3.3V 300mA Low Dropout Regulator

Features

- **Dropout voltage typically 0.45V @ I_O = 300mA**
- **Output current in excess of 300mA**
- **Output voltage accuracy ±3%**
- **Quiescent current, typically 0.6mA**
- **Internal short circuit current limit**
- **Internal over temperature protection**

Applications

- **CD-ROM**
- **Modem**
- **LAN Hub**
- **Networking Appliances**
- **Mouse**
- **Keyboard**

General Description

The G901 positive 3.3V voltage regulator features the ability to source 300mA of output current with a dropout voltage of typically 0.45V. A low quiescent current is provided. The typical quiescent current is 0.6mA.

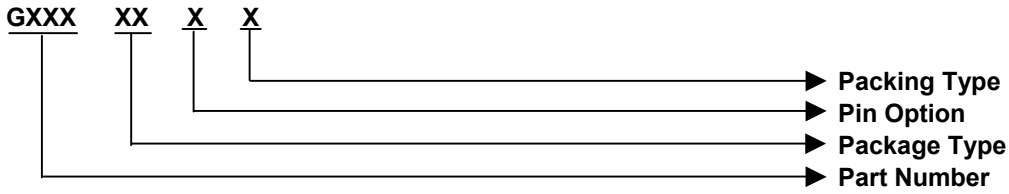
Familiar regulator features such as over temperature and over current protection circuits are provided to prevent it from being damaged by abnormal operating conditions.

Ordering Information

ORDER NUMBER	PACKAGE TYPE	PIN OPTION		
		1	2	3
G901T21U	SOT 89	V_{OUT}	GND	V_{IN}
G901T24U	SOT 89	GND	V_{IN}	V_{OUT}

* For other package types, pin options and package, please contact us at sales @gmt.com.tw

Order Number Identification



PACKAGE TYPE

T2 : SOT 89

PIN OPTION

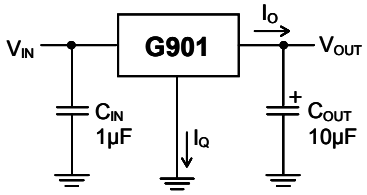
1	2	3
1 : V_{OUT}	GND	V_{IN}
2 : V_{OUT}	V_{IN}	GND
3 : GND	V_{OUT}	V_{IN}
4 : GND	V_{IN}	V_{OUT}
5 : V_{IN}	GND	V_{OUT}
6 : V_{IN}	V_{OUT}	GND

PACKING

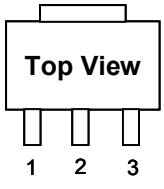
U & D : Tape & Reel Direction
T : Tube
B : Bag

Typical Application

[Note 4]: Type of C_{OUT}



Package Type



SOT 89

Absolute Maximum Ratings (Note 1)

Input Voltage……10V
Power Dissipation Internally Limited (Note2)
Maximum Junction Temperature……150°C
Storage Temperature Range……-65°C ≤ T_J ≤+150°C
Lead Temperature, Time for Wave Soldering
SOT89 Package……260°C, 4s
Continuous Power Dissipation (T_A = + 25°C)
SOT 89[(1)]……0.5W

Note [(1)]: See Recommended Minimum Footprint.

Operating Conditions (Note 1)

Input Voltage……4V ~ 7V
Temperature Range……0°C ≤ T_J ≤125°C

Electrical Characteristics

V_{IN} =5V, I_O = 300mA, C_{IN}=1µF, C_{OUT} =10µF. All specifications apply for T_A = T_J = 25°C.[Note 3]

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Output Voltage	5mA ≤ I_O ≤300mA	3.201	3.3	3.399	V
Line Regulation	4V ≤ V_{IN} ≤ 6.5V, I_O = 50mA		3		mV
Load Regulation	10mA ≤ I_O ≤ 300mA		28		mV
Output Impedance	100mA DC and 100mA AC, f_O = 120Hz		102		mΩ
Quiescent Current	V_{IN} = 5V		0.6		mA
Ripple Rejection	f_i = 120 Hz, 1V_{P-P}, Io = 100mA		42		dB
Dropout Voltage	I_O = 300mA		450		mV
	I_O = 50mA		50	100	
Short Circuit Current			0.77		A
Over Temperature			150		°C

Note 1: Absolute Maximum Ratings are limits beyond which damage to the device may occur. Operating Conditions are conditions under which the device functions but the specifications might not be guaranteed. For guaranteed specifications and test conditions see the Electrical Characteristics.

Note2: The maximum power dissipation is a function of the maximum junction temperature, T_{Jmax}; total thermal resistance, θ_{JA}, and ambient temperature T_A. The maximum allowable power dissipation at any ambient temperature is T_{Jmax}-T_A/θ_{JA}. If this dissipation is exceeded, the die temperature will rise above 150°C and IC will go into thermal shutdown. For the G901 in SOT89 package, θ_{JA} is 250°C/W(See recommend minimum footprint). The safe operation in SOT 89, it can see "Typical Performance Characteristics" (Safe Operating Area).

