

# LCD DRIVER/CONTROLLER SERIES LINE-UP

## 1. BIT MAP TYPE LCD DRIVER

### (1)LINE-UP

| Type No.                                   | FUNCTION   | FEATURES   | PACKAGE  |
|--|--|--|--|
| NJU6450A<br>NJU6452A<br>NJU6570<br>NJU6572 | 16 X 61-output<br>Bit Map LCD Driver<br>(Osc. Freq. =18KHz/NJU6450A<br>/NJU6570)<br>(Osc. Freq. = 2KHz/NJU6452A<br>/NJU6572) | Direct Correspondence between Display Data RAM and LCD Pixel<br>Display RAM 2,560bits<br>Direct Interface with both of 68 and 80 type CPU<br>Low Power Consumption<br>External Clock Operation 18kHz/NJU6450A and 6570<br>2KHz/NJU6452A and 6572<br>Programmable Duty Read<br>Extension Function (Can Combine with NJU6451A and 6453A) | CHIP<br>QFP-100<br>(NJU6450A /52A)<br>BUMPED CHIP<br>(NJU6450A /52A) |
| NJU6451A<br>NJU6453A                       | 80-output Bit Map LCD<br>Extension Driver<br>(Osc. Freq. =18KHz/NJU6451A)<br>(Osc. Freq. = 2KHz/NJU6453A)                    | Display Data RAM 2,560bits<br>External Clock Operation 18KHz/NJU6451A<br>2KHz/NJU6453A<br>Low Power consumption<br>Extension Function (Can Combine with NJU6450A and 6452A)  | CHIP<br>QFP-100  |
| NJU6457<br>NJU6458                         | 80-output Positive Voltage<br>Bit Map LCD Extension Driver<br>(Osc. Freq. =18KHz/NJU6457)<br>(Osc. Freq. = 2KHz/NJU6458)     | Display Data RAM 2,560bits<br>External Clock Operation 18KHz/NJU6457<br>2KHz/NJU6458<br>Low Power consumption  | CHIP<br>QFP-100  |
| NJU6580                                    | 17 X 96-output<br>Bit Map LCD Driver   | Display RAM 1,904 bits (NJU6580)   | BUMPED CHIP<br>TCP   |
| NJU6673                                    | 25 X 100-output<br>Bit Map LCD Driver  | 3,696 bits (NJU6583)<br>3,366 bits (NJU6578)   | BUMPED CHIP<br>TCP, COF  |
| NJU6583                                    | 33 X 96-output<br>Bit Map LCD Driver   | 4,422 bits (NJU6575A)<br>3,434 bits (NJU6576)  | BUMPED CHIP<br>TCP   |
| NJU6578                                    | 33 X 102-output<br>Bit Map LCD Driver  | 4,240 bits (NJU6577S)<br>2,500 bits (NJU6673)<br>2,148 bits (NJU6674)  | BUMPED CHIP  |
| NJU6575A                                   | 33 X 134-output<br>Bit Map LCD Driver  | 5,568 bits (NJU6675)<br>8,580 bits (NJU6676)   | BUMPED CHIP<br>TCP   |
| NJU6576                                    | 34 X 101-output<br>Bit Map LCD Driver<br>for I <sup>2</sup> C Bus Interface  | 15,840 bits (NJU6677)<br>21,120 bits (NJU6678V)<br>25,344 bits (NJU6679)   | BUMPED CHIP  |
| NJU6674                                    | 39 X 132-output<br>Bit Map LCD Driver  | 32,768 bits (NJU6680)<br>84,480 bits (NJU6682)   | BUMPED CHIP<br>TCP   |
| NJU6577S                                   | 53 X 80-output<br>Bit Map LCD Driver   | Direct Interface with both of 68 and 80 type CPU (except NJU6576)<br>Serial Interface (I <sup>2</sup> C Bus Interface for NJU6576)<br>Voltage Tripler Incorporated<br>(NJU6580,6583,6578,6575A,6673 and 6675)  | BUMPED CHIP<br>TCP   |
| NJU6675                                    | 58 X 96-output<br>Bit Map LCD Driver   | Voltage Booster x 4 (NJU6577S, 6674 and 6676)  | BUMPED CHIP  |
| NJU6676                                    | 65 X 132-output<br>Bit Map LCD Driver  | Voltage Booster x 5 (NJU6677 and 6678V)<br>Voltage Booster x 6 (NJU6679 and 6680)  | BUMPED CHIP<br>TCP, COF  |
| NJU6677                                    | 88 X 132-output<br>Bit Map LCD Driver  | Voltage Booster x 7 (NJU6682)<br>Partial Display Function (NJU6677,6678V,6679,6682 and 6680)   | BUMPED CHIP<br>TCP   |
| NJU6678V                                   | 104 X 132-output<br>Bit Map LCD Driver   | Variable RAM Map (NJU6682)<br>N-Line Inverse for High-Duty Display<br>(NJU6677,6678V,6679,6682 and 6680)   | BUMPED CHIP<br>TCP, COF  |
| NJU6679                                    | 128 X 132-output<br>Bit Map LCD Driver   | Electrical Variable Resistance (NJU6580 and 6583)<br>Precision Electrical Variable Resistance  | BUMPED CHIP<br>TCP   |
| NJU6680                                    | 128 X 128-output<br>4-G/S Bit Map LCD Driver   | (NJU6578,6575A,6577S,6673,6674,6675,6676,6677,6678V,6679,6682, and 6680)   | BUMPED CHIP<br>TCP   |
| NJU6682                                    | 160 X 132-output<br>4-G/S Bit Map LCD Driver   | Common Driver Assignment Function<br>(except NJU6576,6673,6677,6678V,6679,6682 and 6680)<br>Smooth Scroll function (NJU6580 and 6583)<br>Internal Clock Operation (except NJU6580 and 6583)<br>Low Power Consumption<br>Rectangle outlook for COG(NJU6578,6575A,6576,6577S and 6676)   | BUMPED CHIP<br>TCP   |

