

SED1278F/D

Dot Matrix LCD Controller Driver

- 1/8, 1/11 or 1/16 Duty Dot Matrix Drive
- Built-in Character Generator ROM and RAM (ROM 240 characters, RAM 8 characters)
- Maximum Simultaneous Display of 80 Characters
(With extension LCD driver)

DESCRIPTION

The SED1278F/D is a dot matrix LCD controller/driver which is dedicated to character display. It is capable of displaying up to 80 characters under 4-bit/8-bit MPU control.

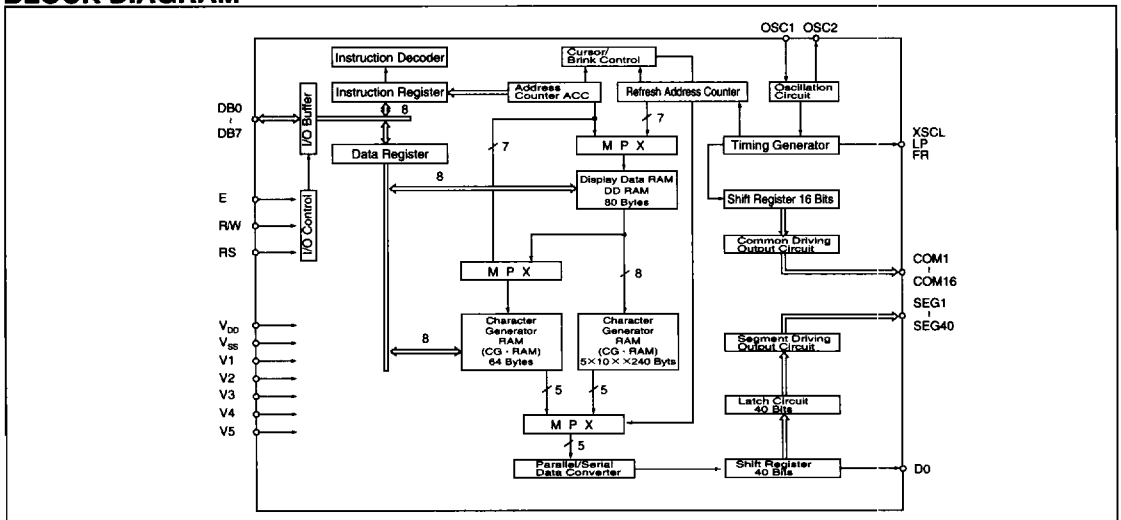
The built-in character generator ROM has an extended capacity of 240 different characters, each being generated in a 5×10 dots font compatible with a 1/11 duty. In addition, the SED1278F/D contains 64 bytes of character generator RAM in which the user can store 8 different characters, each consisting of 5×8 dots. These memory features offer high flexibility in character display.

The guaranteed minimum LCD driving voltage is 3V, and this makes the SED1278F/D suitable for driving low voltage LCDs.

FEATURES

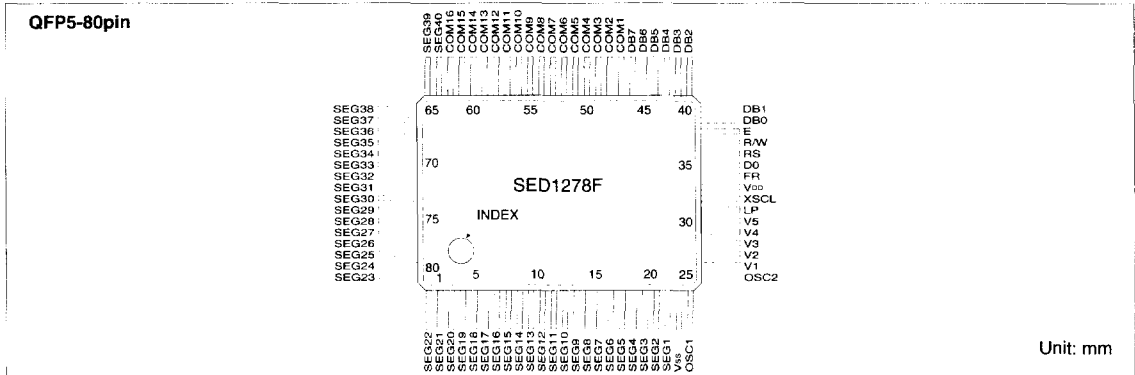
- Display RAM 80 bytes (80 characters)
- Character generator ROM 240 characters (Able to 256 characters)
- Character generator RAM 8 characters
- Built-in CR oscillator, Built-in power-on reset circuit
- Maximim display dimension 40 characters × 2 lines, 80 characters × 1 line
(When accompanied with SED1181FLA/DLA, SED1681FOA/DOA)
- 1/8, 1/11 or 1/16 duty matrix drive (fixed by command)
- 2 flame AC wave-form drive
- High-speed bus interface with 4-bit/8-bit MPU
- Powerful display control instructions
- Character 5 × 7 dots+Cursor line (5 × 8 dots also possible)
5 × 10 dots+Cursor line
- 6 Kinds of character font
- Single power supply 5V±10% (Logic)
- Low LCD driving voltage $V_{DD}-V_5 \geq 3.0V$
- Package SED1278F: QFP5-80pin (plastic)
SED1278D: Die form (Al pad)

