

# KA278RA05

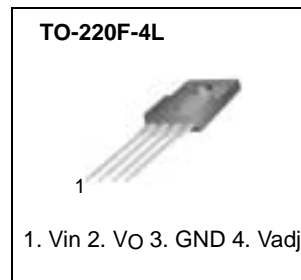
## Low Dropout Voltage Regulator (Fixed & Adjustable)

### Features

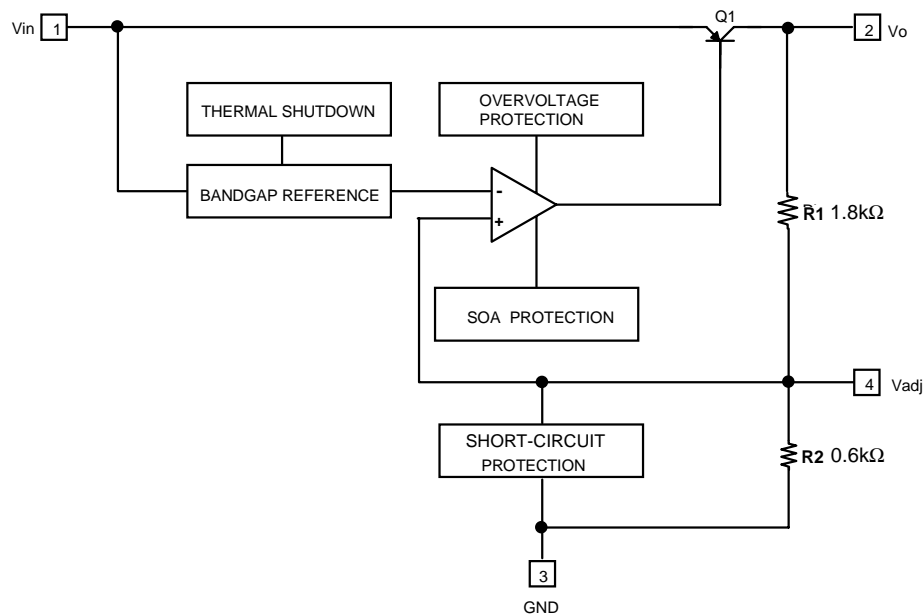
- Nominal 5V output without adjusting
- Output Adjustable Between 1.25V and 32V
- 2A Output low dropout voltage regulator
- TO220 Full-Mold package (4PIN)
- Overcurrent protection, Thermal shutdown
- Overvoltage protection, Short-Circuit protection

### Description

The KA278RA05 is a low-dropout voltage regulator suitable for various electronic equipments. It provides constant voltage power source with TO-220F-4 lead full mold package. Dropout voltage of KA278RA05 is below 0.5V in full rated current(2A). This regulator has various function such as peak current protection, thermal shut down and over voltage protection.



### Internal Block Diagram



## Absolute Maximum Ratings

Parameter	Symbol	Value	Unit	Remark
Input Voltage	V <sub>in</sub>	35	V	-
Output Current	I <sub>O</sub>	2.0	A	-
Power Dissipation 1	Pd1	1.5	W	No Heatsink
Power Dissipation 2	Pd2	15	W	With Heatsink
Junction Temperature	T <sub>j</sub>	150	°C	-
Operating Temperature	Topr	-20 ~ 80	°C	-

## Electrical Characteristics

(V<sub>in</sub> = 7V, I<sub>O</sub> = 1.0A, T<sub>a</sub> = 25 °C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Output Voltage	V <sub>o</sub>	-	4.88	5	5.12	V
Load Regulation	R <sub>load</sub>	5mA < I <sub>O</sub> < 2A	-	0.1	2.0	%
Line Regulation	R <sub>line</sub>	6V < V <sub>in</sub> < 12V	-	0.5	2.5	%
Ripple Rejection Ratio	RR	note1	45	55	-	dB
Dropout Voltage	V <sub>drop</sub>	I <sub>O</sub> = 2A	-	-	0.5	V
Quiescent Current	I <sub>q</sub>	I <sub>O</sub> = 0A	-	-	10	mA
Reference Voltage	V <sub>ref</sub>	-	1.24	1.27	1.30	V

