GJ78XX

3-TERMINAL POSITIVE VOLTAGE REGULATORS

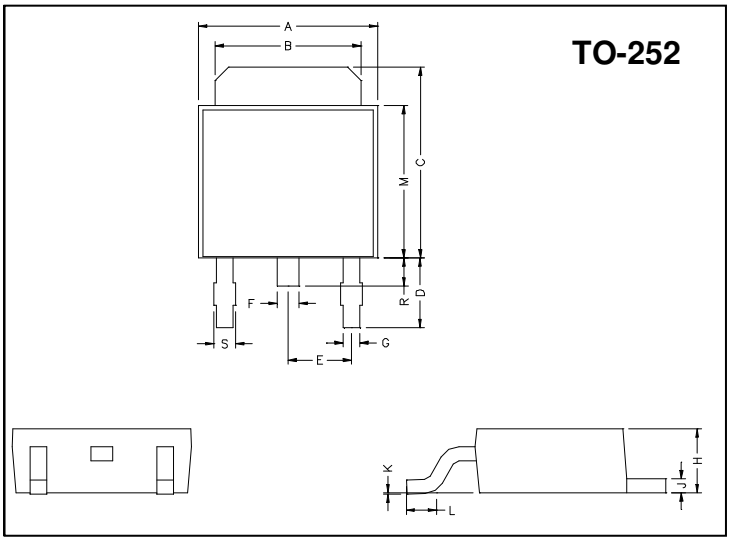
Description

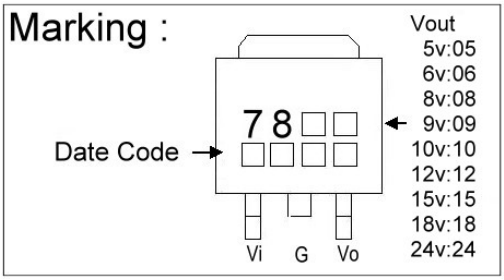
The GJ78XX series of fixed-voltage monolithic integrated-circuit voltage regulators designed for a wide range of applications. These applications include on-card regulation for elimination of noise and distribution problems associated with single-point regulation. Each of these regulators can deliver up to 1 amperes of output current. The internal current limiting and thermal shutdown features of these regulators make them essentially immune to overload.

Features

- 5V, 6V, 8V, 9V, 10V, 12V, 15V, 18V, 24V output voltage available
- Internal Thermal Overload Protection
- High Power Dissipation Capability
- Internal Short-Circuit Current Limiting
- No External Components
- Output Transistor Safe-Area Compensation

Package Dimensions





REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.40	6.80	G	0.50	0.70
B	5.20	5.50	H	2.20	2.40
C	6.80	7.20	J	0.45	0.55
D	2.40	3.00	K	0	0.15
E	2.30 REF.		L	0.90	1.50
F	0.70	0.90	M	5.40	5.80
S	0.60	0.90	R	0.80	1.20

Absolute Maximum Ratings

Parameter		Ratings	Unit
Input voltage	GJ7805 ~ 18	35V	V
	GJ7824	40V	V
Output current		1	A
Operating junction temperature range		0 ~ 150	℃
Storage temperature range		-55 ~ 150	℃
Thermal resistance junction-air ($R_{\theta JA}$)		125	℃/W
Thermal resistance junction-cases ($R_{\theta JC}$)		12.5	℃/W

Electrical Characteristics

GJ7805 (Refer to the test circuits, Tj=0~125℃, Io=500mA, Vin=10V, Cin=0.33μF, Co=0.1μF unless otherwise specified)

