

### GENERAL DESCRIPTION

The CM8300 is the Multiple-LED Current Balancer. It can be used for LED application. By implementing the Daisy Configuration, users can design a single network that can drive many parallel LEDs, resulting in dramatic total system cost reduction.

The CM8300 gets its power through the LED and therefore does NOT require an additional power supply. The maximum DC voltage is 5 VDC. Each pin can handle up to 10mA.

The CM8300 family comes with the industry standard PSOP-8, PTSSOP package.

### FEATURES

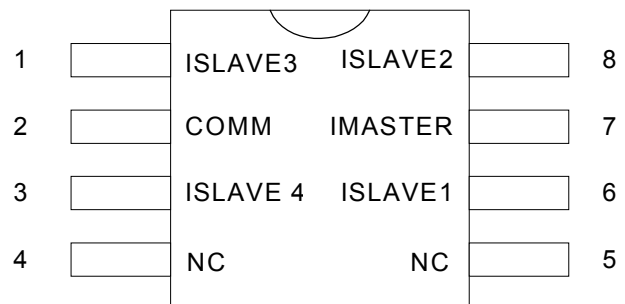
- ◆ Ideal for 2 to unlimited-LED design
- ◆ Current Sense for photo-couple
- ◆ Self powered without additional power supply
- ◆ 8-Pin PSOP and PTSSOP Package
- ◆ Absolute Maximum Voltage is 5VDC
- ◆ +/- 1% Current Tracking Accuracy

