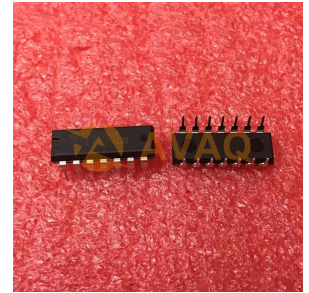


Conv DC-DC 4.5V to 12V Non-Inv/Inv/Step Up/Step Down Single-Out -1.2V to -25V/6.5V to 30V/1.2V to 3.5V 0.5A 14-Pin PDIP Tube



Images are for reference only

[Inquiry](#)

Manufacturer: [Texas Instruments, Inc](#)

Package/Case: DIP14

Product Type: Power Management ICs

RoHS: RoHS Compliant/Lead free 

Lifecycle: Active

General Description

The TL497A incorporates all the active functions required in the construction of switching voltage regulators. It also can be used as the control element to drive external components for high-power-output applications. The TL497A was designed for ease of use in step-up, step-down, or voltage-inversion applications requiring high efficiency.

The TL497A is a fixed-on-time variable-frequency switching-voltage-regulator control circuit. The switch-on time is programmed by a single external capacitor connected between FREQ CONTROL and GND. This capacitor, CT, is charged by an internal constant-current generator to a predetermined threshold. The charging current and the threshold vary proportionally with VCC. Thus, the switch-on time remains constant over the specified range of input voltage (4.5 V to 12 V). Typical on times for various values of CT are as follows:

TIMING CAPACITOR, CT (pF)200250350400500750100015002000ON TIME (μs)19222632445680120180

The output voltage is controlled by an external resistor ladder network (R1 and R2 in Figures 1, 2, and 3) that provides a feedback voltage to the comparator input. This feedback voltage is compared to the reference voltage of 1.2 V (relative to SUBSTRATE) by the high-gain comparator. When the output voltage decays below the value required to maintain 1.2 V at the comparator input, the comparator enables the oscillator circuit, which charges and discharges CT as described above. The internal pass transistor is driven on during the charging of CT. The internal transistor can be used directly for switching currents up to 500 mA. Its collector and emitter are uncommitted, and it is current driven to allow operation from the positive supply voltage or ground. An internal Schottky diode matched to the current characteristics of the internal transistor also is available for blocking or commutating purposes. The TL497A also has on-chip current-limit circuitry that senses the peak currents in the switching regulator and protects the inductor against saturation and the pass transistor against overstress. The current limit is adjustable and is programmed by a single sense resistor, RCL, connected between VCC and CUR LIM SENS. The current-limit circuitry is activated when 0.7 V is developed across RCL. External gating is provided by the INHIBIT input. When the INHIBIT input is high, the output is turned off.

Simplicity of design is a primary feature of the TL497A. With only six external components (three resistors, two capacitors, and one inductor), the TL497A operates in numerous voltage-conversion applications (step-up, step-down, invert) with as much as 85% of the source power delivered to the load. The TL497A replaces the TL497 in all applications.

The TL497AC is characterized for operation from 0°C to 70°C. The TL497AI is characterized for operation from -40°C to 85°C.

