

Alternator Voltage Regulator Darlington Driver

CS3341, CS3351, CS387

The CS3341/3351/387 integral alternator regulator integrated circuit provides the voltage regulation for automotive, 3 phase alternators.

It drives an external power Darlington for control of the alternator field current. In the event of a charge fault, a lamp output pin is provided to drive an external darlington transistor capable of switching on a fault indicator lamp. An overvoltage or no STATOR signal condition activates the lamp output.

The CS3341 and CS3351 are available in SOIC 14 packages. The

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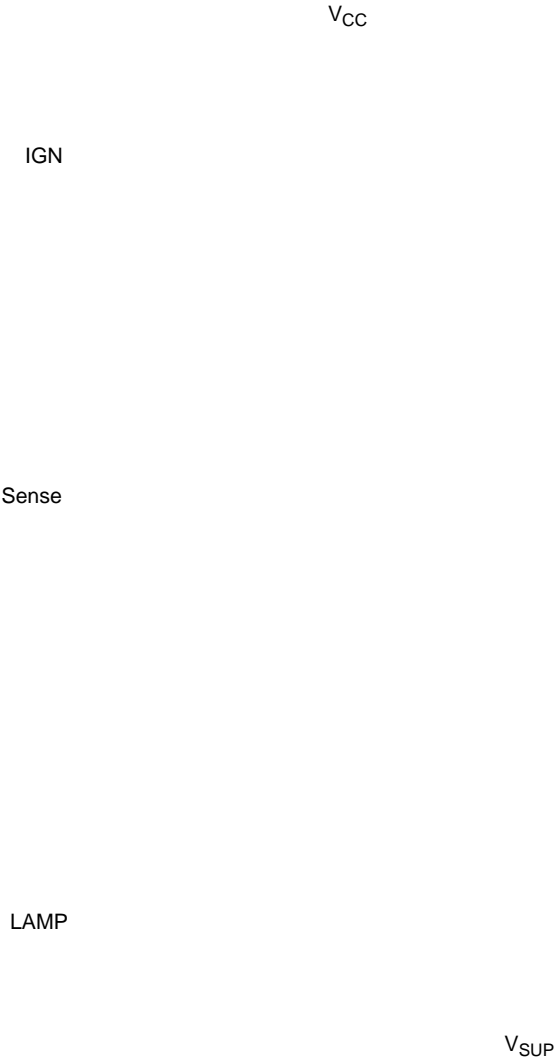


Figure 1. Block Diagram

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ELECTRICAL CHARACTERISTICS ($-40^{\circ}\text{C} < T_A < 125^{\circ}\text{C}$, $-40^{\circ}\text{C} < T_J < 150^{\circ}\text{C}$, $9.0\text{ V} \leq V_{CC} \leq$

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PACKAGE PIN DESCRIPTION

PACKAGE PIN #		PIN SYMBOL	FUNCTION
SOIC-14	Flip Chip		
1	1	Driver	Output driver for external power switch-Darlington
2	2	GND	Ground
3, 6, 7, 9, 13	3	NC	No Connection
4	4	OSC	Timing capacitor for oscillator
5	5	Lamp	Base driver for lamp driver indicates no stator signal or overvoltage condition
8	6	IGN	Switched ignition powerup
10	7	Stator	Stator signal input for stator timer (CS3351 also powerup)
11	8	Sense	Battery sense voltage regulator comparator input and protection
12	9	V _{CC}	Supply for IC
14	10	SC	Short circuit sensing

ORDERING INFORMATION

Device	Package	Shipping†
CS3341YD14	SOIC-14	55 Units/Rail
CS3341YD14G	SOIC-14 (Pb-Free)	55 Units/Rail
CS3341YDR14	SOIC-14	2500 Tape & Reel
CS3341YDR14G	SOIC-14 (Pb-Free)	2500 Tape & Reel
CS3351YD14	SOIC-14	55 Units/Rail
CS3351YD14G	SOIC-14 (Pb-Free)	55 Units/Rail
CS3351YDR14	SOIC-14	2500 Tape & Reel
CS3351YDR14G	SOIC-14 (Pb-Free)	2500 Tape & Reel
CS387H	Flip Chip	Contact Sales

