



51494

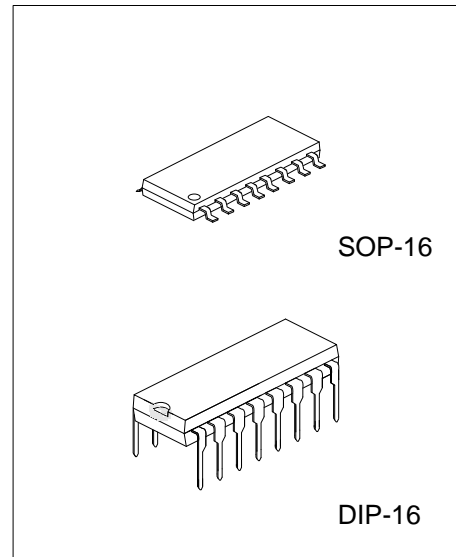
LINEAR INTEGRATED CIRCUIT

DESCRIPTION

The UTC **51494** is a monolithic bipolar integrate circuit that provides same 494 function and built in power good signal circuit for easy using **51494** can be easily implemented by just adding a capacitor.

FEATURES

- * Fully integrated with compact 16-pin dip
- * All necessary functions included for most popular half bridge circuit.
- * Built-in power good delay and power fail lead function.
- * Power good delay time is linearly.
- * Proportional to external capacitor value.
- * Reduced external components for cost down and components for cost down and compact size.

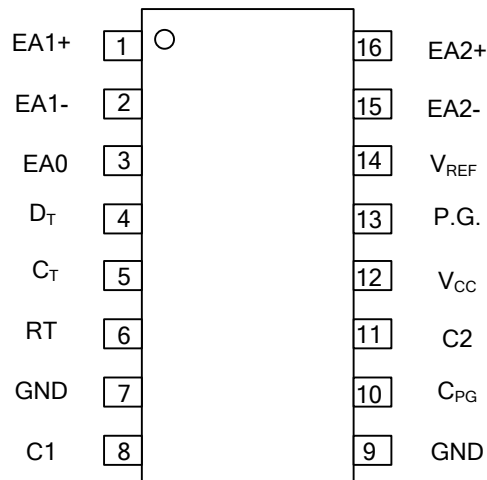


ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
51494L-S16-R	51494G-S16-R	SOP-16	Tape Reel
51494L-S16-T	51494G-S16-T	SOP-16	Tube
51494L-D16-T	51494G-D16-T	DIP-16	Tube

