**The buck-boost converter module has two submodules which is referred to LCD module and voltage converter module.**

**Components used in LCD module:**

1. **HK32F03**0F4P6 – 1

* Manufacturer Shenxhen Hangshun Chip Technology
* Chinese datasheet converted to English version using:
  + <https://www.onlinedoctranslator.com>
* Operating range: 2.0V ~ 5.5V
* Clock: upto 72 MHz
* Reset; software reset, power on reset, external pin reset, watchdog timer reset, power mode reset, low voltage detection,
* 64 KBytes memory
* 16 ADC
* On board temperature sensor
* 7 Timer
* 2 I2C, USART, SPI
* A picture containing text, receipt

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1. HT1621

* HOLTEK
* RAM Mapping 32x4 LCD Controller for i/o MCU
* Operating range: 2.4V ~ 5.2V
* Built in 256 KHz RC Oscilator
* Can be configured as ½ or 1/3 bias can be software configured
* Table

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* Table

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Components used in converter submodule:

1. Lm358 - 2
2. FP5139
   1. Boost conver control ic
   2. Operating voltage range 1.8-15v
   3. Table

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3. SS8050 NPN transistor
   1. Collector current: 1.5A
4. SS8550 PNP transistor
   1. Collector current: -1.5A
5. Special Resistor:
   1. R025: 0.025Ohm
   2. R202: 2K Ohm
6. ME6209: voltage regulator: 3.3v regulator
   1. Operating range: max 18v, max output current 250mA
7. RU7570L
   1. 75V 70A N Channel Power MOSFET
8. SS56
   1. Schottky barrier rectifiers
   2. Reveres voltage 60 volts
   3. Forward current 5.0 amps
9. MST5350B
   1. Voltage regulator
   2. Input voltage up to 35V
   3. Output current <200mA
10. Choke
    1. 4 pin SMT component
11. 31 resistors + 7 open circuit(High resistance) = 38 resistor
12. 21 SMT Capacitors
13. THT capacitors
    1. 220uf
    2. 2 35V – 470uF – 2
    3. 35V 100uF -1
14. Screw terminals
    1. 4x1 screw terminal
    2. A picture containing electronics

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