GSC79LXX NEGATIVE VOLTAGE REGULATOR

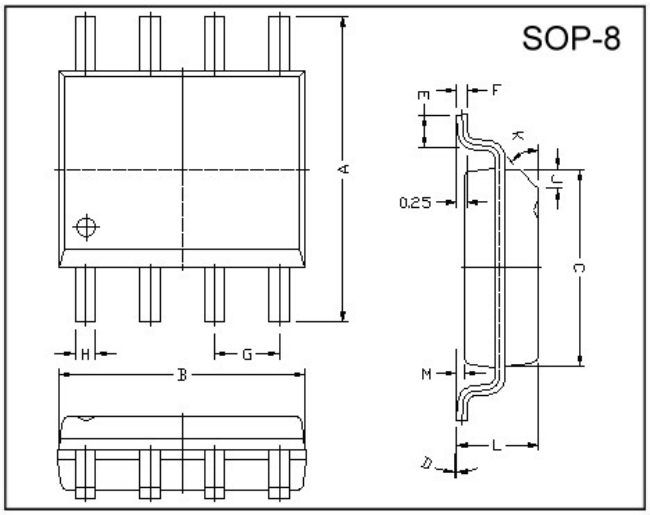
Description

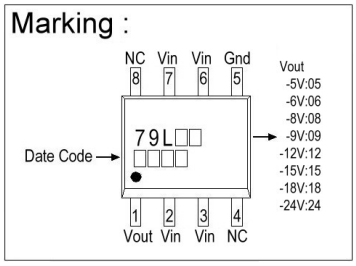
The GSC79LXX series of fixed-voltage monolithic integrated circuit voltage regulators are designed for a wide range of applications. These applications include on-card regulation for elimination of noise and distribution problems associated with single-point regulation. In addition, they can be used with power-pass elements to make high current voltage regulators. Each of these regulators can deliver up to 100mA of output current. The internal limiting and thermal shutdown features of these regulators make them essentially immune to overload. When used as a replacement for a Zener diode-resistor combination, an effective improvement in output impedance can be obtained together with lower-bias current.

Features

- Fixed output voltage of -5V, -6V, -8V,-9V, -12V, -15V, -18V, -24V
- Internal Short-Circuit Current Limiting
- Internal Thermal Overload Protection
- No External Components Required

Package Dimensions





REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.80	6.20	M	0.10	0.25
B	4.80	5.00	H	0.35	0.49
C	3.80	4.00	L	1.35	1.75
D	0°	8°	J	0.375 REF.	
E	0.40	0.90	K	45°	
F	0.19	0.25	G	1.27 TYP.	

Absolute Maximum Ratings

Parameter		Ratings	Unit
Input voltage	GSC79L05 ~ 09	-30	V
	GSC79L12 ~ 18	-35	V
	GSC79L24	-40	V
Output current		100	mA
Operating junction temperature range		0 ~ 125	℃
Storage temperature range		-65 ~ 150	℃
Power Dissipation		750*	mW

*When tested in free air condition, without heat sinking.

Electrical Characteristics

GSC79L05 (Refer to the test circuits, Tj=0~125℃, Io=40mA, Vin= -10V, Cin=0.33μF, Co=0.1μF unless otherwise specified) (Note1)

Symbol		Min.	Typ.	Max.	Unit	Test Conditions
VO	A-Rank (3%)	-4.85	-5.0	-5.15	V	Vin= -10V, Io=40mA, Tj=25℃ -7V ≤ Vin ≤ -20V, 1mA ≤ Io ≤ 40mA Vin= -10V, 1mA ≤ Io ≤ 70mA (Note2)
	B-Rank (5%)	-4.75	-	-5.25		
ΔVO (Line Regulation)		-	15	150	mV	-7V ≤ Vin ≤ -20V, Io=40mA, Tj=25℃
ΔVO (Load Regulation)		-	20	60	mV	Vin= -10V, 1mA ≤ Io ≤ 100mA, Tj=25℃
IQ		-	-	6.0	mA	Vin= -10V, Io=40mA, Tj=25℃
Δ IQ		-	-	0.1	mA	Vin= -10V, 1mA ≤ Io ≤ 40mA
		-	-	1.5		-8V ≤ Vin ≤ -20V, Io=40mA
Vn		-	40	-	μV	10Hz ≤ f ≤ 100KHz
RR		41	49	-	dB	-8V ≤ Vin ≤ -18V, Io=40mA, f=120Hz, Tj=25℃
VD		-	1.7	-	V	Io=100mA, Tj=25℃