Symbol		Min.	Typ.	Max.	Unit	Test Conditions
VO	A-Rank (3%)	4.85	5.0	5.15	V	Vin=10V, Io=500mA, Tj=25℃ 7.5V ≤ Vin ≤ 20V, 5mA ≤ Io ≤ 1A, PD ≤ 15W
	B-Rank (5%)	4.75	-	5.25		
ΔVO (Line Regulation)		-	3	50	mV	7V ≤ Vin ≤ 25V, Io=500mA, Tj=25℃
		-	1	25		8V ≤ Vin ≤ 12V, Io=500mA, Tj=25℃
ΔVO (Load Regulation)		-	-	100	mV	Vin=10V, 5mA ≤ Io ≤ 1A, Tj=25℃
		-	-	50		Vin=10V, 250mA ≤ Io ≤ 750mA, Tj=25℃
IQ		-	-	8.0	mA	Vin=10V, Io=500mA, Tj=25℃
Δ IQ		-	-	0.5	mA	Vin=10V, 5mA ≤ Io ≤ 1A
		-	-	1.3		7V ≤ Vin ≤ 25V, Io=500mA
Vn		-	40	-	μV	10Hz ≤ f ≤ 100KHz, Tj=25℃
RR		-	80	-	dB	8V ≤ Vin ≤ 18V, f=120Hz, Tj=25℃
VD		-	2	-	V	Io=1A, Tj=25℃
Isc		-	250	-	mA	Vin=35V, Tj=25℃
Ipk		-	1.8	-	A	Tj=25℃
ΔVo / ΔTj		-	-0.6	-	mV/℃	Io=5mA, 0℃ ≤ Tj ≤ 125℃

GJ7806 (Refer to the test circuits, Tj=0~125℃, Io=500mA, Vin=11V, Cin=0.33μF, Co=0.1μF unless otherwise specified)

Symbol		Min.	Typ.	Max.	Unit	Test Conditions
VO	A-Rank (3%)	5.82	6.0	6.18	V	Vin=11V, Io=500mA, Tj=25℃ 8V ≤ Vin ≤ 21V, 5mA ≤ Io ≤ 1A, PD ≤ 15W
	B-Rank (5%)	5.70	-	6.30		
ΔVO (Line Regulation)		-	3	60	mV	8V ≤ Vin ≤ 25V, Io=500mA, Tj=25℃
		-	1	25		9V ≤ Vin ≤ 13V, Io=500mA, Tj=25℃
ΔVO (Load Regulation)		-	-	100	mV	Vin=11V, 5mA ≤ Io ≤ 1A, Tj=25℃
		-	-	50		Vin=11V, 250mA ≤ Io ≤ 750mA, Tj=25℃
IQ		-	-	8.0	mA	Vin=11V, Io=500mA, Tj=25℃
Δ IQ		-	-	0.5	mA	Vin=11V, 5mA ≤ Io ≤ 1A
		-	-	1.3		8V ≤ Vin ≤ 25V, Io=500mA
Vn		-	45	-	μV	10Hz ≤ f ≤ 100KHz, Tj=25℃
RR		-	75	-	dB	9V ≤ Vin ≤ 19V, f=120Hz, Tj=25℃
VD		-	2	-	V	Io=1A, Tj=25℃
Isc		-	250	-	mA	Vin=35V, Tj=25℃
Ipk		-	1.8	-	A	Tj=25℃
ΔVo / ΔTj		-	-0.7	-	mV/℃	Io=5mA, 0℃ ≤ Tj ≤ 125℃

GJ7808 (Refer to the test circuits, Tj=0~125℃, Io=500mA, Vin=14V, Cin=0.33μF, Co=0.1μF unless otherwise specified)

