KA79MXX

3-Terminal 0.5A Negative Voltage Regulator

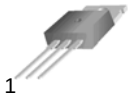
Features

- No External Components Required
- Output Current in Excess of 0.5A
- Internal Thermal Overload
- Internal Short Circuit Current Limiting
- Output Transistor Safe Area Compensation
- Output Voltages of -5V, -12V

Description

The KA79MXX series of 3-Terminal medium current negative voltage regulators are monolithic integrated circuits designed as fixed voltage regulators. These regulators employ internal current limiting, thermal shutdown and safe area compensation making them essentially indestructible.

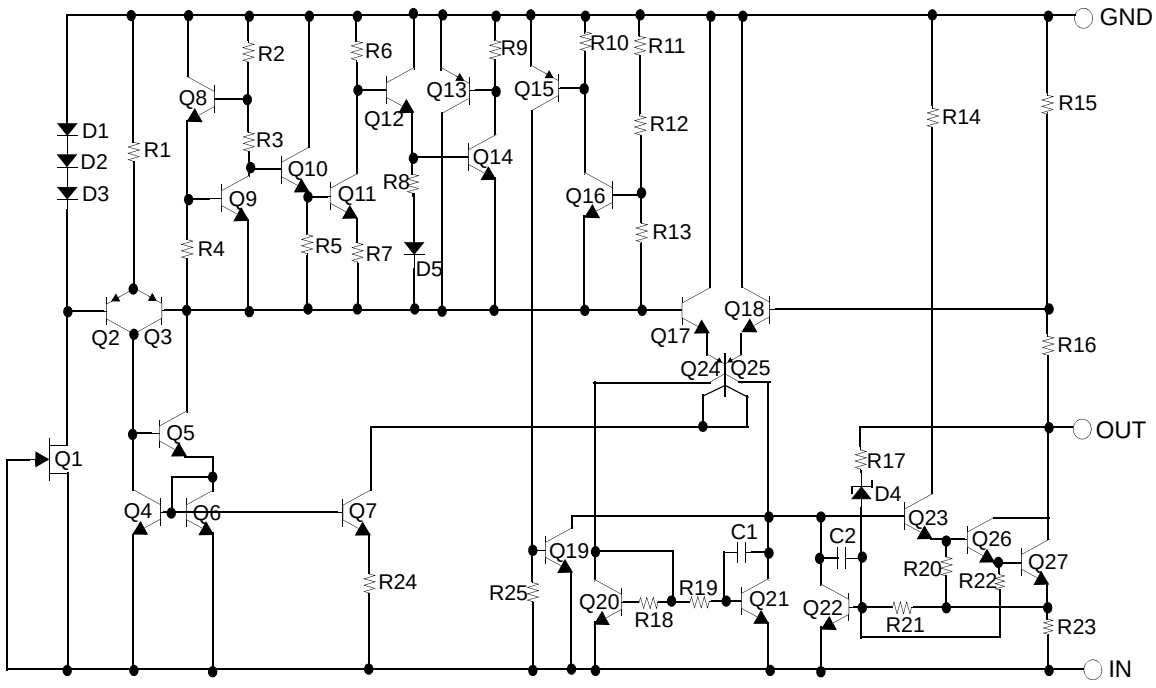
TO-220 (Dual Gauge)



D-PAK

1. GND 2. Input 3. Output

Schematic Diagram



Rev. 1.0.3

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Input Voltage(for V_O = -5V to -12V)	V_I	-35	V
Thermal Resistance Junction-Cases	$R_{\theta JC}$	5	°C/W
Thermal Resistance Junction-Air	$R_{\theta JA}$	65	°C/W
Operating Temperature Range	T_{OPR}	0 ~ +125	°C
Storage Temperature Range	T_{STG}	-65 ~ +150	°C

Electrical Characteristics (KA79M05/KA79M05R)

