

Description

GM6350 series is a group of positive voltage output, three-pin regulators, that provide a high current even when the input/output voltage differential is small. Low power consumption and high accuracy is achieved through CMOS and programmable fuse technologies, with the output voltage range from 1.5V to 6.0V

GM6350 consists of a high precision voltage reference, an error correction circuit, and a current limited output driver. Transient response to load variations has been improved in comparison to the existing series. The GM6350 incorporates both over temperature and over current protection.

Features

- ◆ Maximum output current up 450mA
- ◆ Output voltage from 1.5V to 6.0V in 0.1V increments
- ◆ Output voltage accuracy : $\pm 2\%$
- ◆ CMOS low power consumption, typically 15 μ A at $V_{OUT} = 5.0V$
- ◆ Input stability: typically 0.2%/V
- ◆ Ultra low dropout voltage: 0.3V @ $I_{OUT} = 300mA$ at $V_{OUT} = 5.0V$
- ◆ SOT-23 (150mW), SOT-89 (500mW) and TO-92 packages

Application

Palmtops

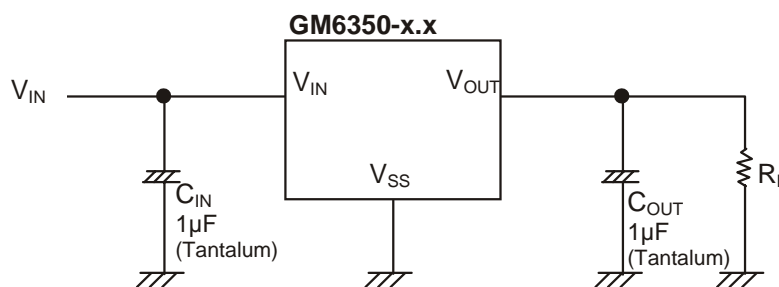
Portable Cameras

Video Recorders

Battery Powered Equipment

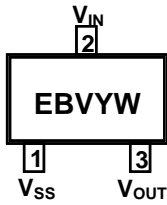
Reference Voltage Sources

Typical Application Circuits

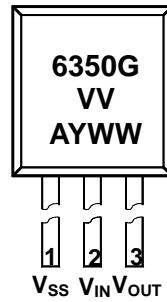


Marking Information and Pin Configurations (Top View)

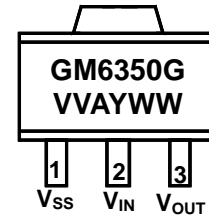
SOT23



TO92



SOT89



EB: Product Code
 G: Green Product
 V: Voltage Code (see next page)
 VV: Voltage suffix (18 = 1.8V, 50 = 5.0V...)
 Y: Year
 W: Week code
 WW: Week

Ordering Information

Ordering Number	Output Voltage	Voltage Code	Package	Shipping
GM6350-1.5T92BG	1.5V		TO-92	1,000 Units/Bag
GM6350-1.5T92RLG			TO-92	2,000 Units/Ammo Pack (Tape)
GM6350-1.5ST23RG		C	SOT-23	3,000 Units/Tape and Reel
GM6350-1.5ST89RG			SOT-89	1,000 Units/Tape and Reel
GM6350-1.8T92BG	1.8V		TO-92	1,000 Units/Bag
GM6350-1.8T92RLG			TO-92	2,000 Units/Ammo Pack (Tape)
GM6350-1.8ST23RG		E	SOT-23	3,000 Units/Tape and Reel
GM6350-1.8ST89RG			SOT-89	1,000 Units/Tape and Reel
GM6350-2.2T92BG	2.2V		TO-92	1,000 Units/Bag
GM6350-2.2T92RLG			TO-92	2,000 Units/Ammo Pack (Tape)
GM6350-2.2ST23RG		D	SOT-23	3,000 Units/Tape and Reel
GM6350-2.2ST89RG			SOT-89	1,000 Units/Tape and Reel
GM6350-2.5T92BG	2.5V		TO-92	1,000 Units/Bag
GM6350-2.5T92RLG			TO-92	2,000 Units/Ammo Pack (Tape)
GM6350-2.5ST23RG		G	SOT-23	3,000 Units/Tape and Reel
GM6350-2.5ST89RG			SOT-89	1,000 Units/Tape and Reel
GM6350-2.7T92BG	2.7V		TO-92	1,000 Units/Bag
GM6350-2.7T92RLG			TO-92	2,000 Units/Ammo Pack (Tape)
GM6350-2.7ST23RG		T	SOT-23	3,000 Units/Tape and Reel
GM6350-2.7ST89RG			SOT-89	1,000 Units/Tape and Reel
GM6350-2.8T92BG	2.8V		TO-92	1,000 Units/Bag
GM6350-2.8T92RLG			TO-92	2,000 Units/Ammo Pack (Tape)
GM6350-2.8ST23RG		H	SOT-23	3,000 Units/Tape and Reel
GM6350-2.8ST89RG			SOT-89	1,000 Units/Tape and Reel
GM6350-2.85T92BG	2.85V		TO-92	1,000 Units/Bag
GM6350-2.85T92RLG			TO-92	2,000 Units/Ammo Pack (Tape)
GM6350-2.85ST23RG		I	SOT-23	3,000 Units/Tape and Reel
GM6350-2.85ST89RG			SOT-89	1,000 Units/Tape and Reel
GM6350-3.0T92BG	3.0V		TO-92	1,000 Units/Bag
GM6350-3.0T92RLG			TO-92	2,000 Units/Ammo Pack (Tape)
GM6350-3.0ST23RG		J	SOT-23	3,000 Units/Tape and Reel
GM6350-3.0ST89RG			SOT-89	1,000 Units/Tape and Reel

