

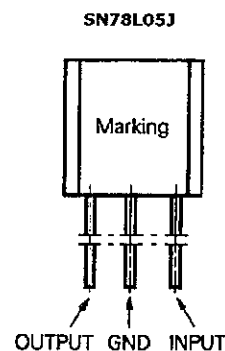
THREE TERMINAL POSITIVE VOLTAGE REGULATOR**DESCRIPTION**

SN78L05J is monolithic three terminal positive regulator which employs internally current limiting, thermal shut down, output transistor safe area protection makes them essentially indestructible.

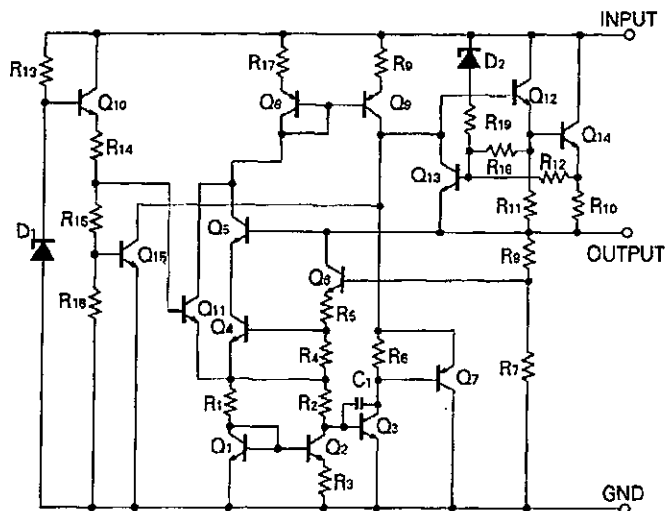
This is intended as fixed voltage regulator in a wide range of application including local on card regulation for elimination of distribution problems associated with single point regulation.

FEATURES

- Output current in excess of 100 mA.
- Low noise.
- High Ripple Rejection.
- Internal output transistor safe area protection.
- Internal thermal overload protection.
- Internal short circuit current limiting.

CONNECTION DIAGRAM**ORDER INFORMATION**

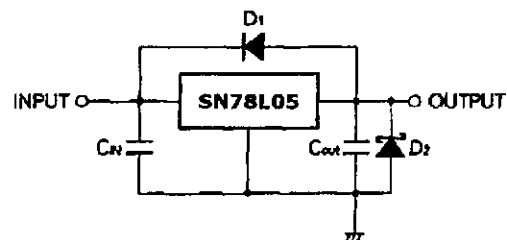
Type Number	Output Voltage	Package	Quality Grade
SN78L05	5 V	TO-92	standard

EQUIVALENT CIRCUIT

ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

PARAMETER	SYMBOL	RATINGS	UNIT
		SN78L05	
Input Voltage	V_{IN}	30	V
Internal Power Dissipation	P_T	700	mW
Operating Ambient Temperature Range	T_{opt}	-20 to +85	$^\circ\text{C}$
Operating Junction Temperature Range	$T_{opt}(j)$	-20 to +150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^\circ\text{C}$
Thermal Resistance (junction to ambient)	$R_{th}(j-a)$	180	$^\circ\text{C/W}$

TYPICAL CONNECTION



C1: Required if regulator is located an appreciable distance from power supply filter