(Refer to test circuit, 0°C ≤T_J ≤ +125°C, I_O =350mA, V_I =-10V,unless otherwise specified, C_I =0.33μF,C_O=0.1μF)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
Output Voltage	V_O	T_J = +25°C		-4.8	-5	-5.2	V
		I_O = 5mA to 350mA V_I = -V7 to -25V		-4.75	-5	-5.25	
Line Regulation (Note1)	ΔV_O	T_J =+25°C	V_I= -7V to -25V	-	7.0	50	mV
			V_I= -8V to -25V	-	2.0	30	
Load Regulation (Note1)	ΔV_O	I_O = 5mA to 500mA T_J = +25°C		-	30	100	mV
Quiescent Current	I_Q	T_J= +25°C		-	3.0	6.0	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 350mA		-	-	0.4	mA
		I_O = 200mA V_I = -8V to -25V		-	-	0.4	
Output Voltage Drift	$\Delta Vo/\Delta T$	I_O = 5mA		-	-0.2	-	mV/°C
Output Noise Voltage	V_N	f = 10Hz to 100kHz, T_A = +25°C		-	40	-	μV
Ripple Rejection	RR	f = 120Hz V_J = -8Vto -18V		54	60	-	dB
Dropout Voltage	V_D	T_J =+25°C, I_O = 500mA		-	1.1	-	V
Short Circuit Current	I_{SC}	T_J = +25°C, V_I = -35V		-	140	-	mA
Peak Current	I_{PK}	T_J = +25°C		-	650	-	mA

Note:

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

Electrical Characteristics (KA79M12R) (Continued)

(Refer to test circuit, $0°C \le T_J \le +125°C$, I_O =350mA, V_I = -19V,unless otherwise specified)

Parameter	Symbol	Conditions		Min.	Typ.	Max.	Unit
Output Voltage	V_O	T_J = +25°C		-11.5	-12	-12.5	V
		I_O = 5mA to 350mA V_I = -14.5V to -30V		-11.4	-12	-12.6	
Line Regulation (Note1)	ΔV_O	T_J =+25°C	V_I = -14.5V to -30V	-	8.0	80	mV
			V_I = -15V to -25V	-	3.0	50	
Load Regulation (Note1)	ΔV_O	T_J = +25°C	I_O = 5.0mA to 500mA	-	30	240	mV
Quiescent Current	I_Q	T_J = +25°C		-	3	6	mA
Quiescent Current Change	ΔI_Q	I_O = 5mA to 350mA		-	-	0.4	mA
		V_I = -14.5V to -30V		-	-	0.4	
Output Voltage Drift	$\Delta V_O/\Delta T$	I_O = 5mA		-	-0.8	-	mV/°C
Output Noise Voltage	V_N	f = 10Hz to 100kHz, T_A = +25°C		-	75	-	μV
Ripple Rejection	RR	f = 120Hz,V_I = -15V to -25V		54	60	-	dB
Dropout Voltage	V_D	I_O = 500mA, T_J = +25°C		-	1.1	-	V
Short Circuit Current	I_{SC}	V_I = -35V, T_J = +25°C		-	140	-	mA
Peak Current	I_{PK}	T_J = +25°C		-	650	-	mA

Note:

