

## 2.5V 600mA Low Dropout Regulator

### Features

- Dropout voltage typically 0.8V @  $I_o = 600\text{mA}$
- Output current in 600mA
- Output voltage accuracy  $\pm 2\%$
- Quiescent current, typically 0.3mA
- Internal short circuit current limit
- Internal over temperature protection

### Application

- CD-R/W
- DVD-ROM
- DVD player
- LAN Switch
- Broadband access

### General Description

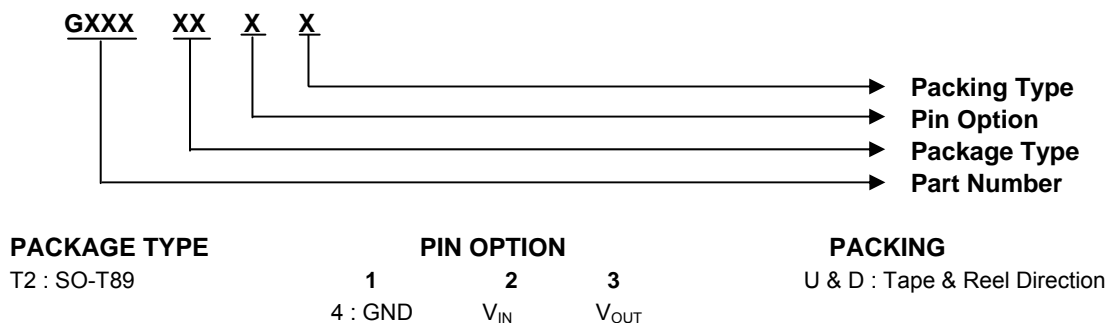
The G905 positive 2.5V voltage regulator features the ability to source 600mA of output current with a dropout voltage of typically 0.8V. A low quiescent current is provided. The typical quiescent current is 0.3mA.

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

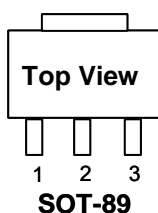
### Ordering Information

ORDER NUMBER	ORDER NUMBER (Pb free)	TEMP. RANGE	PACKAGE	PIN OPTION		
				1	2	3
G905T24U	G905T24Uf	-40°C to 85°C	SOT-89	GND	$V_{IN}$	$V_{OUT}$

### Order Number Identification

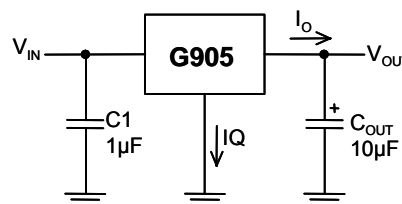


### Package Type



### Typical Application

[Note 4] : Type of  $C_{OUT}$



<b>Absolute Maximum Ratings</b>	(Note 1)
Input Voltage.....	7V
Power Dissipation Internally Limited.....	(Note2)
Maximum Junction Temperature.....	150°C
Storage Temperature Range.....	-65°C ≤ T <sub>J</sub> ≤ +150°C
Reflow Temperature (soldering, 10sec).....	260°C
Thermal Resistance Junction to Ambient, (θ <sub>JA</sub> )	
SOT-89.....	173°C/W
Thermal Resistance Junction to Case, (θ <sub>JC</sub> )	
SOT-89.....	25°C/W

<b>Operating Conditions</b>	(Note 1)
Input Voltage.....	3.3V ~ 6V
Temperature Range.....	-40°C ≤ T <sub>A</sub> ≤ 85°C

Note (1): See Recommended Minimum Footprint

## Electrical Characteristics

V<sub>IN</sub> = 5V, I<sub>O</sub> = 600mA, C<sub>IN</sub> = 1μF, C<sub>OUT</sub> = 10μF. All specifications apply for T<sub>A</sub> = T<sub>J</sub> = 25°C. [Note 3]

