

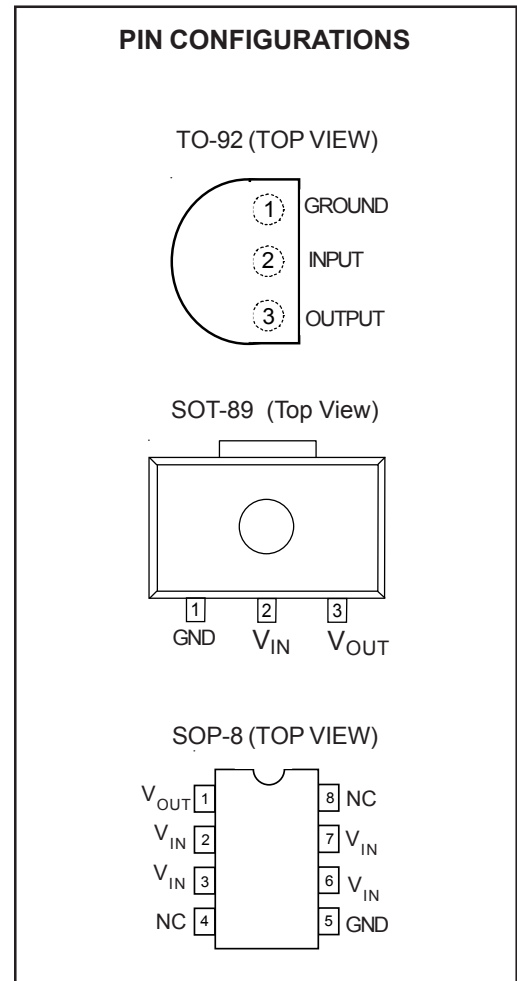
100 mA NEGATIVE VOLTAGE REGULATORS

- Wide range of Fixed Output Voltages
- Output Current up to 100 mA
- No External Components Required
- Internal Thermal Overload Protection
- Internal Short Circuit Current-Limiting
- Available in TO-92, SOT-89 and SOP-8 packages

The GM79L00 series of negative voltage regulators are low-cost devices providing a simple solution for a wide variety of applications requiring a regulated supply of up to 100mA. These virtually indestructible positive voltage regulators are protected by thermal shutdown and internal current-limiting. Most applications require no external components.

The GM79L00's are very versatile. Use them as fixed voltage regulators in a wide range of applications, including local on-card regulation for elimination of noise and distribution problems associated with single-point regulation. They can also be used with power pass elements to make high current voltage regulators.

The GM79L00's offer impressive performance advantages over old-fashioned zener diode-resistor combinations, providing lower output impedance and reduced quiescent current, along with lower noise.


Absolute Maximum Ratings:

PARAMETER		SYMBOL	VALUE	UNITS
Input Voltage	GM79L05	V_I	-30	V
	GM79L12		-35	
	GM79L24		-40	
Power Dissipation		P_D	internally limited	W
Operating Junction Temperature Range		T_J	0 to +150	°C
Storage Temperature Range		T_{stg}	-65 to +150	°C
Lead Temperature (soldering 10sec.)		T_L	260	°C

100 mA NEGATIVE VOLTAGE REGULATORS
■ ELECTRICAL CHARACTERISTICS GM79L05

 at specified junction temperature, $V_I = -10V$, $I_O = 40mA$, (unless otherwise specified)

PARAMETER	TEST CONDITIONS*	MIN	TYP	MAX	UNIT	
Output Voltage**		25°C	-4.8	-5	-5.2	V
	$I_O = 1mA$ to 40mA, $V_I = -7V$ to -20V	0°C to 125°C	-4.75	-5	-5.25	
	$I_O = 1mA$ to 70mA		-4.75	-5	-5.25	
Input Regulation	$V_I = -7V$ to -20V	25°C		15	150	mV
	$V_I = -8V$ to -20V				100	
Ripple Rejection	$V_I = -8V$ to -18V, $f = 120Hz$	0°C to 125°C	41	49		dB
Output Regulation	$I_O = 1mA$ to 100mA	25°C		20	60	mV
	$I_O = 1mA$ to 40mA			10	30	
Output Noise Voltage	$f = 10Hz$ to 100kHz	25°C		40		μV
Dropout Voltage		25°C		1.7		V
Bias Current		25°C			6	mA
		125°C			5.5	
Bias Current change	$V_I = -20V$ to -30V	0°C to 125°C			1.5	mA
	$I_O = 1mA$ to 40mA				0.1	