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

Typical Performance Characteristics

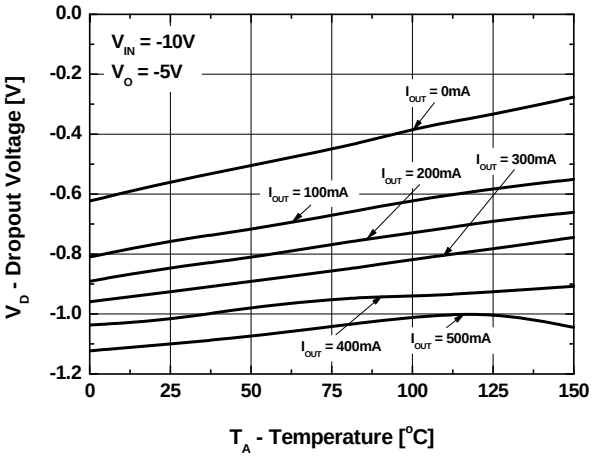


Figure 1. Dropout Voltage

Typical Applications

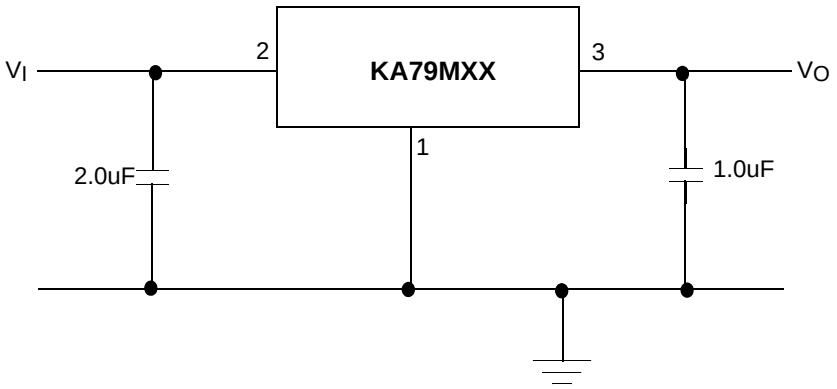


Figure 2. Fixed Output Regulator

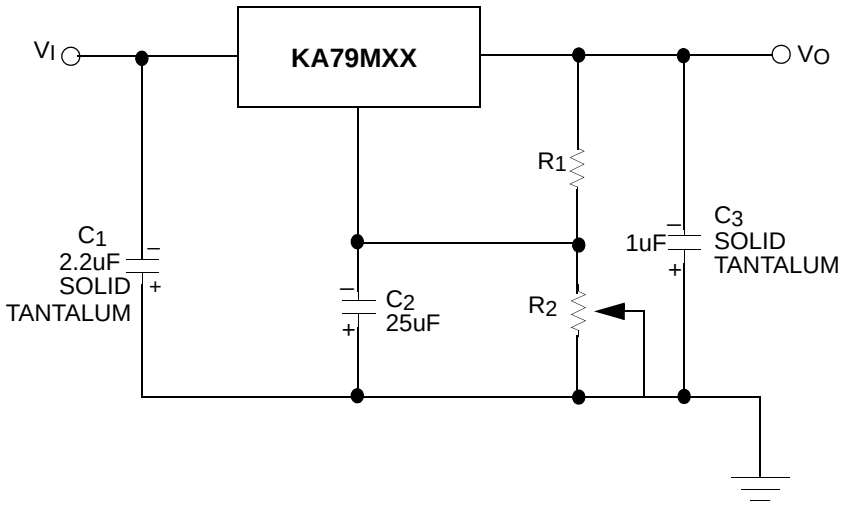


Figure 3. Variable Output

Note:

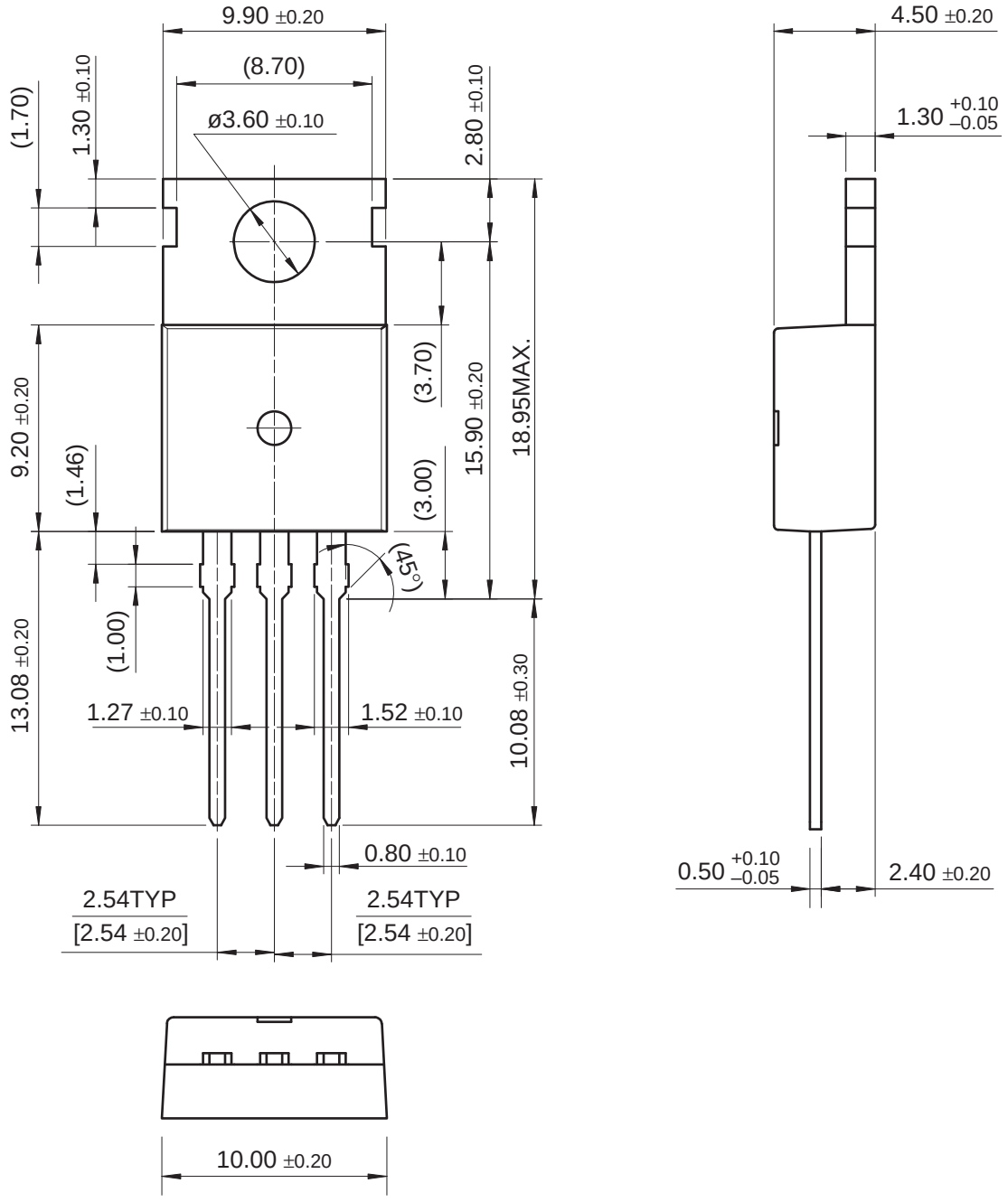
1. Required for stability. For value given, capacitor must be solid tantalum. 25μF aluminum electrolytic may be substituted.
2. C_2 improves transient response and ripple rejection. Do not increase beyond 50μF.