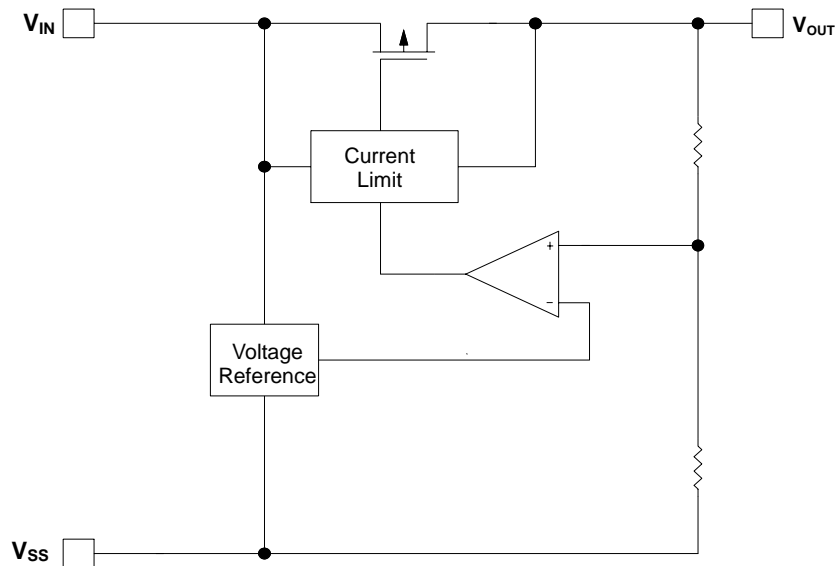
Ordering Information (Continued)

Ordering Number	Output Voltage	Voltage Code	Package	Shipping
GM6350-3.2T92BG	3.2V		TO-92	1,000 Units/Bag
GM6350-3.2T92RLG			TO-92	2,000 Units/Ammo Pack (Tape)
GM6350-3.2ST23RG		U	SOT-23	3,000 Units/Tape and Reel
GM6350-3.2ST89RG			SOT-89	1,000 Units/Tape and Reel
GM6350-3.3T92BG	3.3V		TO-92	1,000 Units/Bag
GM6350-3.3T92RLG			TO-92	2,000 Units/Ammo Pack (Tape)
GM6350-3.3ST23RG		K	SOT-23	3,000 Units/Tape and Reel
GM6350-3.3ST89RG			SOT-89	1,000 Units/Tape and Reel
GM6350-3.5T92BG	3.5V		TO-92	1,000 Units/Bag
GM6350-3.5T92RLG			TO-92	2,000 Units/Ammo Pack (Tape)
GM6350-3.5ST23RG		V	SOT-23	3,000 Units/Tape and Reel
GM6350-3.5ST89RG			SOT-89	1,000 Units/Tape and Reel
GM6350-3.6T92BG	3.6V		TO-92	1,000 Units/Bag
GM6350-3.6T92RLG			TO-92	2,000 Units/Ammo Pack (Tape)
GM6350-3.6ST23RG		L	SOT-23	3,000 Units/Tape and Reel
GM6350-3.6ST89RG			SOT-89	1,000 Units/Tape and Reel
GM6350-4.0T92BG	4.0V		TO-92	1,000 Units/Bag
GM6350-4.0T92RLG			TO-92	2,000 Units/Ammo Pack (Tape)
GM6350-4.0ST23RG		M	SOT-23	3,000 Units/Tape and Reel
GM6350-4.0ST89RG			SOT-89	1,000 Units/Tape and Reel
GM6350-4.4T92BG	4.4V		TO-92	1,000 Units/Bag
GM6350-4.4T92RLG			TO-92	2,000 Units/Ammo Pack (Tape)
GM6350-4.4ST23RG		W	SOT-23	3,000 Units/Tape and Reel
GM6350-4.4ST89RG			SOT-89	1,000 Units/Tape and Reel
GM6350-4.5T92BG	4.5V		TO-92	1,000 Units/Bag
GM6350-4.5T92RLG			TO-92	2,000 Units/Ammo Pack (Tape)
GM6350-4.5ST23RG		N	SOT-23	3,000 Units/Tape and Reel
GM6350-4.5ST89RG			SOT-89	1,000 Units/Tape and Reel
GM6350-5.0T92BG	5.0V		TO-92	1,000 Units/Bag
GM6350-5.0T92RLG			TO-92	2,000 Units/Ammo Pack (Tape)
GM6350-5.0ST23RG		Q	SOT-23	3,000 Units/Tape and Reel
GM6350-5.0ST89RG			SOT-89	1,000 Units/Tape and Reel