Symbol		Min.	Typ.	Max.	Unit	Test Conditions
VO	A-Rank (3%)	7.76	8.0	8.24	V	Vin=14V, Io=500mA, Tj=25℃ 10.5V ≤ Vin ≤ 23V, 5mA ≤ Io ≤ 1A, PD ≤ 15W
	B-Rank (5%)	7.60	-	8.40		
ΔVO (Line Regulation)		-	3	80	mV	10.5V ≤ Vin ≤ 25V, Io=500mA, Tj=25℃
		-	1	40		11V ≤ Vin ≤ 17V, Io=500mA, Tj=25℃
ΔVO (Load Regulation)		-	-	100	mV	Vin=14V, 5mA ≤ Io ≤ 1A, Tj=25℃
		-	-	50		Vin=14V, 250mA ≤ Io ≤ 750mA, Tj=25℃
IQ		-	-	8.0	mA	Vin=14V, Io=500mA, Tj=25℃
Δ IQ		-	-	0.5	mA	Vin=14V, 5mA ≤ Io ≤ 1A
		-	-	1.3		10.5V ≤ Vin ≤ 25V, Io=500mA
Vn		-	58	-	μV	10Hz ≤ f ≤ 100KHz, Tj=25℃
RR		-	72	-	dB	11.5V ≤ Vin ≤ 21.5V, f=120Hz, Tj=25℃
VD		-	2	-	V	Io=1A, Tj=25℃
Isc		-	250	-	mA	Vin=35V, Tj=25℃
Ipk		-	1.8	-	A	Tj=25℃
ΔVo / ΔTj		-	-0.9	-	mV/℃	Io=5mA, 0℃ ≤ Tj ≤ 125℃

GJ7809 (Refer to the test circuits, Tj=0~125℃, Io=500mA, Vin=15V, Cin=0.33μF, Co=0.1μF unless otherwise specified)

Symbol		Min.	Typ.	Max.	Unit	Test Conditions
VO	A-Rank (3%)	8.73	9.0	9.27	V	Vin=15V, Io=500mA, Tj=25℃ 11.5V ≤ Vin ≤ 24V, 5mA ≤ Io ≤ 1A, PD ≤ 15W
	B-Rank (5%)	8.55	-	9.45		
ΔVO (Line Regulation)		-	5	90	mV	11.5V ≤ Vin ≤ 25V, Io=500mA, Tj=25℃
		-	3	45		13V ≤ Vin ≤ 19V, Io=500mA, Tj=25℃
ΔVO (Load Regulation)		-	-	100	mV	Vin=15V, 5mA ≤ Io ≤ 1A, Tj=25℃
		-	-	50		Vin=15V, 250mA ≤ Io ≤ 750mA, Tj=25℃
IQ		-	-	8.0	mA	Vin=15V, Io=500mA, Tj=25℃
Δ IQ		-	-	0.5	mA	Vin=15V, 5mA ≤ Io ≤ 1A
		-	-	1.3		11.5V ≤ Vin ≤ 26V, Io=500mA
Vn		-	58	-	μV	10Hz ≤ f ≤ 100KHz, Tj=25℃
RR		-	72	-	dB	12.5V ≤ Vin ≤ 22.5V, f=120Hz, Tj=25℃
VD		-	2	-	V	Io=1A, Tj=25℃
Isc		-	250	-	mA	Vin=35V, Tj=25℃
Ipk		-	1.8	-	A	Tj=25℃
ΔVo / ΔTj		-	-1.1	-	mV/℃	Io=5mA, 0℃ ≤ Tj ≤ 125℃

GJ7810 (Refer to the test circuits, Tj=0~125℃, Io=500mA, Vin=16V, Cin=0.33μF, Co=0.1μF unless otherwise specified)

Symbol		Min.	Typ.	Max.	Unit	Test Conditions
VO	A-Rank (3%)	9.70	10.0	10.30	V	Vin=16V, Io=500mA, Tj=25℃ 12.5V ≤ Vin ≤ 25V, 5mA ≤ Io ≤ 1A, PD ≤ 15W
	B-Rank (5%)	9.50	-	10.50		
ΔVO (Line Regulation)		-	-	100	mV	13V ≤ Vin ≤ 25V, Io=500mA, Tj=25℃
		-	-	50		14V ≤ Vin ≤ 20V, Io=500mA, Tj=25℃
ΔVO (Load Regulation)		-	-	100	mV	Vin=16V, 5mA ≤ Io ≤ 1A, Tj=25℃
		-	-	50		Vin=16V, 250mA ≤ Io ≤ 750mA, Tj=25℃
IQ		-	-	8.0	mA	Vin=16V, Io=500mA, Tj=25℃
Δ IQ		-	-	0.5	mA	Vin=16V, 5mA ≤ Io ≤ 1A
		-	-	1.0		12.5V ≤ Vin ≤ 25V, Io=500mA
Vn		-	58	-	μV	10Hz ≤ f ≤ 100KHz, Tj=25℃
RR		-	72	-	dB	13V ≤ Vin ≤ 23V, f=120Hz, Tj=25℃
VD		-	2	-	V	Io=1A, Tj=25℃
Isc		-	250	-	mA	Vin=35V, Tj=25℃
Ipk		-	1.8	-	A	Tj=25℃
ΔVo / ΔTj		-	-1.1	-	mV/℃	Io=5mA, 0℃ ≤ Tj ≤ 125℃

