

Series3-Terminal 0.1A Positive Voltage Regulators

LR78L05A/B

DESCRIPTION

The LRC LR78L05 series is monolithic fixed voltage regulator integrated circuit. They are suitable for applications that required supply current up to 100mA.

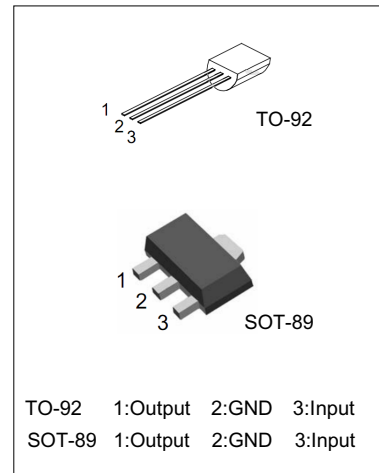
FEATURES

- *Output current up to 100mA
- *Fixed output voltage of 5V available
- *Thermal overload shutdown protection
- *Short circuit current limiting
- *We declare that material of product compliance with ROHS requirements.

ORDERING INFORMATION

*LR78L05A: SOT89

*LR78L05B: TO-92



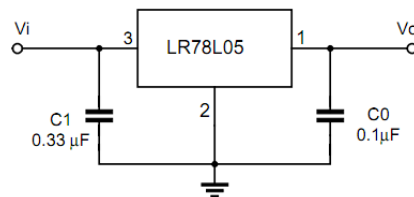
ABSOLUTE MAXIMUM RATINGS

(Operating temperature range applies unless otherwise specified)

PARAMETER	SYMBOL	MIN.	MAX.	UNIT
Input voltage (for $V_o=5\sim 9V$)	V_i		30	V
(for $V_o=12\sim 24V$)	V_i		35	V
Output Current	I_o		100	mA
Power Dissipation	PD			mW
TO-92			625	
SOT-89			350	
Operating Junction Temperature	T_J	-40	+150	°C
Operating Ambient Temperature	T_{OPR}	-40	+125	°C
Storage Temperature Range	T_{STG}	-55	+150	°C

ESD: HBM 2000V

APPLICATION CIRCUIT



Note 1: To specify an output voltage, substitute voltage value for 5V

Note 2: Bypass capacitors are recommended for optimum stability and transient response and should be located as close as possible to the regulators.

ELECTRICAL CHARACTERISTICS

($V_I=10V$, $I_O=40mA$, $-55^{\circ}C < T_J < 125^{\circ}C$, $C_1=0.33\mu F$, $C_O=0.1\mu F$, unless otherwise specified)(Note 1)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP.	MAX	UNIT
Output Voltage	V_O	$T_J=25^{\circ}C$	4.80	5.0	5.20	V
		$7V \leq V_I \leq 20V, I_O=1mA-40mA$	4.75		5.25	V
		$7V \leq V_I \leq V_{MAX}, I_O=1mA-70mA$	4.75		5.25	V (note 2)
Load Regulation	V_O	$T_J=25^{\circ}C, I_O=1mA-100mA$		11	60	mV
		$T_J=25^{\circ}C, I_O=1mA-40mA$		5.0	30	mV
Line regulation	V_O	$7V \leq V_I \leq 20V, T_J=25^{\circ}C$		8	150	mV
		$8V \leq V_I \leq 20V, T_J=25^{\circ}C$		6	100	mV
Quiescent Current	I_Q	$V_{IN}=10V, I_O=0mA, T_J=25^{\circ}C$		2.0	5.5	mA
Quiescent Current Change	ΔI_Q	$8V \leq V_I \leq 20V$			1.5	mA
	ΔI_Q	$1mA \leq V_I \leq 40mA$			0.1	mA
Output Noise Voltage	V_N	$10Hz \leq f \leq 100kHz$		40		μV
Ripple Rejection	RR	$8V \leq V_I \leq 20V, f=120Hz, T_J=25^{\circ}C$	40	49		dB
Dropout Voltage	V_d	$T_J=25^{\circ}C$		1.7		V