Key Features

High Efficiency . . . 60% or Greater

Peak Switch Current . . . 500 mA

Input Current Limit Protection

TTL-Compatible Inhibit

Adjustable Output Voltage

Input Regulation . . . 0.2% Typ

Output Regulation . . . 0.4% Typ

Soft Start-Up Capability

Can be Used in Buck, Boost, and Inverting Configurations

Description

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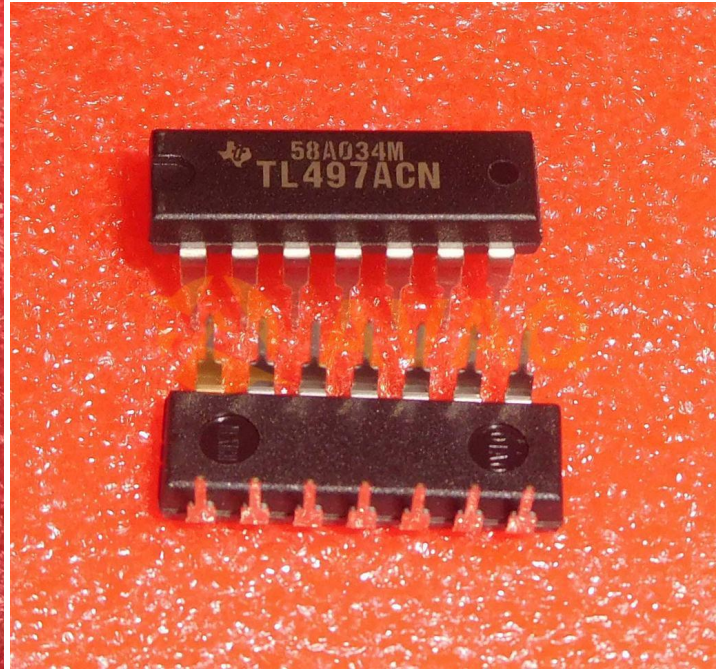
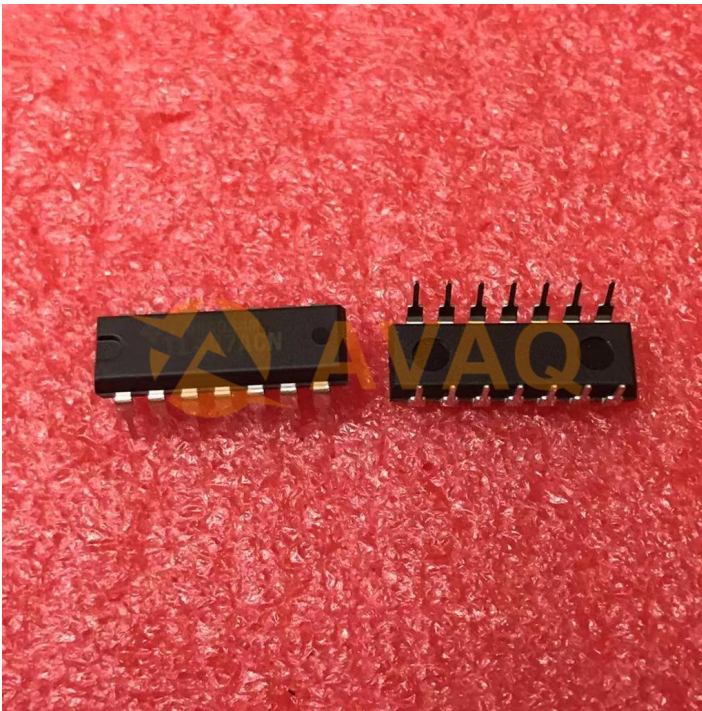
The TL497A is a fixed-on-time variable-frequency switching-voltage-regulator control circuit. The switch-on time is programmed by a single external capacitor connected between **FREQ CONTROL** and **GND**. This capacitor, **CT**, is charged by an internal constant-current generator to a predetermined threshold. The charging current and the threshold vary proportionally with **VCC**. Thus, the switch-on time remains constant over the specified range of input voltage (4.5 V to 12 V). Typical on times for various values of **CT** are as follows:

TIMING CAPACITOR, CT (pF)	200	250	350	400	500	750	1000	1500	2000	ON TIME (μs)
	19	22	26	32	44	56	80	120	180	

The output voltage is controlled by an external resistor ladder network (**R1** and **R2** in Figures 1, 2, and 3) that provides a feedback voltage to the comparator input. This feedback voltage is compared to the reference voltage of 1.2 V (relative to **SUBSTRATE**) by the high-gain comparator. When the output voltage decays below the value required to maintain 1.2 V at the comparator input, the comparator enables the oscillator circuit, which charges and discharges **CT** as described above. The internal pass transistor is driven on during the charging of **CT**. The internal transistor can be used directly for switching currents up to 500 mA. Its collector and emitter are uncommitted, and it is current driven to allow operation from the positive supply voltage or ground. An internal Schottky diode matched to the current characteristics of the internal transistor also is available for blocking or commutating purposes. The TL497A also has on-chip current-limit circuitry that senses the peak currents in the switching regulator and protects the inductor against saturation and the pass transistor against overstress. The current limit is adjustable and is programmed by a single sense resistor, **RCL**, connected between **VCC** and **CUR LIM SENS**. The current-limit circuitry is activated when 0.7 V is developed across **RCL**. External gating is provided by the **INHIBIT** input. When the **INHIBIT** input is high, the output is turned off.

Simplicity of design is a primary feature of the TL497A. With only six external components (three resistors, two capacitors, and one inductor), the TL497A operates in numerous voltage-conversion applications (step-up, step-down, invert) with as much as 85% of the source power delivered to the load. The TL497A replaces the TL497 in all applications.

The TL497AC is characterized for operation from 0°C to 70°C. The TL497AI is characterized for operation from -40°C to 85°C.



Recommended For You

TL2843P

Texas Instruments, Inc

DIP8

TL431CP

Texas Instruments, Inc

DIP8

TL7705ACDR

Texas Instruments, Inc

SOP8

TL3843P

Texas Instruments, Inc

DIP8

TL3845P

Texas Instruments, Inc

DIP8

TL494CD

Texas Instruments, Inc

SOP-16

TL431HDBVR

Texas Instruments, Inc

SOT23-5

TL494CN

Texas Instruments, Inc

DIP

TL431CDBVR

Texas Instruments, Inc

SOT23-5

TL7705ACP

Texas Instruments, Inc

DIP8

TL3842P

Texas Instruments, Inc

DIP8

TLV73325PDBVT

Texas Instruments, Inc

SOT23-5

TLV73333PDBVR

Texas Instruments, Inc

SOT23-5

TL431BIDBZT

Texas Instruments, Inc

SOT23-3

TL431CPSR

Texas Instruments, Inc

SOP-8