### Note:

1. These parameters, although guaranteed, are not 100% tested in production.

## Typical Performance Characteristics

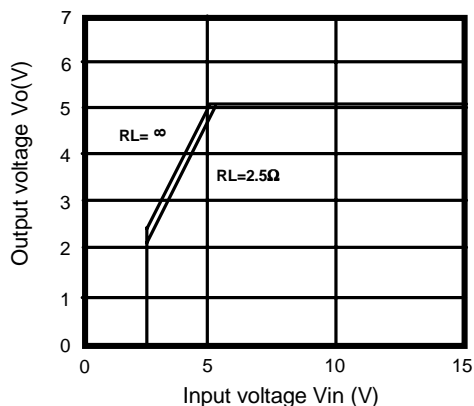


Figure 1. Output Voltage vs. Input Voltage

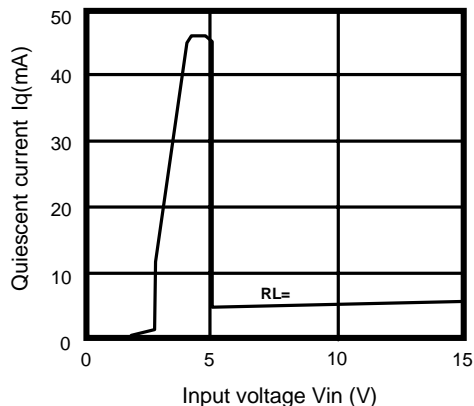


Figure 2. Quiescent Current vs. Input Voltage

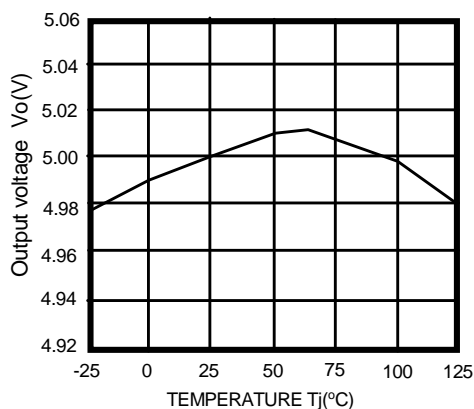


Figure 3. Output Voltage vs. Temperature(Tj)  
\*Fixed Mode (VO=5V)

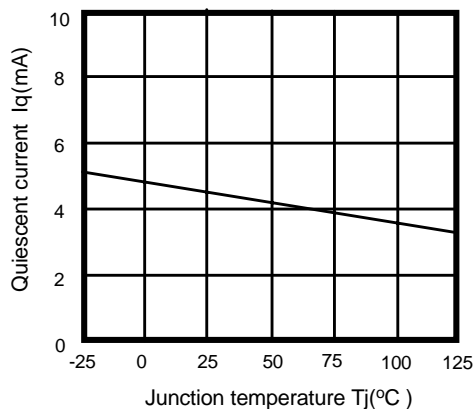


Figure 4. Quiescent Current vs. Temperature(Tj)

