

## HIGH CURRENT FIXED VOLTAGE REGULATORS

### DESCRIPTION

The SG153 family of fixed-voltage, three-terminal regulators are designed to supply load currents in excess of three amps over a wide range of operating conditions. Requiring nothing more than a small output capacitor, these regulators feature output voltages internally trimmed to greater than  $\pm 2\%$  accuracy. In addition to excellent line regulation, a voltage-boost circuit provides positive load regulation (increasing output voltage with increasing load current) to help correct for line losses.

All protective features of thermal shutdown, current limiting, and safe-area control have been designed into these units with added reliability offered by a hard-solder eutectic die attach and an hermetically sealed TO-3 power package.

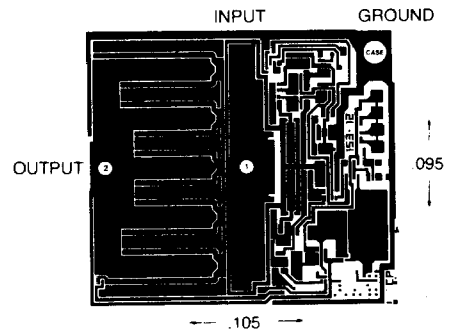
### FEATURES

- Load current in excess of 3A
- Output voltage trimmed to  $\pm 2\%$
- Complete self-contained protective features
- Correction for line resistance
- Eliminates external voltage setting resistors
- Hermetically sealed steel power package
- Available with 5, 12, and 15 volt outputs

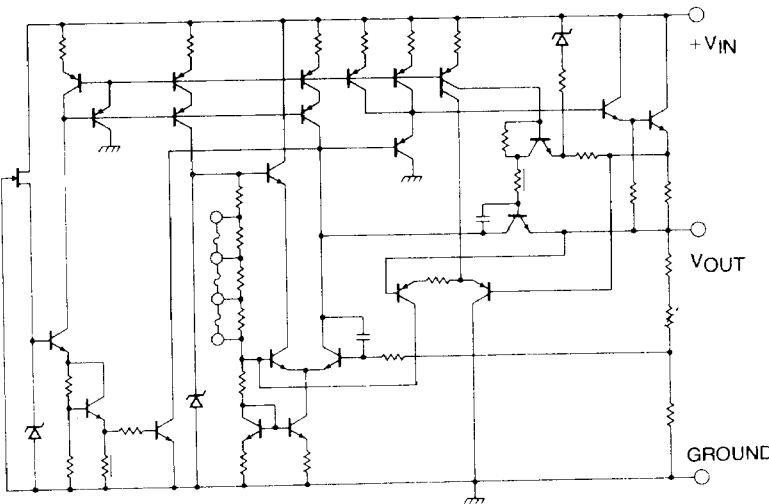
### ABSOLUTE MAXIMUM RATINGS

Input Voltage	35 Volts
Power Dissipation (Internally limited)	50 Watts
Operating Temperature Range ( $T_J$ )	
SG153 Series	$-55^\circ\text{C}$ to $+150^\circ\text{C}$
SG253 Series	$-25^\circ\text{C}$ to $+150^\circ\text{C}$
SG353 Series	$0^\circ\text{C}$ to $+125^\circ\text{C}$
Storage Temperature	$-65^\circ\text{C}$ to $+150^\circ\text{C}$
Lead Temperature (Soldering, 10 sec)	$300^\circ\text{C}$

### CHIP LAYOUT

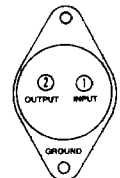


### SIMPLIFIED SCHEMATIC



### PACKAGE/ORDER INFORMATION

TOP VIEWS  
 (Case is internally connected to ground)



K-PACKAGE  
 TO-3

### ORDER PART NO.:

SG153K-5	SG153K-12	SG153K-15
SG253K-5	SG253K-12	SG253K-15
SG353K-5	SG353K-12	SG353K-15

# ELECTRICAL CHARACTERISTICS (See Note 1)

SG153/SG253/SG353

$V_{IN}$  unless otherwise specified (Note 1)

PARAMETER	TEST CONDITIONS	10V				19V				25V				UNITS
		SG153/SG253-05		SG353-05		SG153/SG253-12		SG353-12		SG153/SG253-15		SG353-15		
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
$V_{OUT}$	$I_O = 1A, 25^\circ C$ $V_{IN} = (V_{OUT} + 2.5V)$ to 30V $I_O = 5mA$ to 3A, $P \leq 30W$	4.9	5.1	4.8	5.2	11.8	12.2	11.5	12.5	14.8	15.2	14.4	15.6	V
Load Regulation (Note 2)	5mA-1A 5mA-3A 500mA-1.5A $I_O, 25^\circ C$		20		30		50		80		60		100	mV
Line Reg. Range	(Note 2)	$7V \leq V_{IN} \leq 25V$				$14.5V \leq V_{IN} \leq 30V$				$17.5V \leq V_{IN} \leq 30V$				
Line Regulation	$I_O = 1A, 25^\circ C$	50		75		50		100		50		100		mV
Line Reg. Range	(Note 2)	$8V \leq V_{IN} \leq 12V$				$16V \leq V_{IN} \leq 22V$				$20V \leq V_{IN} \leq 26V$				
Line Regulation	$I_O = 1A, 25^\circ C$	25		50		30		60		30		60		mV
Quiescent Current	$I_O = 1A, 25^\circ C$	9		12		9		12		9		12		mA
Quiescent Current Change	With Load: $I_O = 5mA-2A, 25^\circ C$ With Line: $V_{IN} = 8-25V, 25^\circ C$ $V_{IN} = 15-30V, 25^\circ C$ $V_{IN} = 18.5-30V, 25^\circ C$	500		500		500		500		500		500		$\mu A$ mA mA
$I_O$ - Peak	$25^\circ C$ $V_{IN} = 35V, 25^\circ C$	3	6	3	6	3	6	3	6	3	6	3	6	A
$I_O$ , Short Circuit	$V_O = V_{IN} = 35V, 25^\circ C$	100		100		100		100		100		100		mA
Ripple Rejection at $I_O = 100mA$	$V_{IN} = 8-18V, 120Hz$ sine, $25^\circ C$ $V_{IN} = 15-25V, 120Hz$ sine, $25^\circ C$ $V_{IN} = 18-28V, 120Hz$ sine, $25^\circ C$	51		41		46		41		46		41		dB dB dB

**Note 1:** Unless otherwise specified, these specifications apply:  
 $-55^\circ C \leq T_J \leq +150^\circ C$  for the SG153;  $-25^\circ C \leq T_J \leq +150^\circ C$  for the SG253, and  $0^\circ C \leq T_J \leq +125^\circ C$  for the SG353 and  $I_{OUT} = 1.0A$ . Although power dissipation is internally limited, these specifications are applicable for power dissipations up to 30W.

**Note 2:** Regulation is measured at constant junction temperature. Changes in output voltage due to heating effects must be taken into account separately. Pulse testing with low duty cycle is used.