



# Single Coil Predriver

## Description

The CS464, Single Coil Predriver, provides interface control for the current through a primary ignition coil. Features include output current control, input nega-

tive edge filtering, stall timing and over-voltage shutdown. The IC is available as a bumped flip-chip or packaged in a 16 lead SO wide package.

## Features

- 40mA Driver
- Stall Timing
- Output Clamp
- Overvoltage Shutdown

## Absolute Maximum Ratings

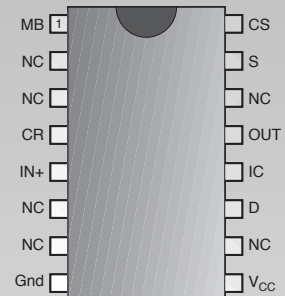
### Lead Temperature Soldering

Reflow (SMD styles only).....60 sec. max above 183°C, 230°C peak  
 Continuous Power Supply @  $V_{BAT}$ ,  $-40^{\circ}\text{C} < T_A < 55^{\circ}\text{C}$  .....5V to 24V  
 Continuous Power Supply @  $V_{BAT}$ ,  $55^{\circ}\text{C} < T_A < 140^{\circ}\text{C}$ .....6V to 18V  
 Frequency .....5 to 400Hz

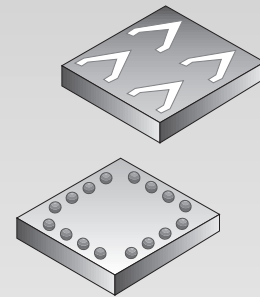
Over the extended ranges of temperature, voltage, and frequency not covered by normal operating conditions, low frequency and run related functions are allowed an additional 20% on specification limits. The degradation shall not be permanent, and upon returning to normal operating conditions shall be within the specification limits. Non-normal "Run Mode" operation is 45 hours cumulative life not exceeding a continuous run time of 10 minutes with a 10 minute "Off" time following each successive operating cycle.

## Package Options

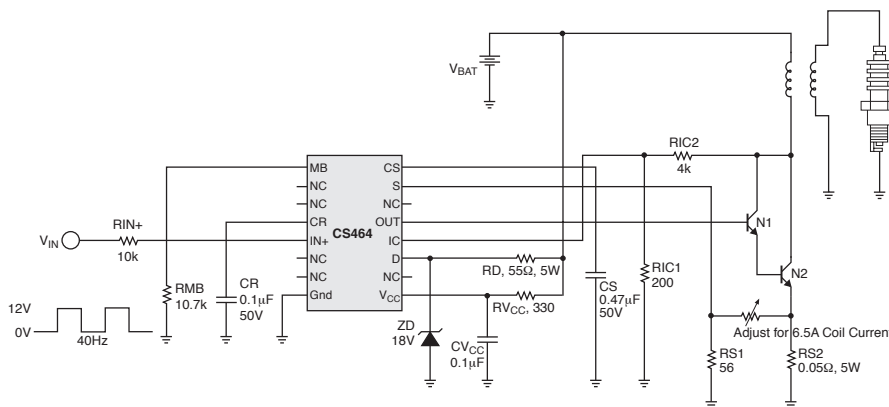
### 16 Lead SO Wide



### Flip-Chip



## Application Diagram



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Electrical Characteristics:  $-30^{\circ}\text{C} \leq T_A \leq 125^{\circ}\text{C}$ ;  $-30^{\circ}\text{C} < T_J < 125^{\circ}\text{C}$ ; All Parameters after  $V_{CC}$  Power-up  $> 100\text{ms}$ ;  
 $V_{BAT} = 14\text{V}$  unless otherwise specified.

PARAMETER	TEST CONDITIONS	16 Lead SO Wide			Flip Chip			UNIT
		MIN	TYP	MAX	MIN	TYP	MAX	
<b>■ Input, Current, Delay</b>								
Positive Threshold	$V_{BAT} = 6\text{V}$		56.2	66		56.2	66	% of $V_{BAT}$
	$V_{BAT} = 16\text{V}$		56.2	66		56.2	66	% of $V_{BAT}$
Hysteresis	$V_{BAT} = 6\text{V}$	8	20.2		9	20.2		% of $V_{BAT}$
	$V_{BAT} = 16\text{V}$	8	20.2		9	20.2		% of $V_{BAT}$
$I_{CC}$	$V_{BAT} = 6\text{V}$	1	2.75	4.5	1	2.75	4.5	mA
	$V_{BAT} = 16\text{V}$	5	12	19	5	12	19	mA
Input Impedance	@10 $\mu\text{A}$	70	170	400				k $\Omega$
	@0.1mA				70	170	400	k $\Omega$
IC Process Delay				15			15	$\mu\text{s}$
<b>■ Output</b>								
Output Current	$V_{BAT} = 6\text{V}$ , 2.1V output load	40	52.5	65	40	52.5	65	mA
Output SOA Current	$V_{BAT} = 22\text{V}$ (Note 1)	40	52.5	65	40	52.5	65	mA
Output Leakage Current	$V_{BAT} = 25\text{V}$ (Note 1)		0	100		0	100	$\mu\text{A}$
Output Clamp Voltage	@ 10mA	13.7	15.35	17	13.7	15.35	17	V
Output Clamp Impedance	@ 10mA	10	42.5	80	10	42.5	80	$\Omega$
<b>■ Regulation Voltage</b>								
VS Regulation Voltage	$V_{BAT} = 7.8\text{V}$	165	200	235	165	200	235	mV
VS Supply Rejection	$V_{BAT} = 6\text{V} \sim 22\text{V}$ (Note 1)	0	0	14	0	0	14	%
	$V_{BAT} = 7.8\text{V} \sim 22\text{V}$ (Note 1)	0	0	13	0	0	13	%
<b>■ Stall &amp; Protection</b>								
Stall Shutdown VS	$V_{BAT} = 6\text{V}$	-5	0	5	-1	0	1	mV
Stall Shutdown Frequency	$V_{BAT} = 14\text{V}$	.4			.4			Hz
	$V_{BAT} = 5.5\text{V}$		1.4	1.47		1.4	1.47	Hz
Stall Shutdown Time	$V_{BAT} = 6\text{V}$	19	28	37	19	28	37	ms
Stall to Spark Output Delay		4.6	6.7	9.5	4.6	6.7	9.5	ms
I/O Signal Relationship	@ 80% Input	79.0	80.5	82.0	79.0	80.0	81.0	%
	@ 50% Input	49.0	50.5	52.0	49.0	50.0	51.0	%
	@ 30% Input	29.0	30.5	32.0	29.0	30.0	31.0	%
Battery Interrupt Time		25		750	25		750	ms
Battery Interrupt Recovery Time	@ 200Hz			800			800	ms
High Voltage Shutdown		25	28	32	25	28	31	V
High Frequency Cut off		1	2.5	5	1	2.5	5	kHz
Negative Threshold	$V_{BAT} = 6\text{V}$	28	36		30	36		% of $V_{BAT}$
	$V_{BAT} = 16\text{V}$	28	36		30	36		% of $V_{BAT}$