BLOCK DIAGRAM



SED1278F/D

PIN CONFIGURATION



PIN DESCRIPTION

| Symbol | No. of signals | Function |
|-----------------|----------------|--|
| RS | 1 | Register select signal |
| R/W | 1 | Read/write select signal |
| E | 1 | Read/write execute signal |
| DB0 to DB7 | 8 | Data bus |
| LP | 1 | Data latching pulse |
| XSC1 | 1 | Data transfer clock |
| FR | 1 | LCD AC driving signal |
| DO | 1 | Serial data |
| COM 1 to COM16 | 16 | Common outputs COM9 to COM16: non-select for 1/8 duty COM12 to COM16: non-select for 1/11 duty |
| SEG1 to SEG40 | 40 | Segment outputs |
| V1 to V5 | 5 | LCD driving power ($V_5 \geq V_{SS}$) |
| V _{DD} | 1 | +5V |
| V _{SS} | 1 | 0V (GND) |
| OSC1 | | Used to connect resistor (typ. 91K-ohms) for oscillation; |
| OSC2 | 2 | OSC1 is for external clock input. |

| * 1 | RS | R/W | E | Operation |
|-----|----|-----|---|--|
| | 0 | 0 | | Instruction write cycle |
| | 0 | 1 | 1 | Busy flag read cycle Address counter read cycle |
| | 1 | 0 | | DD RAM or CG RAM data write cycle |
| | 1 | 1 | 1 | DD RAM or CG RAM data read cycle |

ABSOLUTE MAXIMUM RATINGS

(V_{SS}=0V, T_a=25°C)

| Rating | Symbol | Value | Unit |
|--------------------------------|----------------------------------|------------------------------|------|
| Supply voltage (1) | V _{DD} | -0.3 to 7.0 | V |
| Supply voltage (2) | V ₁ to V ₅ | -0.3 to V _{DD} +0.3 | V |
| Input voltage | V _I | -0.3 to V _{DD} +0.3 | V |
| Output voltage | V _O | -0.3 to V _{DD} +0.3 | V |
| Power dissipation | P _D | 300 | mW |
| Operating temperature | T _{opr} | -20 to 75 | °C |
| Storage temperature | T _{stg} | -65 to 150 | °C |
| Soldering temperature and time | T _{sol} | 260°C · 10s (at lead) | — |

Note: The following condition must always hold true: V_{DD} ≥ V₁ ≥ V₂ ≥ V₃ ≥ V₄ ≥ V₅

ELECTRICAL CHARACTERISTICS

DC Characteristics

(V_{DD}=5.0V±10%, V_{SS}=0V, Ta=-20 to 75°C)

| Characteristic | Symbol | Condition | Applicable Pin | Min. | Typ. | Max. | Unit |
|---|---------------------|---|-----------------------|----------------------|------|--------------------|------|
| "H" level input voltage (1) | V _{IH1} | | DB0-DB7 RS, R/W, E | 2.0 | — | V _{DD} | V |
| "L" level input voltage (1) | V _{IL1} | | | V _{SS} | — | 0.8 | V |
| "H" level input voltage (2) | V _{IH2} | | OSC1 | V _{DD} -1.0 | — | V _{DD} | V |
| "L" level input voltage (2) | V _{IL2} | | | V _{SS} | — | 1.0 | V |
| "H" level output voltage (1) | V _{OH1} | I _{OH} =-0.205mA | DB0-DB7 | 2.4 | — | — | V |
| "L" level output voltage (1) | V _{OL1} | I _{OL} =1.6mA | | — | — | 0.4 | V |
| "H" level output voltage (2) | V _{OH2} | I _{OH} =-0.04mA | XSCL LP DO | 0.9V _{DD} | — | — | V |
| "L" level output voltage (2) | V _{OL2} | I _{OL} =0.04mA | | — | — | 0.1V _{DD} | V |
| Driver-on resistor (COM) | R _{COM} | V _{COM} -V _n =0.5V | COM1-16 | — | 2 | 10 | kΩ |
| Driver-on resistor (SEG) | R _{SEG} | V _{SEG} -V _n =0.5V | SEG1-40 | — | 2.5 | 10 | kΩ |
| I/O leakage current | I _{IL} | V _I =0 to V _{DD} | | — | — | 1 | μA |
| Pull-up MOS current | -I _P | V _{DD} =5V | | 50 | 125 | 250 | μA |
| Supply current | I _{OP} | Rf oscillation, from external clock V _{DD} =5V, f _{osc} =f _{CP} =270kHz | V _{DD} | — | 0.5 | 0.8 | mA |
| External clock operation | | | | | | | |
| External clock operating frequency | f _{EXTCL} | | | 125 | 250 | 350 | kHz |
| External clock duty | Duty | | | 45 | 50 | 55 | % |
| External clock rise time | t _{rEXTCL} | | | - | — | 0.2 | μs |
| External clock fall time | t _{fEXTCL} | | | - | — | 0.2 | μs |
| Internal clock operation (Rf oscillation) | | | | | | | |
| Oscillation frequency | f _{OSC} | R _f =91KΩ ±2% | | 190 | 270 | 350 | kHz |
| Internal clock operation (Ceramic filter oscillation) | | | | | | | |
| Oscillation frequency | f _{OSC} | Ceramic filter | | 245 | 250 | 255 | kHz |
| LCD driving voltage | V _{LCD} | V _{DD} -V ₅ | | 3.0 | — | V _{DD} | V |

