

KA278R05

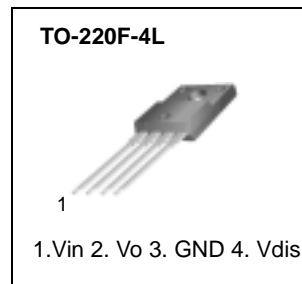
Low Dropout Voltage Regulator

Features

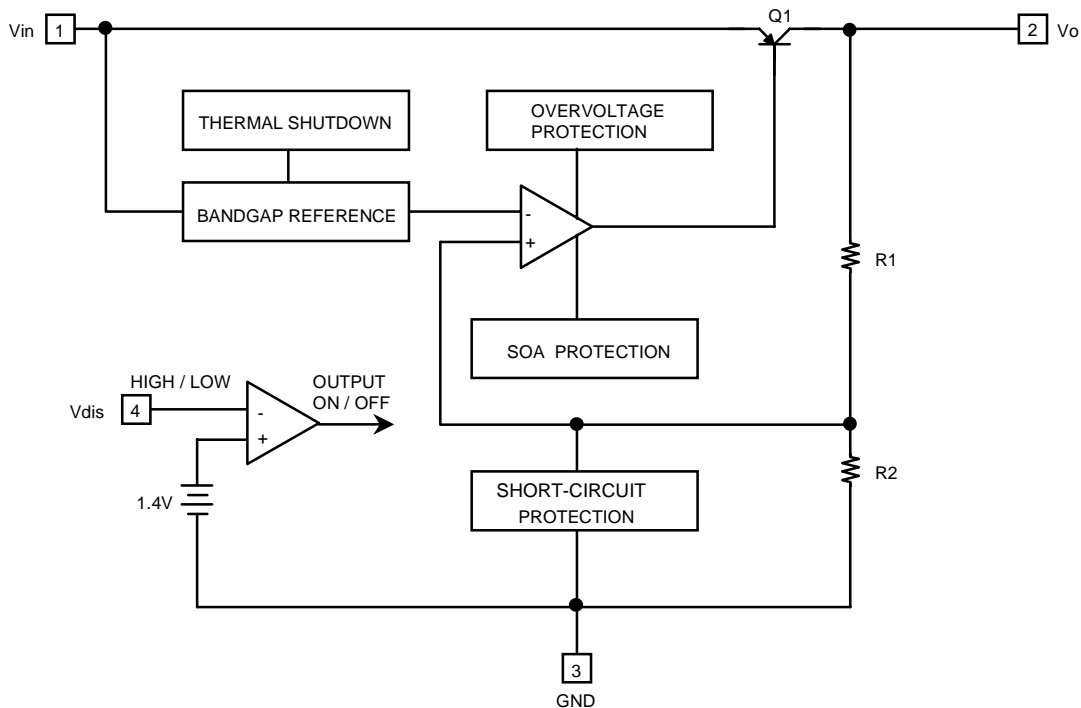
- 2A/5V Output Low Dropout Voltage Regulator
- TO-220 Full-Mold Package (4Pin)
- Overcurrent Protection, Thermal Shutdown
- Overvoltage Protection, Short Circuit Protection
- With Output Disable Function

Description

The KA278R05 is a low-dropout voltage regulator suitable for various electronic equipments. It provides constant voltage power source with TO-220 4 lead full mold package. The dropout voltage of KA278R05 is below 0.5V in full rated current(2A). This regulator has various functions such as a peak current protection, a thermal shut down, an overvoltage protection and an output disable function.



Internal Block Diagram



Absolute Maximum Ratings

| Parameter | Symbol | Value | Unit | Remark |
|--|--------|----------|------|---------------|
| Input Voltage | Vin | 35 | V | - |
| Disable Voltage | Vdis | 35 | V | - |
| Output Current | Io | 2.0 | 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 | - |
| Thermal Resistance, Junction-to-Case (Note2) | Rθjc | 2.9 | °C/W | - |
| Thermal Resistance, Junction-to-Air (Note2) | Rθja | 48.51 | °C/W | - |
| Thermal Shutdown Temperature | Ttsd | 150 | °C | - |

Electrical Characteristics

(Vin=7V, Io=1.0A, Ta=25°C , unless otherwise specified)

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---------------------------|--------|-----------------|------|------|------|------|
| Output Voltage | Vo | - | 4.88 | 5 | 5.12 | V |
| Load Regulation | Rload | 5mA < Io < 2A | - | 0.1 | 2.0 | % |
| Line Regulation | Rline | 6V < Vin < 12V | - | 0.5 | 2.5 | % |
| Ripple Rejection Ratio | RR | note1 | 45 | 55 | - | dB |
| Dropout Voltage | Vdrop | Io = 2A | - | - | 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 |