■ ELECTRICAL CHARACTERISTICS GM79L12

 at specified junction temperature, $V_I = -19V$, $I_O = 40mA$, (unless otherwise specified)

PARAMETER	TEST CONDITIONS*	MIN	TYP	MAX	UNIT	
Output Voltage**		25°C	-11.5	-12	-12.5	V
	$I_O = 1mA$ to 40mA, $V_I = -14.5V$ to -27V	0°C to 125°C	-11.4	-12	-12.6	
	$I_O = 1mA$ to 70mA		-11.4	-12	-12.6	
Input Regulation	$V_I = -14.5V$ to -27V	25°C		50	250	mV
	$V_I = -16V$ to -27V			40	200	
Ripple Rejection	$V_I = -15V$ to -25V, $f = 120Hz$	0°C to 125°C	37	42		dB
Output Regulation	$I_O = 1mA$ to 100mA	25°C		24	100	mV
	$I_O = 1mA$ to 40mA			15	50	
Output Noise Voltage	$f = 10Hz$ to 100kHz	25°C		80		μV
Dropout Voltage		25°C		1.7		V
Bias Current		25°C			6.5	mA
		125°C			6	
Bias Current change	$V_I = -16V$ to -27V	0°C to 125°C			1.5	mA
	$I_O = 1mA$ to 40mA				0.1	

*Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with 0.33μF capacitor across input and 0.1μF capacitor across output.

** The specification applies only for DC power dissipation permitted by absolute maximum ratings

100 mA NEGATIVE VOLTAGE REGULATORS
■ ELECTRICAL CHARACTERISTICS GM79L15

 at specified junction temperature, $V_I = -23V$, $I_O = 40mA$, (unless otherwise specified)

PARAMETER	TEST CONDITIONS*	MIN	TYP	MAX	UNIT	
Output Voltage**		25°C	-14.4	-15	-15.6	V
	$I_O = 1mA$ to 40mA, $V_I = -17.5V$ to -30V	0°C to 125°C	-14.25	-15	-15.75	
	$I_O = 1mA$ to 70mA		-14.25	-15	-15.75	
Input Regulation	$V_I = -17.5V$ to -30V	25°C		65	300	mV
	$V_I = -20V$ to -30V			50	250	
Ripple Rejection	$V_I = -18.5V$ to -28.5V, $f = 120Hz$	0°C to 125°C	34	39		dB
Output Regulation	$I_O = 1mA$ to 100mA	25°C		25	150	mV
	$I_O = 1mA$ to 40mA			15	75	
Output Noise Voltage	$f = 10Hz$ to 100kHz	25°C		90		µV
Dropout Voltage		25°C		1.7		V
Bias Current		25°C			6.5	mA
		125°C			6	
Bias Current change	$V_I = -20V$ to -30V	0°C to 125°C			1.5	mA
	$I_O = 1mA$ to 40mA				0.1	

■ ELECTRICAL CHARACTERISTICS GM79L18

 at specified junction temperature, $V_I = -26V$, $I_O = 40mA$, (unless otherwise specified)

PARAMETER	TEST CONDITIONS*	MIN	TYP	MAX	UNIT	
Output Voltage**		25°C	-17.3	-18	-18.7	V
	$I_O = 1mA$ to 40mA, $V_I = -20.5V$ to -33V	0°C to 125°C	-17.1	-18	-18.9	
	$I_O = 1mA$ to 70mA		-17.1	-18	-18.9	
Input Regulation	$V_I = -20.5V$ to -33V	25°C		70	325	mV
	$V_I = -21V$ to -33V			60	275	
Ripple Rejection	$V_I = -23V$ to -33V, $f = 120Hz$	0°C to 125°C	33	48		dB
Output Regulation	$I_O = 1mA$ to 100mA	25°C		27	170	mV
	$I_O = 1mA$ to 40mA			19	85	
Output Noise Voltage	$f = 10Hz$ to 100kHz	25°C		150		µV
Dropout Voltage		25°C		1.7		V
Bias Current		25°C			6.5	mA
		125°C			6	
Bias Current change	$V_I = -21V$ to -33V	0°C to 125°C			1.5	mA
	$I_O = 1mA$ to 40mA				0.1	

*Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with 0.33µF capacitor across input and 0.1µF capacitor across output.