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

TYPICAL PERFORMANCE CHARACTERISTICS

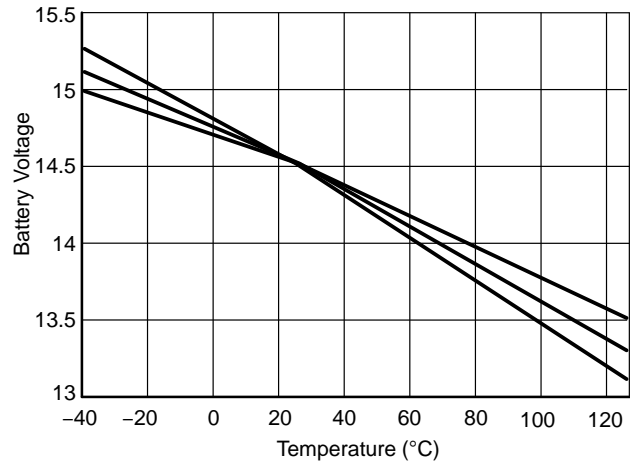


Figure 2. Battery Voltage vs. Temperature (°C)
Over Process Variation

REGULATION WAVEFORMS

The CS3341/3351/387 utilizes proportion control to maintain regulation. Waveforms depicting operation are shown in Figures 4, 5 and 6, where $V_{BAT/N}$ is the divided down voltage present on the Sense pin using R1 and R2 (Figure 7). A sawtooth waveform is generated internally. The amplitude of this waveform is listed in the electric parameter section as proportion control. The oscillator voltage is summed with $V_{BAT/N}$, and compared with the internal voltage regulator (V_{REG}) in the regulation

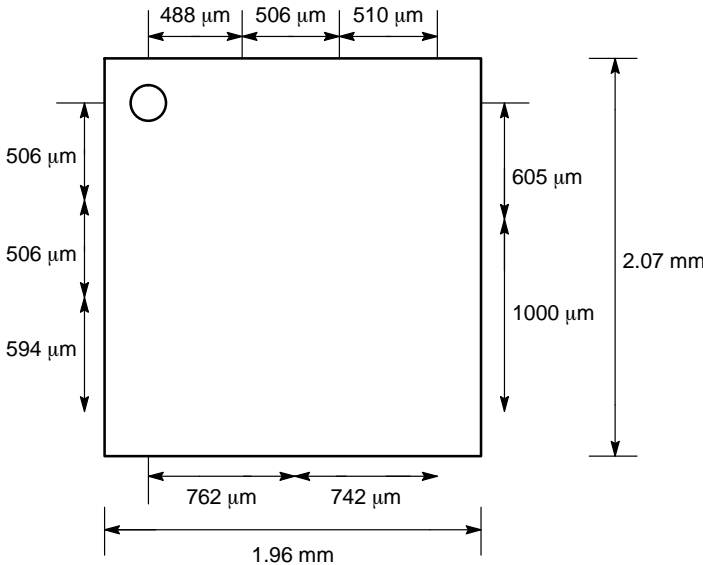
comparator which controls the field through the output “Device Driver.”

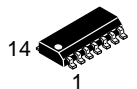
Figure 4 shows typical steady state operation. A 50% duty cycle is maintained.

Figure 5 shows the effect of a drop in voltage on ($V_{BAT/N} + V_{OSC}$). Notice the duty cycle increase to the field drive.

Figure 6 shows the effect of an increase in voltage (above the regulation voltage) on ($V_{BAT/N}$

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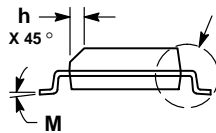
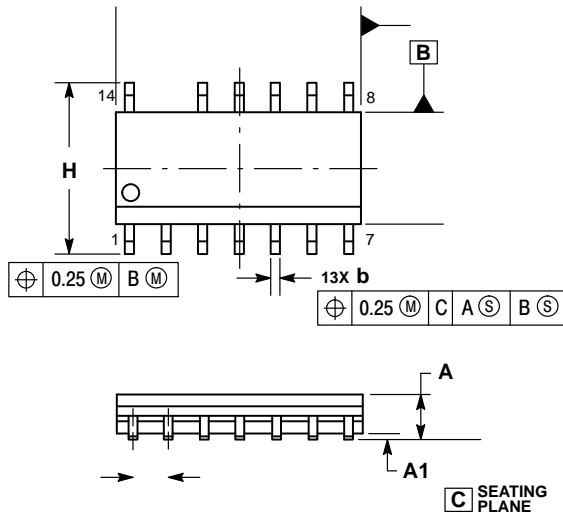




SCALE 1:1

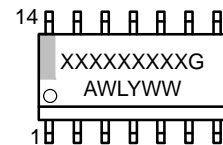
SOIC 14 NB
CASE 751A-03
ISSUE L

DATE 03 FEB 2016



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
 2. CONTROLLING DIMENSION: MILLIMETERS.
 3. DIMENSION b DOES NOT INCLUDE DAMBAR PROTRUSION. ALLOWABLE PROTRUSION SHALL BE 0.13 TOTAL IN EXCESS OF AT MAXIMUM MATERIAL CONDITION.
 4. DIMENSIONS D AND E DO NOT INCLUDE MOLD PROTRUSIONS.
 5. MAXIMUM MOLD PROTRUSION 0.15 PER SIDE.

GENERIC MARKING DIAGRAM*



- XXXXXX = Specific Device Code
- A = Assembly Location
- WL = Wafer Lot
- Y = Year
- WW = Work Week
- G = Pb-Free Package

STYLES ON PAGE 2

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STYLE 7:
PIN 1. ANODE/CATHODE
2. COMMON ANODE
3. COMMON CATHODE
4. ANODE/CATHODE
5. ANODE/CATHODE

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