AC Characteristics

Read Cycle

(V_{DD}=5.0V±10%, V_{SS}=0V, Ta=-20 to 75°C)

| Characteristic | Symbol | Condition | Min. | Typ. | Max. | Unit |
|------------------------------|-----------------------------------|-----------------------|------|------|------|------|
| Enable cycle time | t _{cycE} | | 500 | — | — | ns |
| Enable "H" level pulse width | t _{WEH} | | 220 | — | — | ns |
| Enable rise/fall time | t _{rE} , t _{fE} | | — | — | 25 | ns |
| RS, R/W setup time | t _{AS} | | 40 | — | — | ns |
| RS, R/W address hold time | t _{AH} | | 10 | — | — | ns |
| Read data output delay | t _{rD} | C _L =100pF | — | — | 120 | ns |
| Read data hold time | t _{DHR} | | 20 | — | — | ns |

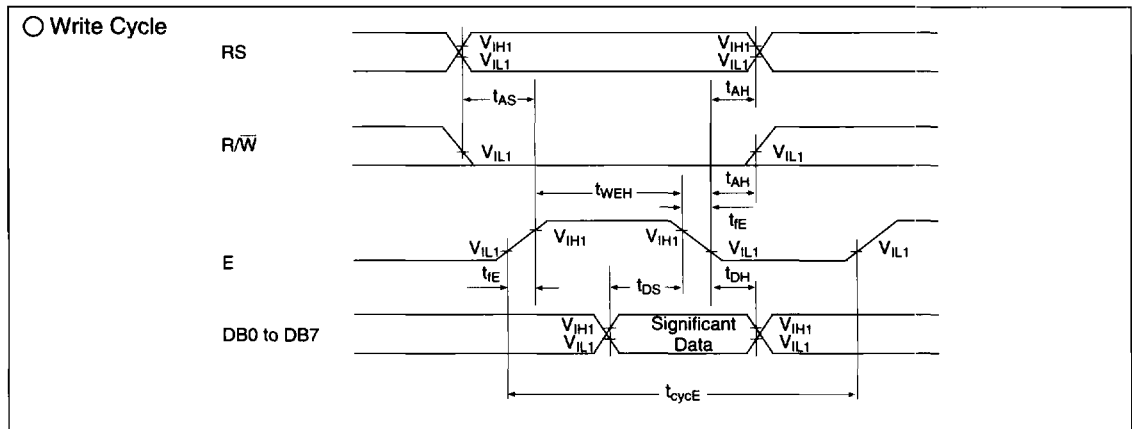
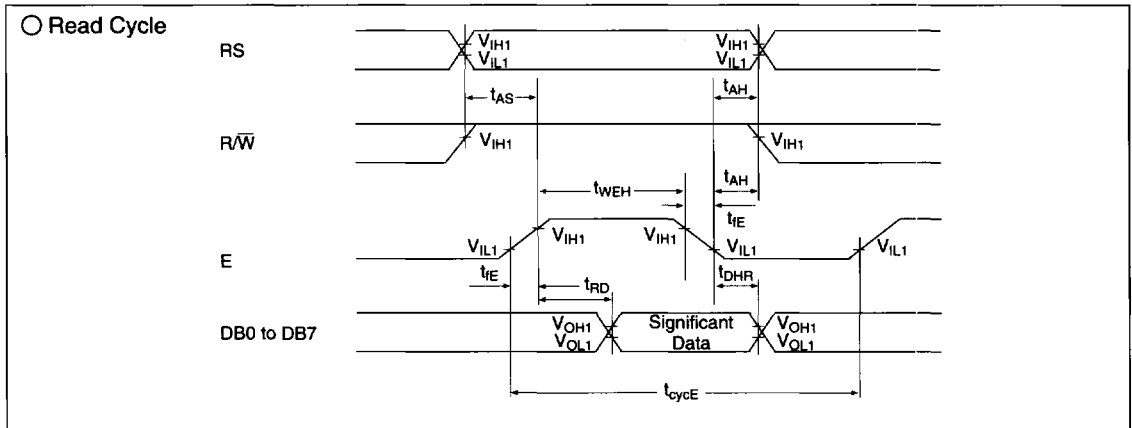
Write Cycle

(V_{DD}=5.0V±10%, V_{SS}=0V, Ta=-20 to 75°C)

| Characteristic | Symbol | Condition | Min. | Typ. | Max. | Unit |
|------------------------------|-----------------------------------|-----------|------|------|------|------|
| Enable cycle time | t _{cycE} | | 500 | — | — | ns |
| Enable "H" level pulse width | t _{WEH} | | 220 | — | — | ns |
| Enable rise/fall time | t _{rE} , t _{fE} | | — | — | 25 | ns |
| RS, R/W setup time | t _{AS} | | 40 | — | — | ns |
| RS, R/W address hold time | t _{AH} | | 10 | — | — | ns |
| Data setup time | t _{DS} | | 60 | — | — | ns |
| Write data hold time | t _{DH} | | 10 | — | — | ns |