Note:

1. These parameters, although guaranteed, are not 100% tested in production.
2. Junction -to -case thermal resistance test environments.
 - Pneumatic heat sink fixture.
 - Clamping pressure 60psi through 12mm diameter cylinder.
 - Thermal grease applied between PKG and heat sink fixture

Typical Performance Characteristics

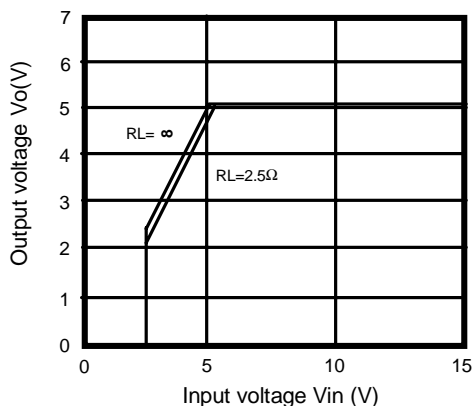


Figure 1. Output Voltage vs. Input Voltage

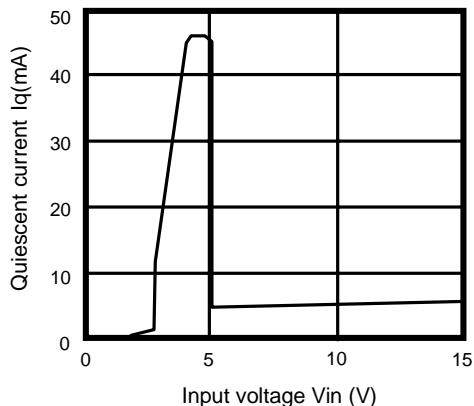


Figure 2. Quiescent Current vs. Input Voltage

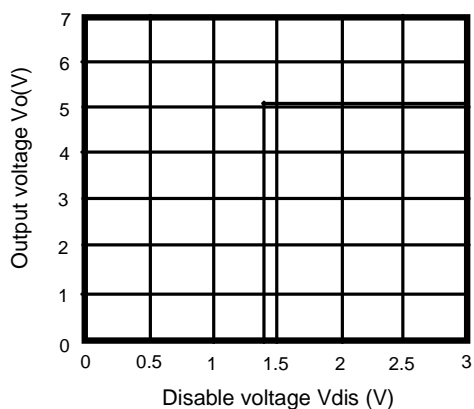


Figure 3. Output Voltage vs. Disable Voltage

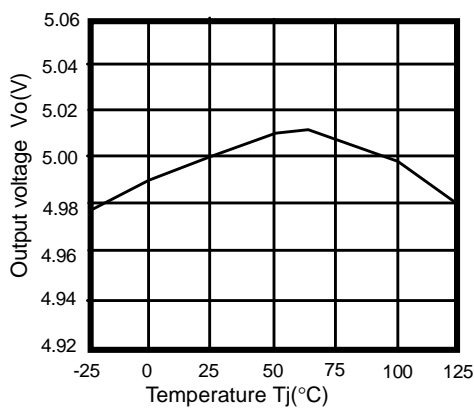


Figure 4. Output Voltage vs. Temperature(Tj)

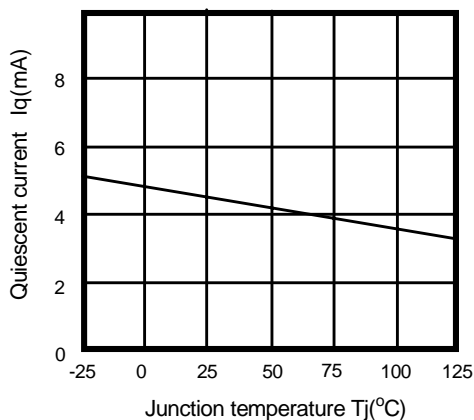


Figure 5. Quiescent Current vs. Temperature(Tj)

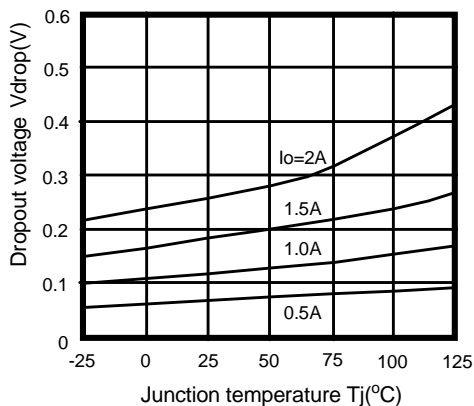


Figure 6. Dropout Voltage vs. Junction Temperature

Typical Performance Characteristics (Continued)

