



## Electrical Characteristics (Note 1)

Electrical Characteristics at  $I_{LOAD} = 0 \text{ mA}$  and  $T_J = +25^\circ\text{C}$  unless otherwise specified.

| PARAMETER                                 | Device             | Test Conditions   | Min | Typ   | Max   | Units |     |
|---|--------------------|---|-----|-------|-------|-------|-----|
| Reference Voltage                         | CS52015            | $V_{CONTROL} = 2.75\text{V}, V_{POWER} = 2\text{V}, I_{LOAD} = 10\text{mA}$   |     | 1.238 | 1.250 | 1.262 | V   |
|   |                    | $V_{CONTROL} = 2.7\text{V to } 12\text{V},$<br>$V_{POWER} = 3.3\text{V to } 5.5\text{V}, I_{LOAD} = 10\text{mA to } 1.5\text{A}$                            | *   | 1.230 | 1.250 | 1.270 |     |
| Output Voltage                            | All fixed Versions | $V_{CONTROL} = V_{OUT} + 1.5\text{V}, V_{POWER} = V_{OUT} + 0.5\text{V},$<br>Variation from nominal $V_{OUT}$   |     | -1    |       | +1    | %   |
|   |                    | $V_{CONTROL} = V_{OUT} + 1.5\text{V}, V_{POWER} = V_{OUT} + 0.8\text{V},$<br>$I_{LOAD} = 0 \text{ mA to } 1.5\text{A},$<br>Variation from nominal $V_{OUT}$ | *   | -1.6  |       | +1.6  | %   |
| Line Regulation                           | All                | $I_{LOAD} = 10 \text{ mA}, (1.5\text{V} + V_{OUT}) \leq V_{CONTROL} \leq 12\text{V},$<br>$0.8\text{V} \leq (V_{POWER} - V_{OUT}) \leq 5.5\text{V}$          | *   |       | 0.04  | 0.20  | %   |
| Load Regulation                           | All                | $V_{CONTROL} = V_{OUT} + 2.5\text{V}, V_{POWER} = V_{OUT} + 0.8\text{V},$<br>$I_{LOAD} = 10 \text{ mA to } 1.5\text{A},$                                    | *   |       | 0.08  | 0.40  |     |
| Minimum Load Current (Note 2)             | CS52015            | $V_{CONTROL} = 5\text{V}, V_{POWER} = 3.3\text{V}, V_{ADJ} = 0\text{V}$   | *   |       | 1.7   | 5     | mA  |
| Control Pin Current (Note 3)              | All                | $V_{CONTROL} = V_{OUT} + 2.5\text{V}, V_{POWER} = V_{OUT} + 0.8\text{V},$<br>$I_{LOAD} = 10 \text{ mA to } 1.5\text{A},$                                    | *   |       |       | 30    | mA  |
| Ground Pin Current                        | All fixed Versions | $V_{CONTROL} = V_{OUT} + 2.5\text{V}, V_{POWER} = V_{OUT} + 0.8\text{V},$<br>$I_{LOAD} = 10 \text{ mA to } 1.5\text{A},$                                    | *   |       | 6     | 10    | mA  |
| Adjust Pin Current                        | CS52015            | $V_{CONTROL} = V_{OUT} + 2.75\text{V}, V_{POWER} = 2.05\text{V},$<br>$I_{LOAD} = 10 \text{ mA}$   | *   |       | 50    | 120   | mA  |
| Current Limit                             | All                | $(V_{IN} - V_{OUT}) = 3\text{V}$  | *   | 1.5   | 2.3   |       | A   |
| Ripple Rejection                          | All                | $V_{CONTROL} = V_{POWER} = V_{OUT} + 2.5\text{V}, V_{RIPPLE} = 1\text{V}_{P-P}$<br>$I_{LOAD} = 750 \text{ mA}$  |     | 60    | 80    |       | dB  |
| Thermal Regulation                        | CS52015            | $T_A = 25^\circ\text{C}, 30 \text{ ms pulse}$   |     |       | 0.003 |       | %/W |
| Dropout Voltage                           |                    |   |     |       |       |       |     |
| Control Input ( $V_{CONTROL} - V_{OUT}$ ) | All                | $V_{POWER} = V_{OUT} + 0.8\text{V}, I_{LOAD} = 10\text{mA}$   |     |       | 1.00  | 1.15  | V   |
|   |                    | $V_{POWER} = V_{OUT} + 0.8\text{V}, I_{LOAD} = 1.5\text{mA}$  | *   |       | 1.15  | 1.30  |     |
| Power Input ( $V_{POWER} - V_{OUT}$ )     | All                | $V_{CONTROL} = V_{OUT} + 2.5\text{V}, I_{LOAD} = 1.5\text{A}$   | *   |       | 0.55  | 0.70  |     |

The \* denotes the specifications which apply over the full temperature range.

Note 1: Unless otherwise specified  $V_{out} = V_{sense}$ . For CS52015 (adj)  $V_{adj} = 0\text{V}$

Note 2: For the adjustable device the minimum load current is the minimum current required to maintain regulation. Normally the current in the resistor divider used to set the output voltage is selected to meet the minimum load current requirement.

Note 3: The control pin current is the drive current required for the output transistor. This current will track output current with a ratio of about 1:100

Note 4: The dropout voltage for the CS52015 is caused by either minimum control voltage or minimum power voltage. The specifications represent the minimum input /output voltage required to maintain 1% regulation.







