FAIRCHILD

A Schlumberger Company

MIL-STD-883
July 1986—Rev 2[5]

μA79M05QB 3-Terminal Negative Voltage Regulator

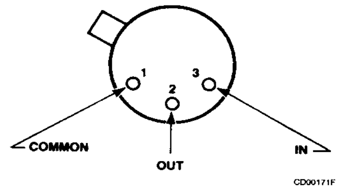
Aerospace and Defense Data Sheet
Linear Products

Description

The μA79M05QB 3-Terminal Medium Current Negative Voltage Regulator is constructed using the Fairchild Planar Epitaxial process. This regulator employs internal current-limiting, thermal shutdown and safe-area compensation, making it essentially indestructible. If adequate heat sinking is provided, it can deliver up to 500 mA output current. It is intended as a fixed voltage regulator in a wide range of applications including local, on-card regulation for elimination of noise and distribution problems associated with single point regulation. In addition to use as a fixed voltage regulator, this device can be used with external components to obtain adjustable output voltages and currents.[6]

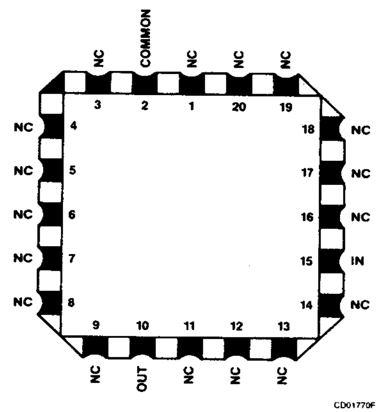
- **Output Current In Excess Of 0.5 A**
- **Internal Thermal Overload Protection**
- **Internal Short Circuit Current-Limiting**
- **Output Transistor Safe-Area Compensation**

Connection Diagram 3-Lead TO-39 Can (Top View)



Lead 3 connected to case.

Connection Diagram 20-Terminal CCP (Top View)



Order Information

Part No.	Case/ Finish	Package Code Mil-M-38510, Appendix C
μA79M05HMQB	XC	3-Lead Can
μA79M05LMQB	2C	C-2 20-Terminal CCP

JAN Product Available

11501	BXC	3-Lead Can

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Absolute Maximum Ratings

Storage Temperature Range	−65°C to +175°C
Operating Temperature Range	−55°C to +125°C
Lead Temperature (soldering, 60 s)	300°C
Internal Power Dissipation[10]	
Can Without Heat Sink[11]	0.18 W
Can With Heat Sink[12]	0.5 W
CCP Without Heat Sink[13]	0.4 W
Input Voltage	−35 V

Notes

1. 100% Test and Group A
2. Group A
3. Periodic tests, Group C
4. Guaranteed but not tested
5. When changes occur, FSC will make data sheet revisions available. Contact local sales representative for the latest revision.
6. For more information on device function, refer to the Fairchild Linear Data Book Commercial Section.
7. All characteristics except line and load transient response and noise are measured using pulse techniques ($t_W \leq 10$ ms, duty cycle $\leq 5\%$). Output voltage changes due to changes in the internal temperature must be taken into account separately.
8. Conditions given will result in the following: $P_D \leq 4$ W.
9. Slowly ramp input voltage up to −8.0 V, When circuit starts, output voltage will be as specified.
10. Internally limited.
11. Rating applies to ambient temperatures up to 125°C. Above 125°C, derate linearly at 140°C/W.
12. Rating applies to ambient temperatures up to 125°C. Above 125°C, derate linearly at 50°C/W.
13. Rating applies to ambient temperatures up to 125°C. Above 125°C, derate linearly at 120°C/W.

Processing: MIL-STD-883, Method 5004

Burn-In: Method 1015, Condition A, PDA calculated using Method 5005, Subgroup 1

Quality Conformance Inspection: MIL-STD-883, Method 5005

Group A Electrical Tests Subgroups:

1. Static tests at 25°C
2. Static tests at 125°C
3. Static tests at −55°C
4. Dynamic tests at 25°C
5. Dynamic tests at 125°C
6. Dynamic tests at −55°C
9. AC tests at 25°C

Group C and D Endpoints: Group A, Subgroup 1

μA79M05QB

Electrical Characteristics $V_I = -10$ V, $I_L = 350$ mA, $C_I = 2.0$ μF, $C_O = 1.0$ μF, unless otherwise specified.[7]

