

KA278R51

Low Dropout Voltage Regulator

Features

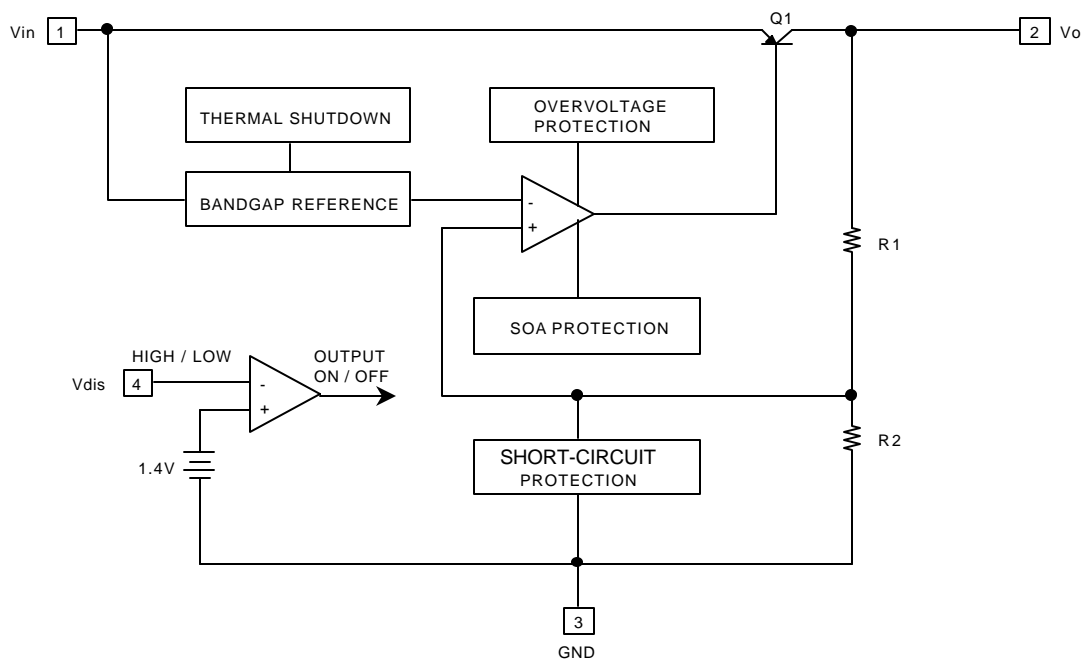
- 2A / 5.1V Output low dropout voltage regulator
- TO220 Full-Mold package (4PIN)
- Overcurrent protection, Thermal shutdown
- Overvoltage protection, Short-Circuit protection
- With output disable function

Description

The KA278R51 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 KA278R51 is below 0.5V in full rated current(2A). This regulator has various function such as peak current protection, thermal shut down, overvoltage protection and output disable function.



Internal Block Diagram



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit	Remark
Input Voltage	V _{in}	35	V	-
Disable Voltage	V _{dis}	35	V	-
Output Current	I _o	2.0	A	-
Power Dissipation 1	P _{d1}	1.5	W	No Heatsink
Power Dissipation 2	P _{d2}	15	W	With Heatsink
Junction Temperature	T _j	+150	°C	-
Operating Temperature	T _{opr}	-20 ~ +80	°C	-

Electrical Characteristics

(V_{in}=7V, I_o=1.0A, T_a = +25°C, unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Output Voltage	V _o	-	4.98	5.1	5.22	V
Load Regulation	R _{load}	5mA < I _o < 2A	-	0.1	2.0	%
Line Regulation	R _{line}	6V < V _{in} < 12V	-	0.5	2.5	%
Ripple Rejection Ratio	RR	note1	45	55	-	dB
Dropout Voltage	V _{drop}	I _o = 2A	-	-	0.5	V
Disable Voltage High	V _{disH}	Output Active	2.0	-	-	V
Disable Voltage Low	V _{disL}	Output Disabled	-	-	0.8	V
Disable Bias Current High	I _{disH}	V _{dis} = 2.7V	-	-	20	μA
Disable Bias Current Low	I _{disL}	V _{dis} = 0.4V	-	-	-0.4	mA
Quiescent Current	I _q	I _o = 0A	-	-	10	mA

