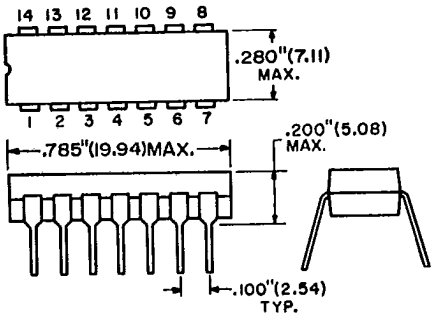
ECG® Semiconductors

ECG921

±15 V Dual Polarity Tracking VR

Features

- **Internally set to ±15 V tracking outputs**
- **Output currents to 100 mA**
- **Line and load regulation of 0.06%**
- **1% maximum output variation due to temperature changes**
- **Externally adjustable current limit**
- **Remote sensing provisions**



The ECG921 is a dual polarity tracking regulator designed to provide balanced positive and negative output voltages at currents to 100 mA. Internally, the device is set for ±15-volt outputs but an external adjustment can be used to change both outputs simultaneously from 10 to 23 volts. Input voltages up to ±30 volts can be used and there is provision for adjustable current limiting.

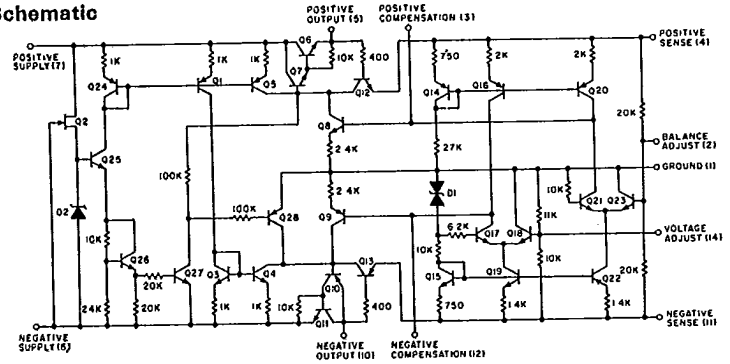
Absolute Maximum Ratings (T_C = +25°C unless otherwise noted)

Characteristic	Symbol	Rating	Unit
Input Voltage	V_{CC}	±30	Vdc
Peak Load Current	I_{PK}	100	mA
Power Dissipation and Thermal Characteristics			
T_A = +25°C	P_D	1.0	W
Derate above T_A = +25°C	$1/\theta_{JA}$	10	mW/°C
Thermal Resistance, Junction to Air	θ_{JA}	100	°C/W
T_C = +25°C	P_D	2.5	W
Derate above T_C = +25°C	$1/\theta_{JC}$	20	mW/°C
Thermal Resistance, Junction to Case	θ_{JC}	50	°C/W
Storage Junction Temperature Range	T_J, T_{stg}	−65 to +175	°C
Minimum Short-Circuit Resistance	R_{SC}(min)	4.0	Ω

Operating Temperature Range

Ambient Temperature	T_A	0 to +70	°C

Circuit Schematic

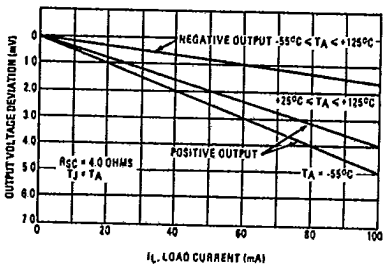


Electrical Characteristics (V_{CC} = +20 V, V_{EE} = −20 V, C1 = C2 = 1500 pF, C3 = C4 = 1.0 μF, $R_{SC}^+ = R_{SC}^- = 4.0\ \Omega$, $I_L^+ = I_L^- = 0$, T_C = +25°C unless otherwise noted)

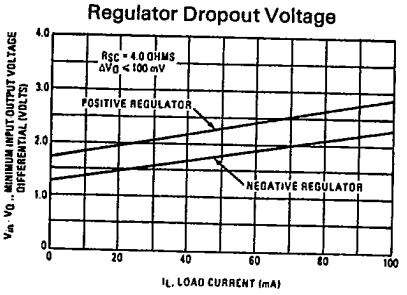
Characteristics	Symbol	Min	Typ	Max	Unit
Output Voltage	V_O	±14.5	±15	±15.5	Vdc
Input Voltage	V_{IN}	--	--	±30	Vdc
Input-Output Voltage Differential	$\|V_{IN}-V_O\|$	2.0	--	--	Vdc
Output Voltage Balance	V_{Bal}	--	±50	±300	mV
Line Regulation Voltage (V_{IN} = 18 V to 30 V) (T_{low} to T_{high}) 0°C to +70°C	Reg_{in}	-- --	-- --	10 20	mV
Load Regulation Voltage (I_L = 0 to 50 mA, T_J = constant) (T_A = T_{low} to T_{high})	Reg_L	-- --	-- --	10 30	mV
Output Voltage Range	V_{OR}	±10	--	±23	V_{dc}
Ripple Rejection (f = 120 Hz)	RR	--	75	--	dB
Output Voltage Temperature Stability (T_{low} to T_{high})	$\|TSV_o\|$	--	0.3	1.0	%
Short-Circuit Current Limit (R_{SC} = 10 ohms)	I_{SC}	--	60	--	mA
Output Noise Voltage (BW = 100 Hz - to kHz)	V_N	--	100	--	μV(RMS)
Positive Standby Current (V_{IN} = +30 V)	I_B^+	--	2.4	4.0	mA
Negative Standby Current V_{IN} = −30 V)	I_B^-	--	--	5.0	mA