### APPLICATIONS

- ◆ Multiple LED in LCD Backlight

### PIN CONFIGURATION

PSOP-8 (PS08)/PTSSOP-8 (PT08)  
Top View



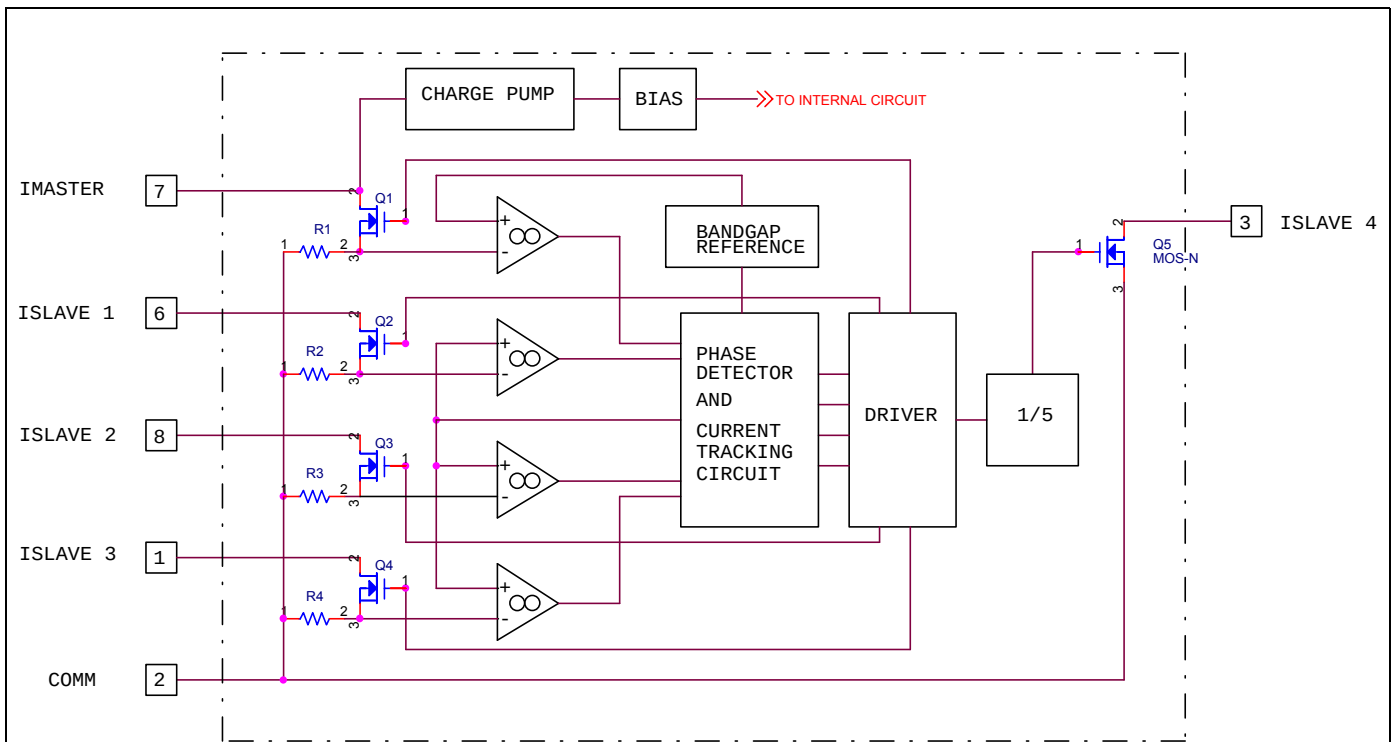
### PIN DESCRIPTION

| Pin No. | Symbol  | Description                                                                                           | Operating Rating |      |      |      |
|---------|---------|-------------------------------------------------------------------------------------------------------|------------------|------|------|------|
|         |         |                                                                                                       | Min.             | Typ. | Max. | Unit |
| 1       | ISLAVE3 | Current output pin. Connect to one of the slave lamp and the current will follow the IMASTER          |                  | 30   | 50   | mA   |
| 2       | COMM    | Common pin for lamp network                                                                           |                  | 30   | 50   | mA   |
| 3       | ISLAVE4 | Current output pin. Connect to one of the slave lamp and the current will follow the IMASTER          |                  | 30   | 50   | mA   |
| 4       | NC      |                                                                                                       |                  |      |      |      |
| 5       | NC      |                                                                                                       |                  |      |      |      |
| 6       | ISLAVE1 | Current output pin. Connect to one of the slave lamp and the current will follow the IMASTER          |                  | 30   | 50   | mA   |
| 7       | IMASTER | Current output pin. Connect to master lamp.<br>Connect a serial resistor to ensure the lamp is master |                  | 30   | 50   | mA   |
| 8       | ISLAVE2 | Current output pin. Connect to one of the slave lamp and the current will follow the IMASTER          |                  | 30   | 50   | mA   |

### ORDERING INFORMATION

| Part Number | Temperature Range | Package         |
|-------------|-------------------|-----------------|
| CM8300IS    | -40°C~+85°C       | PSOP-8 (PS08)   |
| CM8300IT    | -40°C~+85°C       | PTSSOP-8 (PT08) |

### BLOCK DIAGRAM



## ABSOLUTE MAXIMUM RATINGS

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

|                                                    |      |                                            |                  |
|----------------------------------------------------|------|--------------------------------------------|------------------|
| Current on IMASTER, ISLAVE1, ISLAVE2, ISLAVE3 .... | 50mA | Junction Temperature .....                 | +150°C           |
| Voltage on IMASTER, ISLAVE1, ISLAVE2, ISLAVE3 .... | 5V   | Storage Temperature .....                  | -65 °C to +150°C |
| Current on ISENSE .....                            | 30mA | Lead Temperature (Soldering 10 Sec.) ..... | +260°C           |
|                                                    |      | Thermal Resistance ( $\theta_{JA}$ ) ..... | +150°C/W         |