Note:

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

Typical Performance Characteristics

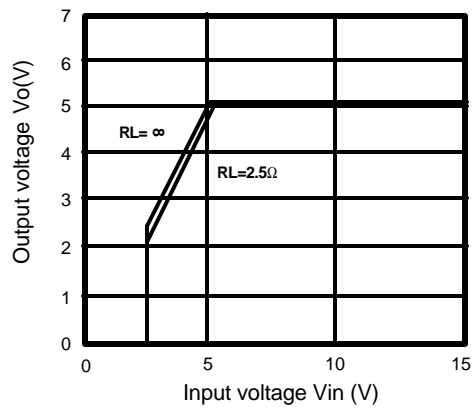


Figure 1. Output Voltage vs. Input Voltage

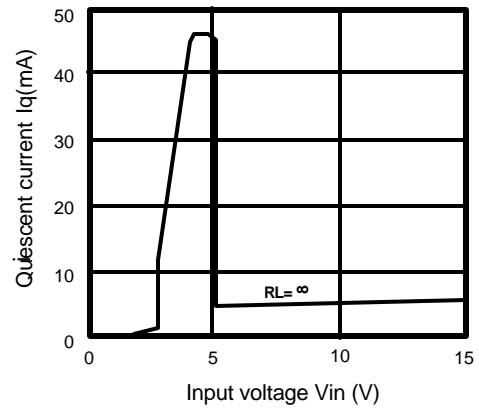


Figure 2. Quiescent Current vs. Input Voltage

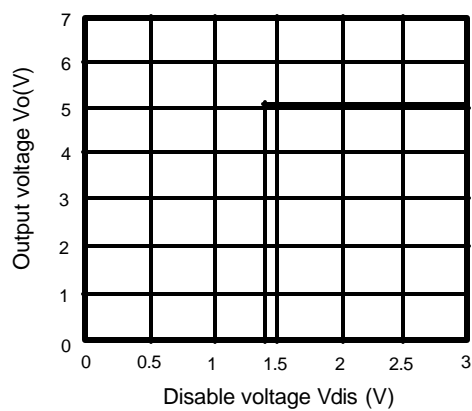


Figure 3. Output Voltage vs. Disable Voltage

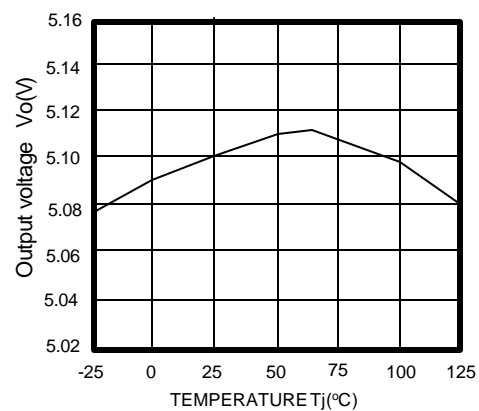


Figure 4. Output Voltage vs. Temperature(T_j)

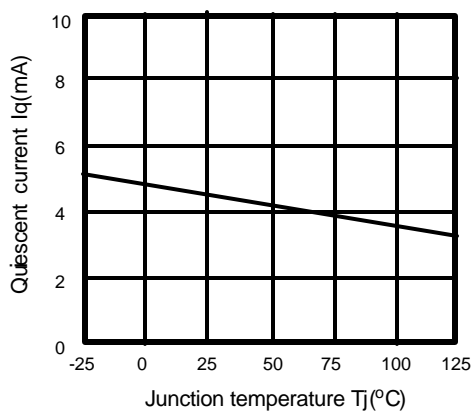


Figure 5. Quiescent Current vs. Temperature(T_j)

