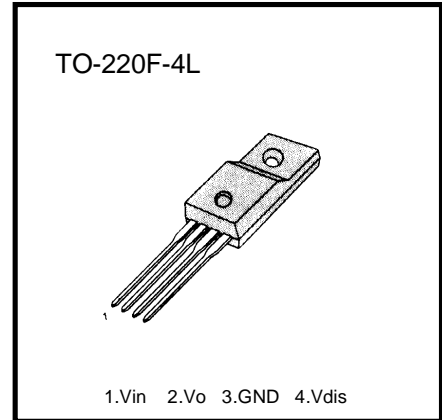


**LOW DROPOUT VOLTAGE REGULATOR**

The KA78R09 is a low-dropout voltage regulator suitable for various electronic equipments. It provide constant voltage power source with TO-220 4 lead full mold package. Dropout voltage of KA78R09 is below 0.5v in full rated current(1A). This regulator has various function such as peak current protection, thermal shut down, overvoltage protection and output disable function.



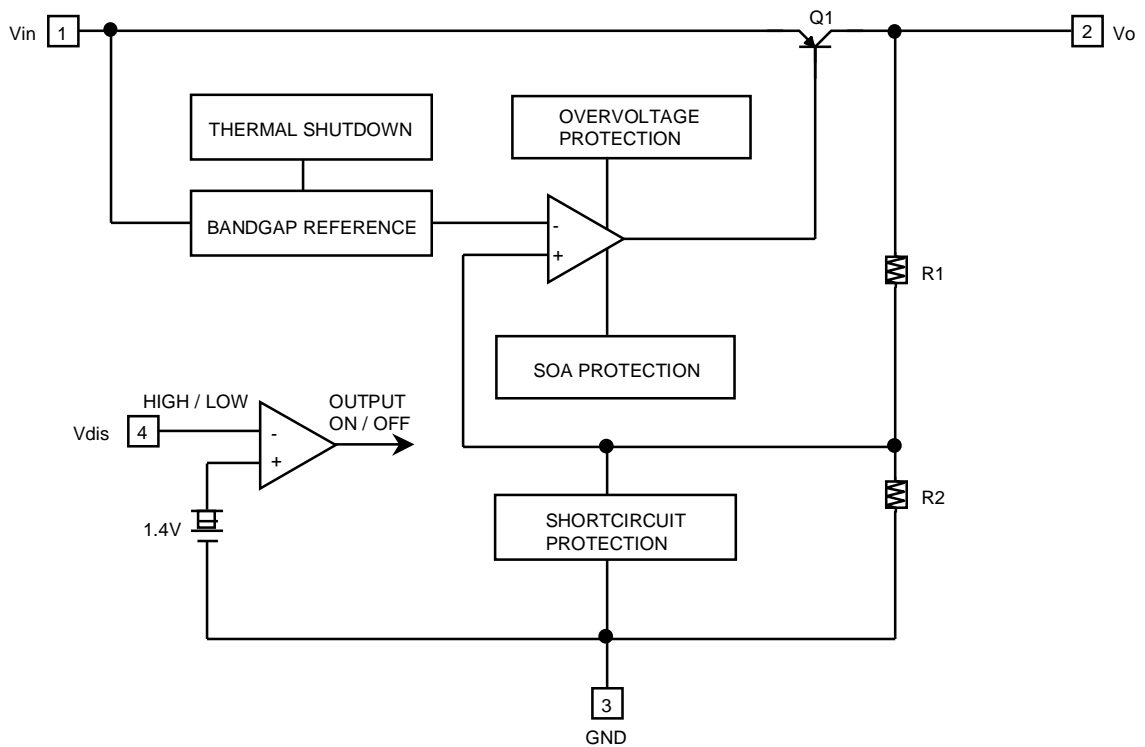
**FEATURES**

- 1A / 9V Output low dropout voltage regulator
- TO220 Full-Mold package (4PIN)
- Overcurrent protection, Thermal shutdown
- Overvoltage protection, Shortcircuit protection
- With output disable function

**ORDERING INFORMATION**

| Device  | Package    | Operating Temperature |
|---------|------------|-----------------------|
| KA78R09 | TO-220F-4L | -20°C ~ +80°C         |

**BLOCK DIAGRAM**



**ABSOLUTE MAXIMUM RATINGS**

| Characteristic        | Symbol | Value    | Unit | Remark        |
|-----------------------|--------|----------|------|---------------|
| Input Voltage         | Vin    | 35       | V    | -             |
| Disable Voltage       | Vdis   | 35       | V    | -             |
| Output Current        | Io     | 1.0      | A    | -             |
| Power Dissipation 1   | Pd1    | 1.5      | W    | No Heatsink   |
| Power Dissipation 2   | Pd2    | 15       | W    | With Heatsink |
| Junction Temperature  | Tj     | 150      | °C   | -             |
| Operating Temperature | Topr   | -20 ~ 80 | °C   | -             |