C2: More than $0.1\ \mu\text{F}$

D1: Needed for $V_{IN} < V_o$

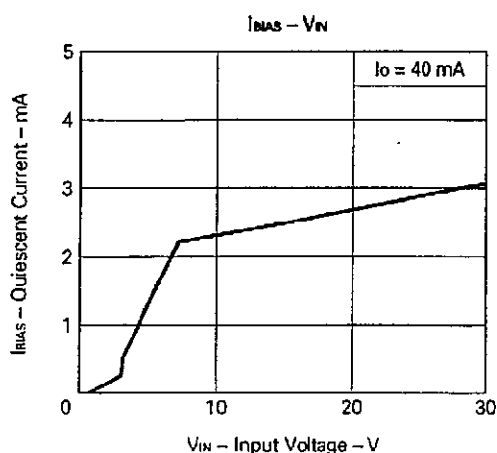
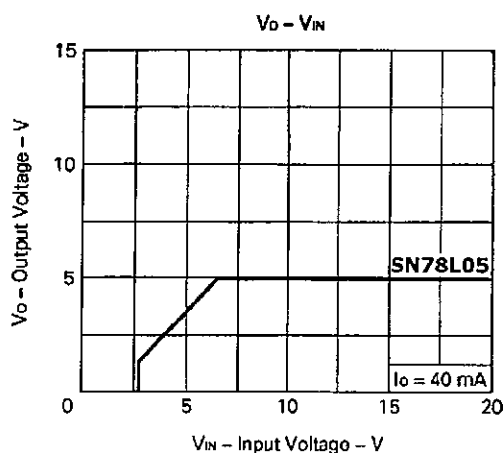
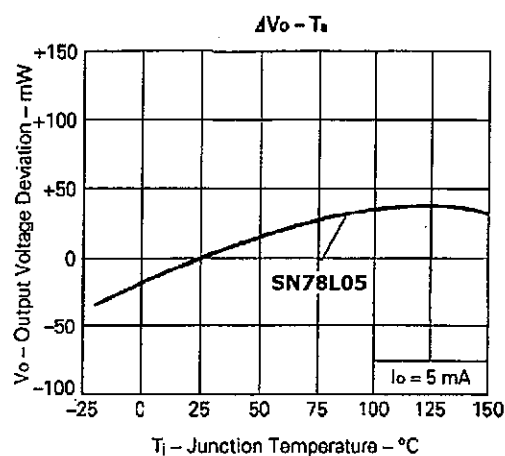
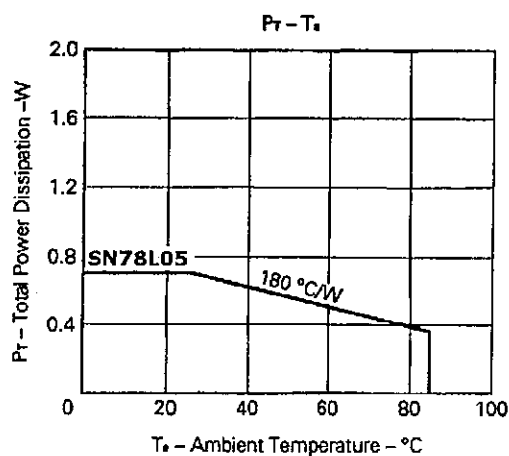
D2: Needed for $V_o < \text{GND}$