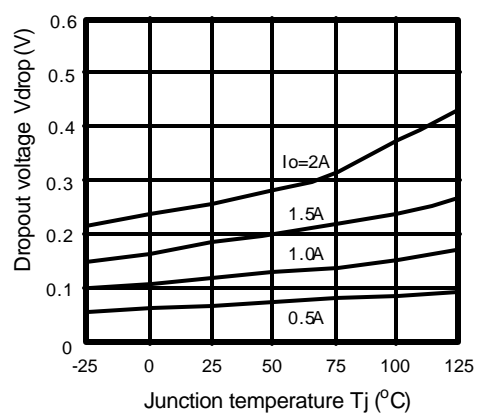


Figure 6. Dropout Voltage vs. Junction Temperature

Typical Performance Characteristics (continued)

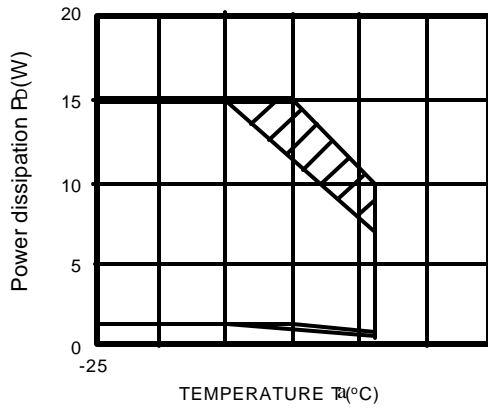


Figure 7. Power Dissipation vs. Temperature(T_a)

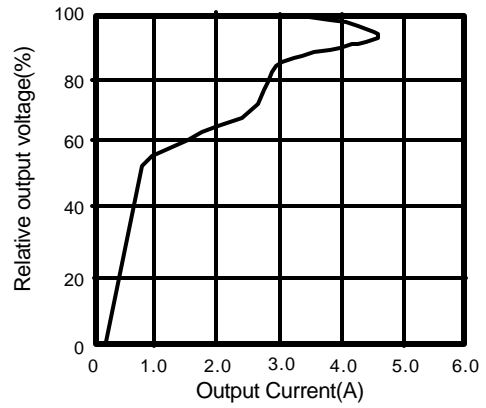


Figure 8. Overcurrent Protection Characteristics (Typical value)