SED1278F/D

● Timing Chart

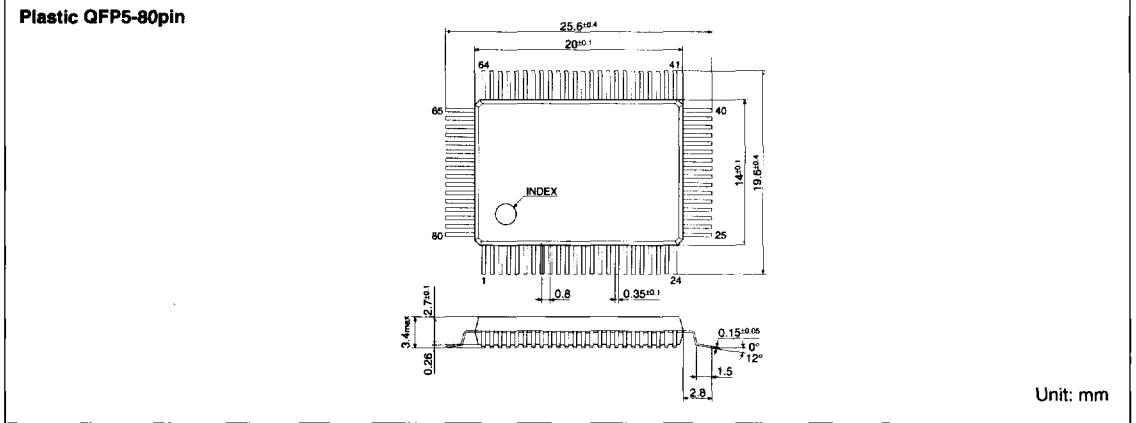


■ DISPLAY COMMAND

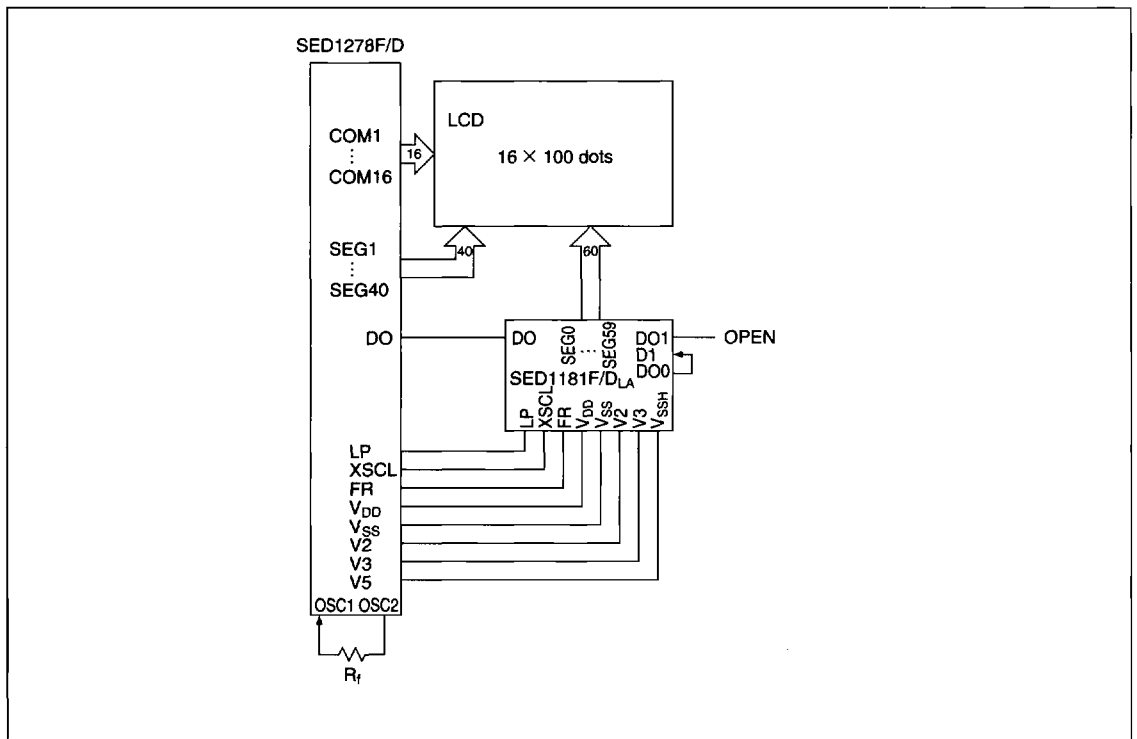
| Parameter | RS | R/W | DB7 | DB6 | DB5 | DB4 | DB3 | DB2 | DB1 | DB0 | Note |
|------------------------------------|----|-----|------------|-----------------|-----------------|-----|-----|-----|-----|---|--|
| CLEAR DISPLAY | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | |
| CURSOR HOME | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | |
| ENTRY MODE SET | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | I/D | I/D | DB1=1: Increment, DB1=0: Decrement DB0=1: The display is shifted. DB0=0: The display is not shifted. |
| DISPLAY ON/OFF | 0 | 0 | 0 | 0 | 0 | 0 | 1 | D | C | C | DB2=1: Display on DB2=0: Display off DB1=1: Cursor on DB1=0: Cursor off DB0=1: Brinking on DB0=0: Brinking off |
| CURSOR/DISPLAY SHIFT | 0 | 0 | 0 | 0 | 0 | 1 | S/C | R/L | * | * | DB3=1: Shifts display one character DB2=1: Right shift, DB2=0: Left shift |
| SYSTEM SET | 0 | 0 | 0 | 0 | 1 | DL | N | F | * | * | DB4=1: 8 bits, DB4=0: 4 bits DB3=1: 2 lines display (1/16 duty), DB3=0: 1 line display (DB2=1: 5×10 dots, 1/11 duty DB2=0: 5×7 dots, 1/8 duty) |
| SET CGRAM ADDRESS | 0 | 0 | 0 | 1 | A _{CC} | | | | | | The address length that can be set is 64 addresses. |
| SET DDRAM ADDRESS | 0 | 0 | 1 | A _{DD} | | | | | | The address length that can be set is 80 addresses. | |
| READ BUSY FLUG/ ADDRESS COUNTER | 0 | 1 | BF | AC | | | | | | DB7=1: Busy (instruction not accepted) DB7=0: Ready (instruction accepted) | |
| WRITE DATA | 1 | 0 | Write Data | | | | | | | | |
| READ DATA | 1 | 1 | Read Data | | | | | | | | |