## LCD DRIVER/CONTROLLER SERIES LINE-UP

(2) SPECIFICATION COMPARATIVE TABLE

| Type No.<br>Item        | NJU6450A<br>NJU6570 | NJU6451A<br>NJU6457 | NJU6452A<br>NJU6572 | NJU6453A<br>NJU6458 | NJU6575A           | NJU6578            | NJU6675            |
|-------------------------|---------------------|---------------------|---------------------|---------------------|--------------------|--------------------|--------------------|
| Display Capacity        | 16cx61s             | 80-Output           | 16cx61s             | 80-Output           | 33cx134s           | 33cx102s           | 58cx96s            |
| Extension Function      | 32cx122s            | -                   | 32cx122s            | -                   | -                  | -                  | -                  |
| Logic Operating Voltage | 2.4V-5.5V           | 2.4V-5.5V           | 2.4V-5.5V           | 2.4V-5.5V           | 2.4V-5.5V          | 2.4V-5.5V          | 2.4V-3.3V          |
| LCD Driving Voltage     | 13.5V<br>10.0V      | 13.5V               | 13.5V<br>10.0V      | 13.5V               | 13.5V              | 10.0V              | 10.0V              |
| DD RAM Size             | 2,560               | 2,560               | 2,560               | 2,560               | 4,422              | 3,366              | 5,568              |
| Interface               | Parallel            | Parallel            | Parallel            | Parallel            | Parallel<br>Serial | Parallel<br>Serial | Parallel<br>Serial |
| Voltage Booster         | -                   | -                   | -                   | -                   | Tripler            | Tripler            | Tripler            |
| Oscillation Circuits    | Ext R               | Ext CLK             | Ext CLK             | Ext CLK             | CR on chip         | CR on chip         | CR on chip         |
| Bias Ratio              | Ext                 | Ext                 | Ext                 | Ext                 | 1/7                | 1/7                | 1/8                |
| Electrical Variable     | -                   | -                   | -                   | -                   | 16 step            | 16 step            | 16 step            |
| Duty                    | 1/16,1/32           | 1/16,1/32           | 1/16,1/32           | 1/16,1/32           | 1/32,1/33          | 1/32,1/33          | 1/58               |

| Type No.<br>Item        | NJU6576               | NJU6580            | NJU6583            | NJU6577S           | NJU6673            | NJU6674            | NJU6676            |
|-------------------------|-----------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Display Capacity        | 34cx101s              | 17cx96s            | 33cx96s            | 53cx80s            | 25cx100s           | 39cx132s           | 65cx132s           |
| Extension Function      | -                     | -                  | -                  | -                  | -                  | -                  | 65cx264s           |
| Logic Operating Voltage | 2.2V-5.5V             | 2.4V-5.5V          | 2.4V-5.5V          | 2.4V-5.5V          | 2.4V-5.5V          | 2.4V-3.3V          | 2.2V-5.5V          |
| LCD Driving Voltage     | 13.5V                 | 10.0V              | 10.0V              | 10.0V              | 10.0V              | 10.0V              | 18.0V              |
| DD RAM Size             | 3,434                 | 1,904              | 3,696              | 4,240              | 2,500              | 5,148              | 8,580              |
| Interface               | I <sup>2</sup> C Bass | Parallel<br>Serial | Parallel<br>Serial | Parallel<br>Serial | Parallel<br>Serial | Parallel<br>Serial | Parallel<br>Serial |
| Voltage Booster         | -                     | Tripler            | Tripler            | Booster x 4        | Tripler            | Booster x 4        | Booster x 4        |
| Oscillation Circuits    | CR on chip            | Ext CLK            | Ext CLK            | CR on chip         | CR on chip         | CR on chip         | CR on chip         |
| Bias Ratio              | 1/5,1/7               | 1/5                | 1/5                | 1/8                | 1/6,1/5            | 1/6,1/5            | 1/7,1/9            |
| Electrical Variable     | -                     | 32 step            | 32 step            | 32 step            | 16 step            | 64 step            | 64 step            |
| Duty                    | 1/17,1/34             | 1/16,1/17          | 1/32,1/33          | 1/52,1/53          | 1/15,1/25          | 1/39               | 1/65               |

