AUTOMOTIVE GRADE

CS464

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 negative 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.

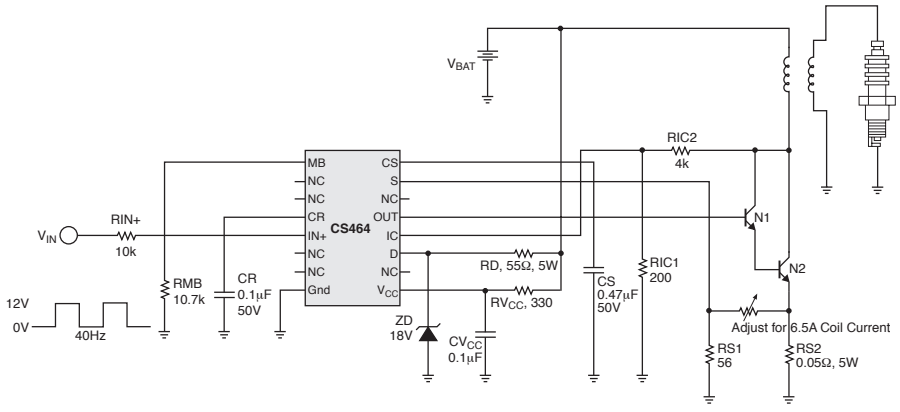
Features

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

Absolute Maximum Ratings

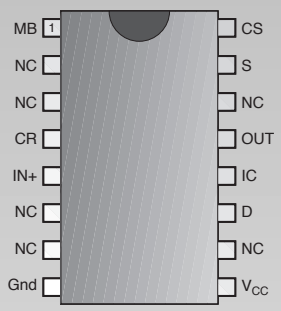
Lead Temperature Soldering
Reflow (SMD styles only).....60 sec. max above 183°C, 230°C peak
Continuous Power Supply @ V_{BAT}, -40°C < T_A < 55°C .....5V to 24V
Continuous Power Supply @ V_{BAT}, 55°C < T_A < 140°C.....6V to 18V
Frequency .....5 to 400Hz
Over the extended ranges of temperature, voltage, 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.

Application Diagram

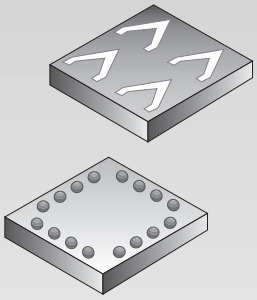


Package Options

16 Lead SO Wide



Flip-Chip



Cherry Semiconductor

Cherry Semiconductor Corporation
2000 South County Trail, East Greenwich, RI 02818
Tel: (401)885-3600 Fax: (401)885-5786
Email: info@cherry-semi.com
Web Site: www.cherry-semi.com

Electrical Characteristics: -30°C ≤ T_A ≤ 125°C; -30°C < T_J < 125°C; All Parameters after V_{CC} Power-up > 100ms; V_{BAT} = 14V unless otherwise specified.