Note3: Low duty pulse techniques are used during test to maintain junction temperature as close to ambient as possible.

Note4: The type of output capacitor should be tantalum or aluminum.

Definitions

Dropout Voltage

The input/output Voltage differential at which the regulator output no longer maintains regulation against further reductions in input voltage. Measured when the output drops 100mV below its nominal value, dropout voltage is affected by junction temperature, load current and minimum input supply requirements.

Line Regulation

The change in output voltage for a change in input voltage. The measurement is made under conditions of low dissipation or by using pulse techniques such that average chip temperature is not significantly affected.

Load Regulation

The change in output voltage for a change in load current at constant chip temperature. The measurement is made under conditions of low dissipation or by using pulse techniques such that average chip temperature is not significantly affected.

Maximum Power Dissipation

The maximum total device dissipation for which the regulator will operate within specifications.

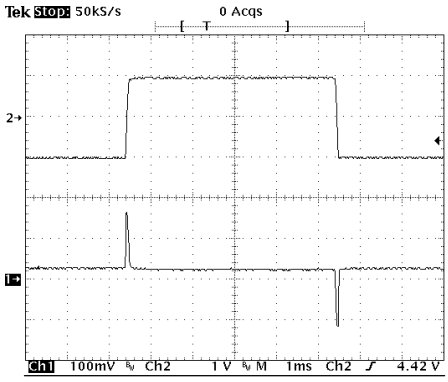
Quiescent Bias Current

Current which is used to operate the regulator chip and is not delivered to the load.

Typical Performance Characteristics

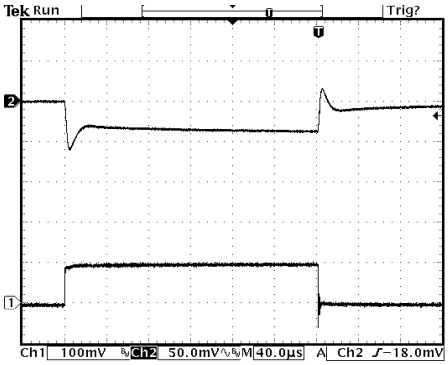
(V_{IN}=5V , C_{IN}=1µF , C_{OUT} =10µF, T_A=25°C , unless otherwise noted.)

Line Transient



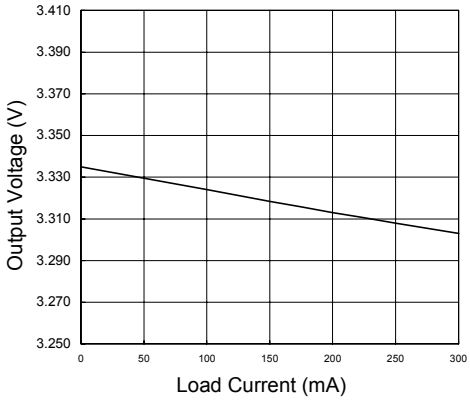
Ch1: Vout (offset=3.30V)
Ch2: Vin (offset=5.0V)
Iout=100mA

Load Transient

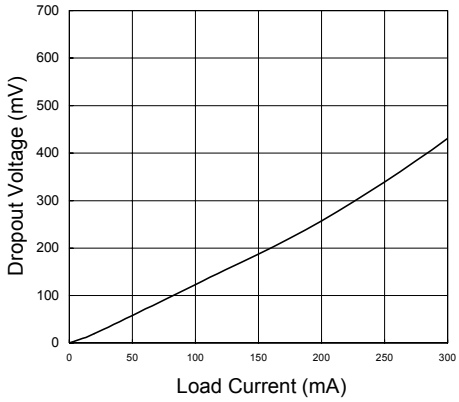


Ch1: Iout (400mA/div)
Ch2: Vout (offset=3.30V)