| Type No.<br>Item        | NJU6677            | NJU6678V           | NJU6679            | NJU6680            | NJU6682            |
|-------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Display Capacity        | 88cx132s           | 104cx132s          | 128cx132s          | 128cx128s          | 160cx132s          |
| Extension Function      | -                  | -                  | -                  | -                  | -                  |
| Logic Operating Voltage | 2.4V-3.6V          | 2.5V-3.3V          | 2.4V-3.6V          | 1.8v-3.0V          | 2.4V-3.3V          |
| LCD Driving Voltage     | 18.0V              | 17.0V              | 18.0V              | 18.0V              | 18.0V              |
| DD RAM Size             | 15,840             | 21,120             | 25,344             | 32,768             | 84,480             |
| Interface               | Parallel<br>Serial | Parallel<br>Serial | Parallel<br>Serial | Parallel<br>Serial | Parallel<br>Serial |
| Voltage Booster         | Booster x 5        | Booster x 5        | Booster x 6        | Booster x 6        | Booster x 7        |
| Oscillation Circuits    | CR on chip         | CR on chip         | CR on chip         | CR on chip         | CR on chip         |
| Bias Ratio              | 1/4-1/10           | 1/4-1/11           | 1/4-1/12           | 1/5-1/12           | 1/4-1/14           |
| Electrical Variable     | 201 step           | 201 step           | 201 step           | 64                 | 201 step           |
| D u t y                 | *                  | *                  | *                  | *                  | *                  |

\* Partial Display Function to set one or two display areas on the screen with Automatic Duty cycle Ratio Selection.

## LCD DRIVER/CONTROLLER SERIES LINE-UP

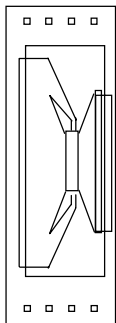
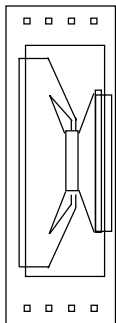
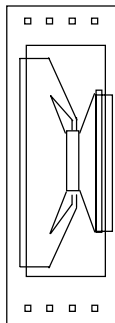
### (3)SELECTION GUIDE

| Display | 61 SEG                                     | 80 SEG  | 96 SEG  | 100 SEG | 101 SEG | 102 SEG | 128 SEG                | 132 SEG                | 134 SEG  |
|---------|--|---------|---------|---------|---------|---------|------------------------|------------------------|----------|
| 16 COM  | NJU6450A<br>NJU6452A<br>NJU6570<br>NJU6572 | -       | -       | -       | -       | -       | -                      | -                      | -        |
| 17 COM  | -  | -       | NJU6580 | -       | -       | -       | -                      | -                      | -        |
| 25 COM  | -  | -       | -       | NJU6673 | -       | -       | -                      | -                      | -        |
| 33 COM  | -  | -       | NJU6583 | -       | -       | NJU6578 | -                      | -                      | NJU6575A |
| 34 COM  | -  | -       | -       | -       | NJU6576 | -       | -                      | -                      | -        |
| 39 COM  | -  | -       | -       | -       | -       | -       | -                      | NJU6674                | -        |
| 53 COM  | -  | NJU6577 | -       | -       | -       | -       | -                      | -                      | -        |
| 58 COM  | -  | -       | NJU6675 | -       | -       | -       | -                      | -                      | -        |
| 65 COM  | -  | -       | -       | -       | -       | -       | -                      | NJU6676                | -        |
| 88 COM  | -  | -       | -       | -       | -       | -       | -                      | NJU6677 <sup>2</sup>   | -        |
| 104 COM | -  | -       | -       | -       | -       | -       | -                      | NJU6678V <sup>2</sup>  | -        |
| 128 COM | -  | -       | -       | -       | -       | -       | NJU6680 <sup>1,2</sup> | NJU6679 <sup>2</sup>   | -        |
| 160 COM | -  | -       | -       | -       | -       | -       | -                      | NJU6682 <sup>1,2</sup> | -        |

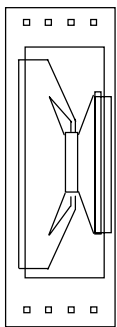
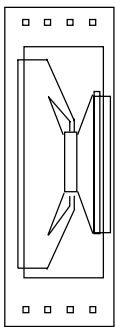
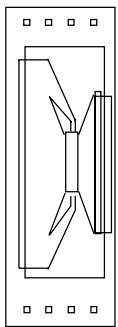
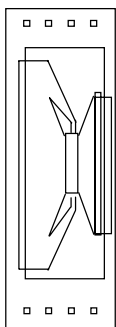
<sup>\*1</sup> 4-Gray Scale.

