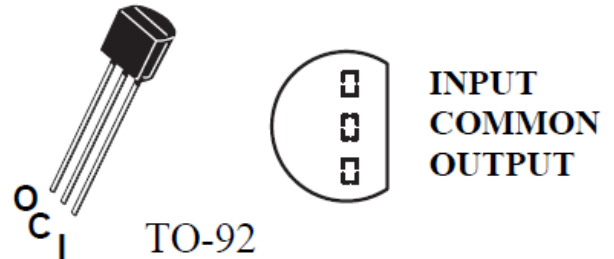


# 78L05

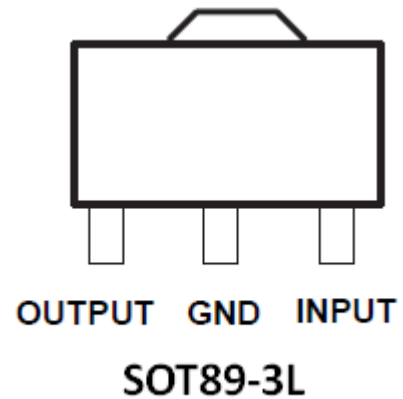
## Features

- 3-Terminal Regulators
- Output Current up to 100 mA
- No External Components
- Internal Thermal-Overload Protection
- Internal Short-Circuit Current Limiting
- Provided Pb-Free packages



## Description

This series of fixed-voltage integrated-circuit voltage regulators is 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. One 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.



## Ordering guide

Product model	package	Operational temperature
78L05	TO-92	-20°C~85°C
78L05	SOT89-3L	-20°C~85°C

**Absolute maximum ratings over operating temperature range (unless otherwise noted)**

78L05	PARAMETER	UNIT
Input voltage, $V_i$	30	V
Virtual junction temperature range, $T_j$	150	°C
Lead temperature 1.6mm(1/16 inch)from case for 10 seconds	260	°C
Storage temperature range, $T_{stg}$	-65 to 150	°C

### Recommended operating conditions

78L05	MIN	MAX	UNIT
Input voltage, $V_i$	7	20	V
Output current, $I_o$		100	mA
Operating virtual junction temperature, $T_j$	0	70	°C

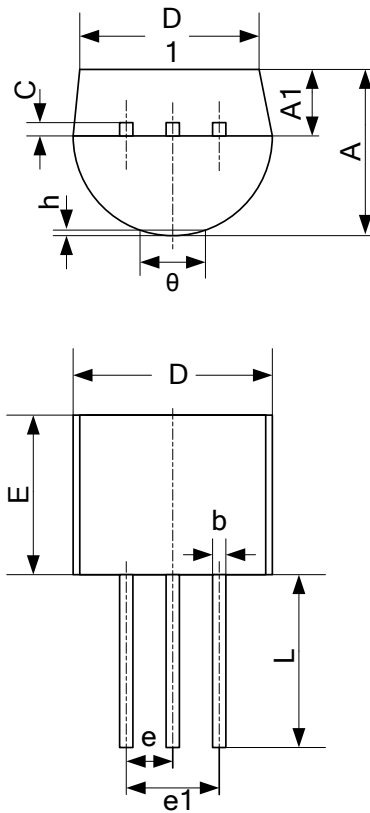
**Electrical characteristics at specified virtual junction temperature,  $V_i=10V$ ,  $I_o=40mA$**

**( unless otherwise noted )**

PARAMETER	TEST CONDITIONS	T‡	78L05			UNIT
			MIN	TYP	MAX	
Output voltage		25°C	4.8	5	5.2	V
	$I_o=1mA$ to 40mA, $V_i=7V$ to 20V	Full range	4.75	5	5.25	
	$I_o=1mA$ to 70mA	Full range	4.75	5	5.25	
Input voltage regulation	$V_i=7V$ to 20V	25°C		32	150	mV
	$V_i=8V$ to 20V			26	100	
Ripple rejection	$V_i=8V$ to 18V, $f=120Hz$	25°C	41	49		dB
Output voltage regulation	$I_o=1mA$ to 100mA	25°C		15	60	mV
	$I_o=1mA$ to 40mA			8	30	
Output noise voltage	$f=10Hz$ to 100kHz	25°C		42		uV
Dropout voltage		25°C		1.7		V
Bias current		25°C		3.8	6	mA
		125°C			5.5	
Bias current change	$V_i=8V$ to 20V	Full range			1.5	mA
	$I_o=1mA$ to 40mA				0.1	

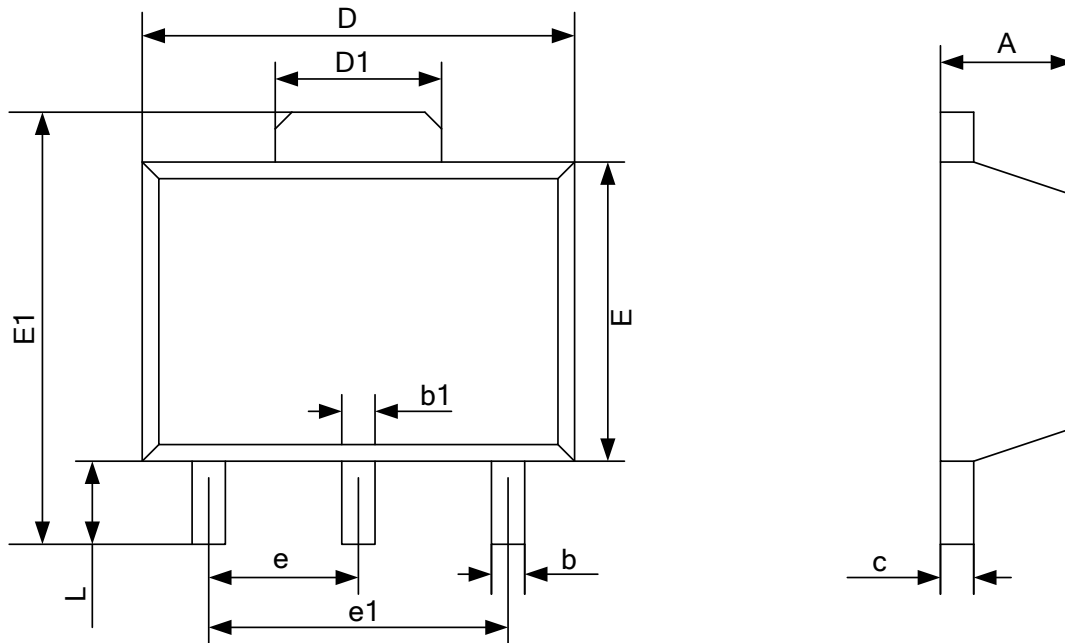
‡Pulse-testing techniques maintain  $T_j$  as close to  $T_A$  as possible. Thermal effects must be taken into account separately. All characteristics are measured with a 0.33uF capacitor across the input and a 0.1uF capacitor across the output. Full range for the 78L05 is  $T_j=0°C$  to 70°C

## 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	1.270 TYP		0.050 TYP	
e1	2.440	2.640	0.096	0.104
L	14.100	14.500	0.555	0.571
theta		1.600		0.063
h	0.000	0.380	0.000	0.015

## SOT89-3L 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	0.197
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 TYP		0.061 TYP	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP		0.060 TYP	
e1	3.000 TYP		0.118 TYP	
L	0.900	1.200	0.035	0.047