**ELECTRICAL CHARACTERISTICS**

(Vin=11V, Io=0.5A, Ta=25°C, unless otherwise specified)

| Characteristic            | Symbol | Test Condition  | Min  | Typ | Max  | Unit |
|---------------------------|--------|-----------------|------|-----|------|------|
| Output Voltage            | Vo     | -               | 8.78 | 9   | 9.22 | V    |
| Load Regulation           | Rload  | 5mA < Io < 1A   | -    | 0.1 | 2.0  | %    |
| Line Regulation           | Rline  | 10V < Vin < 25V | -    | 0.5 | 2.5  | %    |
| Ripple Rejection Ratio    | RR     | note1           | 45   | 55  | -    | dB   |
| Dropout Voltage           | Vdrop  | Io = 1A         | -    | -   | 0.5  | V    |
| Disable Voltage High      | VdisH  | Output Active   | 2.0  | -   | -    | V    |
| Disable Voltage Low       | VdisL  | Output Disabled | -    | -   | 0.8  | V    |
| Disable Bias Current High | IdisH  | Vdis = 2.7V     | -    | -   | 20   | μA   |
| Disable Bias Current Low  | IdisL  | Vdis = 0.4V     | -    | -   | -0.4 | mA   |
| Quiescent Current         | Iq     | Io = 0A         | -    | -   | 10   | mA   |

\*note1 : These parameters, although guaranteed, are not 100% tested in production.

FIG.1 Output Voltage vs. Input Voltage

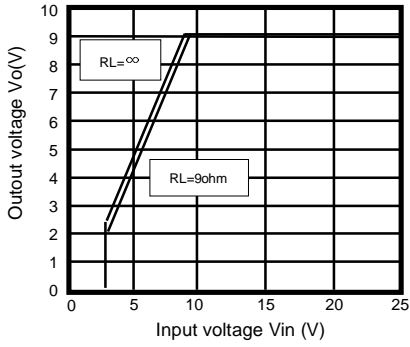


FIG.2 Quiescent Current vs. Input Voltage

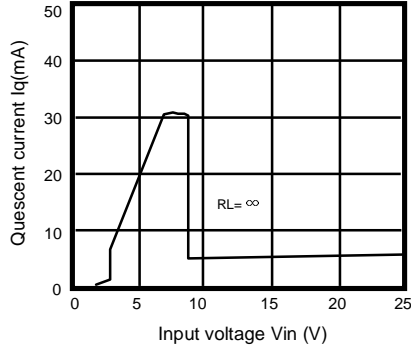


FIG.3 Output Voltage vs. Disable Voltage

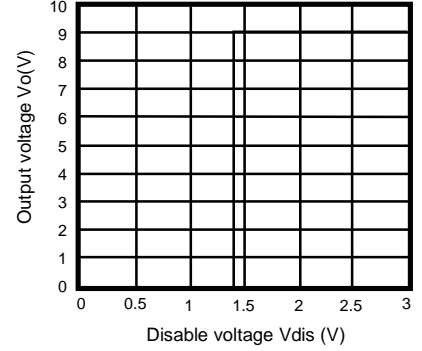


FIG.4 Output Voltage vs. Temperature(Tj)

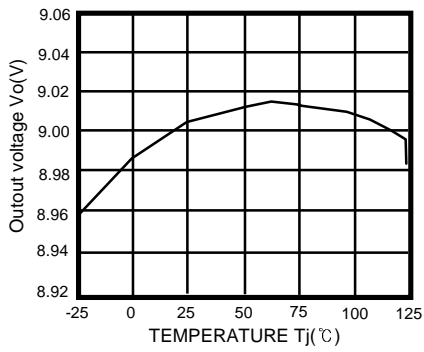


FIG.5 Quiescent Current vs. Temperature(Tj)