GJ7812 (Refer to the test circuits, Tj=0~125℃, Io=500mA, Vin=19V, Cin=0.33μF, Co=0.1μF unless otherwise specified)

Symbol		Min.	Typ.	Max.	Unit	Test Conditions
VO	A-Rank (3%)	11.64	12.0	12.36	V	Vin=19V, Io=500mA, Tj=25℃ 14.5V ≤ Vin ≤ 27V, 5mA ≤ Io ≤ 1A, PD ≤ 15W
	B-Rank (5%)	11.40	-	12.60		
ΔVO (Line Regulation)		-	10	120	mV	14.5V ≤ Vin ≤ 30V, Io=500mA, Tj=25℃
		-	3	60		16V ≤ Vin ≤ 22V, Io=500mA, Tj=25℃
ΔVO (Load Regulation)		-	-	100	mV	Vin=19V, 5mA ≤ Io ≤ 1A, Tj=25℃
		-	-	60		Vin=19V, 250mA ≤ Io ≤ 750mA, Tj=25℃
IQ		-	-	8.0	mA	Vin=19V, Io=500mA, Tj=25℃
Δ IQ		-	-	0.5	mA	Vin=19V, 5mA ≤ Io ≤ 1A
		-	-	1.3		14.5V ≤ Vin ≤ 30V, Io=500mA
Vn		-	75	-	μV	10Hz ≤ f ≤ 100KHz, Tj=25℃
RR		-	72	-	dB	15V ≤ Vin ≤ 25V, f=120Hz, Tj=25℃
VD		-	2	-	V	Io=1A, Tj=25℃
Isc		-	250	-	mA	Vin=35V, Tj=25℃
Ipk		-	1.8	-	A	Tj=25℃
ΔVo / ΔTj		-	-1.5	-	mV/℃	Io=5mA, 0℃ ≤ Tj ≤ 125℃

GJ7815 (Refer to the test circuits, Tj=0~125℃, Io=500mA, Vin=23V, Cin=0.33μF, Co=0.1μF unless otherwise specified)

Symbol		Min.	Typ.	Max.	Unit	Test Conditions
VO	A-Rank (3%)	14.55	15.0	15.45	V	Vin=23V, Io=500mA, Tj=25℃ 17.5V ≤ Vin ≤ 30V, 5mA ≤ Io ≤ 1A, PD ≤ 15W
	B-Rank (5%)	14.25	-	15.75		
ΔVO (Line Regulation)		-	-	150	mV	17.5V ≤ Vin ≤ 30V, Io=500mA, Tj=25℃
		-	-	75		18.5V ≤ Vin ≤ 30V, Io=500mA, Tj=25℃
ΔVO (Load Regulation)		-	-	150	mV	Vin=23V, 5mA ≤ Io ≤ 1A, Tj=25℃
		-	-	75		Vin=23V, 250mA ≤ Io ≤ 750mA, Tj=25℃
IQ		-	-	8.0	mA	Vin=23V, Io=500mA, Tj=25℃
Δ IQ		-	-	0.5	mA	Vin=23V, 5mA ≤ Io ≤ 1A
		-	-	1.3		17.5V ≤ Vin ≤ 30V, Io=500mA
Vn		-	90	-	μV	10Hz ≤ f ≤ 100KHz, Tj=25℃
RR		-	70	-	dB	18.5V ≤ Vin ≤ 28.5V, f=120Hz, Tj=25℃
VD		-	2	-	V	Io=1A, Tj=25℃
Isc		-	250	-	mA	Vin=35V, Tj=25℃
Ipk		-	1.8	-	A	Tj=25℃
ΔVo / ΔTj		-	-1.8	-	mV/℃	Io=5mA, 0℃ ≤ Tj ≤ 125℃

