FAIRCHILD
A Schlumberger Company

MIL-STD-883
July 1986—Rev 2[5]

μA7805QB 3-Terminal Positive Voltage Regulator

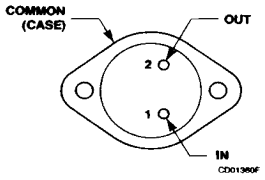
Aerospace and Defense Data Sheet
Linear Products

Description

The μA7805QB 3-Terminal Positive 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 over 1 A output current. It is intended as a fixed voltage regulator in a wide range of applications including local, on-card regulation for elimination of 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 1 A**
- **No External Components**
- **Internal Thermal Overload Protection**
- **Internal Short Circuit Current-Limiting**
- **Output Transistor Safe-Area Compensation**

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



Order Information

Part No.	Case/ Finish	Package Code MIL-M-38510, Appendix C
μA7805KMQB	YC	2-Lead Can
JAN Product Available		
10706	BYA	2-Lead Can
10706	BYC	2-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[9]	
Can Without Heat Sink[10]	0.71 W
Can With Heat Sink[11]	5.6 W
Input Voltage	35 V

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
9. AC tests at 25°C

Group C and D Endpoints: Group A, Subgroup 1

Notes

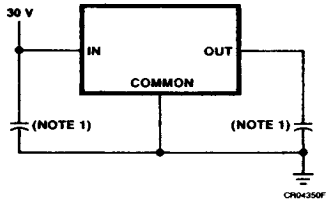
1. 100% Test and Group A
2. Group A
3. Periodic tests, Group C
4. Guaranteed but not tested
5. When changes occur, FSC will make data sheet revisions available. Contact local sales representative for the latest revision.
6. For more information on device function, refer to the Fairchild Linear Data Book 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: $P_D \leq 15$ W.
9. Internally limited.
10. Rating applies to ambient temperatures up to 125°C. Above 125°C, derate linearly at 35°C/W.
11. Rating applies to ambient temperatures up to 125°C. Above 125°C, derate linearly at 4.46°C/W.

μA7805QB
Electrical Characteristics $V_I = 10$ V, $I_L = 500$ mA, $C_I = 0.33$ μF, $C_O = 0.1$ μF, unless otherwise specified.[7]

Symbol	Characteristic	Condition	Min	Max	Unit	Note	Subgrp
V_O	Output Voltage[8]		4.8	5.2	V	1	1
		5.0 mA ≤ I_L ≤ 1.0 A, V_I = 8.0 V	4.65	5.35	V	1	1,2,3
		5.0 mA ≤ I_L ≤ 1.0 A, V_I = 20 V	4.65	5.35	V	1	1,2,3
$\Delta V_O/\Delta T$	Average Temperature Coefficient of Output Voltage	I_L = 5.0 mA, 25°C ≤ T_A ≤ 125°C		1.5	mV/°C	4	2
		I_L = 5.0 mA, −55°C ≤ T_A ≤ 25°C		2.0	mV/°C	4	3
$V_{R\ LINE}$	Line Regulation	7.0 V ≤ V_I ≤ 25 V		50	mV	1	1
		8.0 V ≤ V_I ≤ 25 V		50	mV	1	2,3
		8.0 V ≤ V_I ≤ 12 V		25	mV	1	1
				50	mV	1	2,3
$V_{R\ LOAD}$	Load Regulation	5.0 mA ≤ I_L ≤ 1.5 A		100	mV	1	1,2,3
		250 mA ≤ I_L ≤ 750 mA		25	mV	1	1
				50	mV	1	2,3
I_{SCD}	Standby Current Drain			6.0	mA	1	1
				7.0	mA	1	2,3
ΔI_{SCD} (LINE)	Standby Current Drain Change (vs Line Voltage)	8.0 V ≤ V_I ≤ 25 V		0.8	mA	1	1,2,3
ΔI_{SCD} (LOAD)	Standby Current Drain Change (vs Load Current)	5.0 mA ≤ I_L ≤ 1.0 A		0.5	mA	1	1,2,3
V_{DO}	Dropout Voltage	I_L = 1.0 A		2.5	V	1	1
I_{OS}	Output Short Circuit Current	V_I = 35 V		2.0	A	1	1,2,3
I_{OL}	Overload Current	V_I = 12 V	1.3	3.3	A	1	1,2,3
$\Delta V_I/\Delta V_O$	Ripple Rejection	V_I = 10 V, I_L = 350 mA, e_i = 1.0 V_{rms}, f = 2400 Hz	60		dB	1	4
N_O	Noise	V_I = 10 V, I_L = 100 mA, 10 Hz ≤ f ≤ 10 kHz		125	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 = 100 mA, ΔI_L = 400 mA		2.5	mV/mA	4	9

Primary Burn-In Circuit

(38510/10706 may be used by FSC as an alternate)



Note

1. Capacitor value necessary to suppress oscillations.

Equivalent Circuit