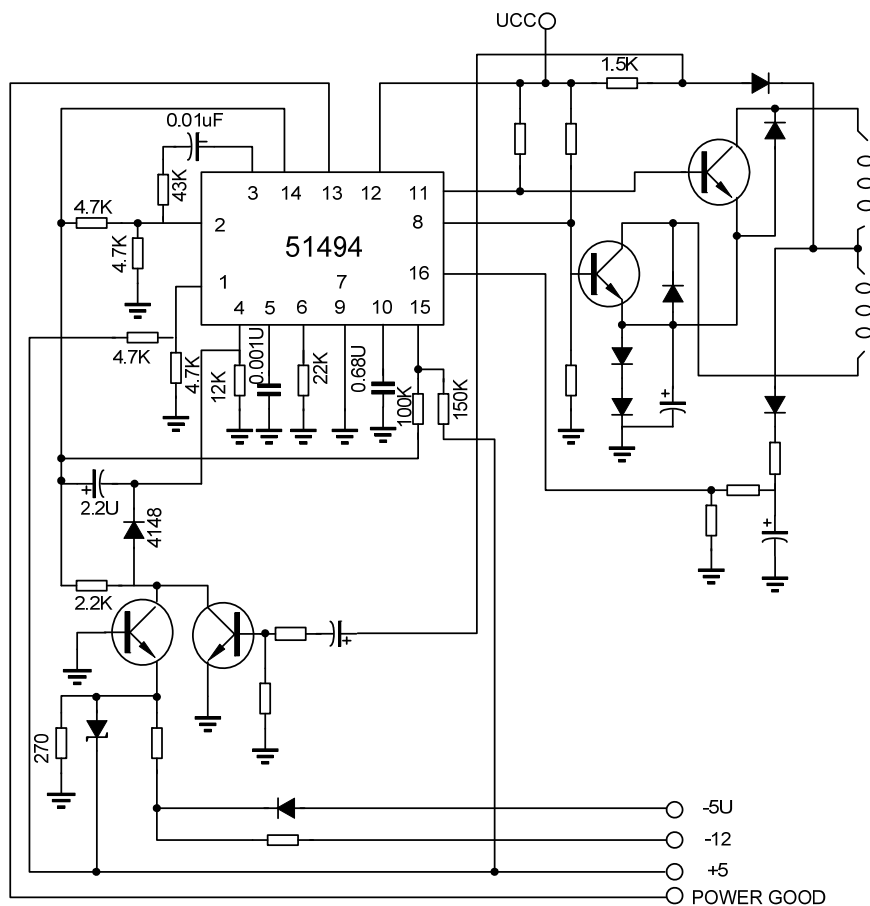
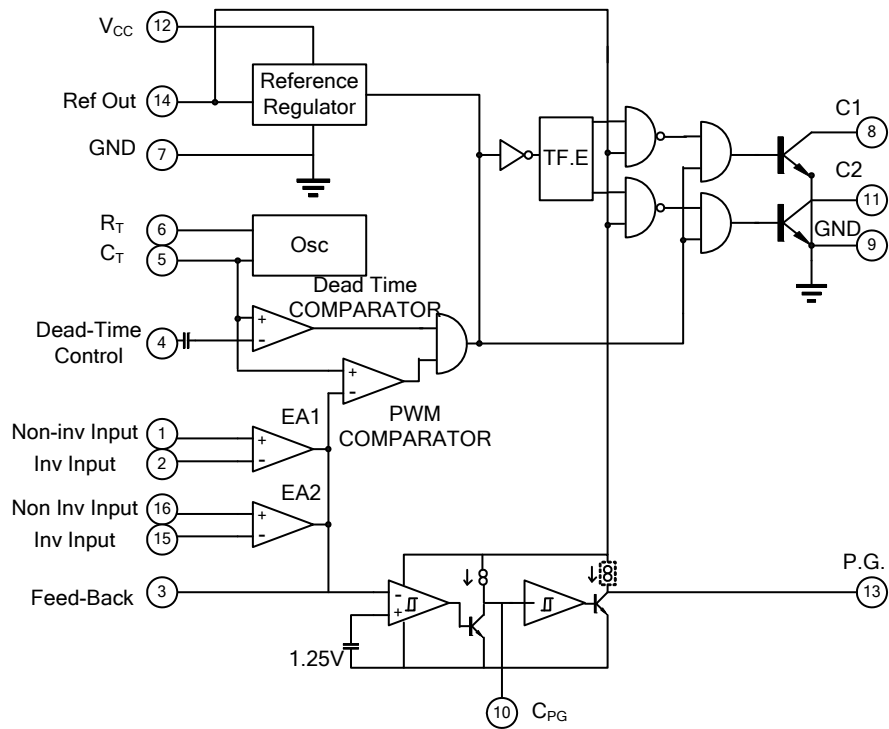
<p>51494L-D16-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Lead Free</p>	<p>(1) R: Tape Reel, T: Tube</p> <p>(2) D16: DIP-16, S16: SOP-16</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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■ PIN ASSIGNMENT



PIN	NAME	FUNCTION
1	EA1+	Error amplifier noninverting input, same as pin 1 of 494
2	EA1-	Error amplifier inverting input, same as pin 2 of 494
3	EA0	Error amplifier output and feedback, same as pin 3 of 494
4	D _T	Dead time control input, same as pin 4 of 494
5	C _T	Connect capacitor to oscillator circuit for operating frequency, same as pin 5 of 494
6	R _T	Connect resistor to oscillator circuit for operating frequency, same as pin 6 of 494
7	GND	Ground terminal of IC, same as pin 7 of 494
8	C1	Collector of output transistor one, same as pin 8 of 494
9	GND	Ground terminal of IC
10	C _{PG}	Terminal for capacitor to determine power good delay time
11	C2	Collector of output transistor two, same as pin 11 of 494
12	V _{CC}	Supply voltage, same as pin 12 of 494
13	P.G.	Output for power good signal
14	V _{REF}	Reference voltage output, same as pin 14 of 494
15	EA2-	Error amplifier inverting input, same as pin 15 of 494
16	EA+	Error amplifier noninverting input, same as pin 16 of 494

