

LOW DROP-OUT 5V DUAL VOLTAGE REGULATOR

- OUTPUT CURRENT OF BOTH REGULATORS : 100 mA GUARANTEED
- INTERNAL SHORT-CIRCUIT AND THERMAL PROTECTION
- FIRST REGULATOR OUTPUT : LOW DISCHARGE CURRENT
- SECOND REGULATOR OUTPUT : SWITCHED-OFF WITH ACTIVE DISCHARGE
- RESET OUTPUT WITH ADJUSTABLE PULSE WIDTH

The circuit generates a reset pulse when :

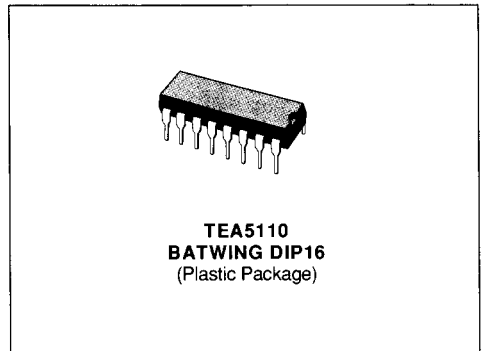
- the supply voltage is applied to the circuit and the output of the second regulator is at its nominal value, and
- when the output of the second regulator is at its nominal value again after a shut-down on the output of the first regulator (see figure 2 page 4).

DESCRIPTION

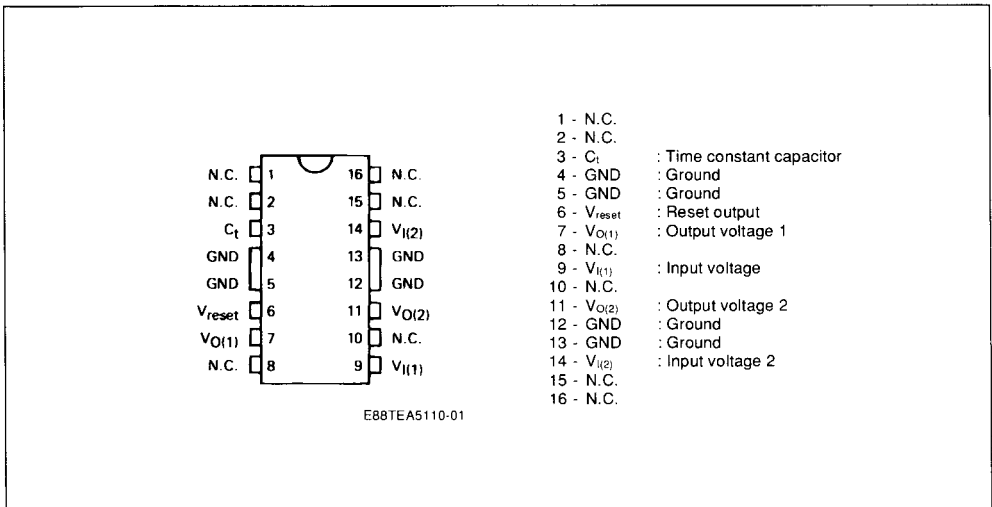
The TEA5110 is a dual positive 5V voltage regulator specially designed to supply a microprocessor and associated circuits.

The first regulator supplies the microprocessor in normal operating conditions. In standby mode, the regulator has a very high output impedance (current drain less than 1 μ A) and the microprocessor may be powered by a battery.

The second regulator supplies the peripherals and provides a halt signal to the microprocessor to turn it in standby mode.



PIN CONNECTIONS



ABSOLUTE MAXIMUM RATINGS

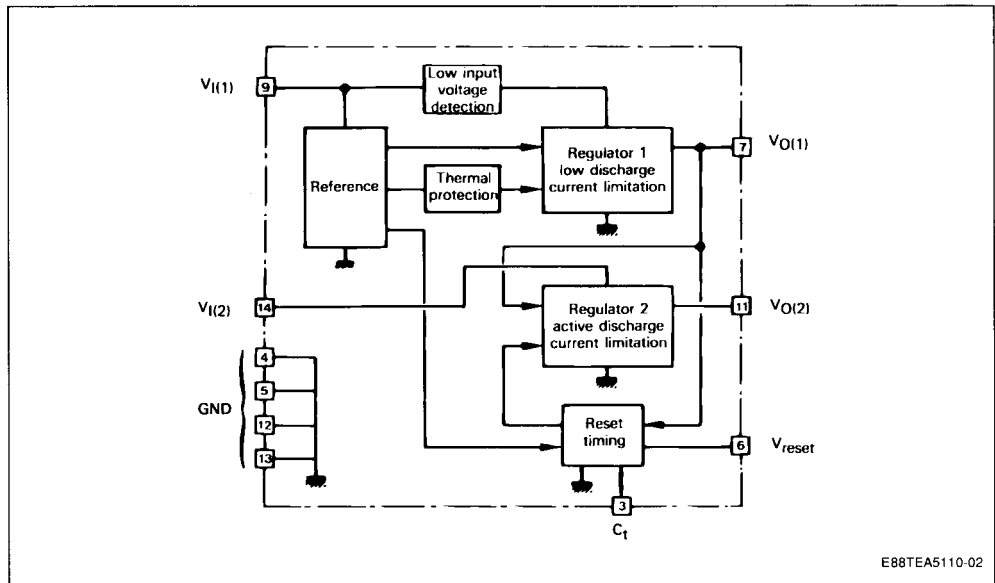
Symbol	Parameter	Value	Unit
V_I	Input Voltage	20	V
I_O	Output Current	Internally Limited	A
P_{tot}	Power Dissipation	Internally Limited	W
T_{oper}	Operating Ambient Temperature Range	0 to 70	°C
T_{stg}	Storage Temperature Range	- 65 to 150	°C