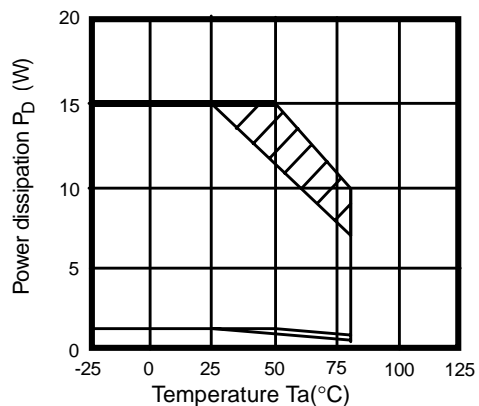


Figure 7. Power Dissipation vs. Temperature(T_a)

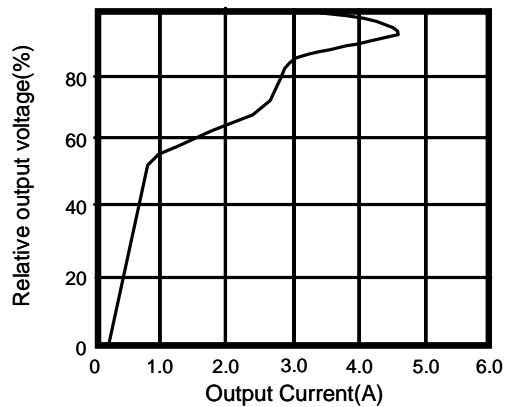


Figure 8. Overcurrent Protection Characteristics (Typical Value)

Typical Application

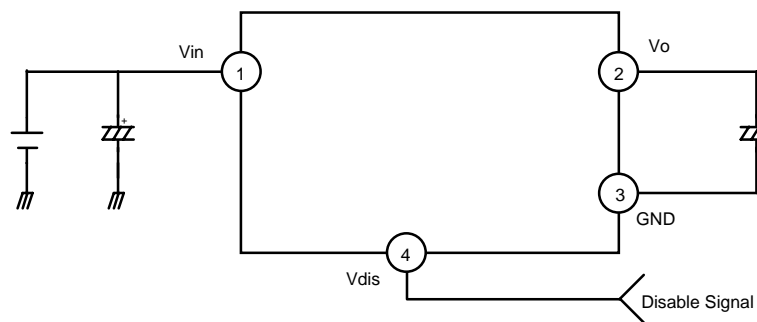


Figure 1. Application Circuit

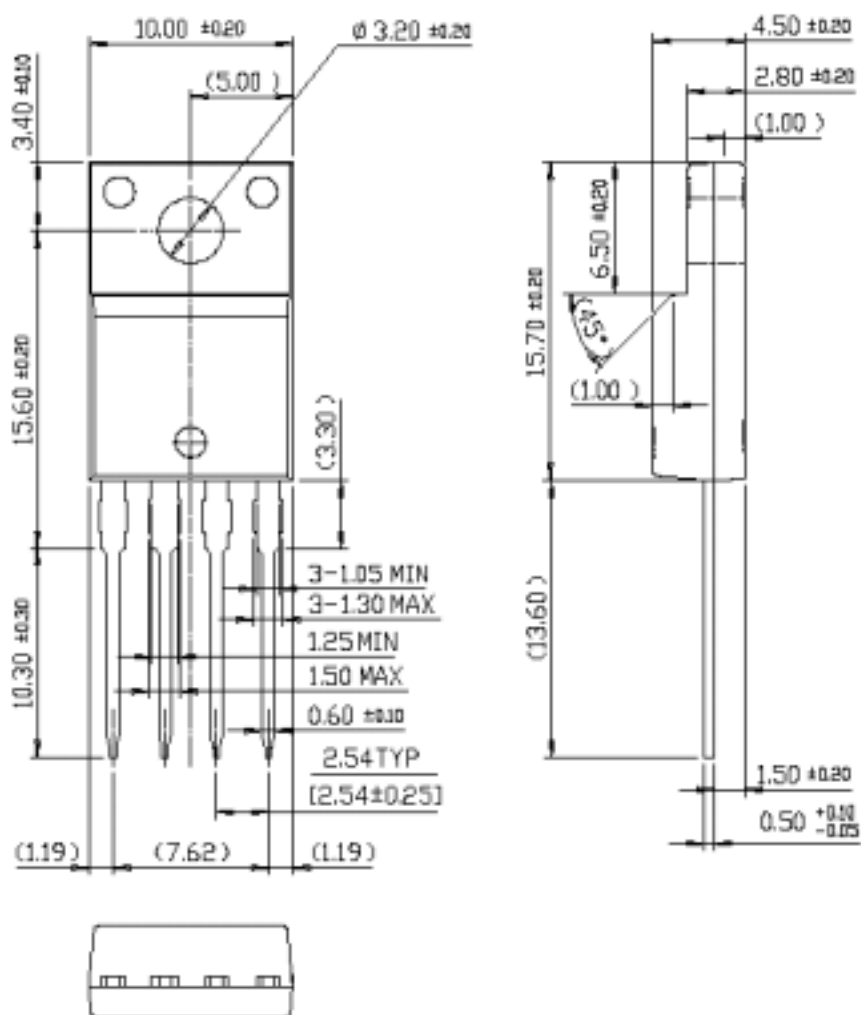
- C_i is required if regulator is located an appreciable distance from power supply filter.
- C_o improves stability and transient response. ($C_o > 47\mu\text{F}$)