Typical Characteristics
(V_{CC} = +20 V, V_{EE} = −20 V, V_o = ±15 V, T_A = +25°C unless otherwise noted)

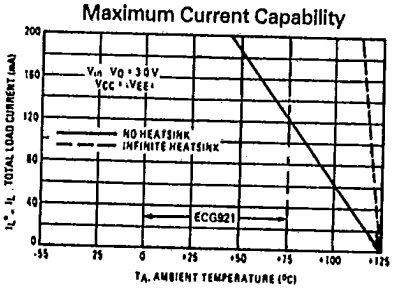
Load Regulation



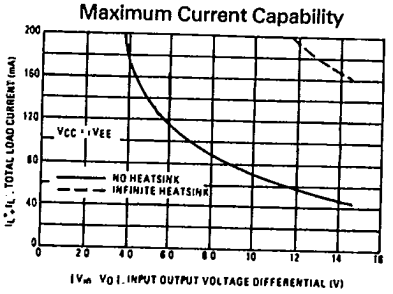
Regulator Dropout Voltage



Maximum Current Capability

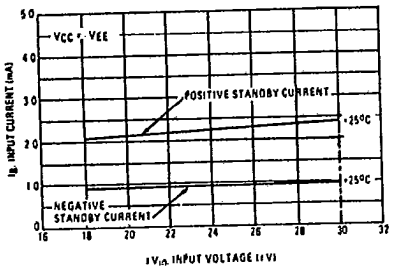


Maximum Current Capability

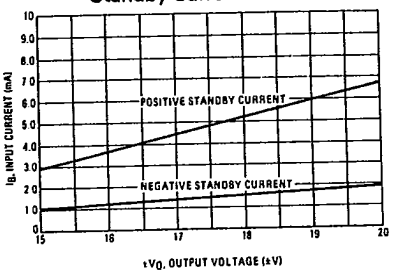


Typical Characteristics (Cont.)

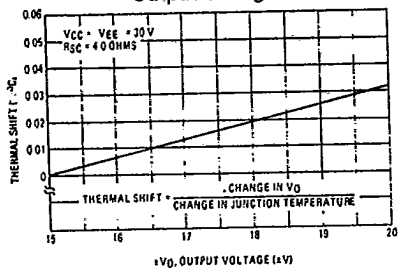
Standby Current Drain



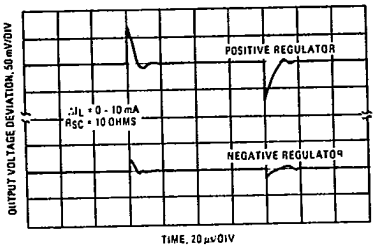
Standby Current Drain



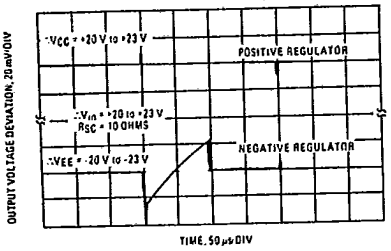
Temperature Coefficient of Output Voltage



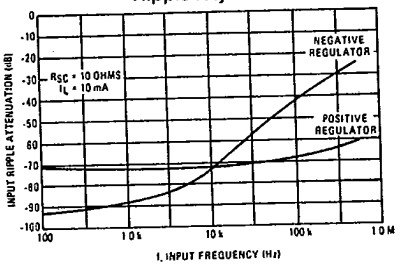
Load Transient Response



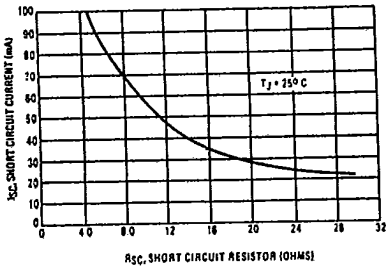
Line Transient Response



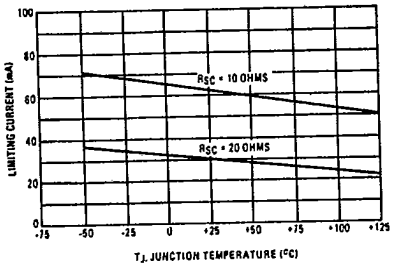
Ripple Rejection



ISC vs RSC

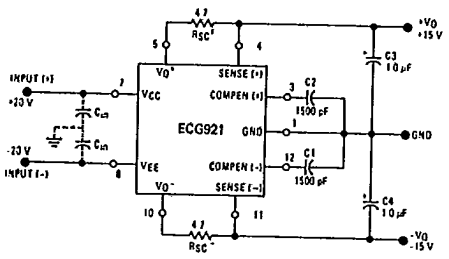


Current-Limiting Characteristics



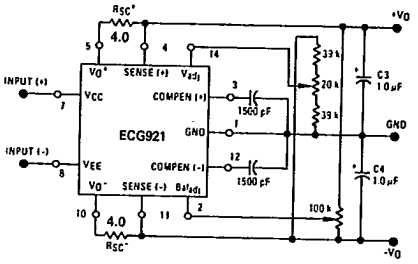
Typical Applications

Basic 50-mA Regulator



C1 and C2 should be located as close to the device as possible. A 0.1 µF ceramic capacitor (C_{IN}) may be required on the input lines if the device is located an appreciable distance from the rectifier filter capacitors. C3 and C4 may be increased to improve load transient response and to reduce the output noise voltage. At low temperature operation, it may be necessary to bypass C4 with a 0.1 µF ceramic disc capacitor.

Voltage Adjust and Balance Adjust Circuit ($14.5\ V \leq V_{OUT} \leq 20\ V$)



Output Impedance