ELECTRICAL CHARACTERISTICS CURVES

Fig.1 UTC78L05 Output Voltage vs Ambient Temperature

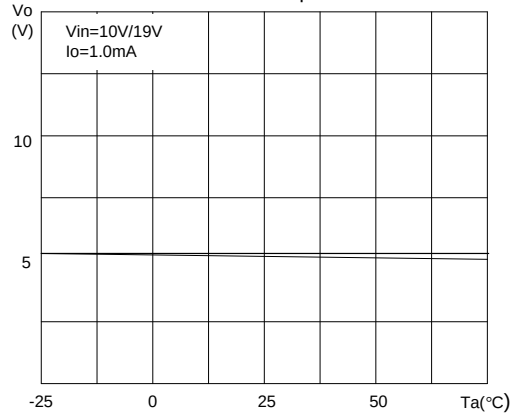


Fig.2 UTC78L05 Quiescent Current vs Output Current

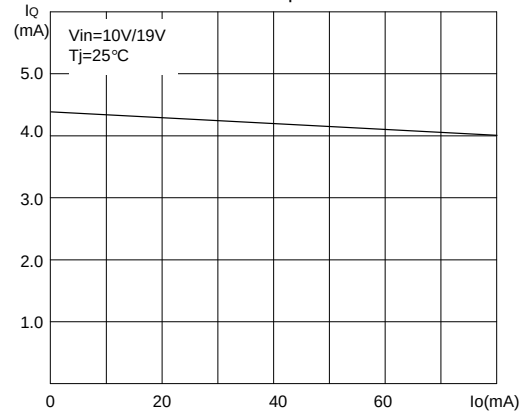


Fig.3 UTC78L05 Quiescent Current vs Input

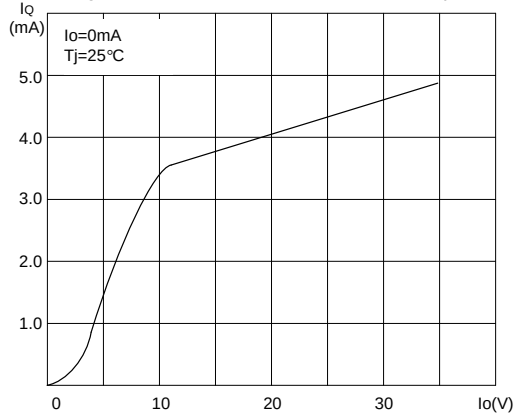


Fig.4 UTC78L05 Thermal Shutdown

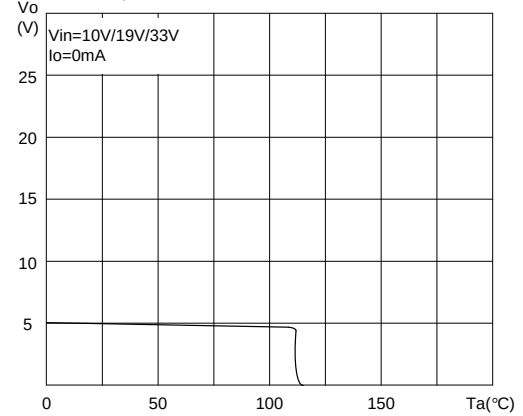


Fig.5 UTC78L05 Output Characteristics

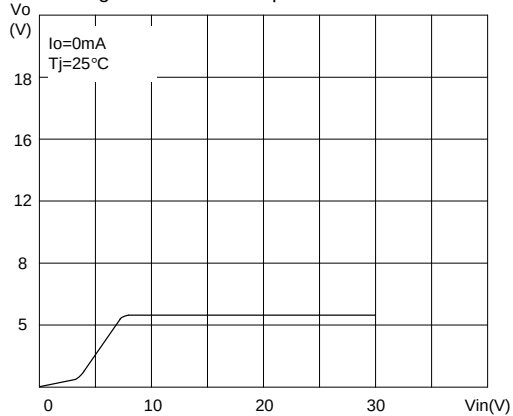
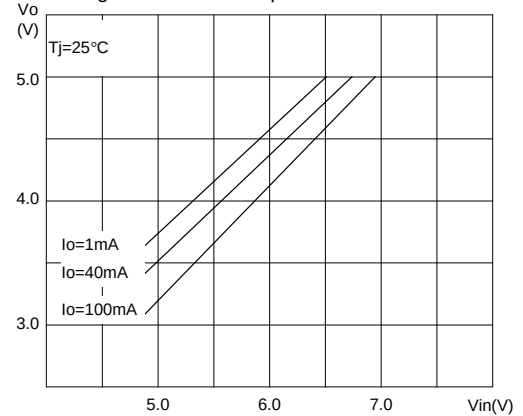
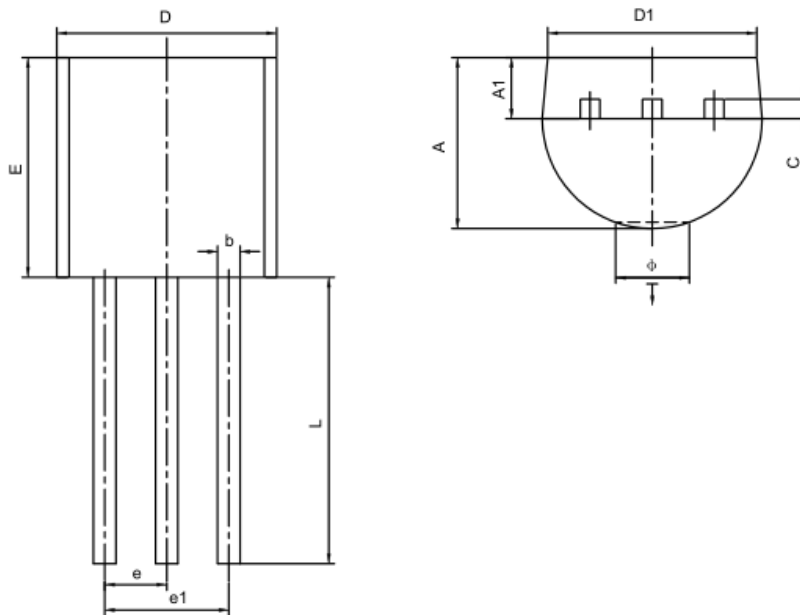


