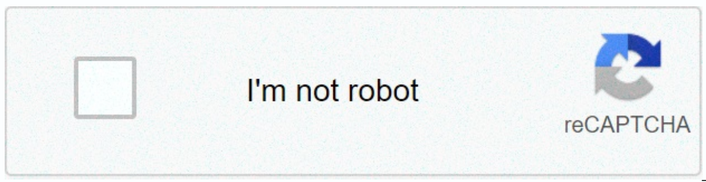

Continue

Alphanumeric lcd 16x2 datasheet

General Specs Interface Pin Function Contour Drawing Electrical Characteristics Display Character Address Code Item Dimension Unit Dot Matrix / Resolution 5×8 dots includes cursor dots Characters × Lines 16 Characters × 2 Lines Module Dimension 85.0 × 36.0 × 13.5 (MAX) mm View Area 66.0 × 16.0 mm Active Area 56.2 × 11.5 mm Mounting Hole 80.0 × 31.0 mm Dot / Pixel Size 0.55 × 0.65 mm Dot / Pixel Pitch 0.60 × 0.70 mm Character Size 2.95 × 5.55 mm Character Pitch 3.55 × 5.95 mm IC ST7066 or Equivalent Interface 6800, option SPI / I2C (RW1063 IC) Power Supply 5V (Also aviailable for 3V)Negative voltage optional for 3V power supply Duty 1/16 duty cycle Type LCD Character Display Module Feature LED can be driven by PIN1, PIN2, PIN15, PIN16 or A and K Pin No. Symbol Description 1 VSS Ground 2 VDD Power Source for Logic 3 VO Contrast Adjustment 4 RS Data/ Instructions select signal 5 R/W Read/Write Signal select 6 E Activation signal 7 DB0 Data bus line 8 DB1 Data bus line 9 DB 2 Data bus line 10 DB3 Bus line Data 11 DB4 Bus Line Data 12 DB5 Data Bus Line 13 DB6 Data Bus Line 14 DB7 Data Bus Line 15 A Power Supply for B/L + 16 K Power Power for B/L - Element Symbol Standard Value typ. Unit input voltage VDD 5.0 V Recommended LCD driving voltage for Normal Temp.Version module @25oC VDD-VO 3.70 V Display position 1 2 3 4 4 5 6 7 8 9 10 11 12 13 14 15 16 DD RAM Address 00 01 0F DD RAM Address 40 41 4F Model No. WH1602T ►LCD character 16x2 ►5x8 points includes the ►Bulit-in controller (ST7066 or Equivalent) ►+5V power supply only ►Optional negative voltage for power supply +3V ►1/16 work cycle ►White LED background is not available ►Interface : 6800, SPI/I2C (RW1063 IC) WH1602T is a 16 x 2 LCD display module, which includes 16 characters of 2 lines. The WH1602T module is embedded with the ST7066 controller or equivalent, the default 5V power supply 6800 4/8-bit parallel interface. There are different LED background lights available in different colors, including blue, green, yellow-green and red. But please note this white LED background light element is not available. For more details, please contact us for this LCD 16x2 datasheet. There are different interface options for the WH1602T series, details after follows: ►WH1602T: 6800 interface (ST7066 IC) ►WH1602T1 : SPI interface (RW1063 IC) 16×2 LCD is so named because; has 16 columns and 2 rows. There are a lot of combinations available, it would be, 8×1, 8×2, 10×2, 16×1, etc. But the most used is 16*2 LCD, therefore we are using it here. All of the above LCD screen will have 16 Pins and the programming approach is also the same and therefore the choice is left to you. Below is Pinout and Pin Description of 16x2 LCD Modules: Sr. No. Pin Type Pin Description Pin Connection 1 Pin 1 Ground Source Pin This is a ground needle of LCD Connected to the ground MCU / Power source 2 Pin 2 VCC Source Pin This is the POWER voltage pin of LCD Connected to the power supply pin 3 Pin 3 V0/VEE Control Pin Adjusts contrast contrast Connected to a variable POT that can source 0-5V 4 Pin 4 Register Select Control Pin Switches between Command/Data Register Connected to an MCU pin and receives either 0 or 1. 0 -> Command Mode 1-> Data Mode 5 Pin 5 Read/Write Pin Control Switches the LCD between Read/Write Operation Connected to an MCU Pin and receives either 0 or 1. 0 -> Write Operation 1-> Read Operation 6 Pin 6 Enable Pin Control Must be held up to perform Read/Write Operation Connected to MCU and Always Raised. 