* Don't care

PACKAGE DIMENSIONS



LCD PANEL INTERFACE EXAMPLE (2 lines × 20 characters)



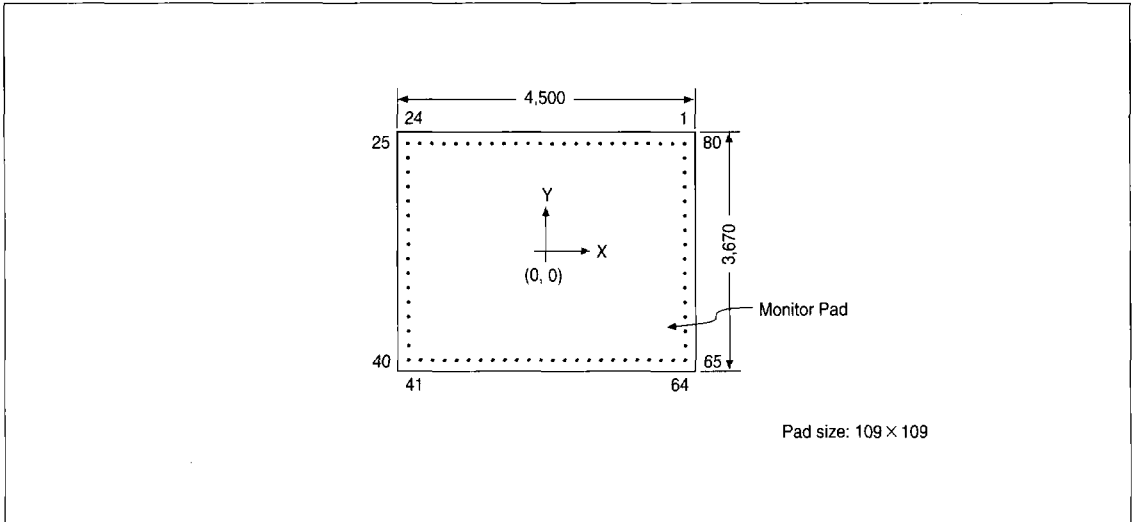
SED1278F/D is usually connected to 8-bit MPU via I/O ports.