PARAMETER	CONDITION	MIN	TYP	MAX	UNIT
Output Voltage	10mA ≤ I <sub>O</sub> ≤ 600mA	2.45	2.5	2.55	V
Line Regulation	4V ≤ V <sub>IN</sub> ≤ 6V, I <sub>O</sub> = 10mA	---	15	---	mV
Load Regulation	10mA ≤ I <sub>O</sub> ≤ 600mA	---	10	---	mV
Quiescent Current	V <sub>IN</sub> = 5V	---	0.3	---	mA
Ripple Rejection	f <sub>i</sub> = 120Hz, V <sub>ripple</sub> = 2V <sub>P-P</sub> , I <sub>O</sub> = 100mA	---	47	---	dB
Dropout Voltage	I <sub>O</sub> = 600mA	---	800	---	mV
	I <sub>O</sub> = 300mA	---	400	---	
Output Current	Continuous Test, V <sub>IN</sub> = 3.3V T <sub>A</sub> = 25°C, T <sub>J</sub> < 125°C, V <sub>OUT</sub> within ±2% (Note 3)	---	600	---	mA
Short Circuit Current	Minimum footprint	---	0.65	---	A
Current Limit		---	0.8	---	A
Over Temperature		---	145	---	°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<sub>Jmax</sub>; total thermal resistance, θ<sub>JA</sub>, and ambient temperature T<sub>A</sub>. The maximum allowable power dissipation at any ambient temperature is T<sub>Jmax</sub>-T<sub>A</sub> / θ<sub>JA</sub>. If this dissipation is exceeded, the die temperature will rise above 150°C and IC will go into thermal shutdown. For the G905 in SOT-89 (T2) package, θ<sub>JA</sub> is 173°C/W (See recommend minimum footprint). The safe operation in SOT-89 package, 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.

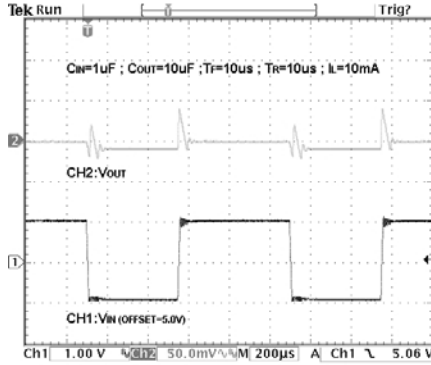
### Quiescent Bias Current

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

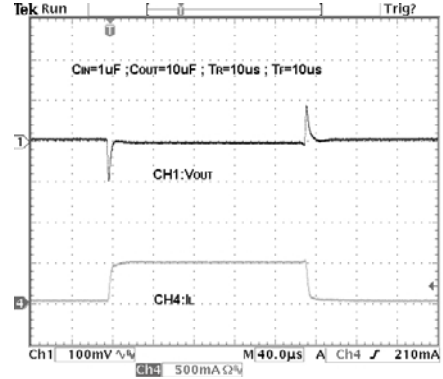
**Typical Performance Characteristics**

( $V_{IN}=5V$ ,  $C_{IN}=1\mu F$ ,  $C_{OUT}=10\mu F$ ,  $T_A=25^\circ C$ , unless otherwise noted.)

