ECG® Semiconductors

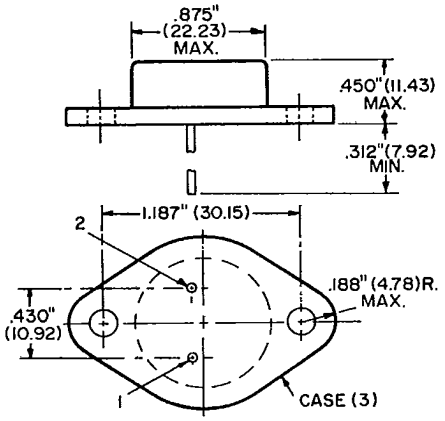
ECG935

Adjustable Pos VR

T-58-11-23

Features

- **7 A peak output current**
- **5 A output current**
- **Adjustable output down to 1.2 V**
- **Line regulation typically 0.005%/V**
- **Load regulation typically 0.1%**
- **Thermal regulation**
- **Current limit constant with temperature**
- **Standard 3-lead transistor package**



1. Adjust
2. V_{IN}
3. Output (Case)

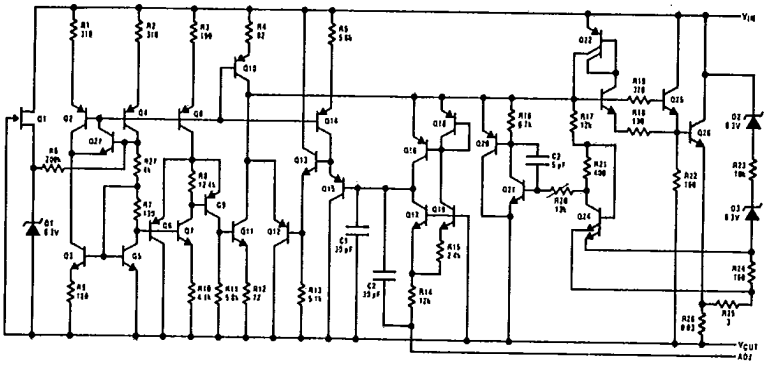
The ECG935 is an adjustable 3-terminal positive voltage regulator capable of supplying in excess of 5 A over a 1.2 V to 32 V output range. This voltage regulator requires only two external resistors to get the output voltage needed. Features include internal current limiting, thermal shutdown and safe area protection on the chip. Hermetically sealed steel packages are utilized for high reliability and low thermal resistance when used with an appropriate heat sink.

The ECG935 serves a wide variety of applications including local on card regulation. This device also makes a simple adjustable switching regulator, a programmable output regulator, or by connecting a fixed resistor between the adjustment and output, the ECG935 can be used as a precision current regulator.

Absolute Maximum Ratings

Characteristic	Rating	Unit
Power Dissipation	Internally limited	
Input—Output Voltage Differential	35	V
Operating Junction Temperature Range	0 to +125	°C
Storage Temperature	−65 to +150	°C
Lead Temperature (Soldering, 10 sec)	300	°C

Schematic Diagram



Electrical Characteristics (Note 1) ($0°C \leq T_j \leq +125°C$, $V_{IN}-V_{OUT}=5$ V, $I_{OUT}=2.5$ A unless otherwise noted)

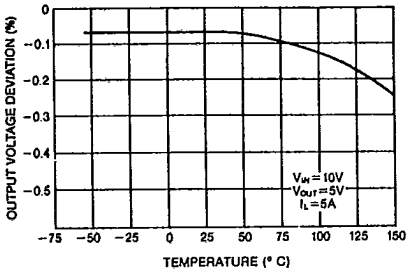
Characteristics	Test Condition	Min	Typ	Max	Unit
Line Regulation	$T_A=25°C$, 3 V $\leq V_{IN}-V_{OUT} \leq$ 35 V (Note 2)	--	0.005	0.03	%/V
Load Regulation	$T_A=25°C$, 10 mA $\leq I_{OUT} \leq$ 5 A $V_{OUT} \leq 5$ V (Note 2) $V_{OUT} \geq 5$ V (Note 2)	 -- --	 5 0.1	 25 0.5	 mV %
Thermal Regulation	Pulse = 20 ms	--	0.002	0.02	%/W
Adjustment Pin Current		--	45	100	μA
Adjustment Pin Current Change	10 mA $\leq I_L \leq$ 5 A 3 V $\leq (V_{IN}-V_{OUT}) \leq$ 35 V	--	0.2	5	μA
Reference Voltage	3 V $\leq (V_{IN}-V_{OUT}) \leq$ 35 V, 10 mA $\leq I_{OUT} \leq$ 5 A, P $\leq$ 50 W	1.19	1.24	1.29	V
Line Regulation	3 V $\leq V_{IN}-V_{OUT} \leq$ 35 V (Note 2)	--	0.02	0.06	%/V
Load Regulation	10 mA $\leq I_{OUT} \leq$ 5 A (Note 2) $V_{OUT} \leq 5$ V $V_{OUT} \geq 5$ V	 -- --	 20 0.3	 50 1.0	 mV %
Temperature Stability	$T_{MIN} \leq T_j \leq T_{MAX}$	--	1	--	%
Minimum Load Current	$V_{IN}-V_{OUT}=35$ V	--	3.5	10	mA
Current Limit	$V_{IN}-V_{OUT} \leq 10$ V DC 0.5 ms Peak $V_{IN}-V_{OUT}=30$ V	 5.0 7 --	 8 12 1	 -- -- --	 A A A
RMS Output Noise, % of V_{OUT}	$T_A=25°C$, 10 Hz $\leq f \leq$ 10 kHz	--	0.003	--	%
Ripple Rejection Ratio	$V_{OUT}=10$ V, f = 120 Hz $C_{ADJ}=10$ μF	-- 60	60 75	-- --	dB dB
Thermal Resistance, Junction to Case		--	--	1.0	°C/W