## OPERATING CONDITIONS

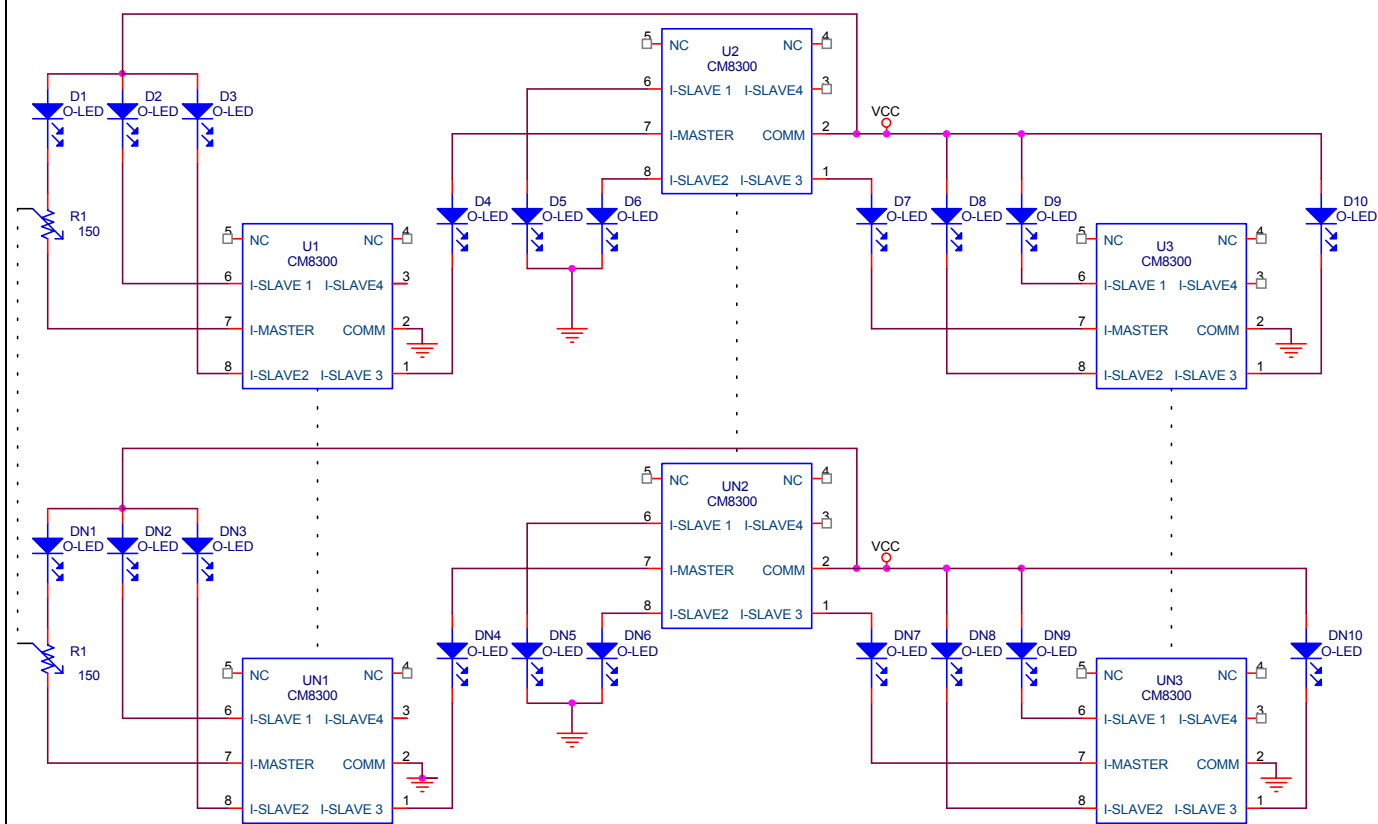
Temperature Range ..... -40°C to +85°C

## ELECTRICAL CHARACTERISTICS (Unless otherwise stated, these specifications apply $T_A=25^{\circ}\text{C}$ )

maximum ratings are stress ratings only and functional device operation is not implied.

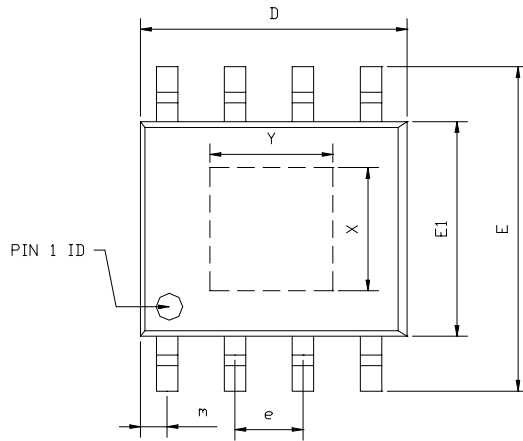
| Symbol                                                                | Parameter | Test Conditions | CM8300 |      |       | Unit |
|-----------------------------------------------------------------------|-----------|-----------------|--------|------|-------|------|
|                                                                       |           |                 | Min.   | Typ. | Max.  |      |
| Current Tracking Test, ISLAVE1, ISLAVE2, ISLAVE3 = 5V and IMASTER=1mA |           |                 |        |      |       |      |
|                                                                       | ISLAVE1   |                 | 29.98  | 30   | 30.02 | mA   |
|                                                                       | ISLAVE2   |                 | 29.98  | 30   | 30.02 | mA   |
|                                                                       | ISLAVE3   |                 | 29.98  | 30   | 30.02 | mA   |
|                                                                       | ISLAVE4   |                 | 29.98  | 30   | 30.02 | mA   |

## TYPICAL APPLICATION SCHEMATIC FOR ORGANIC-LED CURRENT CONTROL



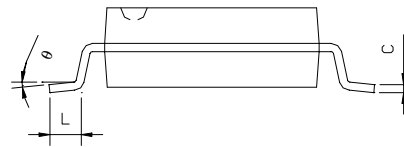
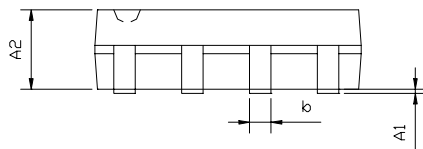
### PACKAGE DIMENSION