Absolute Maximum Ratings

PARAMETER	SYMBOL	RATINGS	UNITS
Input Voltage	V_{IN}	6.5	V
Output Current	I_{OUT}	450	mA
Output Voltage	V_{OUT}	$V_{SS} - 0.3$ to $V_{IN} + 0.3$	V
Continuous Total Power Dissipation	SOT-23	150	mW
	SOT-89	500	
	TO-92	300	
Operating Ambient Temperature	T_A	- 40 to 125	
Storage Temperature	T_{stg}	- 65 to 150	
Lead Temperature (Soldering, 10 sec)		+ 260	

Block Diagram



Electrical Characteristics ($T_A = 25^\circ\text{C}$, $V_{IN} = V_{OUT} + 0.5\text{V}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit	
Output Voltage Accuracy	V_{OUT}	$I_{OUT} = 1\text{mA}$	-1.4		+1.4	%	
		$I_{OUT} = 0.1\text{mA to } 300\text{mA}$	-3.0		+2.0		
Line Regulation	ΔV_{OI}	$I_{OUT} = 1\text{mA}$, $V_{OUT} + 0.1\text{V} < V_{IN} < 6.5\text{V}$, Fig. 1		0.1	0.3	%/V	
Load Regulation	ΔV_{OL}	$V_{IN} = 6\text{V}$, $0.1\text{mA} < I_{OUT} < 300\text{mA}$ $C_{OUT} = 1\mu\text{F}$, Fig. 2		0.005	0.04	%/mA	
Maximum Output Current		$V_{IN} = 5\text{V}$, $V_{OUT} > 0.96 \times V_{RATING}$	300	500		mA	
Output Current Limit	I_{CL}		400			mA	
Ground Pin Current	I_{GND}	$I_{OUT} = 0.1\text{mA to } 300\text{mA}$, Fig. 3		15	30	μA	
Dropout Voltage	ΔV	$V_{OUT} > 2.5\text{V}$	$I_{OUT} = 100\text{mA}$		100	180	mV
			$I_{OUT} = 300\text{mA}$		300	550	
		$2.0\text{V} < V_{OUT} \leq 2.5\text{V}$	$I_{OUT} = 100\text{mA}$		150	300	
			$I_{OUT} = 300\text{mA}$		450	800	
		$V_{OUT} \leq 2.0\text{V}$	$I_{OUT} = 100\text{mA}$		200	400	
			$I_{OUT} = 300\text{mA}$		600	1100	
Power Supply Rejection Ration	PSRR	10kHz		60		dB	