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100 mA NEGATIVE VOLTAGE REGULATORS
■ ELECTRICAL CHARACTERISTICS GM79L24

 at specified junction temperature, $V_I = -33V$, $I_O = 40mA$, (unless otherwise specified)

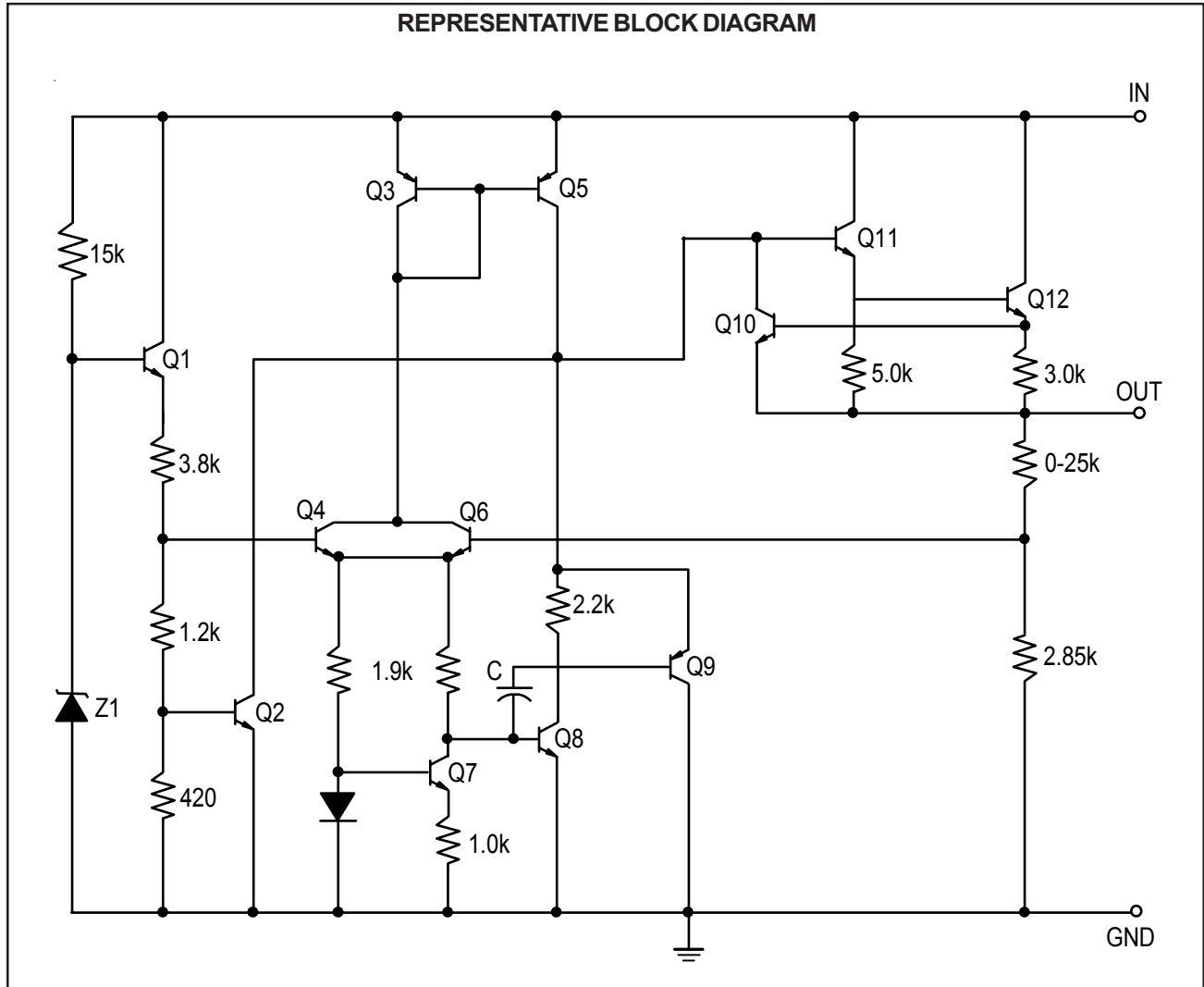
PARAMETER	TEST CONDITIONS*		MIN	TYP	MAX	UNIT
Output Voltage**		25°C	-23	-24	-25	V
	$I_O = 1mA$ to 40mA, $V_I = -27V$ to -38V	0°C to 125°C	-22.8	-24	-25.2	
	$I_O = 1mA$ to 70mA		-22.8	-24	-25.2	
Input Regulation	$V_I = -27V$ to -38V	25°C		90	350	mV
	$V_I = -28V$ to -38V			75	300	
Ripple Rejection	$V_I = -29V$ to -35V, $f = 120Hz$	0°C to 125°C	31	47		dB
Output Regulation	$I_O = 1mA$ to 100mA	25°C		40	200	mV
	$I_O = 1mA$ to 40mA			25	100	
Output Noise Voltage	$f = 10Hz$ to 100kHz	25°C		200		μV
Dropout Voltage		25°C		1.7		V
Bias Current		25°C			6.5	mA
		125°C			6	
Bias Current change	$V_I = -28V$ to -38V	0°C to 125°C			1.5	mA
	$I_O = 1mA$ to 40mA				0.1	

*Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible. Thermal effects must be taken into account separately. All characteristics are measured with 0.33μF capacitor across input and 0.1μF capacitor across output.

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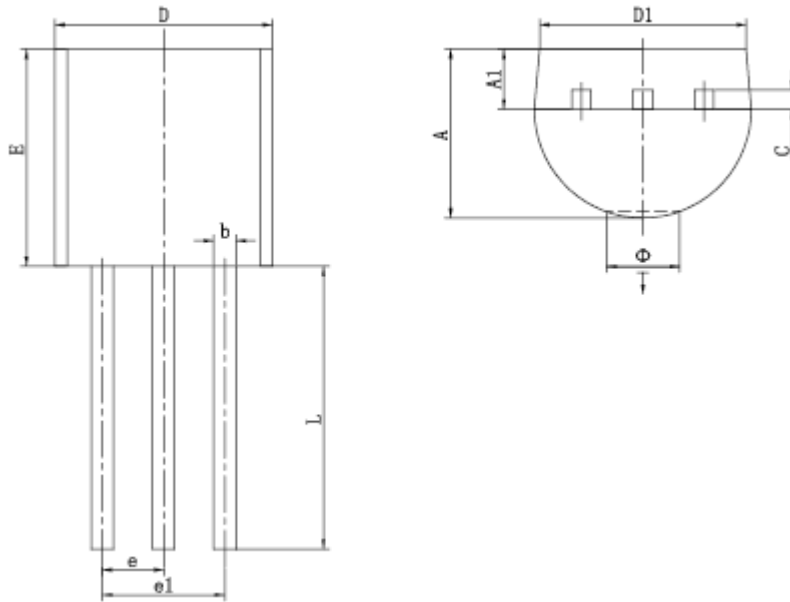
■ RECOMMENDED OPERATING CONDITIONS

PARAMETER		SYMBOL	MIN	MAX	UNIT
Input Voltage	GM79L05	V_I	-7	-20	V
	GM79L12		-14.5	-27	
	GM79L15		-17.5	-30	
	GM79L18		-20.5	-33	
	GM79L24		-27	-38	
Output Current		I_O	-	100	mA
Operating Virtual Junction Temperature		T_J	0	125	°C

100 mA NEGATIVE VOLTAGE REGULATORS

■ ORDERING INFORMATION

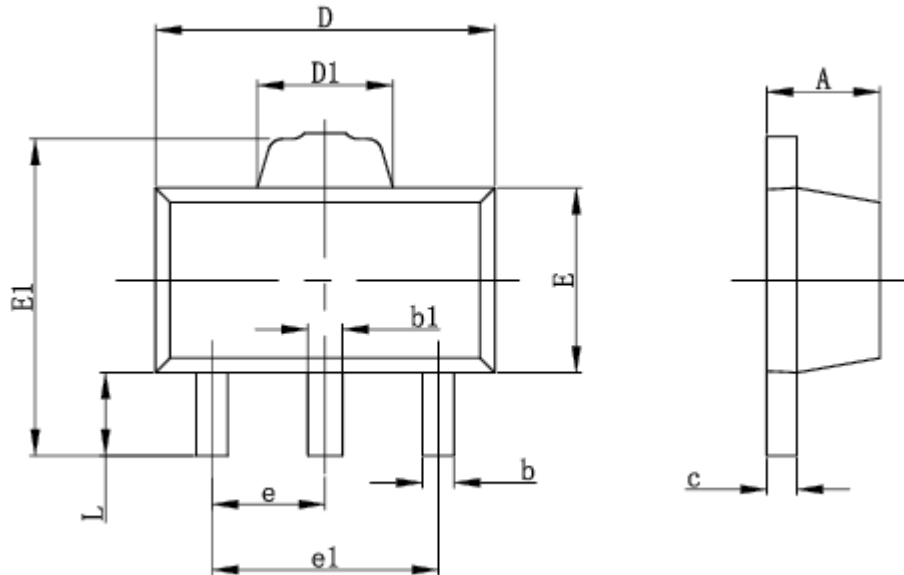
	OUTPUT VOLTAGE	PACKAGE		
		TO-92	SOT-89	SOP 8
GM79L00	5V	GM79L05-T92	GM79L05-ST89	GM79L05-S8
	12V	GM79L12-T92	GM79L12-ST89	GM79L12-S8
	15V	GM79L15-T92	GM79L15-ST89	GM79L15-S8
	18V	GM79L18-T92	GM79L18-ST89	GM79L18-S8
	24V	GM79L24-T92	GM79L24-ST89	GM79L24-S8