THERMAL DATA

$R_{th(j-a)}$ *	Junction-ambient Thermal Resistance	45	°C/W
$R_{th(j-c)}$	Junction-case Thermal Resistance	11	°C/W

* The $R_{th(j-a)}$ is measured on devices soldered on 35 μ m thick copper surface of 40 cm².

BLOCK DIAGRAM



ELECTRICAL CHARACTERISTICS $T_j = +25\text{ }^\circ\text{C}$ (unless otherwise specified)

Symbol	Parameter	Min.	Typ.	Max.	Unit
$V_{O(1)}$	Output Voltage ($+7\text{ V} \leq V_i \leq +18\text{ V}$, $0 \leq I_{O(1)} \leq 100\text{ mA}$)	4.9	5.05	5.2	V
$V_{O(2)}$	Output Voltage ($+7\text{ V} \leq V_i \leq +18\text{ V}$, $0 \leq I_{O(2)} \leq 100\text{ mA}$)	4.8	5	5.2	V
$V_{O(1)}-V_{O(2)}$	Output Voltage Difference $+7\text{ V} \leq V_i \leq +18\text{ V}$, $0 \leq I_{O(1)} \leq 100\text{ mA}$, $0 \leq I_{O(2)} \leq 100\text{ mA}$	0	50	100	mV
$K_{Vl(1)}$ $K_{Vl(2)}$	Line Regulation $+6.8\text{ V} \leq V_i \leq +18\text{ V}$, $I_{O(1)} = 50\text{ mA}$ $+6.8\text{ V} \leq V_i \leq +18\text{ V}$, $I_{O(2)} = 50\text{ mA}$		10 20	50 50	mV mV
$K_{VO(1)}$ $K_{VO(2)}$	Load Regulation $5\text{ mA} \leq I_{O(2)} \leq 100\text{ mA}$, $V_i = +10\text{ V}$ $5\text{ mA} \leq I_{O(2)} \leq 100\text{ mA}$, $V_i = +10\text{ V}$		10 20	50 50	mV mV
I_Q	Quiescent Current ($+6.8\text{ V} \leq V_i \leq +18\text{ V}$, $I_{Q(1)} = I_{Q(2)} = 0$)		6	8	mA
$I_{SC(1)}$ $I_{SC(2)}$	Short-circuit Current $V_i = +10\text{ V}$, $0 \leq V_{O(1)} \leq +5\text{ V}$ $V_i = +10\text{ V}$, $0 \leq V_{O(2)} \leq +5\text{ V}$		200 200		mA mA
$V_i-V_{O(1)}$ $V_i-V_{O(2)}$	Minimum Dropout Voltage - (note 1) Output 1 Output 2				
	$I_{O(1)} = 0$		1.4		V
	$I_{O(1)} = 0.1\text{ A}$		1.6		V
	$I_{O(2)} = 0$		1.5		V
	$I_{O(2)} = 0.1\text{ A}$		1.7		V
$I_{dis(1)}$	$V_{O(1)}$ Discharge Current ($V_i = 0$, $V_{O(1)} = +5\text{ V}$)			1	μA
	Minimum Input Voltage to Switch on $V_{O(2)}$ Output (fig. 1, note 2)	$(V_{O1}+1.4)$	$(V_{O1}+1.6)$	$(V_{O1}+1.8)$	V
ΔV_{IL}	Input Hysteresis to Switch off $V_{O(2)}$ Output (fig. 1)	200	300	400	mV
	Minimum $V_{O(1)}$ Output Voltage to Switch on $V_{O(2)}$	4.5	4.6	4.7	V
$\Delta V_{C(1)}$	$V_{O(1)}$ Hysteresis Voltage to switch off $V_{O(2)}$ (fig. 2)	30	50	70	mV
$V_{L(O2)}$	$V_{O(2)}$ Low Output Voltage (active discharge) $V_i = +10\text{ V}$, $I_{O(2)} = -90\text{ mA}$ $V_i = +10\text{ V}$, $I_{O(2)} = -10\text{ mA}$		1.3 120	1.6 180	V mV
$V_{L(reset)}$	Reset Low Output Voltage ($V_i = +10\text{ V}$, $I_{reset} = -16\text{ mA}$)		120	400	mV
$V_{H(reset)}$	Reset High Output Voltage ($V_i = +10\text{ V}$, $I_{reset} = 1\text{ mA}$)	$V_{O(2)}-1\text{V}$		$V_{O(2)}$	V
t_{reset}	Reset Pulse Duration ($V_i = +10\text{ V}$, $C_{reset} = 10\text{ nF}$) - Note 3	4	8	16	ms
KVT	Average Temperature Coefficient of Output Voltage ($T_j = 0\text{ }^\circ\text{C}$ to $-70\text{ }^\circ\text{C}$)		0.5		mV/ $^\circ\text{C}$
θ	Thermal Shut Down Temperature	110			$^\circ\text{C}$
SVR	Supply Voltage Rejection Ratio $V_i = +12\text{ V}$, $\Delta V_i = 4\text{ Vpp}$, $I_O = 10\text{ mA}$, $f = 100\text{ Hz}$		50		dB