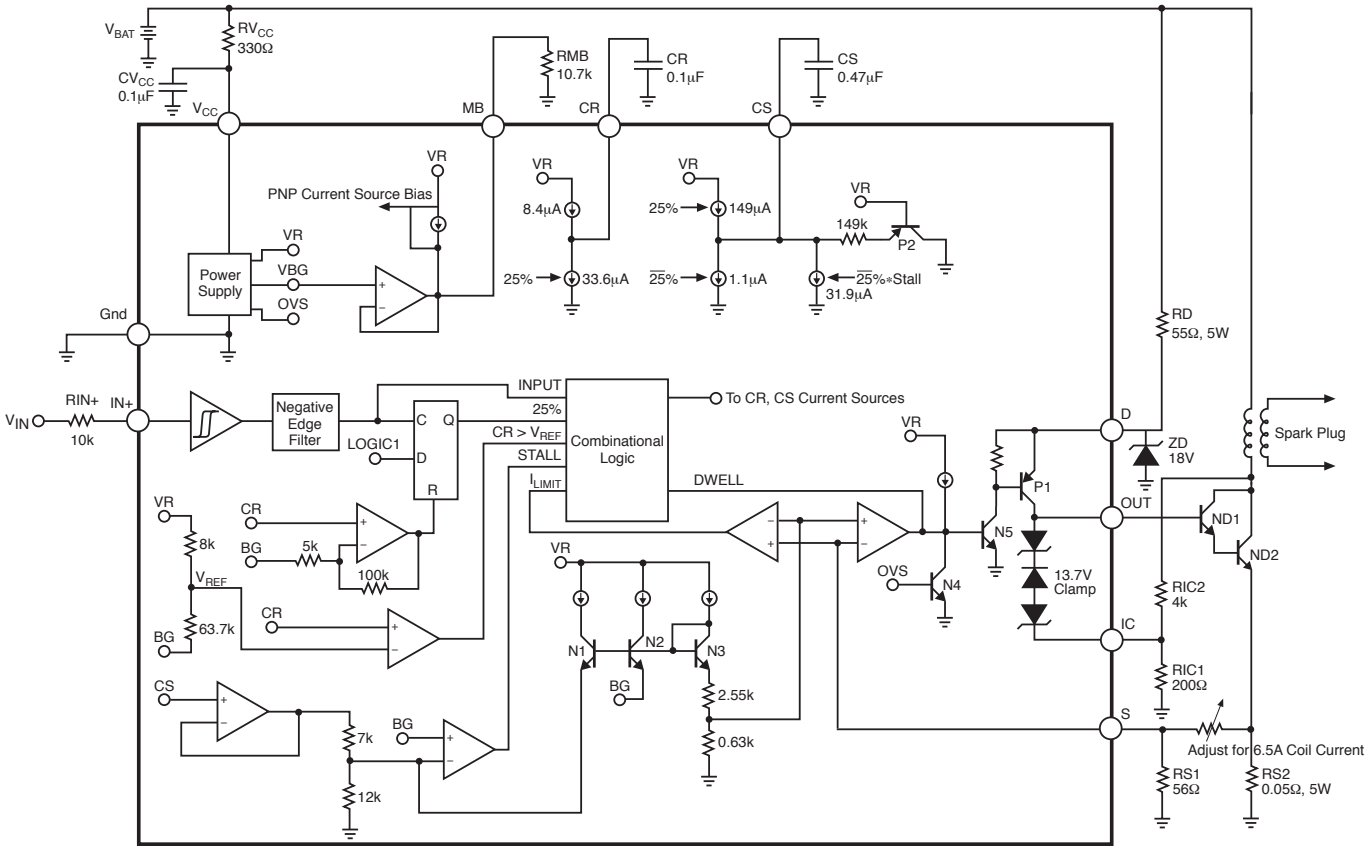
PARAMETER	TEST CONDITIONS	16 Lead SO Wide			Flip Chip			UNIT
		MIN	TYP	MAX	MIN	TYP	MAX	
■ Input, Current, Delay								
Positive Threshold	V_{BAT} = 6V		56.2	66		56.2	66	% of V_{BAT}
	V_{BAT} = 16V		56.2	66		56.2	66	% of V_{BAT}
Hysteresis	V_{BAT} = 6V	8	20.2		9	20.2		% of V_{BAT}
	V_{BAT} = 16V	8	20.2		9	20.2		% of V_{BAT}
I_{CC}	V_{BAT} = 6V	1	2.75	4.5	1	2.75	4.5	mA
	V_{BAT} = 16V	5	12	19	5	12	19	mA
Input Impedance	@10μA	70	170	400				kΩ
	@0.1mA				70	170	400	kΩ
IC Process Delay				15			15	μs
■ Output								
Output Current	V_{BAT} = 6V, 2.1V output load	40	52.5	65	40	52.5	65	mA
Output SOA Current	V_{BAT} = 22V (Note 1)	40	52.5	65	40	52.5	65	mA
Output Leakage Current	V_{BAT} = 25V (Note 1)		0	100		0	100	μA
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	Ω
■ Regulation Voltage								
VS Regulation Voltage	V_{BAT} = 7.8V	165	200	235	165	200	235	mV
VS Supply Rejection	V_{BAT} = 6V ~ 22V (Note 1)	0	0	14	0	0	14	%
	V_{BAT} = 7.8V ~ 22V (Note 1)	0	0	13	0	0	13	%
■ Stall & Protection								
Stall Shutdown VS	V_{BAT} = 6V	-5	0	5	-1	0	1	mV
Stall Shutdown Frequency	V_{BAT} = 14V	.4			.4			Hz
	V_{BAT} = 5.5V		1.4	1.47		1.4	1.47	Hz
Stall Shutdown Time	V_{BAT} = 6V	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} = 6V	28	36		30	36		% of V_{BAT}
	V_{BAT} = 16V	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 Pin Description