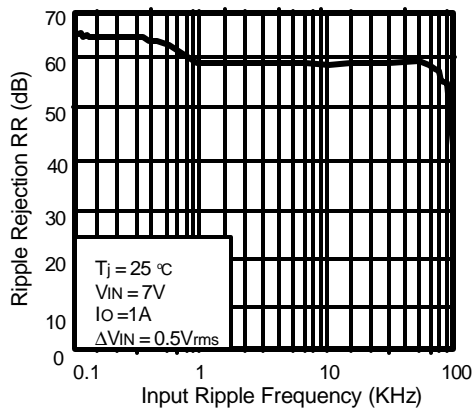


Figure 9. Ripple Rejection vs. Input Ripple Frequency

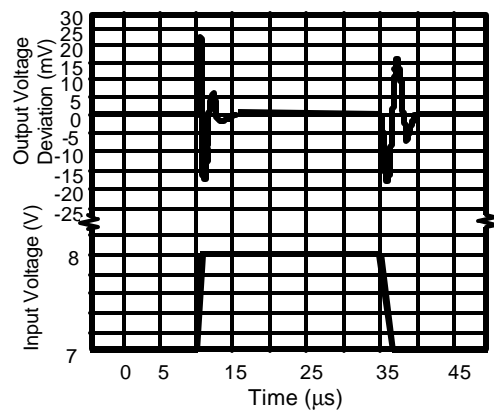


Figure 10. Line Transient Response

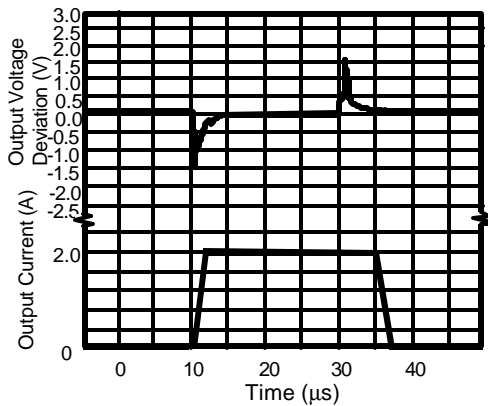


Figure 11. Load Transient Response

Typical Application

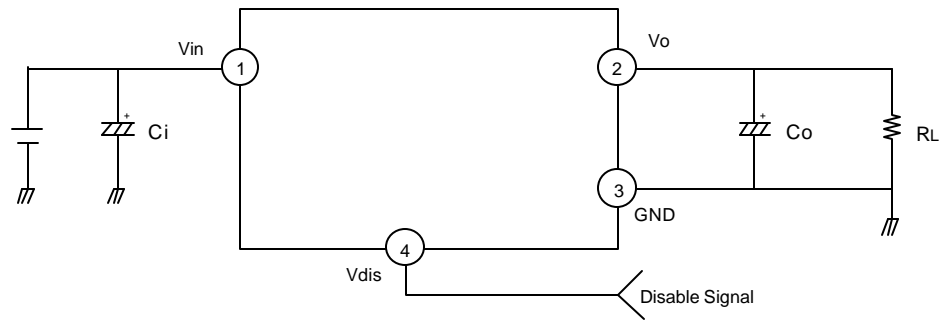


Figure 1. Application Circuit

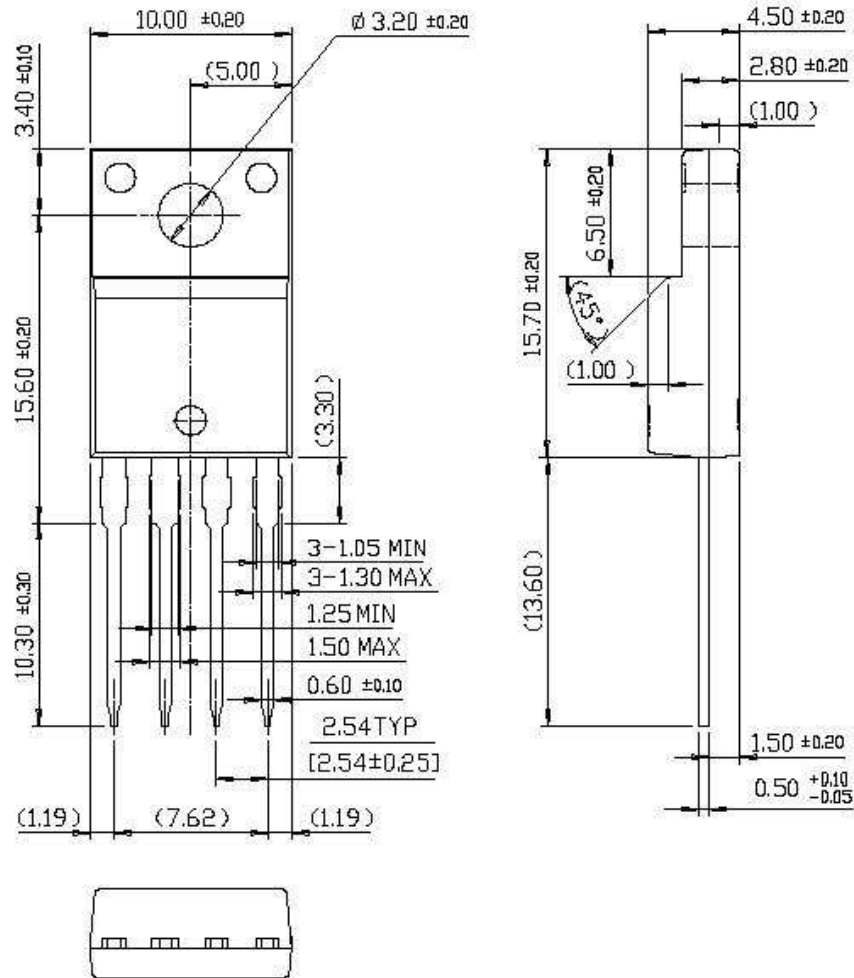
- C_i is required if regulator is located an appreciable distance from power supply filter.
- C_o improves stability and transient response. ($C_o > 47\mu\text{F}$)

Mechanical Dimensions

Package

Dimensions in millimeters

TO-220F-4L



Ordering Information

Product Number	Package	Operating Temperature
KA278R51	TO-220F-4L	-20°C to + 80°C

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