#### 8-PIN PSOP (PS08)

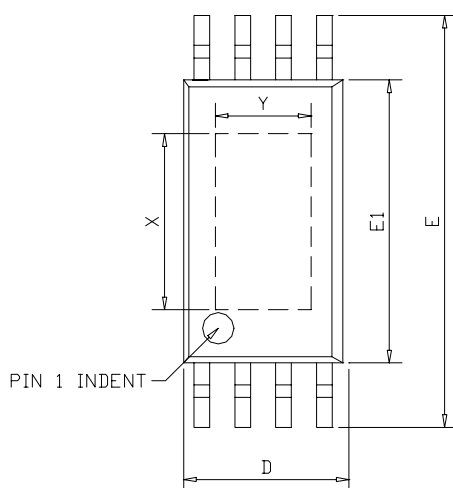


| SYMBOLS | DIMENSIONS IN MILLIMETERS |      |      | DIMENSIONS IN INCHES |       |       |
|---------|---------------------------|------|------|----------------------|-------|-------|
|         | MIN                       | NOM  | MAX  | MIN                  | NOM   | MAX   |
| A1      | 0.10                      | ---  | 0.25 | 0.004                | ---   | 0.010 |
| A2      | 1.40                      | ---  | 1.55 | 0.055                | ---   | 0.061 |
| b       | 0.30                      | ---  | 0.51 | 0.012                | ---   | 0.020 |
| C       | 0.15                      | ---  | 0.26 | 0.006                | ---   | 0.010 |
| D       | 4.60                      | ---  | 5.06 | 0.169                | ---   | 0.199 |
| E       | 5.79                      | ---  | 6.20 | 0.228                | ---   | 0.244 |
| E1      | 3.76                      | ---  | 4.01 | 0.148                | ---   | 0.158 |
| e       | ---                       | 1.27 | ---  | ---                  | 0.050 | ---   |
| L       | 0.38                      | ---  | 0.69 | 0.015                | ---   | 0.035 |
| m       | 0.43                      | ---  | 0.69 | 0.017                | ---   | 0.027 |
| θ       | 0°                        | ---  | 8°   | 0°                   | ---   | 8°    |

EXPOSED PAD DIMENSION : (mm)  
PAD SIZE: X=2.3 ; Y=2.3

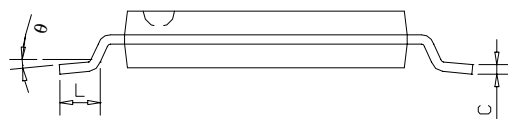
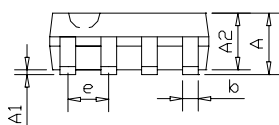


#### 8-PIN PTSSOP (PT08)



| SYMBOLS | DIMENSIONS IN MILLIMETERS |       |      | DIMENSIONS IN INCHES |       |       |
|---------|---------------------------|-------|------|----------------------|-------|-------|
|         | MIN                       | NOM   | MAX  | MIN                  | NOM   | MAX   |
| A1      | 0.05                      | ---   | 0.15 | 0.002                | ---   | 0.006 |
| A2      | ---                       | 1.00  | 1.05 | ---                  | 0.039 | 0.041 |
| b       | 0.25                      | ---   | 0.30 | 0.010                | ---   | 0.012 |
| C       | ---                       | 0.127 | ---  | ---                  | 0.005 | ---   |
| D       | 2.90                      | 3.05  | 3.10 | 0.114                | 0.120 | 0.122 |
| E       | 6.20                      | 6.40  | 6.60 | 0.244                | 0.252 | 0.260 |
| E1      | 4.30                      | ---   | 4.50 | 0.169                | ---   | 0.177 |
| e       | ---                       | 0.65  | ---  | ---                  | 0.026 | ---   |
| L       | 0.50                      | ---   | 0.70 | 0.020                | ---   | 0.028 |
| θ       | 0°                        | ---   | 8°   | 0°                   | ---   | 8°    |

EXPOSED PAD DIMENSION : (mm)  
PAD SIZE: X=2.8; Y=1.524



### **IMPORTANT NOTICE**

Champion Microelectronic Corporation (CMC) reserves the right to make changes to its products or to discontinue any integrated circuit product or service without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is current.

A few applications using integrated circuit products may involve potential risks of death, personal injury, or severe property or environmental damage. CMC integrated circuit products are not designed, intended, authorized, or warranted to be suitable for use in life-support applications, devices or systems or other critical applications. Use of CMC products in such applications is understood to be fully at the risk of the customer. In order to minimize risks associated with the customer's applications, the customer should provide adequate design and operating safeguards.

#### **HsinChu Headquarter**

5F, No. 11, Park Avenue II,  
Science-Based Industrial Park,  
HsinChu City, Taiwan

TEL: +886-3-567 9979

FAX: +886-3-567 9909

<http://www.champion-micro.com>

#### **Sales & Marketing**

11F, No. 306-3, Sec. 1, Ta Tung Rd.,  
Hsichih, Taipei Hsien 221  
Taiwan, R.O.C.

TEL: +886-2-8692 1591

FAX: +886-2-8692 1596