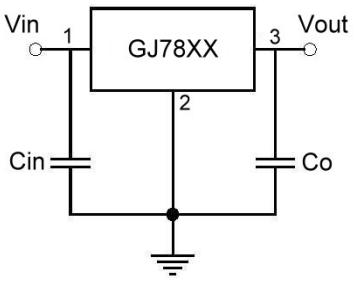
GJ7818 (Refer to the test circuits, Tj=0~125℃, Io=500mA, Vin=27V, Cin=0.33μF, Co=0.1μF unless otherwise specified)

Symbol		Min.	Typ.	Max.	Unit	Test Conditions
VO	A-Rank (3%)	17.46	18.0	18.54	V	Vin=27V, Io=500mA, Tj=25℃ 21V ≤ Vin ≤ 33V, 5mA ≤ Io ≤ 1A, PD ≤ 15W
	B-Rank (5%)	17.10	-	18.9		
ΔVO (Line Regulation)		-	-	180	mV	21V ≤ Vin ≤ 33V, Io=500mA, Tj=25℃
		-	-	90		24V ≤ Vin ≤ 30V, Io=500mA, Tj=25℃
ΔVO (Load Regulation)		-	-	180	mV	Vin=27V, 5mA ≤ Io ≤ 1A, Tj=25℃
		-	-	90		Vin=27V, 250mA ≤ Io ≤ 750mA, Tj=25℃
IQ		-	-	8.0	mA	Vin=27V, Io=500mA, Tj=25℃
Δ IQ		-	-	0.5	mA	Vin=27V, 5mA ≤ Io ≤ 1A
		-	-	1.0		21V ≤ Vin ≤ 33V, Io=500mA
Vn		-	110	-	μV	10Hz ≤ f ≤ 100KHz, Tj=25℃
RR		-	69	-	dB	22V ≤ Vin ≤ 32V, f=120Hz, Tj=25℃
VD		-	2	-	V	Io=1A, Tj=25℃
Isc		-	250	-	mA	Vin=35V, Tj=25℃
Ipk		-	1.8	-	A	Tj=25℃
ΔVo / ΔTj		-	-2.2	-	mV/℃	Io=5mA, 0℃ ≤ Tj ≤ 125℃

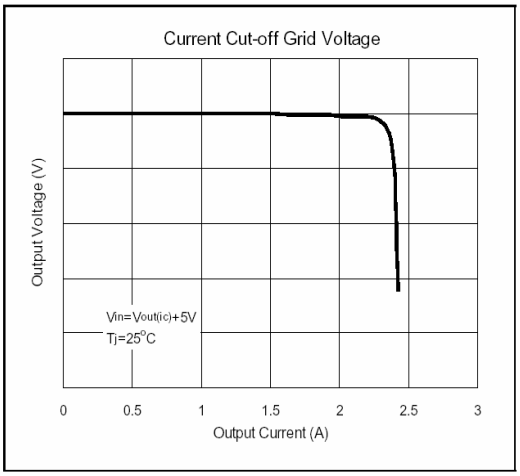
GJ7824 (Refer to the test circuits, Tj=0~125℃, Io=500mA, Vin=33V, Cin=0.33μF, Co=0.1μF unless otherwise specified)