GSC79L06 (Refer to the test circuits, Tj=0~125℃, Io=40mA, Vin= -11V, Cin=0.33μF, Co=0.1μF unless otherwise specified) (Note1)

Symbol		Min.	Typ.	Max.	Unit	Test Conditions
VO	A-Rank (3%)	-5.82	-6.0	-6.18	V	Vin= -11V, Io=40mA, Tj=25℃ -8V ≤ Vin ≤ -20V, 1mA ≤ Io ≤ 40mA Vin= -11V, 1mA ≤ Io ≤ 70mA (Note2)
	B-Rank (5%)	-5.70	-	-6.30		
ΔVO (Line Regulation)		-	20	150	mV	-8V ≤ Vin ≤ -20V, Io=40mA, Tj=25℃
ΔVO (Load Regulation)		-	21	60	mV	Vin= -11V, 1mA ≤ Io ≤ 100mA, Tj=25℃
IQ		-	-	6.0	mA	Vin= -11V, Io=40mA, Tj=25℃
Δ IQ		-	-	0.1	mA	Vin= -11V, 1mA ≤ Io ≤ 40mA
		-	-	1.5		-9V ≤ Vin ≤ -20V, Io=40mA
Vn		-	44	-	μV	10Hz ≤ f ≤ 100KHz
RR		40	48	-	dB	-9V ≤ Vin ≤ 19V, Io=40mA, f=120Hz, Tj=25℃
VD		-	1.7	-	V	Io=100mA, Tj=25℃

GSC79L08 (Refer to the test circuits, Tj=0~125℃, Io=40mA, Vin= -14V, Cin=0.33μF, Co=0.1μF unless otherwise specified) (Note1)

Symbol		Min.	Typ.	Max.	Unit	Test Conditions
VO	A-Rank (3%)	-7.76	-8.0	-8.24	V	Vin= -14V, Io=40mA, Tj=25℃ -10.5V ≤ Vin ≤ -23V, 1mA ≤ Io ≤ 40mA Vin= -14V, 1mA ≤ Io ≤ 70mA (Note2)
	B-Rank (5%)	-7.60	-	-8.40		
ΔVO (Line Regulation)		-	42	175	mV	-10.5V ≤ Vin ≤ -23V, Io=40mA, Tj=25℃
ΔVO (Load Regulation)		-	30	80	mV	Vin= -14V, 1mA ≤ Io ≤ 100mA, Tj=25℃
IQ		-	-	6.0	mA	Vin= -14V, Io=40mA, Tj=25℃
Δ IQ		-	-	0.1	mA	Vin=-14V, 1mA ≤ Io ≤ 40mA
		-	-	1.5		-11V ≤ Vin ≤ -23V, Io=40mA
Vn		-	54	-	μV	10Hz ≤ f ≤ 100KHz
RR		37	46	-	dB	-11V ≤ Vin ≤ -21V, Io=40mA, f=120Hz, Tj=25℃
VD		-	1.7	-	V	Io=100mA, Tj=25℃

GSC79L09 (Refer to the test circuits, Tj=0~125℃, Io=40mA, Vin= -15V, Cin=0.33μF, Co=0.1μF unless otherwise specified) (Note1)

