



Linear Voltage Regulator – 79L05AC

Negative Fixed 5V Voltage Regulator in bare die form

Rev 1.0
11/15/19

Description

79L05AC 5V fixed 3-terminal negative voltage regulator delivers up to 100mA output current & is equipped with internal limiting + thermal shutdown features for overload immunity. Implementing this device at point-of-source removes the complexity of single point regulation methods + reduces noise. In replacement of a Zener diode/resistor combination, the device improves output impedance by x2 order of magnitude and delivers lower bias current with lower noise. The 79L05 can also be used with power-pass elements to make high-current voltage regulators.

Features:

- $\pm 5\%$ V_{OUT} tolerance over entire temperature range
- 100mA Output Current
- Internal thermal overload protection
- Internal short circuit current limit
- Full Military Temperature Range
- Positive Voltage complement is 78L05AC

Ordering Information

The following part suffixes apply:

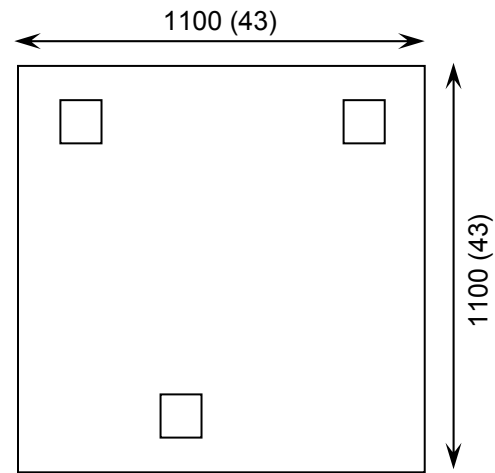
- No suffix - MIL-STD-883 /2010B Visual Inspection
- "H" - MIL-STD-883 /2010B Visual Inspection + MIL-PRF-38534 Class H LAT
- "K" - MIL-STD-883 /2010A Visual Inspection (Space) + MIL-PRF-38534 Class K LAT

LAT = Lot Acceptance Test.

For further information on LAT process flows see below.

www.siliconsupplies.com/quality/bare-die-lot-qualification

Die Dimensions in μm (mils)



Supply Formats:

- Default – Die in Waffle Pack (400 per tray capacity)
- Sawn Wafer on Tape – On request
- Unsawn Wafer – On request
- With Ti/Ni/Ag Back Metal – On request
- In Metal or Ceramic package – On request

Mechanical Specification

Die Size (Unsawn)	1100 x 1100 43 x 43	μm mils
Minimum Bond Pad Size	116 x 116 4.57 x 4.57	μm mils
Die Thickness	280 (± 20) 11 (± 0.8)	μm mils
Top Metal Composition	Al 1%Si 1.4 μm	
Back Metal Composition	N/A – Bare Si	

