

KA79MXX

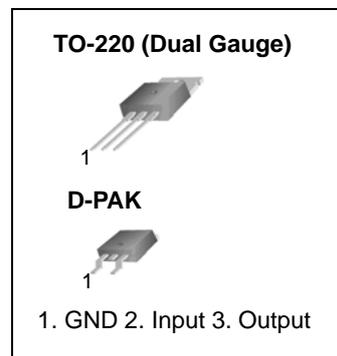
3-Terminal 0.5A Negative Voltage Regulator

Features

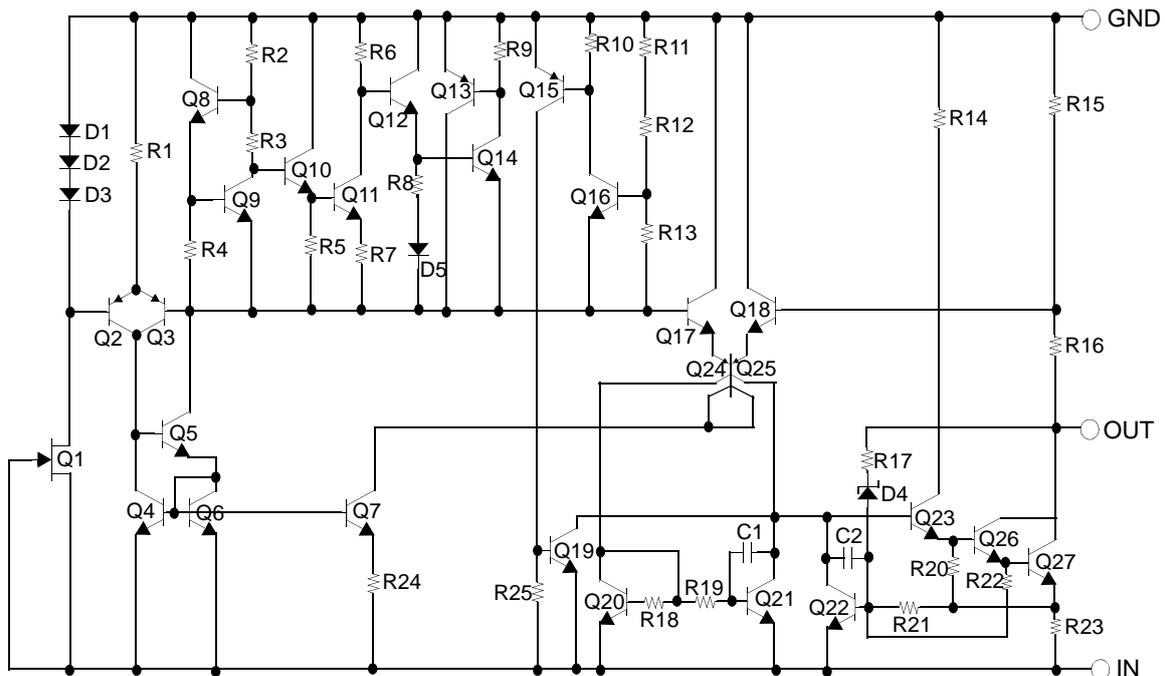
- No External Components Required
- Output Current in Excess of 0.5A
- Internal Thermal Overload
- Internal Short Circuit Current Limiting
- Output Transistor Safe Area Compensation
- Output Voltages of -5V, -12V

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.



Schematic Diagram



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	$^{\circ}C/W$
Thermal Resistance Junction-Air	$R_{\theta JA}$	65	$^{\circ}C/W$
Operating Temperature Range	T_{OPR}	0 ~ +125	$^{\circ}C$
Storage Temperature Range	T_{STG}	-65 ~ +150	$^{\circ}C$

Electrical Characteristics (KA79M05/KA79M05R)

(Refer to test circuit, $0^{\circ}C \leq T_J \leq +125^{\circ}C$, $I_O = 350mA$, $V_I = -10V$, unless otherwise specified, $C_I = 0.33\mu F$, $C_O = 0.1\mu F$)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
Output Voltage	V_O	$T_J = +25^{\circ}C$	-4.8	-5	-5.2	V	
		$I_O = 5mA$ to $350mA$ $V_I = -7V$ to $-25V$	-4.75	-5	-5.25		
Line Regulation (Note1)	ΔV_O	$T_J = +25^{\circ}C$	$V_I = -7V$ to $-25V$	-	7.0	50	mV
			$V_I = -8V$ to $-25V$	-	2.0	30	
Load Regulation (Note1)	ΔV_O	$I_O = 5mA$ to $500mA$ $T_J = +25^{\circ}C$	-	30	100	mV	
Quiescent Current	I_Q	$T_J = +25^{\circ}C$	-	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	$\Delta V_O / \Delta T$	$I_O = 5mA$	-	-0.2	-	$mV/^{\circ}C$	
Output Noise Voltage	V_N	$f = 10Hz$ to $100kHz$, $T_A = +25^{\circ}C$	-	40	-	μV	
Ripple Rejection	RR	$f = 120Hz$ $V_J = -8V$ to $-18V$	54	60	-	dB	
Dropout Voltage	V_D	$T_J = +25^{\circ}C$, $I_O = 500mA$	-	1.1	-	V	
Short Circuit Current	I_{SC}	$T_J = +25^{\circ}C$, $V_I = -35V$	-	140	-	mA	
Peak Current	I_{PK}	$T_J = +25^{\circ}C$	-	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, $0^{\circ}\text{C} \leq T_J \leq +125^{\circ}\text{C}$, $I_O = 350\text{mA}$, $V_I = -19\text{V}$, unless otherwise specified)