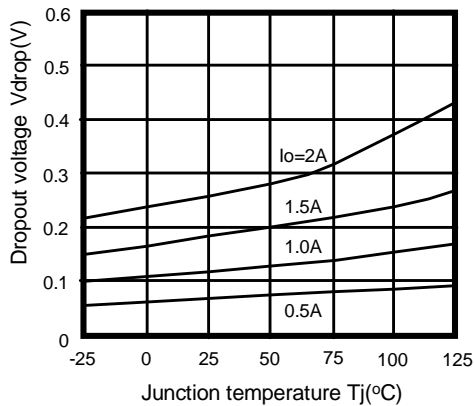


Figure 5. Dropout Voltage vs. Junction Temperature

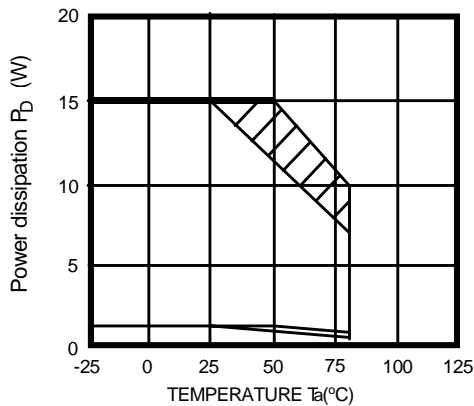


Figure 6. Power Dissipation vs. Temperature(Ta)

## Typical Performance Characteristics

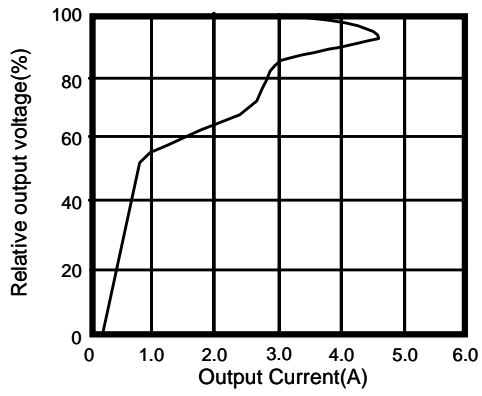
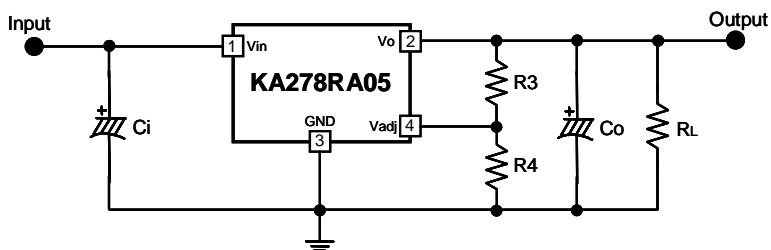


Figure 7. Overcurrent Protection Characteristics  
(Typical Value)

## Typical Application



$$V_o = 1.25 \left( 1 + \frac{R_1/R_3}{R_2/R_4} \right) \quad R_1 = 1.8\text{k}\Omega, R_2 = 0.6\text{k}\Omega$$

Figure 7. Application Circuit (Adjustable Mode)

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

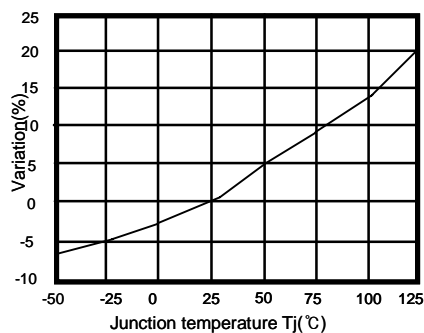


Figure 8. Internal Resistor( $R_1, R_2$ ) Variation vs. Temperature( $T_j$ )

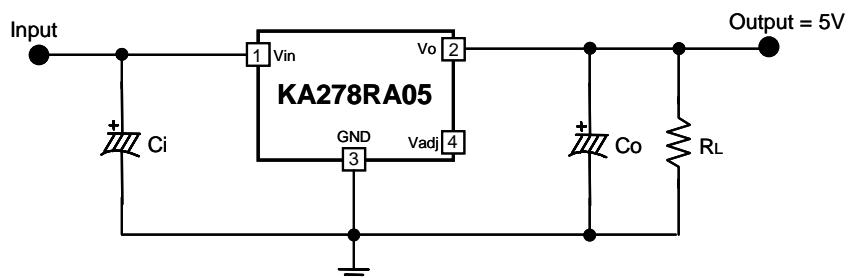


Figure 9. Application Circuit (Fixed Mode)



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## Ordering Information

Product Number	Package	Operating Temperature
KA278RA05	TO-220F-4L	-20°C to + 80°C

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2. A critical component in any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.