SED1278F/D

SED1278D

PAD LAYOUT

Unit: μm



PAD COORDINATION

Unit: μm

| Pad No. | Pad Name | X | Y | Pad No. | Pad Name | X | Y | Pad No. | Pad Name | X | Y |
|---------|----------------|--------|-------|---------|-----------------|--------|--------|---------|----------|-------|--------|
| 1 | SEG22 | 2,087 | 1,671 | 28 | V ₃ | -2,087 | 819 | 55 | COM9 | 452 | -1,671 |
| 2 | SEG21 | 1,905 | ↓ | 29 | V ₄ | ↓ | 637 | 56 | COM10 | 633 | ↓ |
| 3 | SEG20 | 1,723 | ↓ | 30 | V ₅ | ↓ | 455 | 57 | COM11 | 814 | ↓ |
| 4 | SEG19 | 1,541 | ↓ | 31 | LP | ↓ | 273 | 58 | COM12 | 995 | ↓ |
| 5 | SEG18 | 1,359 | ↓ | 32 | XSCL | ↓ | 91 | 59 | COM13 | 1,177 | ↓ |
| 6 | SEG17 | 1,177 | ↓ | 33 | V _{CC} | ↓ | -91 | 60 | COM14 | 1,359 | ↓ |
| 7 | SEG16 | 995 | ↓ | 34 | FR | ↓ | -273 | 61 | COM15 | 1,541 | ↓ |
| 8 | SEG15 | 814 | ↓ | 35 | DO | ↓ | -455 | 62 | COM16 | 1,723 | ↓ |
| 9 | SEG14 | 633 | ↓ | 36 | RS | ↓ | -637 | 63 | SEG40 | 1,905 | ↓ |
| 10 | SEG13 | 452 | ↓ | 37 | R/W | ↓ | -819 | 64 | SEG39 | 2,087 | ↓ |
| 11 | SEG12 | 272 | ↓ | 38 | E | ↓ | -1,001 | 65 | SEG38 | ↓ | -1,365 |
| 12 | SEG11 | 91 | ↓ | 39 | DB0 | ↓ | -1,183 | 66 | SEG37 | ↓ | -1,183 |
| 13 | SEG10 | -91 | ↓ | 40 | DB1 | ↓ | -1,365 | 67 | SEG36 | ↓ | -1,001 |
| 14 | SEG9 | -272 | ↓ | 41 | DB2 | ↓ | -1,671 | 68 | SEG35 | ↓ | -819 |
| 15 | SEG8 | -452 | ↓ | 42 | DB3 | ↓ | -1,905 | 69 | SEG34 | ↓ | -637 |
| 16 | SEG7 | -633 | ↓ | 43 | DB4 | ↓ | -1,723 | 70 | SEG33 | ↓ | -455 |
| 17 | SEG6 | -814 | ↓ | 44 | DB5 | ↓ | -1,541 | 71 | SEG32 | ↓ | -273 |
| 18 | SEG5 | -995 | ↓ | 45 | DB6 | ↓ | -1,359 | 72 | SEG31 | ↓ | -91 |
| 19 | SEG4 | -1,177 | ↓ | 46 | DB7 | ↓ | -1,177 | 73 | SEG30 | ↓ | 91 |
| 20 | SEG3 | -1,359 | ↓ | 47 | COM1 | ↓ | -995 | 74 | SEG29 | ↓ | 273 |
| 21 | SEG2 | -1,541 | ↓ | 48 | COM2 | ↓ | -814 | 75 | SEG28 | ↓ | 455 |
| 22 | SEG1 | -1,723 | ↓ | 49 | COM3 | ↓ | -633 | 76 | SEG27 | ↓ | 637 |
| 23 | GND | -1,905 | ↓ | 50 | COM4 | ↓ | -452 | 77 | SEG26 | ↓ | 819 |
| 24 | OSC1 | -2,087 | ↓ | 51 | COM5 | ↓ | -272 | 78 | SEG25 | ↓ | 1,001 |
| 25 | OSC2 | ↓ | 1,365 | 52 | COM6 | ↓ | -91 | 79 | SEG24 | ↓ | 1,183 |
| 26 | V ₁ | ↓ | 1,183 | 53 | COM7 | ↓ | 91 | 80 | SEG23 | ↓ | 1,365 |
| 27 | V ₂ | ↓ | 1,001 | 54 | COM8 | ↓ | 272 | | | | |

■ SED1278D_{0A} CHARACTER FONT

| | | Higher 4-bit (D4 to D7) of Character Code (Hexadecimal) | | | | | | | | | | | | | | | |
|--|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| Lower 4-bit (D0 to D3) of Character Code (Hexadecimal) | 0 | CG RAM (1) | | | 0 | 0 | P | ` | P | | | | — | 9 | 3 | 0 | P |
| | 1 | CG RAM (2) | ! | 1 | P | 0 | a | a | | | | u | 7 | 7 | 4 | a | a |
| | 2 | CG RAM (3) | " | 2 | R | b | r | r | | | | r | 4 | w | x | p | e |
| | 3 | CG RAM (4) | # | 3 | C | S | c | a | | | | j | 0 | 7 | e | e | w |
| | 4 | CG RAM (5) | \$ | 4 | D | T | d | t | | | | \ | 1 | k | t | u | o |
| | 5 | CG RAM (6) | % | 5 | E | U | e | u | | | | . | * | * | 1 | S | U |
| | 6 | CG RAM (7) | & | 6 | F | V | v | v | | | | 7 | 0 | 2 | 3 | 0 | Z |
| | 7 | CG RAM (8) | ' | 7 | G | W | w | w | | | | 7 | 7 | 7 | 7 | g | g |
| | 8 | CG RAM (1) | (| 8 | H | X | x | x | | | | 4 | 0 | 0 | 0 | 0 | X |
| | 9 | CG RAM (2) |) | 9 | I | Y | y | y | | | | 0 | 1 | 0 | 0 | 0 | Y |
| | A | CG RAM (3) | * | * | J | Z | z | z | | | | 1 | 0 | 0 | 0 | 0 | J |
| | B | CG RAM (4) | + | + | K | 0 | k | (| | | | * | 0 | 0 | 0 | 0 | K |
| | C | CG RAM (5) | , | < | L | * | l | l | | | | 0 | 0 | 0 | 0 | 0 | L |
| | D | CG RAM (6) | — | = | M | 0 | m |) | | | | 1 | 0 | 0 | 0 | 0 | M |
| | E | CG RAM (7) | . | > | N | 0 | n | + | | | | 0 | 0 | 0 | 0 | 0 | N |
| | F | CG RAM (8) | / | ? | O | 0 | o | + | | | | 0 | 0 | 0 | 0 | 0 | O |