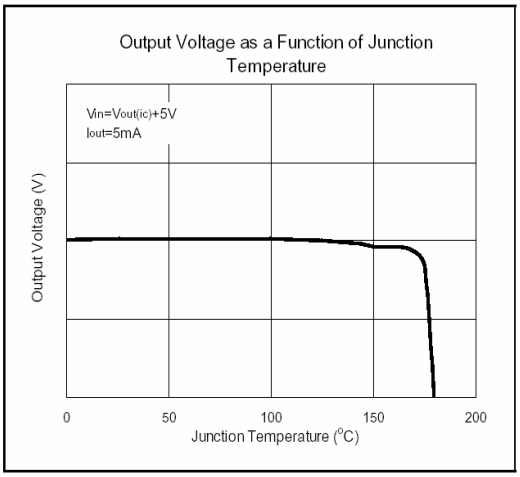
Symbol		Min.	Typ.	Max.	Unit	Test Conditions
VO	A-Rank (3%)	23.28	24.0	24.72	V	Vin=33V, Io=500mA ,Tj=25℃ 27V ≤ Vin ≤ 38V, 5mA ≤ Io ≤ 1A, PD ≤ 15W
	B-Rank (5%)	22.80	-	25.20		
ΔVO (Line Regulation)		-	-	240	mV	27V ≤ Vin ≤ 38V, Io=500mA, Tj=25℃
		-	-	120		30V ≤ Vin ≤ 36V, Io=500mA, Tj=25℃
ΔVO (Load Regulation)		-	-	240	mV	Vin=33V, 5mA ≤ Io ≤ 1A, Tj=25℃
		-	-	120		Vin=33V, 250mA ≤ Io ≤ 750mA, Tj=25℃
IQ		-		8.0	mA	Vin=33V, Io=500mA, Tj=25℃
Δ IQ		-	-	0.5	mA	Vin=33V, 5mA ≤ Io ≤ 1A
		-	-	1.0		28V ≤ Vin ≤ 38V, Io=500mA
Vn		-	170	-	μV	10Hz ≤ f ≤ 100KHz, Tj=25℃
RR		-	66	-	dB	28V ≤ Vin ≤ 38V, f=120Hz, Tj=25℃
VD		-	2	-	V	Io=1A, Tj=25℃
Isc		-	250	-	mA	Vin=35V, Tj=25℃
Ipk		-	1.8	-	A	Tj=25℃
ΔVo / ΔTj		-	-2.8	-	mV/℃	Io=5mA, 0℃ ≤ Tj ≤ 125℃

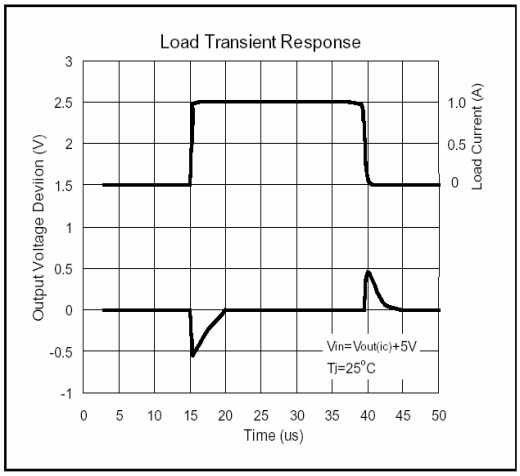
Typical Application

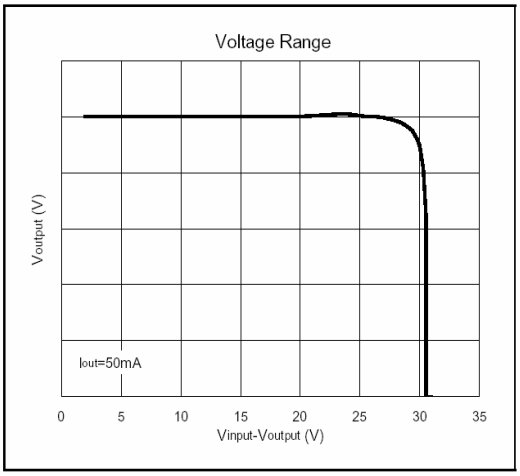


Characteristics Curve









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