

100mA Three Teminal Voltage Regulator

Features

- Quiescent Current: 3.8mA(Typ.)
- Input Voltage: 30V
- Output Current: 100mA
- Low Dropout Voltage: 1.7V(Typ.)
- Continuous Total Dissipation
- Built-in Thermal Overload Protection
- Built-in Short Circuit Current Limiting

Applications

- Computing and Servers
- Field Transmitter: Temperature Sensors
- On-Card Regulation
- Telecommunications

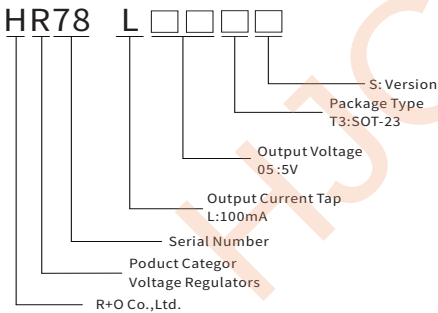
General Description

The HR78L05T3S Series is three-terminal positive regulators. These regulators can deliver up to 100mA of output current. The internal limiting and thermal-shutdown features of the regulator make them essentially immune to overload. When used as are placement for a zener diode-resistor Combination, an effective improvement in output impedance can be obtained, together with lower quiescent current.

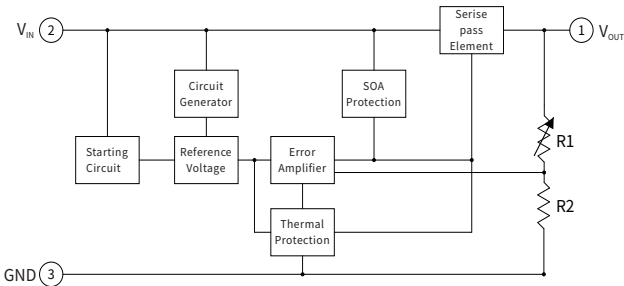
Reference News

Marking:
HR78L05T3S: L05

Part Numbering

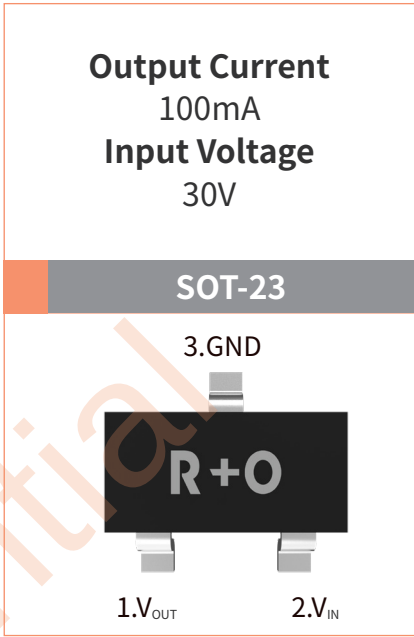


Block Diagram

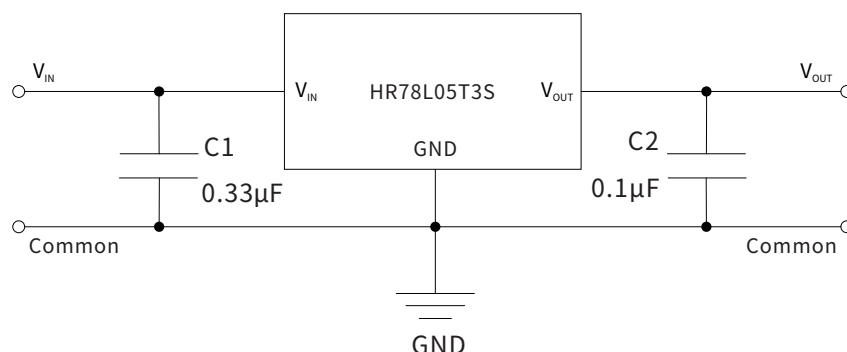


Ordering Information

Package	Package Code	Unit Weight(g)	Reel(pcs)	Box(pcs)	Carton(pcs)	Delivery Mode	MSL
SOT-23	R1	0.008	3000	30000	180000	7"	3



Typical Application Circuit



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

Absolute Maximum Ratings (Operating temperature range applies unless otherwise specified)

PARAMETER	SYMBOL	Value	UNIT
Input Voltage Limit	V_{IN}	30	V
Operating Current	I_O	100	mA
Power Dissipation	P_D	250	mW
Solder Temperature/Time	T_d	260/10	°C /S
Operating Junction Temperature	T_{OPR}	-40 to +125	°C
Storage Temperature	T_{stg}	-55 to +150	°C

Note: Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device.

Electrical Characteristics ($V_i=10V, I_o=40mA, C_i=0.33\mu F, C_o=0.1\mu F$, Unless otherwise specified)

PARAMETER	SYMBOL	Conditions	Min.	Typ.	Max.	UNIT
Output Voltage	V_{OUT}	$T_A=25^\circ C$	4.80	5.0	5.2	V
		$7V \leq V_{IN} \leq 20V, I_o=1mA \sim 40mA$ $T_A=0 \text{ to } 125^\circ C$	4.75	5.0	5.25	
		$I_o=1mA \sim 70mA, T_A=0 \text{ to } 125^\circ C$	4.75	5.0	5.25	
Line Regulation	$\Delta V_{OUT} / \Delta V_{IN} \cdot V_{OUT}$	$7V \leq V_{IN} \leq 20V$	--	32	150	mV
		$8V \leq V_{IN} \leq 20V, T_A=25^\circ C$	--	26	100	
Load Regulation	ΔV_{OUT}	$I_o=1mA \sim 100mA, T_A=25^\circ C$	--	15	60	mV
		$I_o=1mA \sim 40mA, T_A=25^\circ C$	--	8	30	
Quiescent Current	I_Q	$T_A=25^\circ C$	--	3.8	6	mA
Quiescent Current Change	ΔI_Q	$8V \leq V_{IN} \leq 20V, T_A=0 \text{ to } 125^\circ C$	--	--	1.5	mA
Quiescent Current Change	ΔI_Q	$1mA \leq I_o \leq 40mA, T_A=0 \text{ to } 125^\circ C$	--	--	0.1	mA
Output Noise Voltage	V_n	$10Hz \leq f \leq 100KHz, T_A=25^\circ C$	--	42	--	μV
Power-Supply Rejection Ratio	PSRR	$f = 120Hz, 8V \leq V_{IN} \leq 20V, T_A=0 \text{ to } 125^\circ C$	41	49	--	dB
Dropout Voltage	V_{Drop}	$T_A=25^\circ C$	--	1.7	--	V

HR78L05T3S

Positive-Voltage Linear Regulators

Package Outline Dimensions (SOT-23)

Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.15	0.035	0.045
A1	-	0.10	-	0.004
A2	0.90	1.05	0.035	0.041
b	0.30	0.50	0.012	0.020
c	0.10	0.20	0.004	0.008
D	2.80	3.00	0.110	0.118
E	1.20	1.40	0.047	0.055
E1	2.25	2.55	0.089	0.100
e	0.950TYP		0.037TYP	
e1	1.80	2.00	0.071	0.079
L	0.550REF		0.022REF	
L1	0.30	0.50	0.012	0.020
θ	-	8°	-	8°

Suggested Pad Layout

Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
J	0.80	-	0.031	-
K	-	0.90	-	0.035
M	2.00	-	0.078	-
N	-	1.90	-	0.074