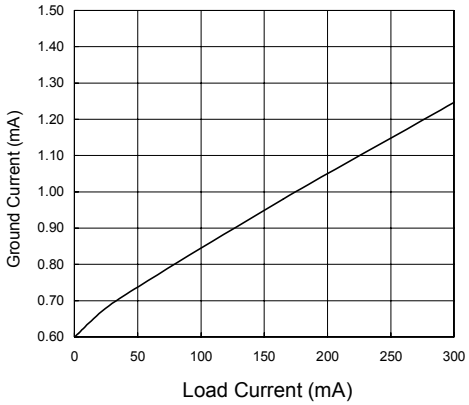
Output Voltage vs. Load Current



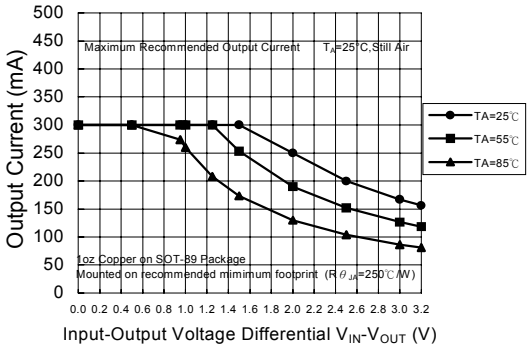
Dropout Voltage vs. Load Current



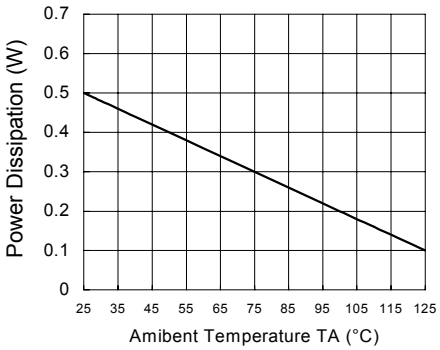
Ground Current vs. Load Current



Safe Operating Area of SOT-89

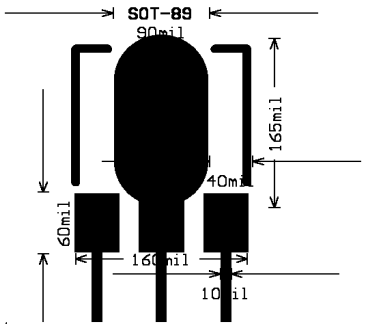


Maximum Power Dissipation of SOT-89

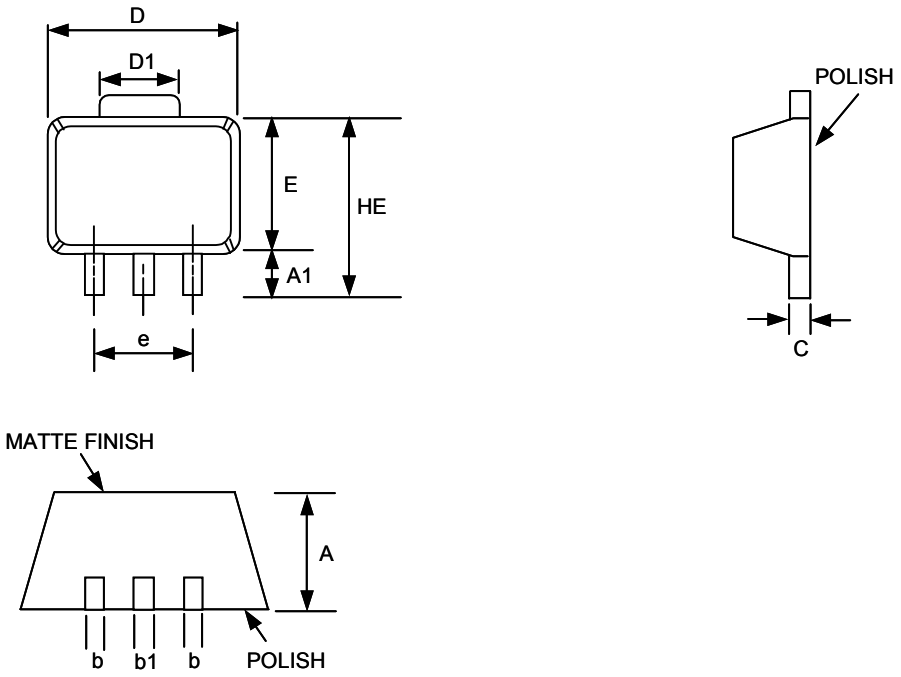


Note: $V_{IN(max)}$ <= 6.5V

Recommend Minimum Footprint



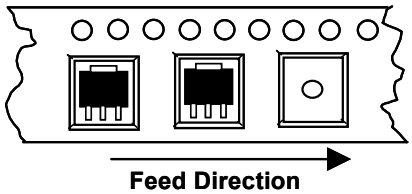
Package Information



SOT- 89 (T2) Package

SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.40	1.50	1.60	0.055	0.059	0.063
A1	0.80	1.04	-----	0.031	0.041	-----
b	0.36	0.42	0.48	0.014	0.016	0.048
b1	0.41	0.47	0.53	0.016	0.018	0.020
C	038	0.40	0.43	0.014	0.015	0.017
D	4.40	4.50	4.60	0.173	0.177	0.181
D1	1.40	1.60	1.75	0.055	0.062	0.069
HE	-----	-----	4.25	-----	-----	0.167
E	2.40	2.50	2.60	0.094	0.098	0.102
e	2.90	3.00	3.10	0.114	0.118	0.122

Package Orientation



Feed Direction

SOT 89 Package Orientation