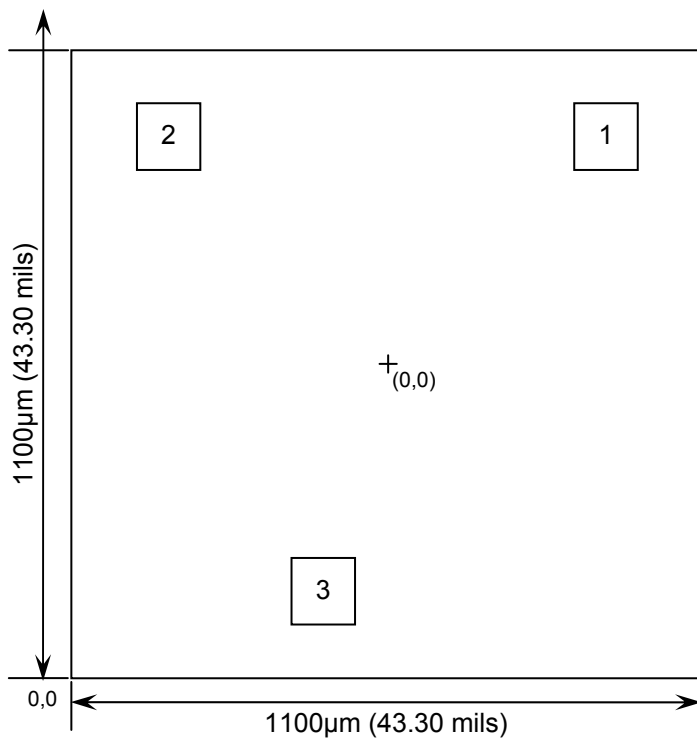




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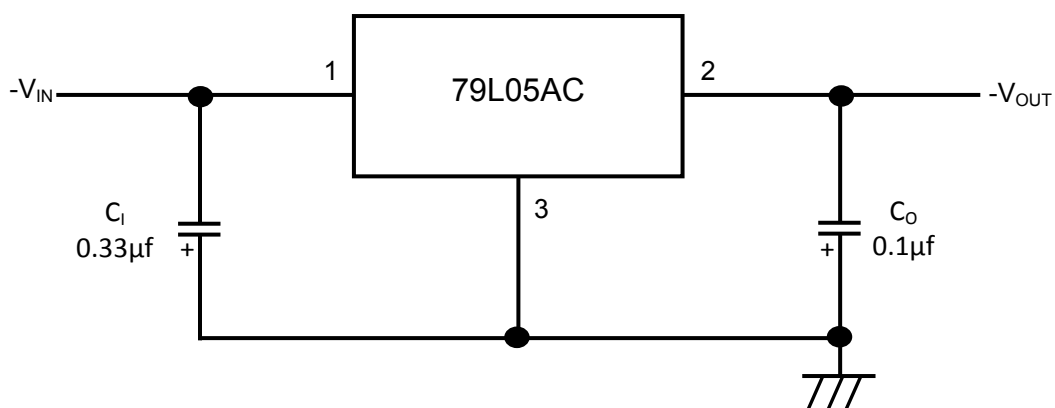
Pad Layout and Functions



PAD	FUNCTION	COORDINATES (μm)	
		X	Y
1	$-V_{\text{IN}}$	382	397
2	$-V_{\text{OUT}}$	-382	397
3	GND	-110	-397

CONNECT CHIP BACK TO V_{IN}

Typical Application



C_i is required if the regulator is located an appreciable distance from power supply filter. C_o is not required for stability; however it does improve transient response. For optimum stability and transient response locate C_i C_o as close as possible to the regulator.





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Absolute Maximum Ratings

PARAMETER	SYMBOL	VALUE	UNIT
Input Voltage	V_{IN}	-30	V
Power Dissipation ¹	P_D	620	mW
Operating Temperature Range	-	-55 to 125	°C
Maximum Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-65 to 150	°C

Recommended Operating Conditions

PARAMETER	SYMBOL	MIN	MAX	UNIT
Input Voltage	V_{IN}	-7	-20	V
Output Current	I_{OUT}	-	100	mA
Operating Temperature Range	T_J	-55	125	°C

DC Electrical Characteristics $V_I = -10V, I_{OUT}=40mA, C_i=0.33\mu F, C_o=0.1\mu f, 0^\circ C < T_J < +125^\circ C$ (unless noted otherwise)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Output Voltage	V_{OUT}	$T_J = 25^\circ C, I_O = 40mA$	-4.80	-5.00	-5.20	V
		$1mA \leq I_{OUT} \leq 40mA, -7V \leq V_{IN} \leq -20V$	-4.75	-5.00	-5.25	
		$1mA \leq I_{OUT} \leq 70mA, V_{IN} = -10V$	-4.75	-5.00	-5.25	
Line Regulation	ΔV_{OUT}	$-7V \leq V_{IN} \leq -20V, T_J = 25^\circ C, I_O = 40mA$	-	32	150	mV
		$-8V \leq V_{IN} \leq -20V, T_J = 25^\circ C, I_O = 40mA$	-	26	100	
Load Regulation	ΔV_{OUT}	$1mA \leq I_{OUT} \leq 100mA, T_J = 25^\circ C$	-	15	60	mV
		$1mA \leq I_{OUT} \leq 40mA, T_J = 25^\circ C$	-	8	30	
Input Bias Current	I_B	$T_J = 25^\circ C$	-	3.8	6.0	mA
		$T_J = 125^\circ C$	-	-	5.5	
Input Bias Current Change	ΔI_B	$-8V \leq V_{IN} \leq -20V$	-	-	1.5	mA
		$1mA \leq I_{OUT} \leq 40mA$	-	-	0.1	
Output Noise Voltage	e_N	$10Hz \leq f \leq 100KHz, T_J = 25^\circ C$	-	40	-	μV_{RMS}
Ripple Rejection	RR	$f = 120Hz, -8V \leq V_{IN} \leq 18V, T_J = 25^\circ C$	41	49	-	dB
Dropout Voltage	V_D	$V_{IN} - V_{OUT}$	-	1.7	-	V

1. Value measured in TO-92 package applicable only for DC power dissipation permitted by absolute maximum ratings. Results in die form are dependent on die attach and assembly method.





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