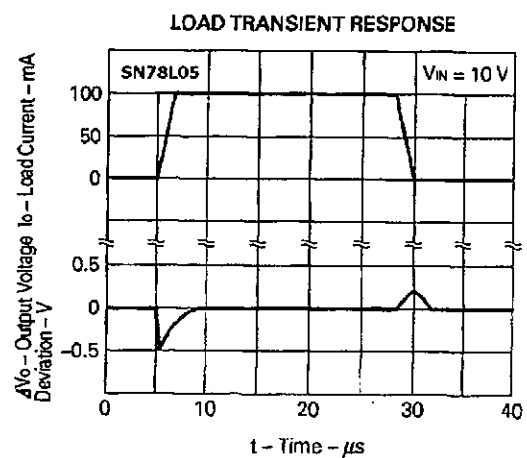
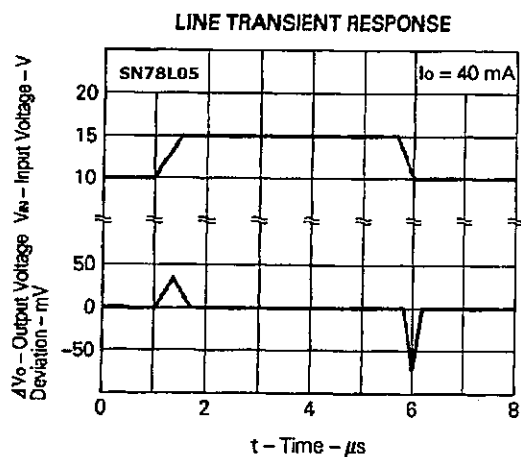
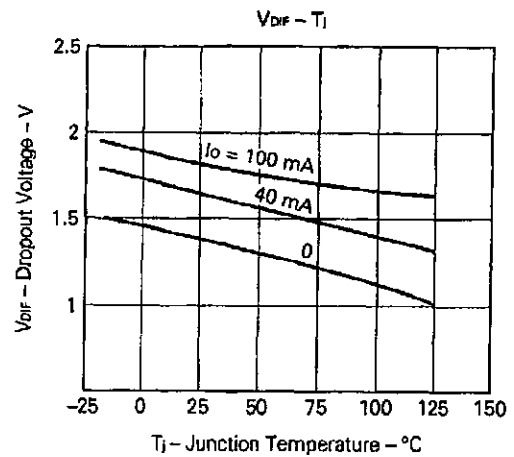
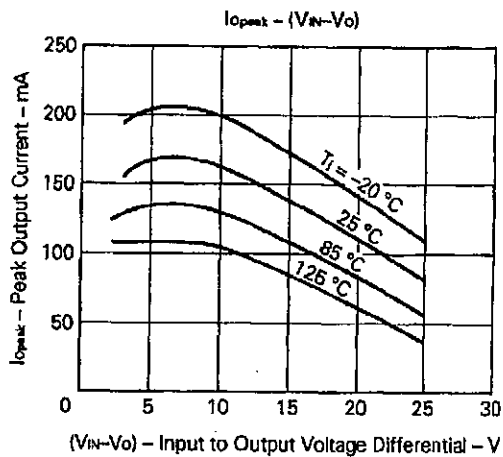
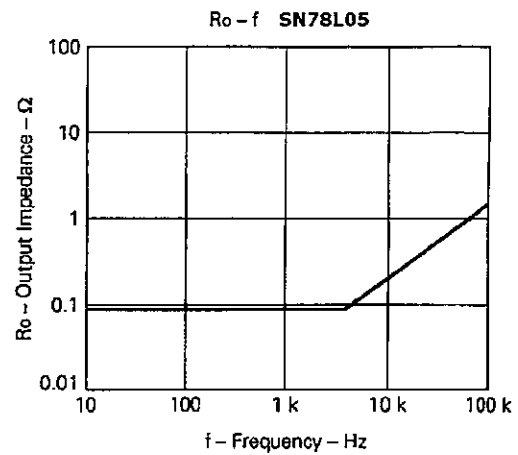
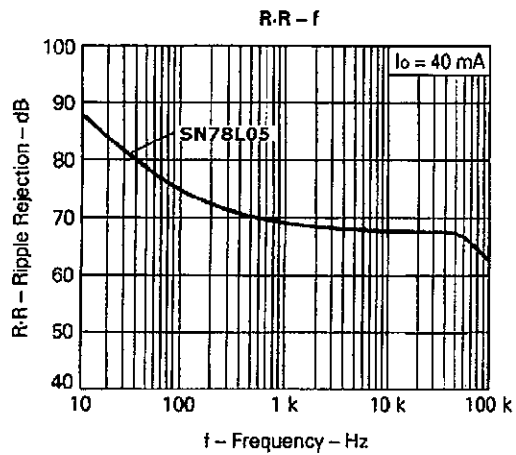
RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	TYPE NUMBER	MIN.	TYP.	MAX.	UNIT
Input Voltage	V_{IN}	SN78L05	7	10	20	
Output Current	I_o	All	0	40	70	mA
Operating Temperature Range	T_{opt}	All	-20		+85	$^\circ\text{C}$
Operating Junction Temperature Range	$T_{opt}(j)$	All	-20		+125	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS SN78L05(V_{IN} = 10 V, I_o = 40 mA, 0 °C ≤ T_j ≤ + 125 °C, C_{IN} = 0.33 μF, C_{OUT} = 0.1 μF)