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

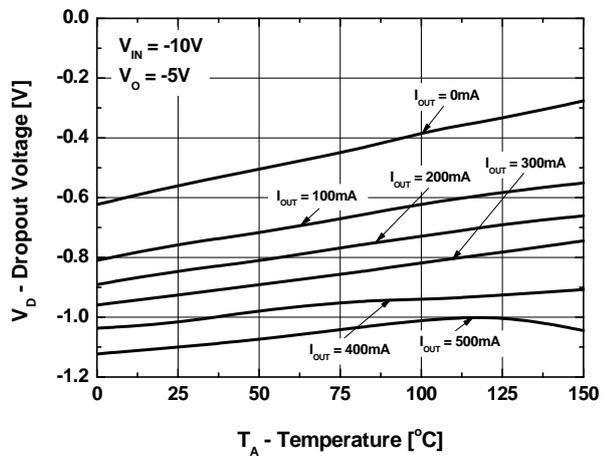


Figure 1. Dropout Voltage

Typical Applications

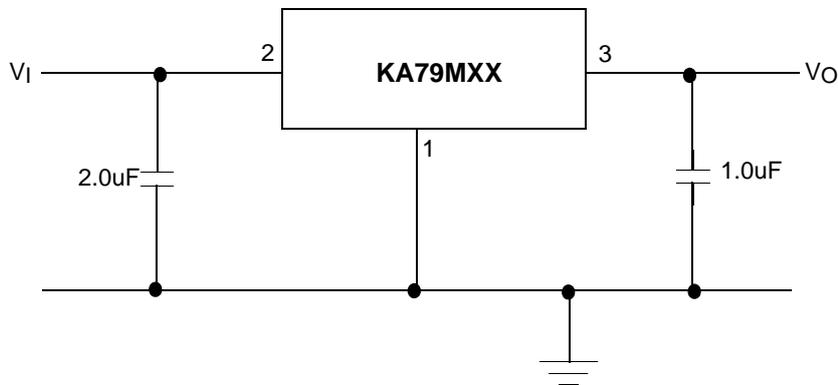


Figure 2. Fixed Output Regulator

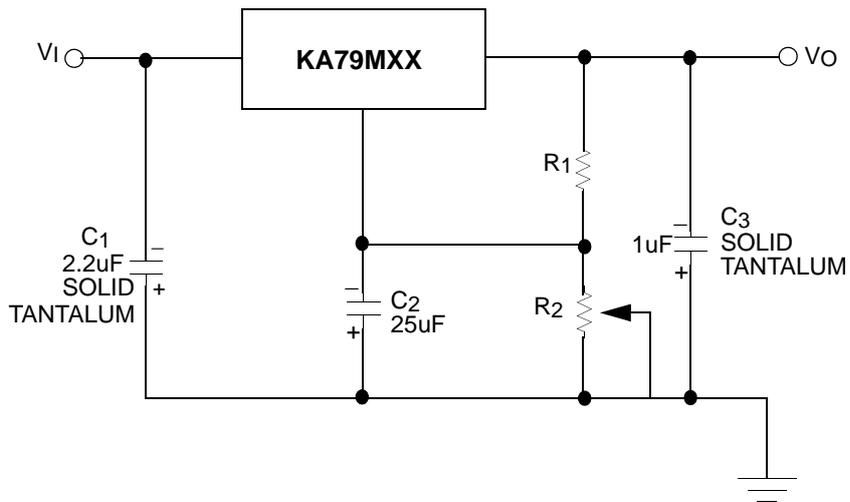


Figure 3. Variable Output

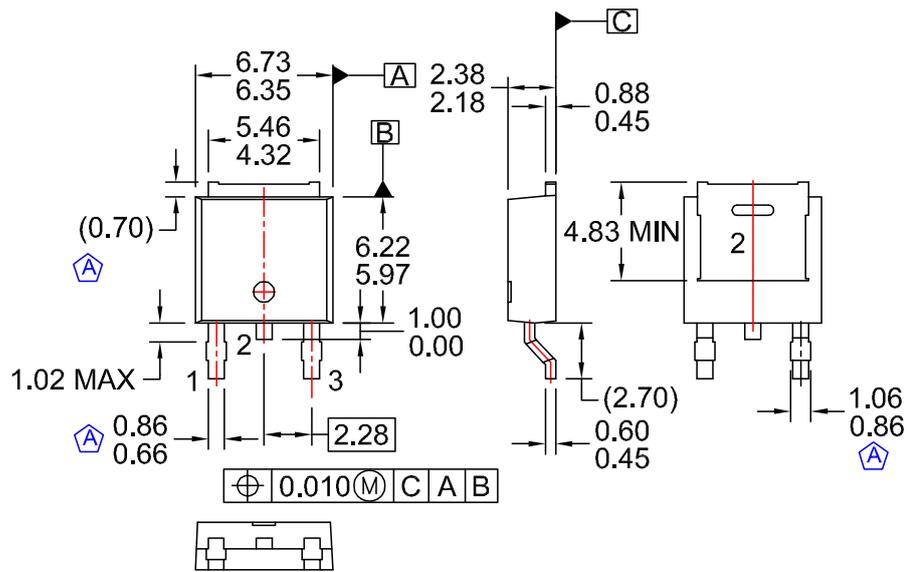
Note:

1. Required for stability. For value given, capacitor must be solid tantalum. 25 μ F aluminum electrolytic may be substituted.
2. C2 improves transient response and ripple rejection. Do not increase beyond 50 μ F.

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.

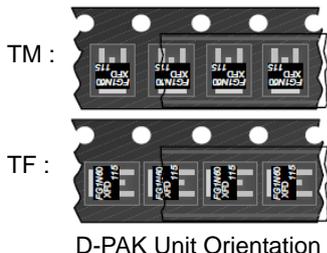
E) FORMERLY NAMED BD1733

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



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