

STRUCTURE            Silicon Monolithic Integrated Circuit

TYPE                 Three-Terminal Regulator

PRODUCT SERIES    **BA78XXFP**

FEATURE             Output current up to 1A

○ABSOLUTE MAXIMUM RATING (Ta=25°C)

Parameter	Symbol	Limit	Unit
Input Voltage	Vin	35	V
Power Dissipation 1	Pd1	1 <sup>*1</sup>	W
Power Dissipation 2	Pd2	10 <sup>*2</sup>	W
Output Current	Iout	1 <sup>*3</sup>	A
Operating Temperature Range	Topr	-40~+85	°C
Operating Junction Temperature Range	Tj	-40~+150	°C
Storage Temperature Range	Tstg	-55~+150	°C

\*1 Derating in done 8mW/°C for temperatures above Ta=25°C.

\*2 Derating in done 80mW/°C for temperatures above Ta=25°C, Mounted on infinity Aluminium heat sink

\*3 Pd, ASO should not be exceeded.

○RECOMMENDED OPERATING CONDITIONS (Ta=-40~+85°C)

Parameter	Symbol	Type	Min	Max	Unit
Input Voltage	Vin	BA7805FP	7.5	25	V
		BA7806FP	8.5	21	
		BA7807FP	9.5	22	
		BA7808FP	10.5	23	
		BA7809FP	11.5	26	
		BA7810FP	12.5	25	
		BA7812FP	15	27	
		BA7815FP	17.5	30	
		BA7818FP	21	33	
		BA7820FP	23	33	
BA7824FP	27	33			
Output Current	I <sub>o</sub>	Common	—	1 <sup>*3</sup>	A

The product described in this specification is a strategic product (and/or Service) subject to COCOM regulations.

It should not be exported without Authorization from the appropriate government.

This product is not designed for protection against radioactive rays.

Status of this document

The Japanese version of this document is the formal specification. A customer may use this translation version only for a reference to help reading the formal version. If there are any differences in translation version of this document, formal version takes priority.

○ELECTRICAL CHARACTERISTICS

(Unless otherwise specified, Ta=25°C, Vin=10V(05),11V(06),13V(07),14V(08),15V(09),16V(10),19V(12),23V(15),27V(18),29V(20),33V(24), Io=500mA)

Parameter	Symbol	Type	Limit			Unit	Condition
			Min.	Typ.	Max.		
Output Voltage1	Vo1	05	4.8	5.0	5.2	V	Io=500mA
		06	5.75	6.0	6.25		
		07	6.7	7.0	7.3		
		08	7.7	8.0	8.3		
		09	8.6	9.0	9.4		
		10	9.6	10.0	10.4		
		12	11.5	12.0	12.5		
		15	14.4	15.0	15.6		
		18	17.3	18.0	18.7		
		20	19.2	20.0	20.8		
		24	23.0	24.0	25.0		
Output Voltage2	Vo2	05	4.75	—	5.25	V	Vin=7.5~20V, Io=5mA~1A
		06	5.7	—	6.3		Vin=8.5~21V, Io=5mA~1A
		07	6.65	—	7.35		Vin=9.5~22V, Io=5mA~1A
		08	7.6	—	8.4		Vin=10.5~23V, Io=5mA~1A
		09	8.55	—	9.45		Vin=11.5~26V, Io=5mA~1A
		10	9.5	—	10.5		Vin=12.5~25V, Io=5mA~1A
		12	11.4	—	12.6		Vin=15~27V, Io=5mA~1A
		15	14.25	—	15.75		Vin=17.5~30V, Io=5mA~1A
		18	17.1	—	18.9		Vin=21~33V, Io=5mA~1A
		20	19.0	—	21.0	Vin=23~33V, Io=5mA~1A	
		24	22.8	—	25.2	Vin=27~33V, Io=5mA~1A	
Line Regulation1	Reg.11	05	—	3	100	mV	Vin=7~25V, Io=500mA
		06	—	4	120		Vin=8~25V, Io=500mA
		07	—	5	140		Vin=9~25V, Io=500mA
		08	—	5	160		Vin=10.5~25V, Io=500mA
		09	—	6	180		Vin=11.5~26V, Io=500mA
		10	—	7	200		Vin=12.5~27V, Io=500mA
		12	—	8	240		Vin=14.5~30V, Io=500mA
		15	—	9	300		Vin=17.5~30V, Io=500mA
		18	—	10	360		Vin=21~33V, Io=500mA
		20	—	12	400	Vin=23~33V, Io=500mA	
		24	—	15	480	Vin=27~33V, Io=500mA	
Line Regulation2	Reg.12	05	—	1	50	mV	Vin=8~12V, Io=500mA
		06	—	2	60		Vin=9~13V, Io=500mA
		07	—	2	70		Vin=10~15V, Io=500mA
		08	—	3	80		Vin=11~17V, Io=500mA
		09	—	4	90		Vin=13~19V, Io=500mA
		10	—	4	100		Vin=14~20V, Io=500mA
		12	—	5	120		Vin=16~22V, Io=500mA
		15	—	5	150		Vin=20~26V, Io=500mA
		18	—	5	180		Vin=24~30V, Io=500mA
		20	—	7	200	Vin=26~32V, Io=500mA	
		24	—	10	240	Vin=30~33V, Io=500mA	
Ripple Rejection	R.R.	05	62	78	—	dB	ein=1Vrms, f=120Hz, Io=100mA
		06	59	73	—		
		07	57	69	—		
		08	56	65	—		
		09	56	64	—		
		10	55	64	—		
		12	55	63	—		
		15	54	62	—		
		18	55	61	—		
		20	53	60	—		
		24	50	58	—		
Temperature Coefficient of Output Voltage	Tcvo	05	—	-1.0	—	mV/°C	Io=5mA, Tj=0~125°C
		06/07/08/09/10/12	—	-0.5	—		
		15/18	—	-0.6	—		
		20/24	—	-0.7	—		
Peak Output Current	Io-p	Common	—	1.7	—	A	Tj=25°C