Mechanical Dimensions

Package

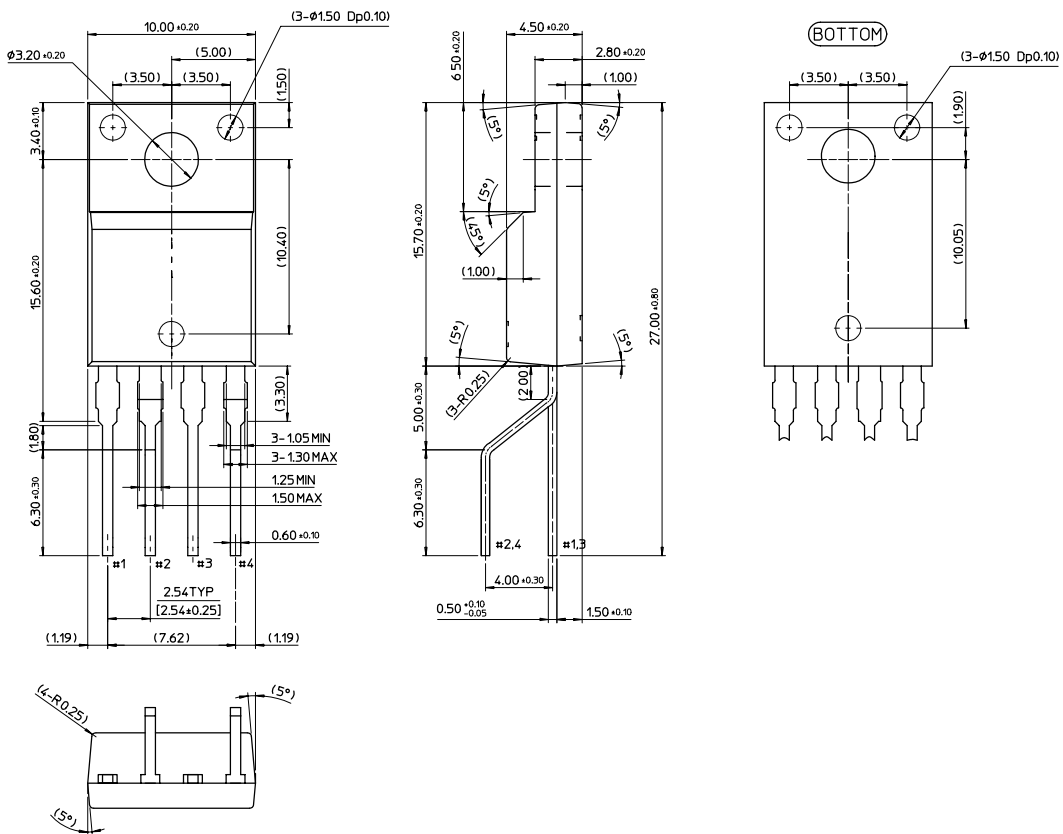
Dimensions in millimeters

TO-220F-4L



Mechanical Dimensions (Continued)**Package**

Dimensions in millimeters

TO-220F-4L(Forming)

Ordering Information

| Product Number | Package | Operating Temperature |
|----------------|---------------------|-----------------------|
| KA278R05TU | TO-220F-4L | -20°C to +80°C |
| KA278R05YDTU | TO-220F-4L(Forming) | |

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