PACKAGE PIN #		PIN SYMBOL	FUNCTION
Flip-Chip (Bump #)	16 Lead SO Wide		
1	13	OUT	Output control of darlington driver.
2	15	S	Current sense feedback input.
3	16	CS	Stall timer capacitor.
4	1	MB	Master current bias resistor.
5	2,3,6,7,10,14	NC	No connection.
6	4	CR	Reset capacitor.
7	5	IN+	Input control.
8		IN-	Negative input control (grounded in 16 Lead SO package).
9	8	Gnd	Ground.
10	9	V_{CC}	Input supply voltage.
11	11	D	Darlington drive supply input.
12	12	IC	Input collector voltage sense.
13		TEST	Test bump, grounded.

Block Diagram



Package Specification

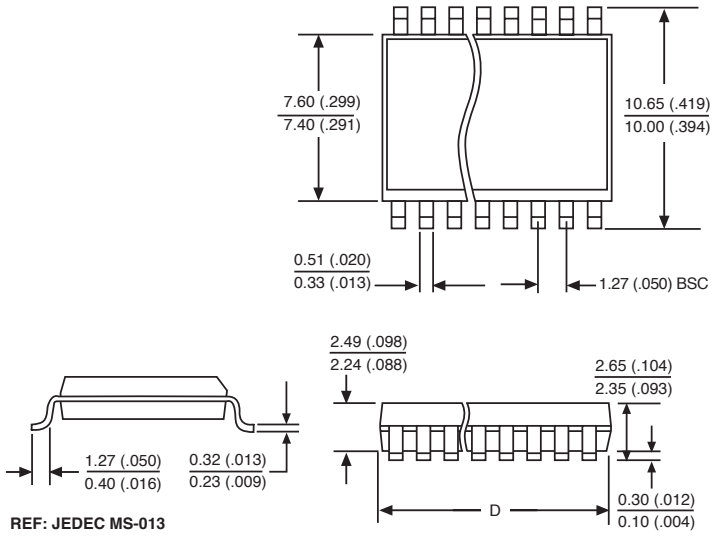
PACKAGE DIMENSIONS IN mm (INCHES)

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

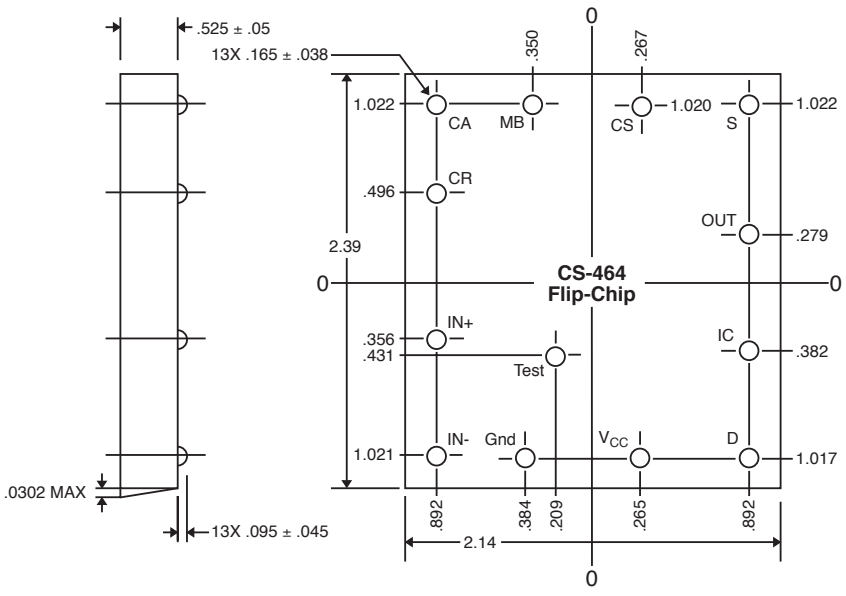
PACKAGE THERMAL DATA

Thermal Data		**16 Lead SO Wide**	
$R_{\Theta JC}$	typ	23	°C/W
$R_{\Theta JA}$	typ	105	°C/W

Surface Mount Wide Body (DW); 300 mil wide



Flip-Chip



Note: All dimensions in millimeters.

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)*

Cherry Semiconductor Corporation reserves the right to make changes to the specifications without notice. Please contact Cherry Semiconductor Corporation for the latest available information.