SED1278F/D

■ SED1278F_{0B/0B} CHARACTER FONT

| | | Higher 4-bit (D4 to D7) of Character Code (Hexadecimal) | | | | | | | | | | | | | | | |
|--|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| Lower 4-bit (D0 to D3) of Character Code (Hexadecimal) | 0 | CG RAM (1) | ± | | 0 | P | ' | P | 9 | á | á | ' | 1 | P | B | 7 | |
| | 1 | CG RAM (2) | ≡ | ! | 1 | A | Q | a | 9 | Q | a | á | " | 1 | t | y | U |
| | 2 | CG RAM (3) | 7 | " | 2 | R | b | r | é | á | á | ° | ° | ° | ° | ° | ° |
| | 3 | CG RAM (4) | ¿ | # | 3 | O | S | c | á | á | á | ° | ° | ° | ° | ° | ° |
| | 4 | CG RAM (5) | ¿ | \$ | 4 | T | t | a | á | á | á | ' | ° | ° | ° | ° | ° |
| | 5 | CG RAM (6) | √ | % | 5 | E | U | e | á | á | á | ° | ° | ° | ° | ° | ° |
| | 6 | CG RAM (7) | √ | & | 6 | F | U | f | v | á | á | ° | ° | ° | ° | ° | ° |
| | 7 | CG RAM (8) | √ | ' | 7 | G | U | g | v | á | á | ° | ° | ° | ° | ° | ° |
| | 8 | CG RAM (1) | √ | (| 8 | H | X | h | x | á | á | ° | ° | ° | ° | ° | ° |
| | 9 | CG RAM (2) | √ |) | 9 | I | Y | i | y | á | á | ° | ° | ° | ° | ° | ° |
| | A | CG RAM (3) | √ | * | | J | Z | j | z | á | á | ° | ° | ° | ° | ° | ° |
| | B | CG RAM (4) | √ | + | | K | C | k | c | á | á | ° | ° | ° | ° | ° | ° |
| | C | CG RAM (5) | √ | , | | L | V | l | v | á | á | ° | ° | ° | ° | ° | ° |
| | D | CG RAM (6) | √ | - | | M | O | m | o | á | á | ° | ° | ° | ° | ° | ° |
| | E | CG RAM (7) | √ | . | | N | N | n | ' | á | á | ° | ° | ° | ° | ° | ° |
| | F | CG RAM (8) | √ | / | | O | L | o | á | á | á | ° | ° | ° | ° | ° | ° |

■ SED1278Foc/Doc CHARACTER FONT

| | | Higher 4-bit (D4 to D7) of Character Code (Hexadecimal) | | | | | | | | | | | | | | | | |
|--|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F | |
| Lower 4-bit (D0 to D3) of Character Code (Hexadecimal) | 0 | CG RAM (1) | | | 0 | 0 | P | ' | P | | | | e | e | e | e | e | |
| | 1 | CG RAM (2) | . | ! | 1 | R | Q | a | a | | | | 0 | a | i | e | 0 | a |
| | 2 | CG RAM (3) | " | 2 | E | R | b | r | | | | e | e | e | i | e | a | a |
| | 3 | CG RAM (4) | # | 3 | C | S | c | a | | | | a | e | 0 | i | . | a | a |
| | 4 | CG RAM (5) | \$ | 4 | D | T | a | t | | | | a | 0 | a | i | a | a | # |
| | 5 | CG RAM (6) | % | 5 | E | U | e | u | | | | a | 0 | a | i | ' | 0 | e |
| | 6 | CG RAM (7) | & | 6 | F | V | v | v | | | | ' | 0 | a | ' | 0 | a | a |
| | 7 | CG RAM (8) | ' | 7 | G | W | w | w | | | | a | 0 | 0 | 0 | 0 | a | a |
| | 8 | CG RAM (1) | (| 8 | H | X | x | x | | | | e | e | e | w | 0 | a | a |
| | 9 | CG RAM (2) |) | 9 | I | Y | y | y | | | | e | e | e | y | 0 | a | a |
| | A | CG RAM (3) | * | : | J | Z | z | z | | | | e | 0 | 0 | a | 0 | a | e |
| | B | CG RAM (4) | + | ; | K | K | ' | ' | | | | i | e | e | i | 0 | a | e |
| | C | CG RAM (5) | , | < | L | L | ' | ' | | | | i | 0 | a | e | 0 | a | e |
| | D | CG RAM (6) | - | = | M | M | ' | ' | | | | i | a | i | e | 0 | a | e |
| | E | CG RAM (7) | . | > | N | N | ' | ' | | | | a | e | i | a | e | a | e |
| | F | CG RAM (8) | / | ? | O | O | e | e | | | | a | e | 0 | a | e | a | a |

SED1278F/D

■ SED1278F_{0D}/D_{0E} CHARACTER FONT

| | | Higher 4-bit (D4 to D7) of Character Code (Hexadecimal) | | | | | | | | | | | | | | | |
|--|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| Lower 4-bit (D0 to D3) of Character Code (Hexadecimal) | 0 | CG RAM (1) | | | 0 | a | P | ' | P | | | | | æ | á | á | ý |
| | 1 | CG RAM (2) | : | 1 | Q | a | q | | | | | | | ú | ú | ú | ú |
| | 2 | CG RAM (3) | " | 2 | R | b | r | | | | | | | ë | é | é | é |
| | 3 | CG RAM (4) | # | 3 | S | c | s | | | | | | | ö | ó | ó | ó |
| | 4 | CG RAM (5) | \$ | 4 | T | d | t | | | | | | | ä | ä | ä | ä |
| | 5 | CG RAM (6) | % | 5 | E | e | e | | | | | | | ö | ö | ö | ö |
| | 6 | CG RAM (7) | & | 6 | F | f | f | | | | | | | ó | ó | ó | ó |
| | 7 | CG RAM (8) | ' | 7 | G | g | g | | | | | | | ú | ú | ú | ú |
| | 8 | CG RAM (1) | (| 8 | H | h | h | | | | | | | é | é | é | é |
| | 9 | CG RAM (2) |) | 9 | I | i | i | | | | | | | é | é | é | é |
| | A | CG RAM (3) | * | A | J | j | j | | | | | | | ö | ö | ö | ö |
| | B | CG RAM (4) | + | B | K | k | k | | | | | | | ú | ú | ú | ú |
| | C | CG RAM (5) | , | C | L | l | l | | | | | | | ú | ú | ú | ú |
| | D | CG RAM (6) | - | D | M | m | m | | | | | | | ú | ú | ú | ú |
| | E | CG RAM (7) | . | E | N | n | n | | | | | | | é | é | é | é |
| | F | CG RAM (8) | / | F | O | o | o | | | | | | | ú | ú | ú | ú |