Symbol		Min.	Typ.	Max.	Unit	Test Conditions
VO	A-Rank (3%)	-8.73	-9.0	-9.27	V	Vin= -15V, Io=40mA, Tj=25℃ -11.5V ≤ Vin ≤ -24V, 1mA ≤ Io ≤ 40mA Vin= -15V, 1mA ≤ Io ≤ 70mA (Note2)
	B-Rank (5%)	-8.55	-	-9.45		
ΔVO (Line Regulation)		-	42	200	mV	-11.5V ≤ Vin ≤ -24V, Io=40mA, Tj=25℃
ΔVO (Load Regulation)		-	30	90	mV	Vin= -15V, 1mA ≤ Io ≤ 100mA, Tj=25℃
IQ		-	-	6.0	mA	Vin= -15V, Io=40mA, Tj=25℃
Δ IQ		-	-	0.1	mA	Vin= -15V, 1mA ≤ Io ≤ 40mA
		-	-	1.5		-12V ≤ Vin ≤ -24V, Io=40mA
Vn		-	54	-	μV	10Hz ≤ f ≤ 100KHz
RR		37	46	-	dB	-12V ≤ Vin ≤ -22V, Io=40mA, f=120Hz, Tj=25℃
VD		-	1.7	-	V	Io=100mA, Tj=25℃

GSC79L12 (Refer to the test circuits, Tj=0~125℃, Io=40mA, Vin= -19V, Cin=0.33μF, Co=0.1μF unless otherwise specified) (Note1)

Symbol		Min.	Typ.	Max.	Unit	Test Conditions
VO	A-Rank (3%)	-11.64	-12.0	-12.36	V	Vin= -19V, Io=40mA, Tj=25℃ -14.5V ≤ Vin ≤ -27V, 1mA ≤ Io ≤ 40mA Vin= -19V, 1mA ≤ Io ≤ 70mA (Note2)
	B-Rank (5%)	-11.40	-	-12.60		
ΔVO (Line Regulation)		-	50	250	mV	-14.5V ≤ Vin ≤ -27V, Io=40mA, Tj=25℃
ΔVO (Load Regulation)		-	24	100	mV	Vin= -19V, 1mA ≤ Io ≤ 100mA, Tj=25℃
IQ		-	-	6.5	mA	Vin= -19V, Io=40mA, Tj=25℃
Δ IQ		-	-	0.1	mA	Vin= -19V, 1mA ≤ Io ≤ 40mA
		-	-	1.5		-16V ≤ Vin ≤ -27V, Io=40mA
Vn		-	80	-	μV	10Hz ≤ f ≤ 100KHz
RR		37	42	-	dB	-15V ≤ Vin ≤ -25V, Io=40mA, f=120Hz, Tj=25℃
VD		-	1.7	-	V	Io=100mA, Tj=25℃

GSC79L15 (Refer to the test circuits, Tj=0~125℃, Io=40mA, Vin= -23V, Cin=0.33μF, Co=0.1μF unless otherwise specified) (Note1)

Symbol		Min.	Typ.	Max.	Unit	Test Conditions
VO	A-Rank (3%)	-14.55	-15.0	-15.45	V	Vin= -23V, Io=40mA, Tj=25℃ -17.5V ≤ Vin ≤ -30V, 1mA ≤ Io ≤ 40mA Vin= -23V, 1mA ≤ Io ≤ 70mA (Note2)
	B-Rank (5%)	-14.25	-	-15.75		
ΔVO (Line Regulation)		-	65	300	mV	-17.5V ≤ Vin ≤ -30V, Io=40mA, Tj=25℃
ΔVO (Load Regulation)		-	25	150	mV	Vin= -23V, 1mA ≤ Io ≤ 100mA, Tj=25℃
IQ		-	-	6.5	mA	Vin= -23V, Io=40mA, Tj=25℃
Δ IQ		-	-	0.1	mA	Vin= -23V, 1mA ≤ Io ≤ 40mA
		-	-	1.5		-20V ≤ Vin ≤ -30V, Io=40mA
Vn		-	90	-	μV	10Hz ≤ f ≤ 100KHz
RR		34	39	-	dB	-18.5V ≤ Vin ≤ -28.5V, Io=40mA, f=120Hz, Tj=25℃
VD		-	1.7	-	V	Io=100mA, Tj=25℃