Parameter	Symbol	Type	Limit			Unit	Condition
			Min.	Typ.	Max.		
Load Regulation1	Reg.L1	05	—	15	100	mV	Io=5mA~1A
		06	—	16	120		
		07	—	17	140		
		08	—	19	160		
		09	—	20	180		
		10	—	21	200		
		12	—	23	240		
		15	—	27	300		
		18	—	30	360		
		20	—	32	400		
Load Regulation2	Reg.L2	05	—	5	50	mV	Io=250mA~750mA
		06	—	6	60		
		07	—	6	70		
		08	—	7	80		
		09	—	8	90		
		10	—	8	90		
		12	—	10	120		
		15	—	10	150		
		18	—	12	180		
		20	—	14	200		
Output Noise Voltage	Vn	05	—	40	—	μV	f=10Hz~100kHz
		06	—	60	—		
		07	—	70	—		
		08	—	80	—		
		09	—	90	—		
		10	—	100	—		
		12	—	110	—		
		15	—	125	—		
		18	—	140	—		
		20	—	150	—		
Dropout Voltage	Vd	Common	—	2.0	—	V	Io=1A
Bias Current	Ib	Common	—	4.5	8.0	mA	Io=0mA
Bias Current Change 1	Ib1	Common	—	—	0.5	mA	Io=5mA~1A
Bias Current Change 2	Ib2	05	—	—	0.8	mA	Vin:8~25V, Io=500mA
		06	—	—	0.8		Vin:8.5~25V, Io=500mA
		07	—	—	0.8		Vin:9.5~25V, Io=500mA
		08	—	—	0.8		Vin:10.5~25V, Io=500mA
		09	—	—	0.8		Vin:11.5~26V, Io=500mA
		10	—	—	0.8		Vin:12.5~27V, Io=500mA
		12	—	—	0.8		Vin:14.5~30V, Io=500mA
		15	—	—	0.8		Vin:17.5~30V, Io=500mA
		18	—	—	0.8		Vin:21~33V, Io=500mA
		20	—	—	0.8		Vin:23~33V, Io=500mA
Short-Circuit Output Current	Ios	05/06/07/08	—	0.6	—	A	Vin=25V
		09/10/12/15/18/20/24	—	0.3	—		Vin=30V
Output Resistance	Ro	05	—	9	—	mΩ	f=1kHz
		06/07/08/09	—	10	—		
		10	—	11	—		
		12	—	12	—		
		15	—	14	—		
		18	—	17	—		
		20	—	19	—		
24	—	27	—				

○ Output Voltage and Marking

Type	Marking	Output Voltage(V)
BA7805FP	17805	5
BA7806FP	17806	6
BA7807FP	17807	7
BA7808FP	17808	8
BA7809FP	17809	9
BA7810FP	17810	10

Type	Marking	Output Voltage(V)
BA7812FP	17812	12
BA7815FP	17815	15
BA7818FP	17818	18
BA7820FP	17820	20
BA7824FP	17824	24



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