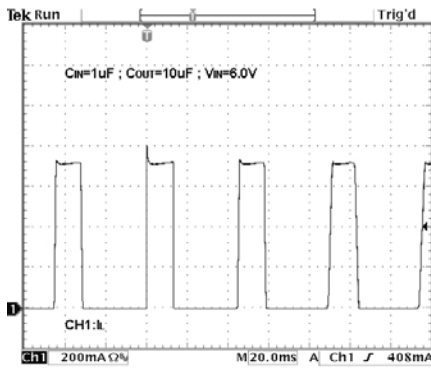
**Line Transient**



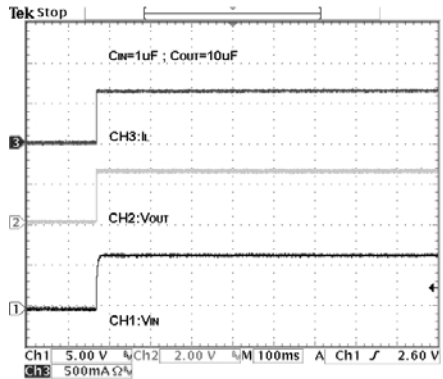
**Load Transient**



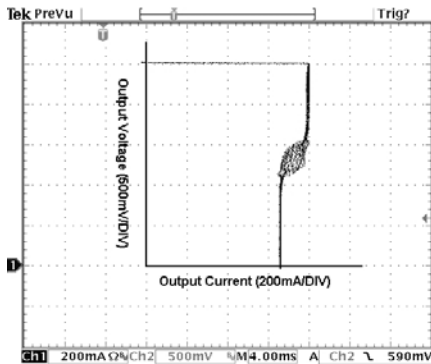
**Short Circuit Current**



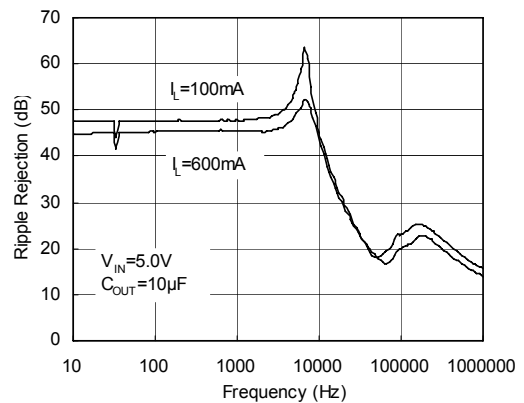
**Start-UP**



**Overcurrent Protection Characteristics**

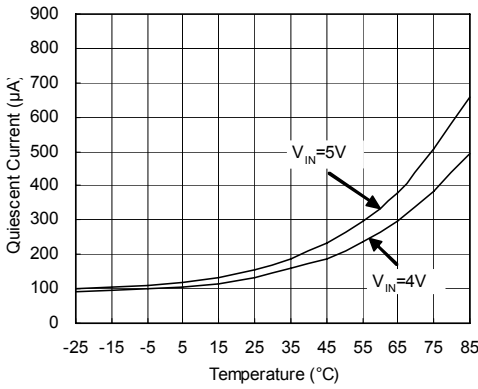


**Ripple Rejection**

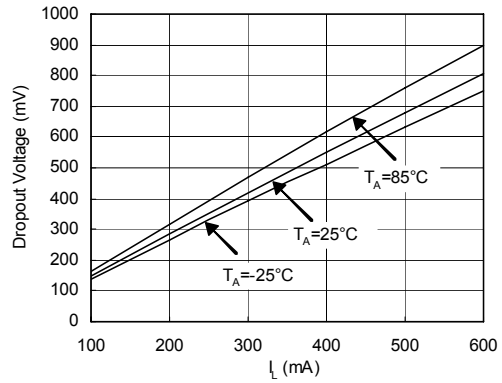


Typical Performance Characteristics (continued)

