

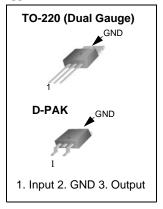
KA78M05 3-Terminal 0.5A Positive Voltage Regulator

Features

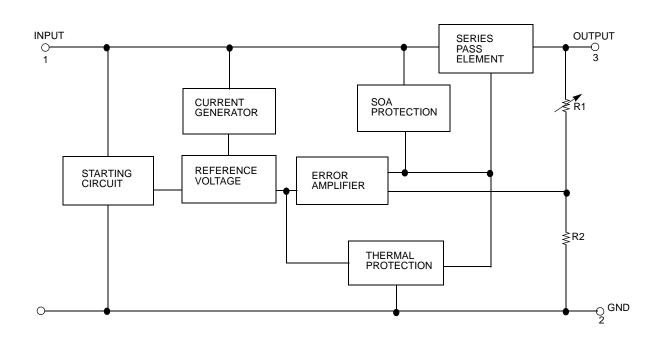
- Output Current up to 0.5A
- Output Voltages of 5V
- Thermal Overload Protection
- Short Circuit Protection
- Output Transistor Safe Operating Area (SOA) Protection

Description

The KA78M05 series of three terminal positive regulators are available in the TO-220/D-PAK package with several fixed output voltages making it useful in a wide range of applications.



Internal Block Diagram



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Input Voltage (for Vo = 5V)	VI	35	V
Thermal Resistance Junction-Cases (Note1) TO-220 (Tc = +25°C)	ReJC	2.5	°C/W
Thermal Resistance Junction-Air (Note1,2) TO-220 (Ta = +25°C) D-PAK (Ta = +25°C)	R _θ JA	66 92	°C/W
Operating Junction Temperature Range	TOPR	0 ~ +150	°C
Storage Temperature Range	TSTG	-65 ~ +150	°C

Note:

1. Thermal resistance test board Size: 76.2mm * 114.3mm * 1.6mm(1S0P) JEDEC standard: JESD51-3, JESD51-7

2. Assume no ambient airflow

Electrical Characteristics (KA78M05/KA78M05R)

(Refer to the test circuits, $0 \le T_J \le +125^{\circ}$ C, IO=350mA, VI=10V, unless otherwise specified, CI =0.33 μ F, CO=0.1 μ F)

Parameter	Symbol	Conditions		Min.	Тур.	Max.	Unit
	Vo	TJ =+25°C		4.8	5	5.2	V
Output Voltage		I _O = 5 to 350mA VI = 7 to 20V		4.75	5	5.25	
Line Regulation (Note3)	ΔVO	IO = 200mA TJ =+25°C	V _I = 7 to 25V	-	-	100	mV
Line Regulation (Note3)			VI = 8 to 25V	-	-	50	
Load Pogulation (Nota2)	ΔVo	IO = 5mA to 0.5A, TJ = +25°C		-	-	100	mV
Load Regulation (Note3)		IO = 5mA to 200mA, TJ =+25°C		-	-	50	
Quiescent Current	lQ	TJ = +25°C		-	4.0	6.0	mA
	ΔlQ	IO = 5mA to 350mA		-	-	0.5	mA
Quiescent Current Change		Io = 200mA VI = 8 to 25V		-	-	0.8	
Output Voltage Drift	ΔV/ΔΤ	Io = 5mA TJ = 0 to +125°C		-	-0.5	-	mV/°C
Output Noise Voltage	VN	f = 10Hz to 100kHz		-	40	-	μV/Vo
Ripple Rejection	RR	f = 120Hz, IO = 300mA VI = 8 to 18V, TJ = +25°C		-	80	-	dB
Dropout Voltage	Vd	TJ = +25°C, IO = 500mA		-	2	-	V
Short Circuit Current	ISC	$T_J = +25^{\circ}C, V_I = 35V$		-	300	-	mA
Peak Current	IPK	T _J = +25°C		-	700	-	mA

Note:

 Load and line regulation are specified at constant junction temperature. Change in V₀ due to heating effects must be taken into account separately. Pulse testing with low duty is used.