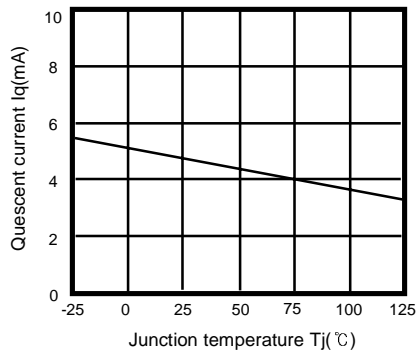


FIG.6 Dropout Voltage vs. Junction Temperature

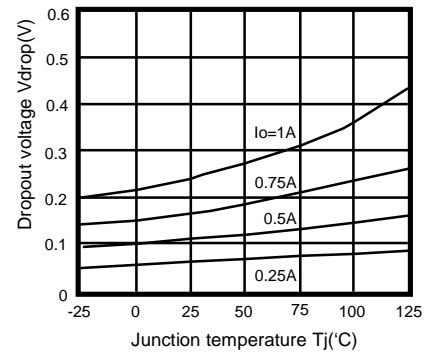
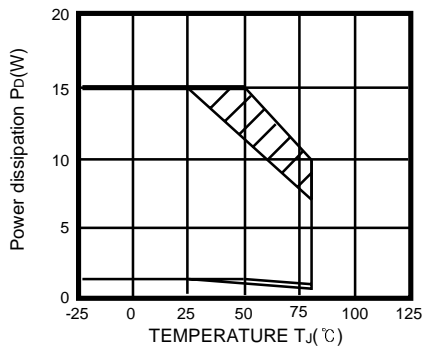
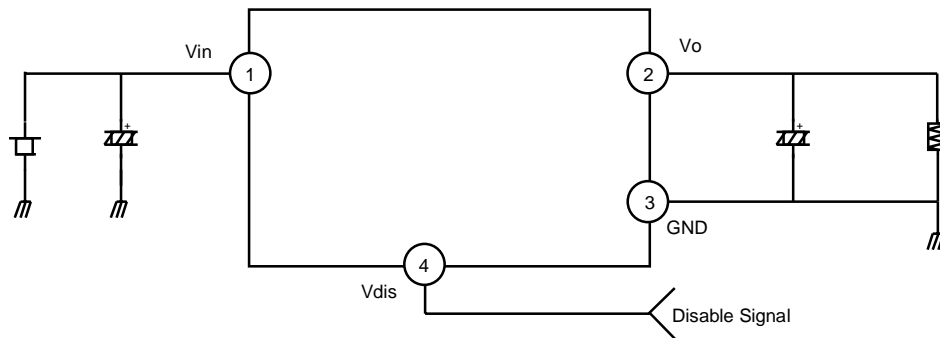


FIG.7 Power Dissipation vs. Temperature(Ta)



## TYPICAL APPLICATION

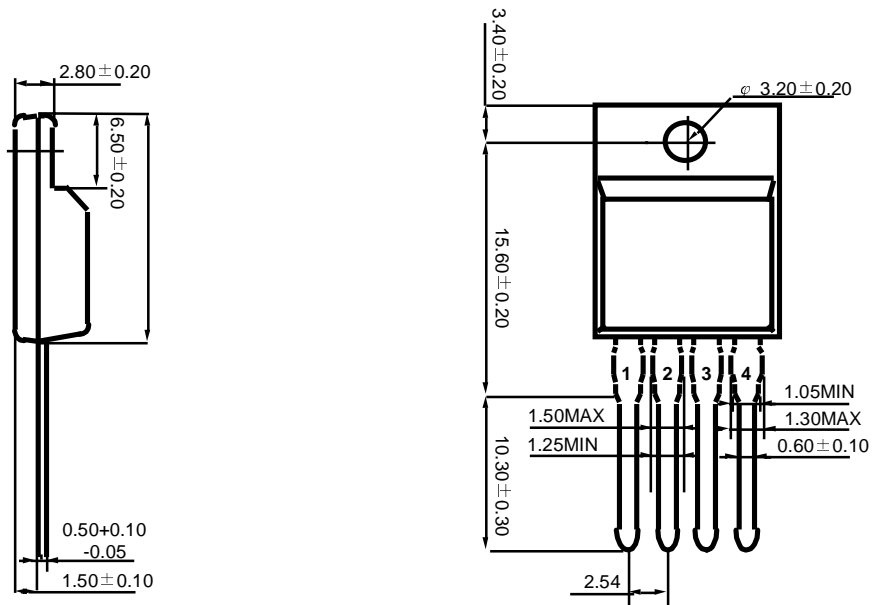
FIG.1 APPLICATION CIRCUIT



\*  $C_i$  is required if regulator is located an appreciable distance from power supply filter.

\*  $C_o$  improves stability and transient response. ( $C_o > 47\mu\text{F}$ )

< TO220F-4L >



\* DIMENSIONS IN MILIMETER

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| E <sup>2</sup> CMOS™ | PowerTrench™  |      |
| FACT™                | QST™          |      |
| FACT Quiet Series™   | Quiet Series™ |      |
| FAST®                | SuperSOT™-3   |      |
| FASTr™               | SuperSOT™-6   |      |
| GTO™                 | SuperSOT™-8   |      |
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