Note 1: Although power dissipation is internally limited, these specifications are applicable for power dissipations up to 50 W.

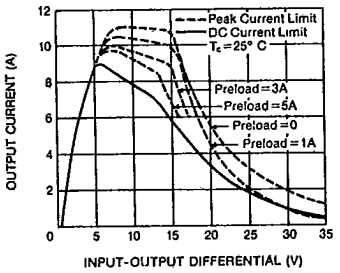
Note 2: Regulation is measured at constant junction temperature. Changes in output voltage due to heating effects must be taken into account separately by thermal regulation.

Typical Characteristics

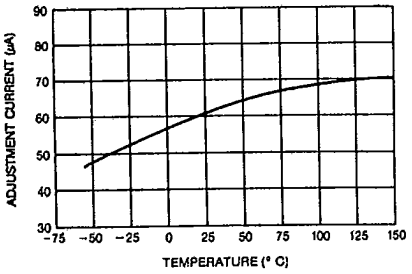
Load Regulation



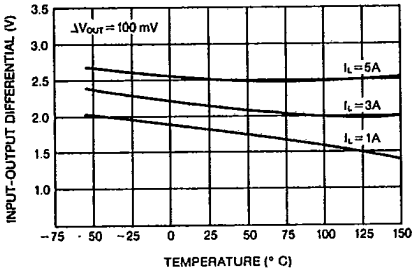
Current Limit



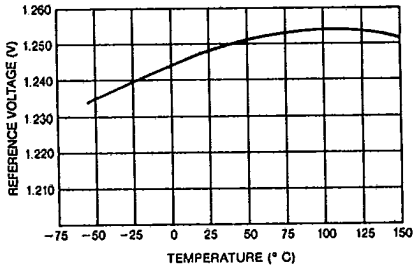
Adjustment Current



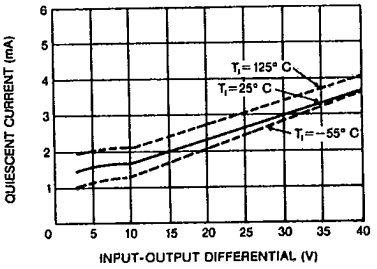
Dropout Voltage



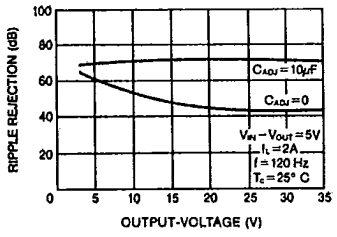
Temperature Stability



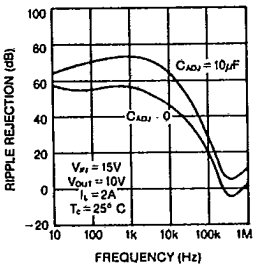
Minimum Operating Current



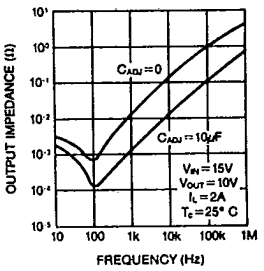
Ripple Rejection



Ripple Rejection



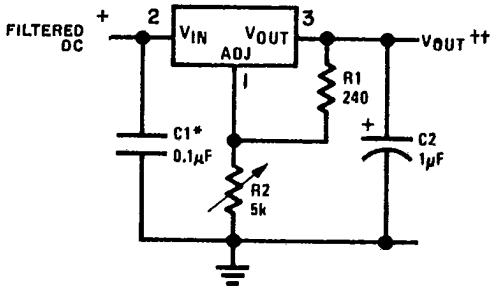
Output Impedance



Application Circuit

T-58-11-23

1.2 V - 25 V Adjustable Regulator



* Required if device is more than 4" from filter capacitor.

† Regulator is stable with no load capacitor into resistive loads.

†† $V_{OUT} = 1.25\ V \left(1 + \frac{R_2}{R_1}\right)$