

93334

LINEAR INTEGRATED CIRCUIT

HIGH ENERGY IGNITION CIRCUIT

DESCRIPTION

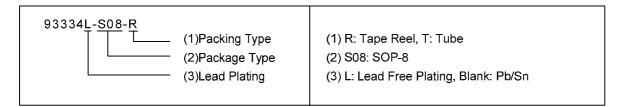
This device is designed to use the signal from a reluctor type ignition pickup to produce a well controlled output from a power darlington output transistor.

FEATURES

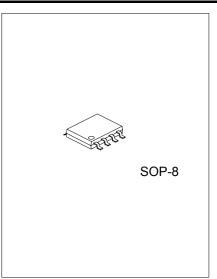
- * Very Low Peripheral Component Count
- * No Critical System Resistors
- * Wide Supply Voltage Operating Range (4.0V ~ 24V)
- * Overvoltage Shutdown (30V)
- * Dwell Automatically Adjusts to Produce Optimum Stored Energy without Waste
- * Externally Adjustable Peak Current
- * Transient Protected Inputs and Outputs

ORDERING INFORMATION

Orderir	ig Number	Deekege	Deaking	
Normal	Lead Free Plating	Package	Packing	
93334-S08-R	93334L-S08-R	SOP-8	Tape Reel	
93334-S08-T	93334L-S08-T	SOP-8	Tube	



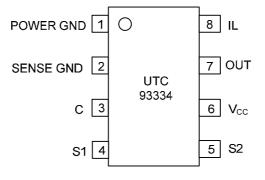
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*Pb-free plating product number: 93334L

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PIN CONFIGURATION



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BLOCK DIAGRAM AND TYPICAL APPLICATION

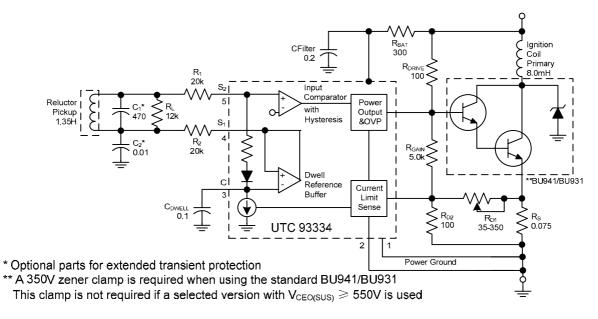


Figure 1

Component Values

Dieleure	Series resistance = $9000\pm10\%$ @ 25 inductonce = 1.25H @ 1.0kHz @ 15Vrms						
Pickup	Series resistance = 800Ω±10% @ 25 , inductance= 1.35H @ 1.0kHz @ 15Vrms						
Coil	Leakage L=0.6mH, primary R=0.43Ω±5% @ 25 , primary L=7.5mH ~ 8.5mH @ 5.0A						
R∟	Load resistor for pickup=12KΩ±20%						
R ₁ , R ₂	Input buffer resistors provide additional transient protection to the already clamped inputs=20k±20%						
C ₁ , C ₂	For reduction of high frequency noise and spark transients induced in pick-up and leads; optional and non-critical						
R _{BAT}	Provides load dump protection (but small enough to allow operation at V_{BAT} =4.0V) =300 Ω ±20%						
CFilter	Transient filter on V _{CC} , non-critical						
C _{DWELL}	Stores reference, circuit designed for 0.1µF±20%						
RGAIN	R_{GAIN}/R_{D1} sets the DC gain of the current regulator =5.0k±20%						
R _{D2}	R _{D2} /R _{D1} set up voltage feedback from R _S						
Rs	Sense resistor (P_DA_G in thick film techniques) =0.075 Ω ±30%						
R _{DRIVE}	Low enough to supply drive to the output Darlington, high enough to keep $V_{CE(SAT)}$ of the I _C below Darlington turn-on during load dump = 100 Ω ±20%, 5.0W						
R _{D1}	Starting with 35 Ω assures less than 5.5A, increasing as required to set 5.5A R _{D1} =(I _{O(PEAK)} R _S - V _{REF})/((V _{REF} /R _{D2})-(1.4/R _{GAIN}))-(≈100 Ω)						