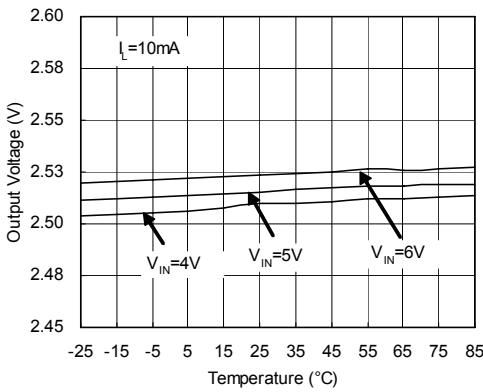
Quiescent Current vs. Temperature



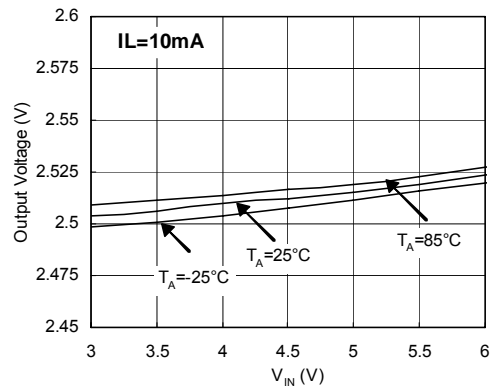
Dropout Voltage vs. IL



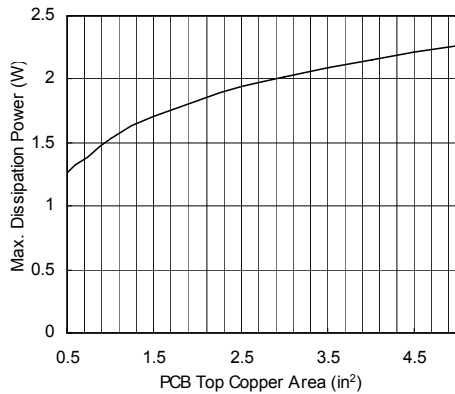
Output Voltage vs. Temperature



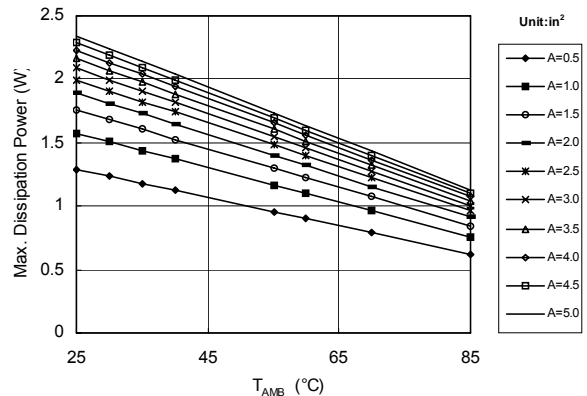
Output Voltage vs. VIN



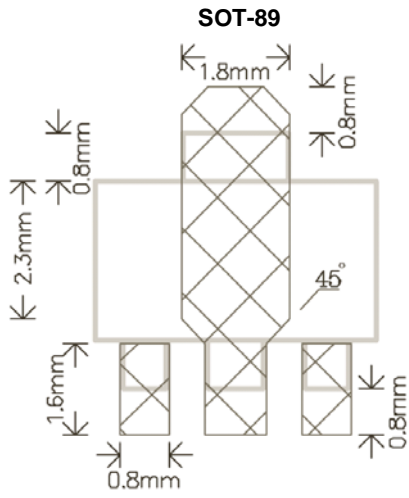
SOT-89 Max. Power Dissipation vs. PCB Top Copper Area  
T<sub>AMB</sub> = 25°C ; Still Air



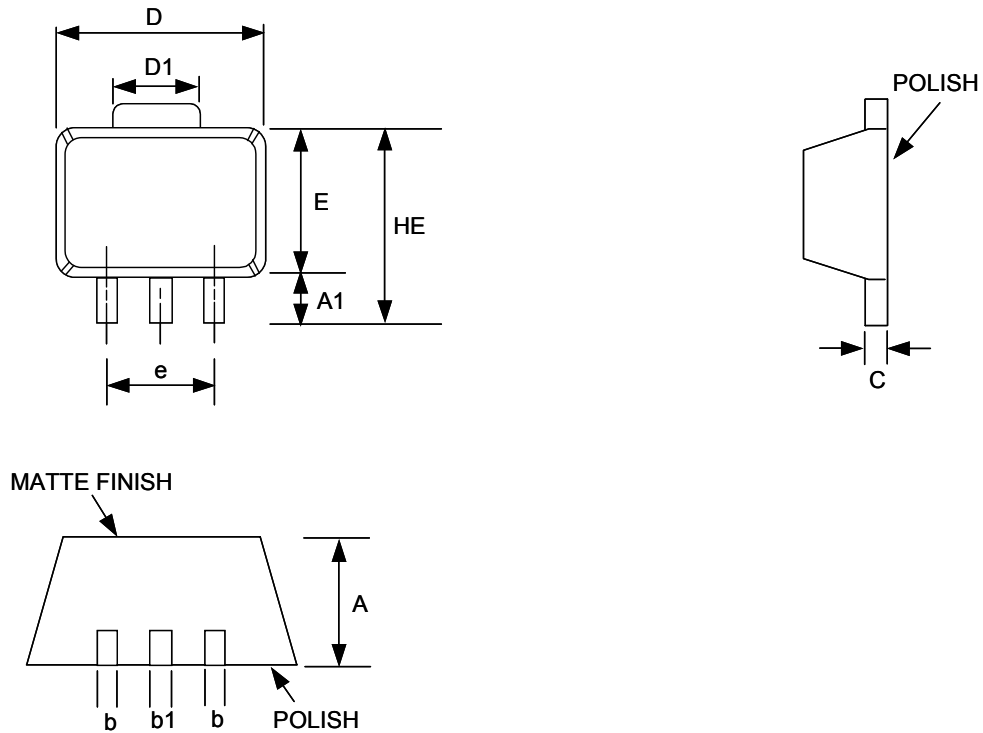
SOT-89 Max. Power Dissipation vs. T<sub>AMB</sub> (still air)  
(Different PCB Top Copper Area)



**Recommended Minimum Footprint**



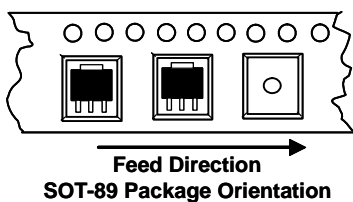
**Package Information**



**SOT-89 (T2) Package**

SYMBOL	DIMENSIONS IN MILLIMETER			DIMENSIONS IN INCH		
	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	0.019
b1	0.41	0.47	0.53	0.016	0.018	0.020
C	0.38	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

**Taping Specification**



PACKAGE	Q'TY/REEL
SOT-89	1,000 ea

GMT Inc. does not assume any responsibility for use of any circuitry described, no circuit patent licenses are implied and GMT Inc. reserves the right at any time without notice to change said circuitry and specifications.