Notes : 1. The dropout voltage (input-output voltage difference) is measured when the output voltage has dropped 100 mV from the nominal value obtained at 10 V input voltage.

Dropout voltage is dependent upon load current and junction temperature.

2. $V_{O(1)}$ voltage is measured at 10 V input voltage.

3. t_{reset} (ms) = 0.8 C_{reset} (nF).

Figure 1 : Typical Application and Test Circuit.

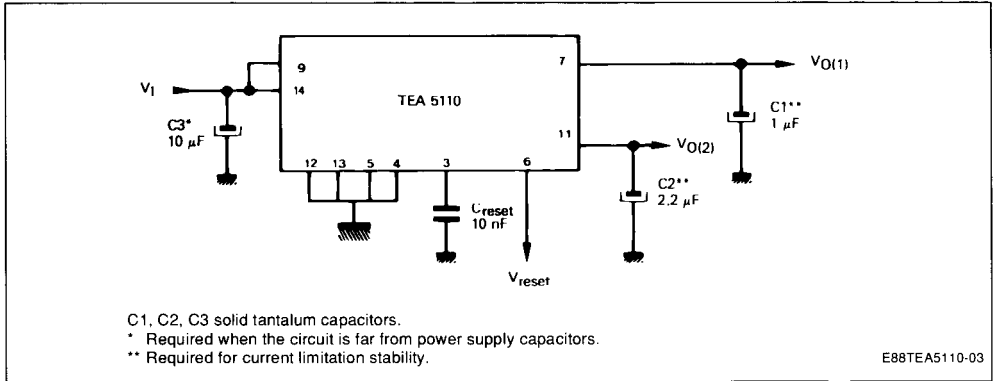
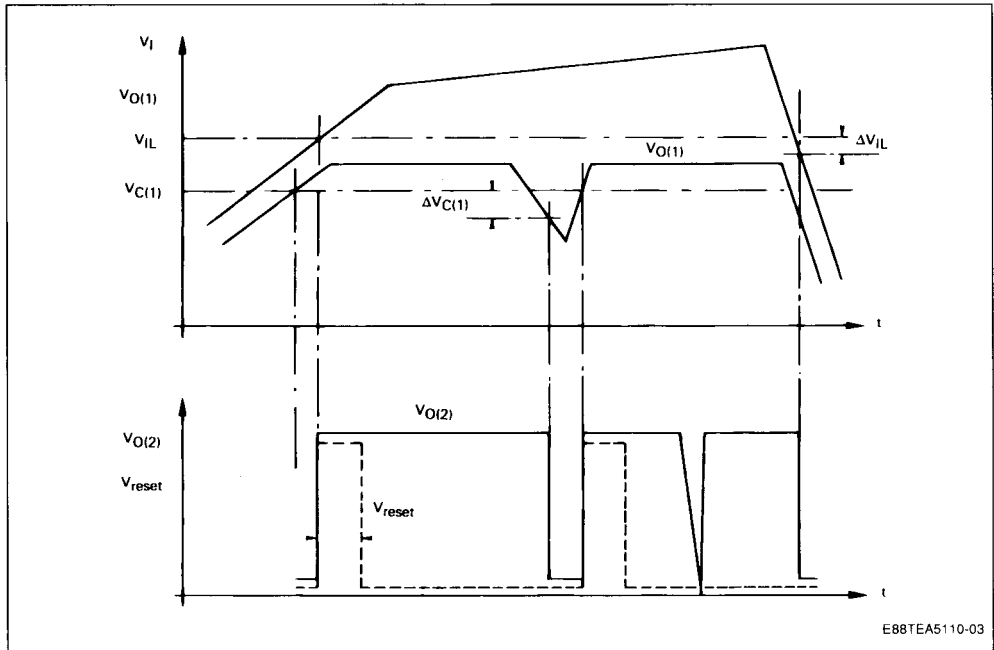


Figure 2 : Dynamic Characteristics of VO(1), VO(2), Vreset Outputs.



PACKAGE MECHANICAL DATA

16 PINS – PLASTIC DIP