GSC79L18 (Refer to the test circuits, Tj=0~125℃, Io=40mA, Vin= -27V, Cin=0.33μF, Co=0.1μF unless otherwise specified) (Note1)

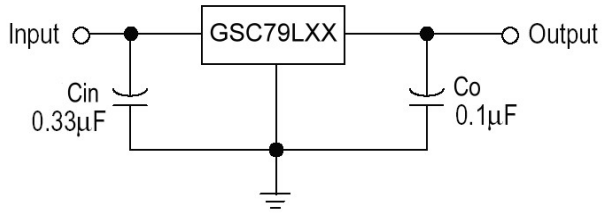
Symbol		Min.	Typ.	Max.	Unit	Test Conditions
VO	A-Rank (3%)	-17.46	-18.0	-18.54	V	Vin= -27V, Io=40mA, Tj=25℃ -20.5V ≤ Vin ≤ -33V, 1mA ≤ Io ≤ 40mA Vin= -27V, 1mA ≤ Io ≤ 70mA (Note2)
	B-Rank (5%)	-17.10	-	-18.9		
ΔVO (Line Regulation)		-	70	300	mV	-20.5V ≤ Vin ≤ -33V, Io=40mA, Tj=25℃
ΔVO (Load Regulation)		-	27	170	mV	Vin= -27V, 1mA ≤ Io ≤ 100mA, Tj=25℃
IQ		-	-	6.5	mA	Vin= -27V, Io=40mA, Tj=25℃
Δ IQ		-	-	0.1	mA	Vin= -27V, 1mA ≤ Io ≤ 40mA
		-	-	1.5		-21V ≤ Vin ≤ -33V, Io=40mA
Vn		-	150	-	μV	10Hz ≤ f ≤ 100KHz
RR		33	48	-	dB	-23V ≤ Vin ≤ -33V, Io=40mA, f=120Hz, Tj=25℃
VD		-	1.7	-	V	Io=100mA, Tj=25℃

GSC79L24 (Refer to the test circuits, Tj=0~125℃, Io=40mA, Vin= -33V, Cin=0.33μF, Co=0.1μF unless otherwise specified) (Note1)

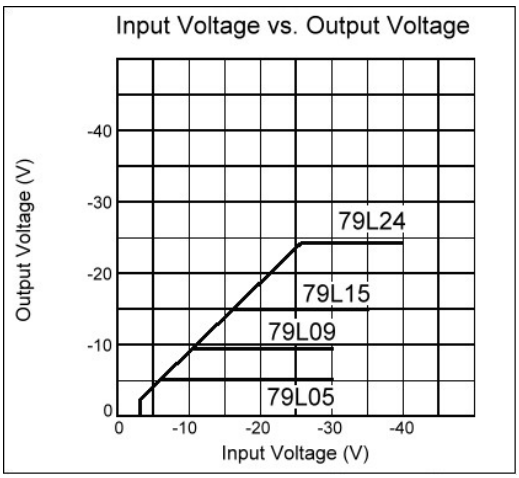
Symbol		Min.	Typ.	Max.	Unit	Test Conditions
VO	A-Rank (3%)	-23.28	-24.0	-24.72	V	Vin= -33V, Io=40mA ,Tj=25℃ -27V ≤ Vin ≤ -38V, 1mA ≤ Io ≤ 40mA Vin= -33V, 1mA ≤ Io ≤ 70mA (Note2)
	B-Rank (5%)	-22.80	-	-25.20		
ΔVO (Line Regulation)		-	90	350	mV	-27V ≤ Vin ≤ -38V, Io=40mA, Tj=25℃
ΔVO (Load Regulation)		-	40	200	mV	Vin= -33V, 1mA ≤ Io ≤ 100mA, Tj=25℃
IQ		-	-	6.5	mA	Vin= -33V, Io=40mA, Tj=25℃
Δ IQ		-	-	0.1	mA	Vin= -33V, 1mA ≤ Io ≤ 40mA
		-	-	1.5		-28V ≤ Vin ≤ -38V, Io=40mA
Vn		-	200	-	μV	10Hz ≤ f ≤ 100KHz
RR		31	47	-	dB	-29V ≤ Vin ≤ -35V, Io=40mA, f=120Hz, Tj=25℃
VD		-	1.7	-	V	Io=100mA, Tj=25℃