Fig.6 UTC78L05 Dropout Characteristics

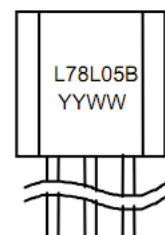


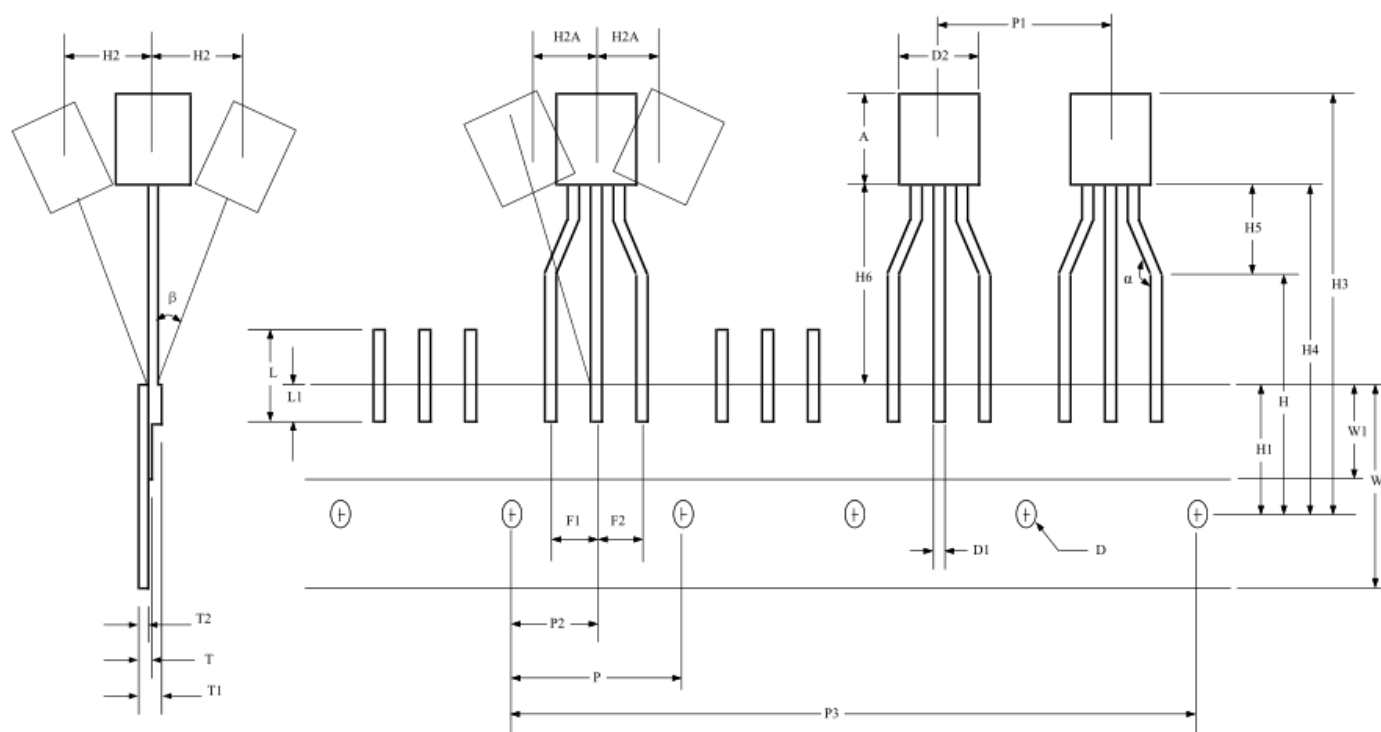
TO-92 PACKAGE OUTLINE DIMENSIONS


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
Ö		1.600		0.063
↓	0.000	0.380	0.000	0.015

SHIPPING INFORMATION

1. Bag: 1000 Units/ Bag 10 Bag/ Box(240mm*170mm*96mm)
4 Box/ Chest(365mm*270mm*210mm)
2. Tape: 2000 Units/ Box 10 Box/ Chest

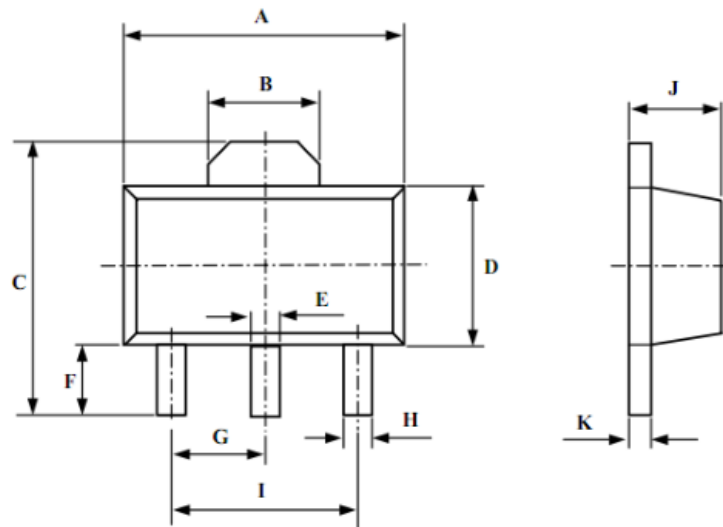
MARKING


TO-92 TAPPING OUTLINE DIMENSIONS


symbol	mm		inch	
	min	max	min	max
A	4.40	4.80	0.173	0.189
D	3.80	4.20	0.150	0.165
D1	0.45	0.55	0.018	0.022
D2	4.40	4.80	0.173	0.189
F1,F2	2.40	2.90	0.094	0.114
F1-F2	-0.30	0.30	-0.012	0.012
H	15.50	16.50	0.610	0.650
H1	8.50	9.50	0.335	0.374
H2	-	1.00	-	0.039
H2A	-	1.00	-	0.039
H3	-	26.00	-	1.024
H4	-	21.00	-	0.827
H5	3.00	5.00	0.118	0.197
H6	9.00	11.00	0.354	0.433