Typical Applications

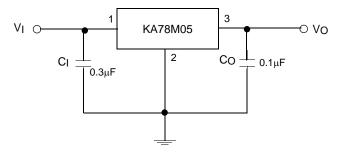


Figure 1. Fixed Output Regulator

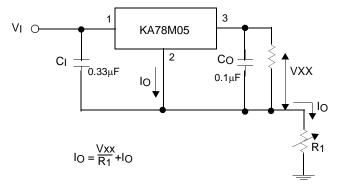


Figure 2. Constant Current Regulator

Notes:

- 1. To specify an output voltage, substitute voltage value for "XX"
- 2. Although no output capacitor is needed for stability, it does improve transient response.
- 3. Required if regulator is located an appreciable distance from power Supply filter

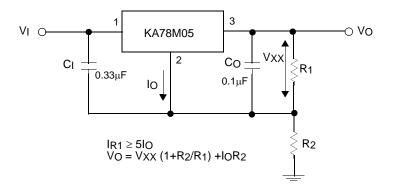


Figure 3. Circuit for Increasing Output Voltage

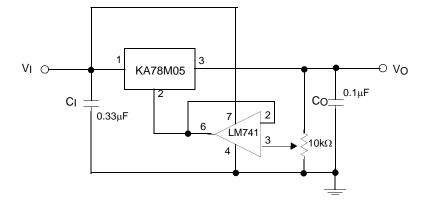
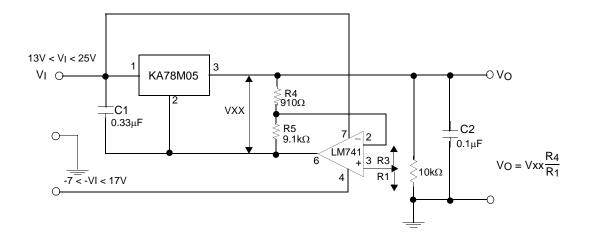


Figure 4. Adjustable Output Regulator (7 to 30V)

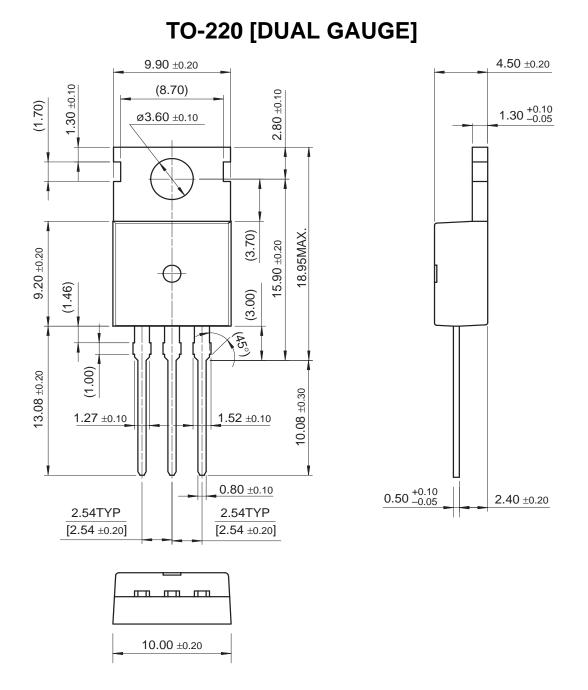




Mechanical Dimensions

Package

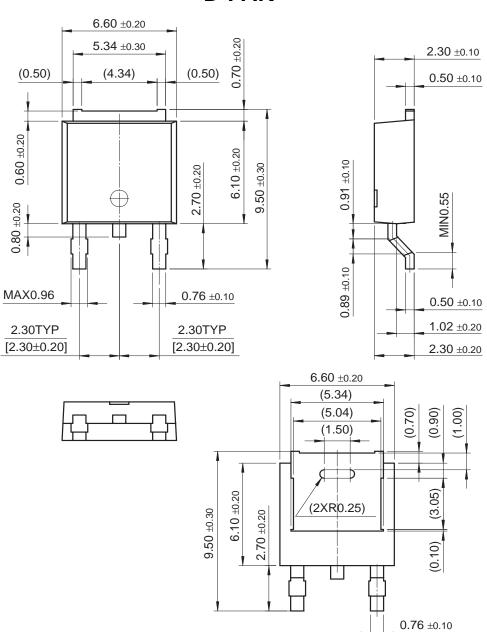
Dimensions in millimeters



Mechanical Dimensions (Continued)

Package

Dimensions in millimeters



D-PAK

Ordering Information

l	Product Number	Package	Operating Temperature
	KA78M05	TO-220 (Dual Gauge)	0 ~ +125°C
	KA78M05R	D-PAK	0~+125 0

KA78M05

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