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Output Voltage	V _o	T _j = 25 °C	4.8	5.0	5.2	V
		7 V ≤ V _{IN} ≤ 20 V, 1 mA ≤ I _o ≤ 40 mA	4.75		5.25	
		V _{IN} = 10 V, 1 mA ≤ I _o ≤ 70 mA	4.75		5.25	
Line Regulation	REG _{IN}	T _j = 25 °C, 7 V ≤ V _{IN} ≤ 20 V		6	150	mV
		T _j = 25 °C, 8 V ≤ V _{IN} ≤ 20 V		4	100	
Load Regulation	REG _L	T _j = 25 °C, 1 mA ≤ I _o ≤ 100 mA		9	60	mV
		T _j = 25 °C, 1 mA ≤ I _o ≤ 40 mA		4	30	
Quiescent Current	I _{BIAS}	T _j = 25 °C		2.3	5.5	mA
Quiescent Current Change	ΔI _{BIAS}	8 V ≤ V _{IN} ≤ 20 V, I _o = 40 mA			1.5	mA
		V _{IN} = 10 V, 1 mA ≤ I _o ≤ 40 mA			0.1	
Output Noise Voltage	V _n	T _j = 25 °C, 10 Hz ≤ f ≤ 100 kHz		45	120	μV _{r.m.s.}
Ripple Rejection	R · R	T _j = 25 °C, f = 120 Hz, 8 V ≤ V _{IN} ≤ 18 V	55	75		dB
Dropout Voltage	V _{DIFF}	T _j = 25 °C		1.7		V
Short Circuit Current	I _o short	T _j = 25 °C, V _{IN} = 20 V		88		mA
Peak Output Current	I _o peak	T _j = 25 °C	125	160	205	mA
Temperature coefficient of Output Voltage	ΔV _o /ΔT	I _o = 5 mA		0.4		mV/°C

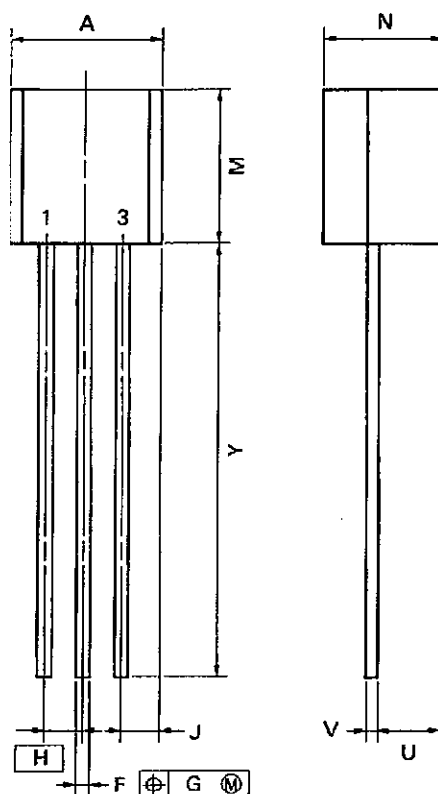
TYPICAL CHARACTERISTICS (T_a = 25 °C)



PACKAGE DIMENSIONS (Unit: mm)

SN78L05J

3PIN PLASTIC SIP (TO-92)



NOTE

Each lead centerline is located within 0.12 mm (0.005 inch) of its true position (T.P.) at maximum material condition.

ITEM	MILLIMETERS	INCHES
A	4.82 MAX.	0.190 MAX.
F	0.45 ±0.1	0.018 ±0.004
G	0.12	0.005
H	1.24	0.051
J	1.17 MAX.	0.046 MAX.
M	4.77 MAX.	0.188 MAX.
N	3.74 MAX.	0.147 MAX.
U	2.7 MAX.	0.106 MAX.
V	0.4 ±0.1	0.016 ±0.004
Y	14.38 ±0.7	0.582 ±0.028

RECOMMENDED SOLDERING CONDITIONS**SN78L05J**

Soldering process	Soldering condition	Symbol
Wave soldering	Solder temperature: 260 °C or below, Flow time: 10 seconds or below	