100 mA NEGATIVE VOLTAGE REGULATORS

 ■ **TO-92 PACKAGE OUTLINE DIMENSIONS**


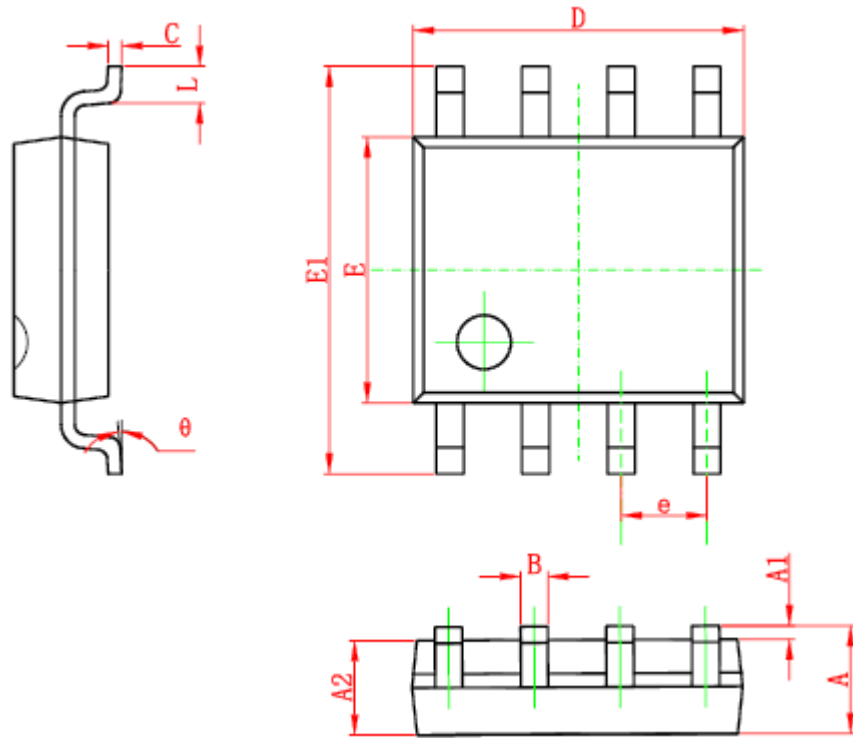
SYMBOL	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	3.300	3.700	0.130	0.146
A1	1.100	1.400	0.043	0.055
b	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.400	4.700	0.173	0.185
D1	3.430	-	0.135	-
E	4.300	4.700	0.169	0.185
e	1.270TYP		0.050TYP	
e1	2.440	2.640	0.096	0.104
L	14.100	14.500	0.555	0.571
Φ	-	1.600	-	0.063
↓	0.000	0.380	0.000	0.015

100 mA NEGATIVE VOLTAGE REGULATORS

 ■ **SOT-89-3L PACKAGE OUTLINE DIMENSIONS**


SYMBOL	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.360	0.560	0.014	0.022
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.400	1.800	0.055	0.071
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500TYP		0.060TYP	
e1	2.900	3.100	0.114	0.122
L	0.900	1.100	0.035	0.043

100 mA NEGATIVE VOLTAGE REGULATORS

 ■ **SOP-8 PACKAGE OUTLINE DIMENSIONS**


SYMBOL	Dimensions In Millimeters		Dimensions In Inches	
	MIN	MAX	MIN	MAX
A	1.45	1.75	0.057	0.069
A1	0.1	0.25	0.004	0.01
A2	1.35	1.55	0.053	0.061
B	0.306	0.506	0.012	0.02
C	0.153	0.253	0.006	0.01
D	4.81	5.01	0.189	1.197
E	3.84	4.04	0.151	0.159
E1	5.84	6.24	0.23	0.246
e	1.27		0.05	
L	0.45	1	0.018	0.039
theta	0°	8°	0°	8°