symbol	mm		inch	
	min	max	min	max
L	-	11.00	-	0.433
L1	2.50	-	0.098	-
P	12.50	12.90	0.492	0.508
P1	12.50	12.90	0.492	0.508
P2	6.31	6.39	0.248	0.252
P3	50.30	51.30	1.980	2.020
T	-	0.55	-	0.022
T1	-	1.42	-	0.056
T2	0.36	0.55	0.014	0.022
W	17.50	19.00	0.689	0.748
W1	5.00	7.00	0.197	0.276
W2	-	0.50	-	0.020
α	145°	155°	145°	155°
β	-	4°	-	4°

SOT-89-3L PACKAGE OUTLINE DIMENSIONS



SYMBOL	Dimensions In Mm		Dimensions In Inches	
	Min	Max	Min	Max
A	4.000	4.600	0.173	0.181
B	1.550 REF		0.061 REF	
C	3.940	4.250	0.155	0.167
D	2.300	2.600	0.091	0.102
E	0.400	0.580	0.016	0.023
F	0.900	1.200	0.035	0.047
G	1.5 TYP		0.06 TYP	
H	0.320	0.520	0.013	0.020
I	3 TYP		0.118 TYP	
J	1.400	1.600	0.055	0.063
K	0.350	0.440	0.014	0.017

SHIPPING INFORMATION

Tape: 2500 Units/ Reel(13 inch)
 2 Reel/ Box(340mm*340mm*50mm)
 6 Box/ Chest(360mm*360mm*315mm)

MARKING