■ SED1278F_{OG}/D_{OG} CHARACTER FONT

| | | Higher 4-bit (D4 to D7) of Character Code (Hexadecimal) | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F | | | | | | |
| Lower 4-bit (D0 to D3) of Character Code (Hexadecimal) | 0 | CG RAM (1) | | | 0 | a | P | ' | P | | | | | | | | | Y | e | a | a | o | i |
| | 1 | CG RAM (2) | . | ! | 1 | A | Q | a | 9 | | | | | | | | | 0 | e | i | a | o | i |
| | 2 | CG RAM (3) | " | 2 | B | R | b | r | | | | | | | | | e | f | a | x | s | f | |
| | 3 | CG RAM (4) | # | 3 | C | S | c | s | | | | | | | | | a | o | o | o | a | a | |
| | 4 | CG RAM (5) | \$ | 4 | D | T | d | t | | | | | | | | | a | o | a | o | o | o | |
| | 5 | CG RAM (6) | % | 5 | E | U | e | u | | | | | | | | | a | o | n | ' | o | o | |
| | 6 | CG RAM (7) | & | 6 | F | V | f | v | | | | | | | | | ' | o | a | ' | o | o | |
| | 7 | CG RAM (8) | ' | 7 | G | W | g | w | | | | | | | | | W | o | o | W | a | a | |
| | 8 | CG RAM (1) | (| 8 | H | X | h | x | | | | | | | | | a | s | o | u | a | W | |
| | 9 | CG RAM (2) |) | 9 | I | Y | i | y | | | | | | | | | e | e | ' | W | o | ' | |
| | A | CG RAM (3) | * | * | J | Z | j | z | | | | | | | | | a | o | a | L | . | e | |
| | B | CG RAM (4) | + | + | K | Y | k | y | | | | | | | | | i | u | W | i | o | o | |
| | C | CG RAM (5) | , | , | L | V | l | v | | | | | | | | | i | W | W | ' | o | o | |
| | D | CG RAM (6) | - | - | M | N | m | n | | | | | | | | | i | . | i | W | e | X | |
| | E | CG RAM (7) | . | . | N | O | n | o | | | | | | | | | a | e | t | ' | a | i | |
| | F | CG RAM (8) | / | / | O | L | o | l | | | | | | | | | a | s | u | W | ' | o | |

SED1278F/D

■ SED1278F_{OH}/D_{OH} CHARACTER FONT

| | | Higher 4-bit (D4 to D7) of Character Code (Hexadecimal) | | | | | | | | | | | | | | | |
|--|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
| Lower 4-bit (D0 to D3) of Character Code (Hexadecimal) | 0 | CG RAM (1) | | | 0 | a | F | ' | P | | | B | W | 4 | . | Z | A |
| | 1 | CG RAM (2) | ! | 1 | A | a | a | | | | | n | m | . | U | P | |
| | 2 | CG RAM (3) | " | 2 | B | R | b | r | | | | e | S | u | U | P | |
| | 3 | CG RAM (4) | # | 3 | C | S | c | s | | | | W | B | u | U | P | |
| | 4 | CG RAM (5) | \$ | 4 | D | T | d | t | | | | S | r | U | U | P | |
| | 5 | CG RAM (6) | % | 5 | E | V | e | v | | | | N | e | a | U | U | P |
| | 6 | CG RAM (7) | & | 6 | F | V | f | v | | | | K | m | U | U | P | |
| | 7 | CG RAM (8) | ' | 7 | G | W | g | w | | | | J | B | a | U | U | P |
| | 8 | CG RAM (1) | (| 8 | H | X | h | x | | | | n | m | U | U | P | |
| | 9 | CG RAM (2) |) | 9 | I | Y | i | y | | | | V | a | U | U | P | |
| | A | CG RAM (3) | * | # | J | Z | j | z | | | | Q | K | U | U | P | |
| | B | CG RAM (4) | + | ; | K | Z | k | z | | | | Y | a | U | U | P | |
| | C | CG RAM (5) | , | < | L | + | l | + | | | | W | M | U | U | P | |
| | D | CG RAM (6) | - | = | M | I | m | i | | | | b | w | U | U | P | |
| | E | CG RAM (7) | . | > | N | ^ | n | ^ | | | | b | m | U | U | P | |
| | F | CG RAM (8) | / | ? | O | _ | o | _ | | | | S | T | U | U | P | |