel becomes better and there is no regional color shift.



Whole New Control Method

With whole new control method, ICND2200 can generate GCLK which is for display from lower DCLK frequency so that EMI performance is better than traditional structure.

Conclusion

Because of the quick rising market and widely application of super fine pitch LED panel, key component innovation is more and more important. Through new driving structure and control method, ICND2200 is the best HDR solution of super fine pitch and mini LED (COB) LED panel with excellent display uniformity, EMI performance and the uniformity of temperature distribution. For the future development of super fine pitch LED panel, LED driving structure is in key place. ICND2200 definitely is revolution innovation and the advantages are increasingly highlighted.

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