7 Pin 7-14 Data Bits (0-7) Data / Pin Pin Command used to send command or data to LCD. In 4-Wire mode Only 4 pins (0-3) is connected to MCU In 8-Wire mode All 8 pins (0-7) are connected to MCU 8 Pin 15 positive LED Pin Normal LEDs would be running to illuminate LCD Connected to +5V 9 Pin 16 negative LED PIN Normal LEDs as running to illuminate LCD connected with GND. Connected to the ground It's okay if you don't understand the function of all the pins, I'll be explaining in detail below. Now, let's go back to our LCD: Okay, what is this two black circle like things on the back of our LCD? These black circles consist of an IC interface and its associated components to help us use this LCD with MCU. Because our LCD is a 16*2 Dot LCD matrix and so will have (16* 2 = 32) 32 characters in total and each character will be made of 5*8 Pixel Dots. A single character with all its pixels enabled is displayed in the image below. So now we know that each character has (5 * 8 = 40) 40 Pixels and for 32 characters we will have (32 * 40) 1280 Pixels. In addition, the LCD should also be trained on the position of pixels. It will be a hectic task to handle everything using MCU, therefore an IC interface like HD44780 is used, which is mounted on the LCD module itself. The function of this IC is to obtain commands and data from MCU and their process to display significant information on our LCD screen. Let's discuss the different types of modes and options available on the LCD screen that need to be controlled by our Control Pins. 4-bit and 8-bit LCD mode: The LCD can work in two different modes, namely 4-bit mode and 8-bit mode. In 4-bit mode we will send the data nibbling through the nibbles, first the upper nibbles and then the smaller nibbles. For those of you who don't know what a nibble is: a nibble is a four-bit group, so the smaller four bits (D0-D3) of one byte form smaller nibbles while the top four bits (D4-D7) of a larger nibble shape byte. This allows us to send 8-bit data. While in 8-bit mode we can send 8-bit data directly in one stroke, because we will use all 8 data lines. Now you must have guessed, yes 8-bit mode is faster and without than 4-bit mode. But the major drawback is that it needs 8 data lines connected to the microcontroller. This will make us run out of I/O pins on MCU, so 4-bit mode is widely used. Do not use control pins to set these modes. It's just the programming mode that changes. Read and Write LCD Mode: So said, LCD itself IC interface. MCU can read or write to this IC interface. Most of the time we will only be writing to IC because reading will make it more complex and such scenarios are very rare. Information such as cursor position, pause add-in status, etc. can be read if necessary, but it is outside the scope of this tutorial. The IC interface present in most of the LCD is HD44780U, in order to program our LCD should learn the complete datasheet of the IC. The datasheet is shown here. LCD commands: There are some instructions for preset commands in the LCD, which we need to send to the LCD via some microcontroller. Some important command instructions are given below: Hex Code Command to LCD Instruction Register 0F LCD ON, cursor ON 01 Clear display screen 02 Return home 04 Decrement cursor (shift cursor to left) 06 Increment cursor (shift cursor to right) 05 Display shift right 07 Shift display left 0E Display ON, cursor blinks 80 Force cursor at the beginning of the first line C0 Force the cursor at the beginning of the second line 38 2 lines and 5×7 array 83 Cursor line 1 position 3 3C Activate second line 08 Display OFF, slider OFF C1 Jump to second line, position 1 OC Display ON, cursor OFF C1 Jump to second line, position 1 C2 Jump to second line , position 2 Check our LCD interfacing Articles with different Microcontrollers : M440T1MV-15ZA9 : 3.3V, 32 Mbit (1024 Kbit X 32) Timekeeper%ae SRAM. Integrated SRAM ULTRA LOW POWER, REAL TIME WORK, POWER CONTROL CONTROL CIRCUIT, BATTERY AND MONITORING OF CRISTALS PRECISION POWER AND CIRCUITS FOR COMMUNITYING THE AUTOMATED READING POWER WHEN VCC IS FROM THE TENSION TENSION OF POWER: VCC 3.6V; 2.8V VPDD 2.97V BATTERY LOW PIN (BL) DUAL BATTERY SNAPHAT® CARCASE IS REPLACED 85ns SRAM CHIP ENABLE. AWU6608 : WCDMA/HSPA AWU6608 HELP3power ™ PA is a third