Symbol	Characteristic	Condition		Min	Max	Unit	Note	Subgrp
V_O	Output Voltage[8]			−5.2	−4.8	V	1	1
		$5.0\ mA \leq I_L \leq 350\ mA$	$V_I = -7.0$ V	−5.25	−4.75	V	1	1,2,3
			$V_I = -25$ V	−5.25	−4.75	V	1	1,2,3
$\Delta V_O/\Delta T$	Average Temperature Coefficient of Output Voltage	$I_L = 5.0$ mA, $25°C \leq T_A \leq 125°C$			1.5	mV/°C	4	2
		$I_L = 5.0$ mA, $-55°C \leq T_A \leq 25°C$			1.5	mV/°C	4	3
$V_{R\ LINE}$	Line Regulation	$-25\ V \leq V_I \leq -7.0\ V$			50	mV	1	1
		$-25\ V \leq V_I \leq -8\ V$			50	mV	1	2,3
		$-18\ V \leq V_I \leq -8.0\ V$			30	mV	1	1
					60	mV	1	2,3
$V_{R\ LOAD}$	Load Regulation	$5.0\ mA \leq I_L \leq 500\ mA$			100	mV	1	1,2,3
I_{SCD}	Standby Current Drain				2.0	mA	1	1
					3.0	mA	1	2,3
ΔI_{SCD} (LINE)	Standby Current Drain Change (vs Line Voltage)	$-25\ V \leq V_I \leq -8.0\ V$			0.4	mA	1	1,2,3
ΔI_{SCD} (LOAD)	Standby Current Drain Change (vs Load Current)	$5.0\ mA \leq I_L \leq 350\ mA$			0.4	mA	1	1,2,3
V_{DO}	Dropout Voltage				2.3	V	1	1
I_{OS}	Short Circuit Current	$V_I = -35$ V			1.0	A	1	1,2,3
I_{pk}	Peak Output Current	$V_I - V_O = -10$ V		0.5	2.0	A	1	1,2,3
V_{RTH}	Thermal Regulation	$V_I = -15$ V, $I_L = 1.0$ A			50	mV	3	1
V_{START}	Voltage Start[9]				−4.75	V	1	1,2,3,
$\Delta V_I/\Delta V_O$	Ripple Rejection	$V_I = -10$ V, $I_L = 125$ mA, $e_i = 1.0\ V_{rms}$, f = 2400 Hz		50		dB	1	4,5,6
N_O	Noise	$V_I = -10$ V, $I_L = 50$ mA, $10\ Hz \leq f \leq 10\ kHz$			250	μV_{rms}	4	9
$\Delta V_O/\Delta V_I$	Line Transient Response	$V_I = -10$ V, $I_L = 5.0$ mA, $V_{pulse} = -3.0$ V			30	mV/V	4	9
$\Delta V_O/\Delta I_L$	Load Transient Response	$V_I = -10$ V, $I_L = 50$ mA, $\Delta I_L = 200$ mA			2.5	mV/mA	4	9

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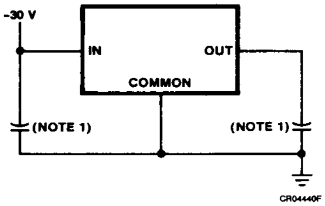
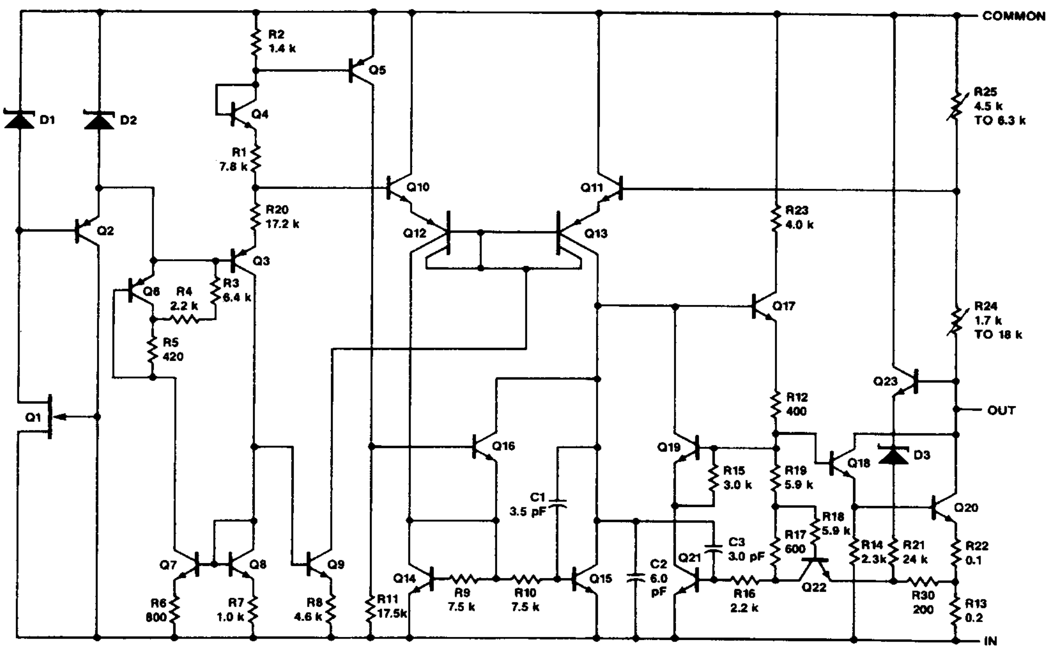
Primary Burn-In Circuit

(38510/11501 may be used by FSC as an alternate)



Equivalent Circuit (Note 2)



Notes

1. Capacitor value necessary to suppress oscillations.
2. All resistor values in ohms.

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