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS

(Unless otherwise specified, all is over operating free-air temperature Range)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	42	V
Voltage from any pin to ground (except pin8 & pin11)	V_{IN}	$V_{CC} + 0.3$	V
Collector Output Voltage	V_{C1}, V_{C2}	42	V
Peak Collector Output	I_{C1}, I_{C2}	250	mA
Power Dissipation	P_D	1500	mW
Operating Temperature	T_{OPR}	0 ~ +70	°C
Storage Temperature	T_{STG}	-40 ~ +150	°C
Junction Temperature	T_J	125	°C

Note: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS (Unless otherwise specified, $T_A=0\sim 70^\circ\text{C}$, $V_{CC}=15\text{V}$, $f=10\text{kHz}$)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
REFERENCE SECTION						
Reference Voltage	V_{REF}	$I_{REF} = 1.0\text{mA}$	4.75	5	5.25	V
Line Regulation	V_{LINE}	$7\text{V} < V_{CC} < 40\text{V}$		2	25	mV
Load Regulation	V_{LOAD}	$1\text{mA} < I_{REF} < 5\text{mA}$		1	15	mV
Temperature Coefficient		$0^\circ\text{C} < F_A < 70^\circ\text{C}$		0.01	0.03	%/°C
OSCILLATOR SECTION						
Oscillator Frequency	F_{OSC}	$C_T=0.01\mu\text{F}$, $R_T=12\text{k}\Omega$		10		kHz
Oscillator Frequency Change Over Operating Temperature Range	Δf_{OSC}	$C_T=0.01\mu\text{F}$, $R_T=12\text{k}\Omega$			2	%
DEAD TIME CONTROL SECTION						
Input Bias Current (Pin 4)	$I_{B(DT)}$	$V_{CC} = 15\text{V}$, $0\text{V} < V_4 < 5.25\text{V}$		-2	-10	μA
Maximum Duty Cycle, Each Output	$D_{C(MAX)}$	$V_{CC} = 15\text{V}$, Pin 4 = 0V Output Control Pin = V_{REF}	43		45	%
Input Threshold Voltage	Zero Duty	V_{TH}		3	3.3	V
	Max Duty		0			
ERROR AMPLIFIER SECTION						
Input Offset Voltage	V_{ICS}	$V_3=2.5\text{V}$		2	10	mV
Input Offset Current	I_{ICS}	$V_3=2.5\text{V}$		25	250	nA
Input Bias Current	I_{IB}	$V_3=2.5\text{V}$		0.2	1	μA
Input Common-mode Voltage Range	V_{ICR}	$7\text{V} < V_{CC} < 40\text{V}$	-0.3		V_{CC}	V
Large Signal Open-Loop Voltage Range	G_{VO}	$0.5\text{V} < V_3 < 3.5\text{V}$	60	74		dB
Unity-Gain Band width	f_c			650		kHz

■ ELECTRICAL CHARACTERISTICS(Cont.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OUTPUT SECTION						
Collector Off-State Current	$I_{C(OFF)}$	$V_{CC}=V_C=40V, V_E=0$		2	100	μA
Emitter Off-State Current	$I_{E(OFF)}$	$V_{CC}=V_C=40V, V_E=0$			-100	μA
Output Saturation Voltage Common-Emitter	$V_{CE(SAT)}$	$V_E=15V, I_C=200mA$		1.1	1.3	V
OUTPUT CONTROL (pin13)						
Standby Power Supply Current	I_{CC}			6	10	mA
Output AC Characteristic						
Raise Time Common-Emitter	T_R			100	200	ns
Fall Time Common-Emitter	T_R			25	100	ns
PWM COMPARATOR SECTION						
Inhibit Threshold Voltage	V_{THI}	Zero Duty cycle		4	4.5	V
Output Source Current	I_{O+}	$0.5V < V_3 < 3.5V$	2			mA
Output Sink Current	I_{O-}	$0.5V < V_3 < 3.5V$	-0.2	-0.6		mA
POWER GOOD SECTION						
Power Good Delay Time	t_{PD}	$C_D = 1\mu F$	230	280	330	ms
		$C_D = 0.47\mu F$	108	130	160	
Power Fail Lead Time	T_{P1}			4		ms
Output High Voltage	V_{OH}	$V_{PINN} = 5V, I_L = 1mA$	4.75			V
Output Saturation Voltage	V_{SAT}	$V_{PINN} = 5V, I_{SINK} = 4mA$			0.4	V
Output Leakage Current	I_{OH}				100	μA

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