generation WCDMA product for UMTS phones. This PA incorporates ANADIGICS' HELP3™ technology to ensure low power consumption without the need for an external voltage regulator. A daisy chainable directional coupling is integrated into the mode, thus eliminating the need for external couplings. LPC2132CBD64/01 : Single-chip 16/32-bit microcontrollers; 32/64/128/256/512 kB Isp/iap Flash with 10-bit ADC and DAC. WP1053IDT: 1mmx5mm rectangular solid lamp. REDUCED ENERGY CONSUMPTION. FIABLE AND ROBUSTE. EXCELENT UNIFORMITY OF LIGHT OUTPUT. SUITABLE FOR THE LEVEL INDICATOR. According to RoHS. High-efficiency red color devices are made with Gallium Arsenide Phospide on Gallium Fosfide Orange Light Emitting Diode. Notes: 1. All dimensions are in millimeters (inches). 2. Tolerance shall be ±0.25 (0.01) unless. 2SA1199: Transistors. 242164 : RF adapters - Between the BNC JACK and UHF PLUG ADAPTER series. Amphenol Connex Â High Between RF Series Coaxial Adapter joins two different series connectors. The adapter has a large selection of , including reverse polarization with the lowest VSWR rating of the two series included. Amphenol Amphenol Â's Between Series RF Coaxial. 66953-016LF: Headers & Wire Housads VERT CARD 30AU D/R. s: Manufacturer: FCI; Product category: Headers & Wire Housats; RoHS: Details; Product type: Containers / Prizes - PCB; Series: BergCon series; Contact Genre: Socket (Woman); Pitch: 2.54 mm; Number of positions/contacts: 32 ; Number of rows: 2 ; Mounting style: through the hole; Mounting angle:. C44AHGP5750ZA0J : 75µF Radial Film Condenser, Can - Screw Terminals; CAP FILM 75UF 600VDC SURUB. s: Capacity: 75µF; Tolerance: ±5%; Dielectric material: Polypropylene, Metallic; Package / Case: Radial, Maybe - Screw Terminals; Packaging: Bulk; Lead spacing: 0.878 (22.30 mm); ESR (Serial Equivalent Resistance): 5.0 mOhm; Mounting type: Chassis support; : General. 590BB-BDG : Oscillator ±50ppm - Programmable crystal and oscillator; OSC PROG LVDS 3.3V 25PPM 6-SMD. s: Package / Case: 6-SMD, Unleaded (DFN, LCC); Exit: LVDS; Operating temperature: -40°C ~ 85°C; Frequency stability: ±50ppm; Available frequency range: 10MHz ~ 250MHz; Function: Tri-State ; Packaging: Tray; Spread of bandwidth spectrum: - ; Lead. 950507-6102-AR : Gold through rectangular hole - Headers, Containers, Female plug connectors, Interconnection container; CONN SOCKET 7POS 2MM VERT T/H. s: Color: Black; Connector type: Container; Contact finish: Gold; : - ; Mounting type: through the hole; Number of positions loaded: All ; Number of rows: 1 ; Pitch: 0.079 (2.00mm); Row spacing: - ; Packaging: Tube. IDH05S120 : Diode, Rectifier - Single Discrete Semiconductor Product 5A (DC) 1200V (1.2kV) Silicon Carbide Schottky; SCHOTTKY 1200V 5A TO220-2 DIODE. s: Diode type: Silicon Carbide Schottky; Voltage - DC Reverse (Vr) (Max): 1200V (1.2kV); Current - Rectified medium (Io): 5A (DC); Voltage - Forward (Vf) (Max) @ If: 1.8V @ 5A; Reverse recovery time (trr): 0ns; Current. IRKL42/06A : Scr Semiconductor Mode; SCR MOD PWR 600V 40A ADD-A-PAK. s: Number of SCRs, Diodes: 1 SCR, 1 Diode; Current - On Status (It (AV)) (Max): 45A; Current - per state (it (RMS)) (max): 100a; Voltage - Off State: 600V; Current - Gate Trigger (Igt) (Max): 150mA; Current - Hold (Ih) (Max): 200mA; Current - Non Rep. Surge 50, 60Hz (Itsm): 850A, 890A; Structure:. 7-1879254-9 : 43.2 Ohm 0.25W, 1/4W Chip Resistor - Mount Surface; RES 43.2 OHM 1/4W 0.1% 1206. s: Resistance (Ohmi): 43.2; Power (Watts): 0.25W, 1/4W; Tolerance: ±0.1%; Packaging: Bulk; Composition: Thin film; Temperature coefficient: ±15ppm/°C; Lead Free Status: Lead Free; RoHS Status: RoHS Compatible. J01010A0000: TERMINATE CABLE, MASCULIN, TNC CONECTOR, CRIMP, PLUG. s: Connector type: TNC; Sex: Male; Types of termination: Crimp. STTH806F : 8 A, 600 V, SILICON, RECIFIAL DIODE. s: Package: ISOWATT220AC, 2 PIN; Number of diodes: 1; VRRM: 600 volts; IF: 8000 mA; trr: 0.0450 ns. Ns.