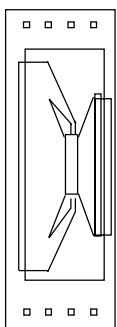
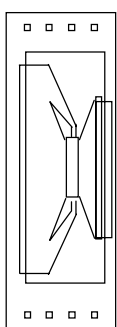
<sup>\*2</sup> Partial Display Function to set one or two display areas on the screen with Automatic Duty cycle Ratio Selection.

### (4)STANDARD TCP

| Type No.         | NJU6575AH01   | NJU6580H01  | NJU6583H01  |
|------------------|---|---|---|
| Item             |   |   |   |
| Out Line of TCP  |  |  |  |
| Size(mm)         | 45.8 x 13.8   | 36.3 x 14.2   | 36.3 x 14.2   |
| Chip Mount       | Face UP   | Face UP   | Face UP   |
| Display Capacity | 33 x 134 dot  | 17 x 96 dot   | 33 x 96 dot   |
| Common Driver    | 33-Common<br>(COM1-32,COMI)   | 17-Common<br>(COM1-16,COMI)   | 33-Common<br>(COM1-32,COMI)   |
| Segment Driver   | 134-Segment   | 96-Segment  | 96-Segment  |
| Duty             | 1/32,1/33   | 1/16,1/17   | 1/32,1/33   |
| Interface        | 8 bit Parallel/Serial   | 8 bit Parallel/Serial   | 8 bit Parallel/Serial   |
| Packing          | Reel Packing  | Reel Packing  | Reel Packing  |
| TCP Folding      | No Guarantee  | No Guarantee  | No Guarantee  |

## LCD DRIVER/CONTROLLER SERIES LINE-UP

| Type No.<br>Item | NJU6577SH01   | NJU6676H01  | NJU6677H01  | NJU6678VH02   |
|------------------|---|---|---|---|
| Out Line of TCP  |  |  |  |  |
| Size(mm)         | 37.3 x 15.3   | 32.15 x 12.5  | 35.45 x 13.5  | 31.3 x 14.5   |
| Chip Mount       | Face UP   | Face DOWN   | Face DOWN   | Face DOWN   |
| Display Capacity | 50 x 80 dot   | 65 x 132 dot  | 88 x 132 dot  | 104 x 132 dot   |
| Common Driver    | 53-Common<br>(COM1-52,COMI)   | 65-Common<br>(COM1-65)  | 88-Common<br>(COM1-88)  | 104-Common<br>(COM1-104)<br>132-Segment   |
| Segment Driver   | 80-Segment  | 132-Segment   | 132-Segment   | *   |
| Duty             | 1/52,1/53   | 1/65  | *   | 8 bit Parallel/Serial   |
| Interface        | 8 bit Parallel/Serial   | 8 bit Parallel/Serial   | 8 bit Parallel/Serial   | Reel Packing  |
| Packing          | Reel Packing  | Reel Packing  | Reel Packing  | No Guarantee  |
| TCP Folding      | No Guarantee  | No Guarantee  | No Guarantee  | No Guarantee  |

| Type No.<br>Item | NJU6679H01  | NJU6680H01  |  |  |
|------------------|---|---|--|--|
| Out Line of TCP  |  |  |  |  |
| Size(mm)         | 32.15 x 12.5  | 34.0 x 20.57  |  |  |
| Chip Mount       | Face UP   | Face UP   |  |  |
| Display Capacity | 128 x 132 dot   | 128 x 128 dot   |  |  |
| Common Driver    | 128-Common<br>(COM1-128)  | 128-Common<br>(COM0-COM127)   |  |  |
| Segment Driver   | 132-Segment   | 128-Segment   |  |  |
| Duty             | *   | *   |  |  |
| Interface        | 8 bit Parallel/Serial   | 8 bit Parallel/Serial   |  |  |
| Packing          | Reel Packing  | Reel Packing  |  |  |
| TCP Folding      | No Guarantee  | No Guarantee  |  |  |

\* Partial Display Function which Automatic Duty cycle Ratio Selection.

• The above TCPs are standard products, therefore initial cost(for development) is not required.

In case of the custom TCP, please consult with New Japan Radio about initial cost.