Note: Load Regulation is measured using pulse techniques with duty cycle < 5%

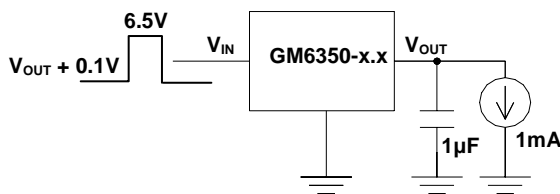


Figure 1. Line Regulation Test Circuit

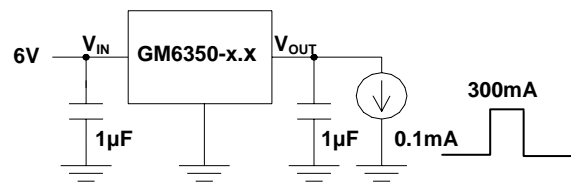


Figure 2. Load Regulation Test Circuit

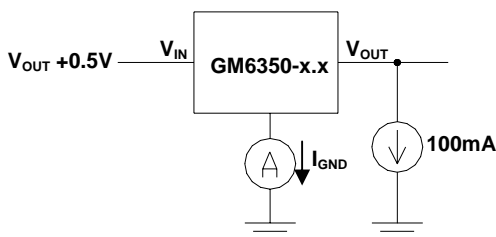
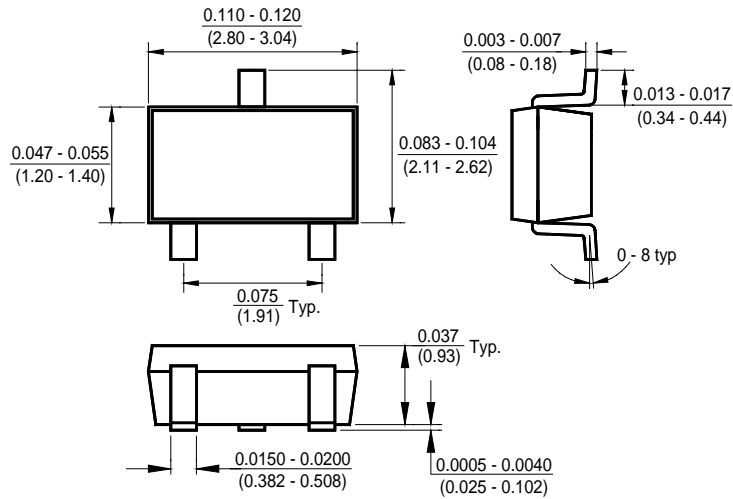
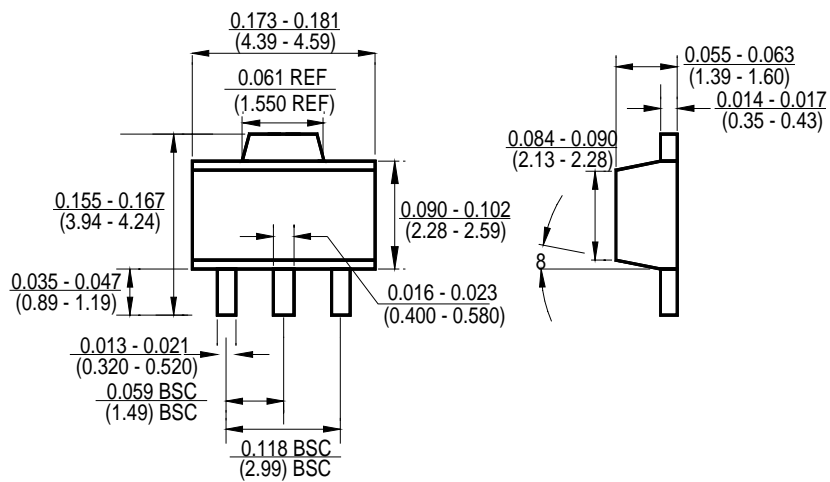


Figure 3. Ground Current Test Circuit

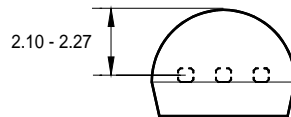
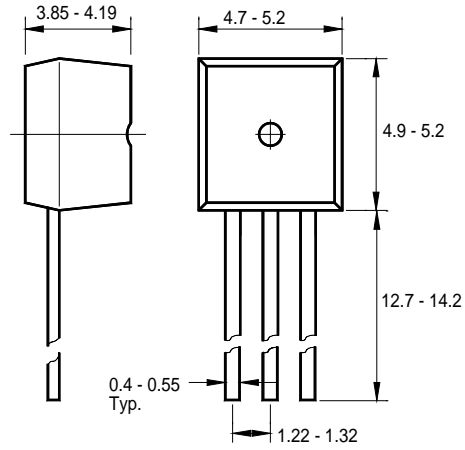
Package Outline Dimensions – SOT 23



Package Outline Dimensions – SOT 89



Package Outline Dimensions – TO 92



Dimensions are in millimeters

Ordering Number

GM 6350 - 1.5 ST23 R G

APM Gamma Micro	Circuit Type	Output Voltage	Package Type	Shipping Type	
		1.5 = 1.5V 2.5 = 2.5V 3.3 = 3.3V 5.0 = 5.0V	T92: TO 92 ST89: SOT 89 ST23: SOT 23	B: Bag RL: Ammo Pack (Tape) T: Tube R: Tape & Reel	Blank: Pb-free G:Green

Note:

Pb-free products:

- ◆ RoHS compliant and compatible with the current requirements of IPC/JEDEC J-STD-020.
- ◆ Suitable for use in SnPb or Pb-free soldering processes with 100% matte tin (Sn) plating.

Green products:

- ◆ Lead-free (RoHS compliant)
- ◆ Halogen free (Br or Cl does not exceed 900ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500ppm by weight)