Mechanical Dimensions

Package

Dimensions in millimeters

TO-220 [DUAL GAUGE]

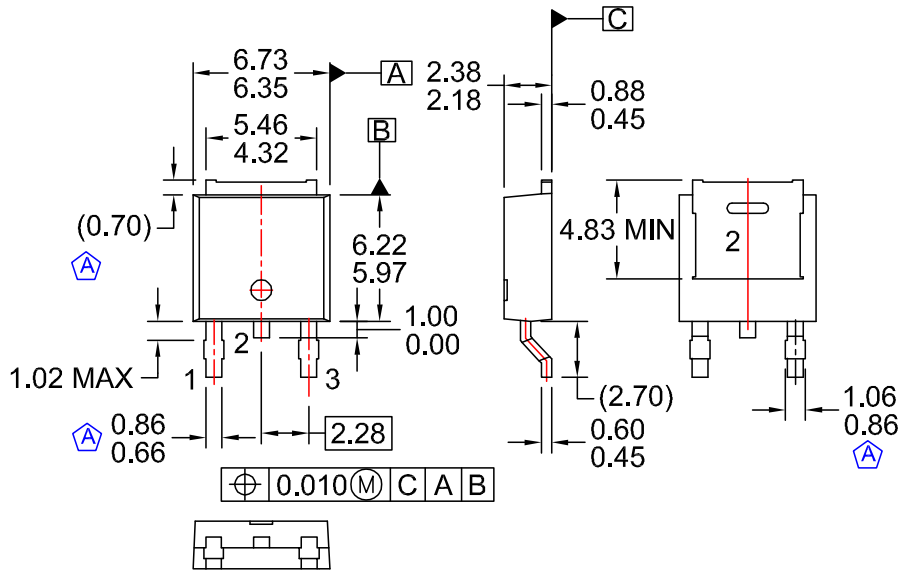


Mechanical Dimensions (Continued)

Package

Dimensions in millimeters

D-PAK



NOTES: UNLESS OTHERWISE SPECIFIED

A) CONFORMS TO JEDEC TO-252 VARIATION AB EXCEPT WHERE NOTED

B) ALL DIMENSIONS ARE IN MILLIMETERS.

C) DRAWING CONFORMS TO ASME Y14.5M-1994

D) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, AND TIE BAR EXTRUSIONS.

E) FORMERLY NAMED BD1733

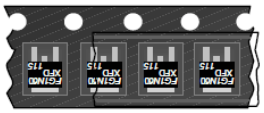
F) DRAWING FILE NAME: MKT-TO252D03REV1

Ordering Information

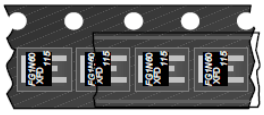
Product Number	Package	Operating Temperature
KA79M05TU	TO-220 (Dual Gauge)	0 ~ +125°C
KA79M05RTM	D-PAK	
KA79M05RTF		
KA79M12RTM		
KA79M12RTF		

* Refer to below figure for TM / TF suffix of DPAK packing option

TM :



TF :



D-PAK Unit Orientation