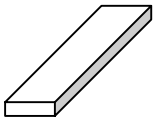
88-common x 272-segment Bitmap LCD Driver

■ GENERAL DESCRIPTION

The **NJU6657** is a bitmap LCD driver to display graphics or characters.
It contains 23,936 bits display data RAM, microprocessor interface circuits, instruction decoder, 88-common and 272-segment drivers.
The bit image display data is transferred to the display data RAM by serial or 8-bit parallel interface.
88 x 272 dots graphics or 17-character 5-line by 16 x 16 dots character with icon are displayed by **NJU6657** itself.
The NJU6657 contains a built-in OSC circuit for reducing external components.
The wide operating voltage from 2.7 to 5.5V and low operating current are suitable for battery-powered applications.

■ PACKAGE OUTLINE



NJU6657CJ

■ FEATURES

- Direct Correspondence between Display Data RAM and LCD Pixel
- Display Data RAM – 23,936 bits
- 225 LCD Drivers – 88-common and 272-segment
- Direct Microprocessor Interface for both of 68 and 80 type MPU
- Serial Interface (SDA, SCL, A0, CSB)
- Programmable Bias selection : 1/5,1/7,1/8,1/9,1/10 bias
- Useful Instruction Set
  Display On/Off Cont, Initial Display Line Set, Page Address Set, Column Address Set, Status Read, Display Data Read/Write, ADC Select, Common Direction Register Set, Inverse Display, Entire Display On/Off, Partial Select, n-line Inverse Drive Register Set, Dummy Period Set, Read Modify Write, End, Internal Oscillation Circuit ON/OFF, Oscillation Frequency Set, Bias Select, Power Control set, EVR Register Set, Voltage Booster Circuits Multiple Select, Voltage Booster Circuits Clock Select, Temperture Sensor ON/OFF, Soft Reset, Power Save.
- Power Supply Circuits for LCD Incorporated
  Voltage Booster Circuits (12-time Maximum),
  Voltage Adjust Circuits, Voltage Follower x 4
- High Precision Voltage Regulator Incorporated (V_{REF}=±3%, Ta=25^{O}C)
- Precision Electrical Variable Resistance (400-step)
- V_{LCD} Temperature Coefficient :-0.00 to –0.15%/^{O}C
- Low Power Consumption 130uA(Typ.).
- Operating Voltage (All the voltages are based on V_{SS}=0V.)
  - Logic Operating Voltage : V_{DD}=2.7V to 5.5V
  - Voltage Booster Operating Voltage : V_{EE}=V_{DD} to 5.5V
  - LCD Driving Voltage : V_{LCD}= 4.8 to 28.8V(External Voltage: 36.0V)
- Rectangle outlook for COG
- Package Outline : Bump-chip
- C-MOS Technology (Substrate : P)