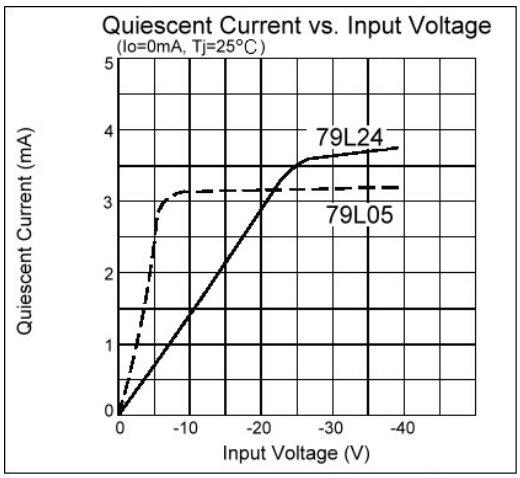
Note1: The Maximum steady state usable output current is dependent on input voltage, heat sinking, lead length of the package and copper of PCB. The data above represent pulse test conditions with junction temperatures specified at the initiation of test.
Note2: Power dissipation<0.75W

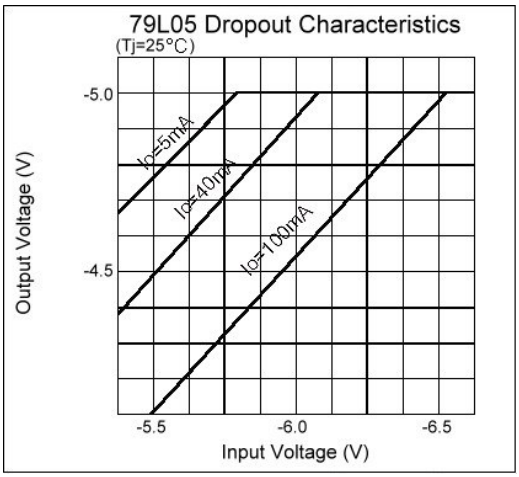
Typical Application

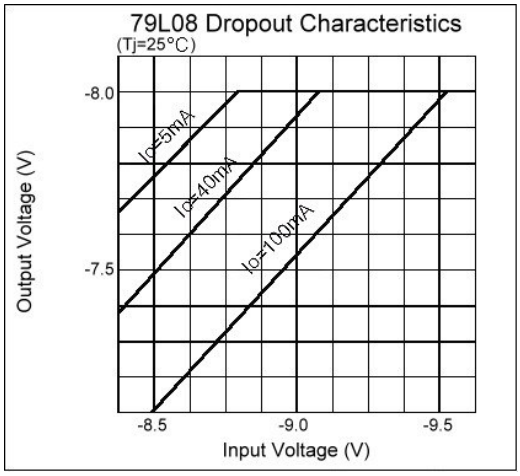


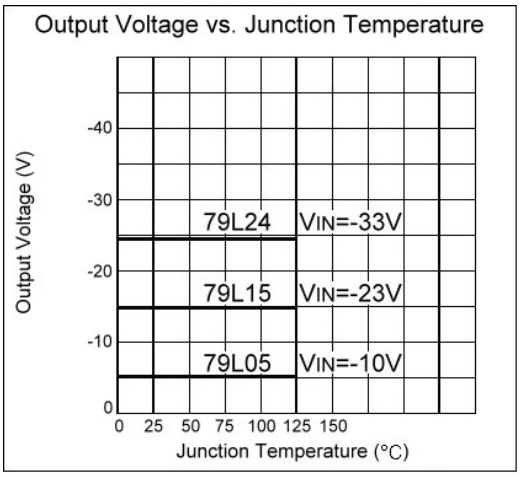
Characteristics Curve











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