Note 1: Voltage extremes are for testing purposes only. Part in continuous operation should conform to absolute max table.



Package Specification

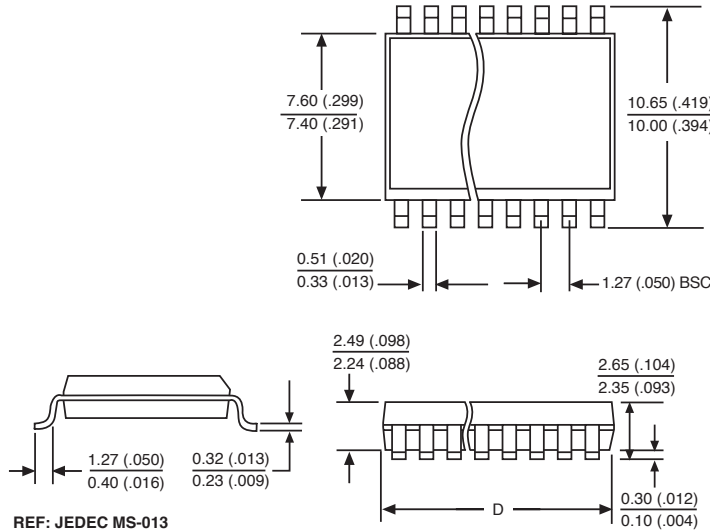
PACKAGE DIMENSIONS IN mm (INCHES)

Lead Count	D			
	Metric		English	
	Max	Min	Max	Min
16 Lead SO Wide	10.50	10.10	.413	.398

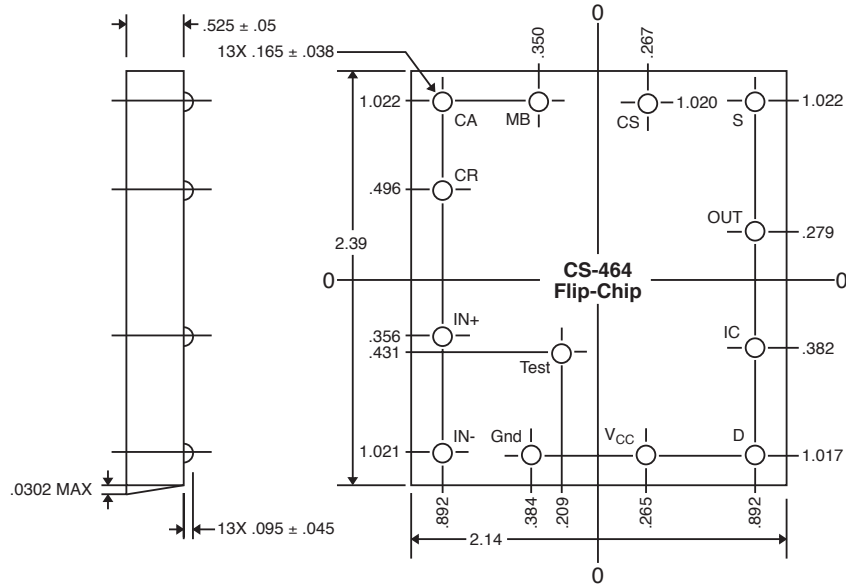
PACKAGE THERMAL DATA

Thermal Data		16 Lead SO Wide	
R <sub>θJC</sub>	typ	23	°C/W
R <sub>θJA</sub>	typ	105	°C/W

Surface Mount Wide Body (DW); 300 mil wide



Flip-Chip



Bump Locations, Bump Side Up

Ordering Information

Part Number	Description
CS464	Flip-Chip
CS464YDW16	16 Lead SO Wide
CS464YDWR16	16 Lead SO Wide (tape & reel)

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