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ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Dewer Supply Veltage Steedy State Transient 200me er lege	V	24	V
Power Supply Voltage-Steady State Transient 300ms or less	V _{cc}	90	v
Output Sink Ourrant Staady State Transient 200ma of leas		300	mA
Output Sink Current-Steady State Transient 300ms of less	I _{OUT} (SINK)	1.0	А
Power Dissipation		1.05	W
Derate above 25°C	PD	12	mW/°C
Junction Temperature	TJ	+125	°C
Operating Temperature	T _{OPR}	-40~+125	°C
Storage Temperature	T _{STG}	-40 ~ 150	°C

Note: 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.

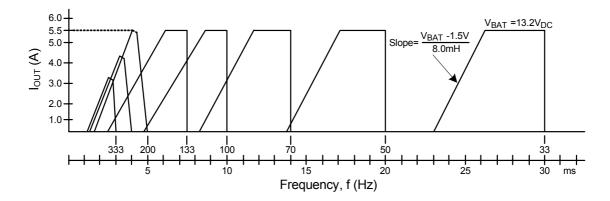
ELECTRICAL CHARACTERISTICS (V_{CC} = 13.2V_{DC}, circuit of Figure 3, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDI	TIONS	MIN	TYP	MAX	UNIT	
		V _{BAT} =4.0V _{DC}			3.5			
lateral Oversky Maltera, Die O		V _{BAT} =8.0V _{DC}			7.2			
Internal Supply Voltage, Pin 6	V _{CC}	$V_{BAT} = 12.0 V_{DC}$			10.4		V _{DC}	
		$V_{BAT} = 14.0 V_{DC}$			11.8			
		V_{BAT} =4.0 V_{DC}		3.0	3.4			
Ignition Coil Current Peak,	1	V _{BAT} =6.0V _{DC}		4.0	5.2			
Cranking RPM 2.0Hz ~ 27Hz	I _{PEAK}	$V_{BAT} = 8.0 V_{DC}$		4.6	5.3		A _{PEAK}	
		V_{BAT} =10.0 V_{DC}		5.1	5.4			
		F=33Hz		5.1	5.5			
		F=133Hz		5.1	5.5			
Ignition Coil Current Peak, Normal RPM	I _{PEAK}	F=200Hz		4.2	5.4		A _{PEAK}	
-		F=267Hz		3.4	4.4			
		F=333Hz		2.7	3.4			
		F=33Hz			7.5	14.0		
		F=133Hz			5.0	5.9		
Ignition Coil On-Time, Normal RPM Range	T _{ON}	F=200Hz			4.0	4.6		
		F=267Hz			3.0	3.6		
		F=333Hz			2.3	2.8		
Shutdown Voltage	V_{BAT}			25	30	35	V_{DC}	
		Turn-on			360			
Input Threshold (Static Test)	V _{THR}	Turn-off			90		mV _{DC}	
Input Threshold Hysteresis	V _{HYS}			75			mV_{DC}	
		Turn-on			1.8			
Input Threshold (Active Operation)	V _{THR}	Turn-off			1.5		V _{DC}	
Total Circuit Lag from ts (Figure 1) until Ignition Coil Current Falls to 10%					60	120	μS	
Ignition Coil Current Fall Time (90% ~ 10%)					4.0		μS	
		V _{BAT} =10V _{DC}			120			
Saturation Voltage IC Output (Pin 7)	V _{CE(SAT)}	V _{BAT} =30V _{DC}	34		280	1-	mV _{DC}	
(R _{DRIVE} = 100Ω)	. ,	V _{BAT} =50V _{DC}	發		540	打		
Current Limit Reference, Pin 8	V_{REF}		FΟ	<mark>R</mark> 120 I	<mark>\$</mark> 16 <mark>8</mark>	U 190	mV_{DC}	
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■ IGNITION COIL CURRENT VS. FREQUENCY / PERIOD



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