

GENERAL DESCRIPTION

The CM2830/CM2830A family is a positive voltage linear regulator developed utilizing CMOS technology featured low quiescent current (30 μ A typ.), low dropout voltage, and high output voltage accuracy. Built-in low on-resistance transistor provides low dropout voltage and large output current. A 2.2 μ F or greater can be used as an output capacitor.

The SOT-23-3, SOT-23-5, and TO-92 miniaturized package and the SOT-89 package are recommended for configuring portable devices and large current application, respectively.

These robust devices are designed to prevent device failure under the worst operation condition with both Thermal Shutdown and Current Fold-back.

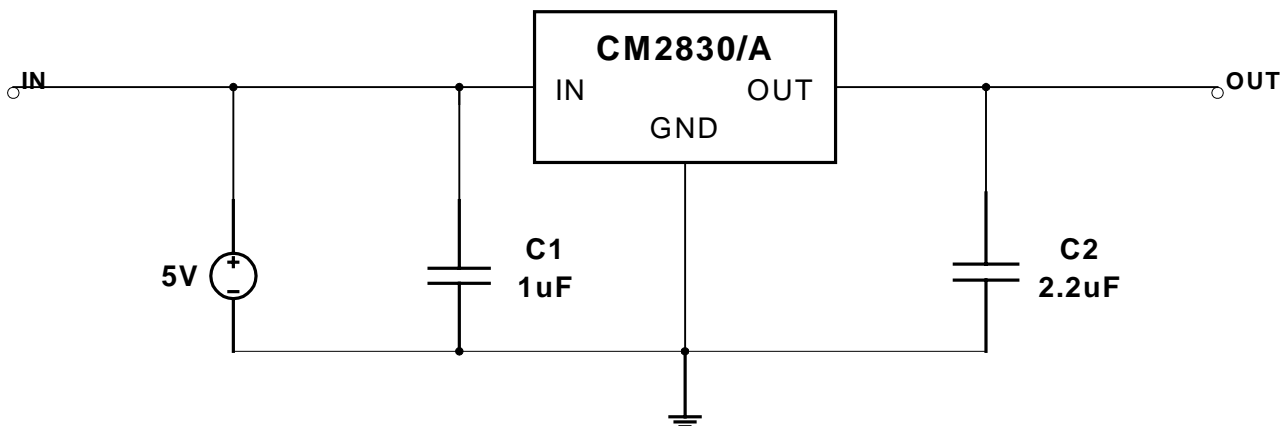
FEATURES

- ◆ Very Low Dropout Voltage
- ◆ Low Current Consumption: Typ. 30 μ A, Max. 35 μ A
- ◆ Output Voltage: 1.5V, 1.8V, 1.9V, 2.0V, 2.2V, 2.5V, 2.7V, 2.8V, 2.9V, 3.0V, 3.3V, 3.5V, 3.6V, and 3.8V
- ◆ High Accuracy Output Voltage: +/- 1.5%
- ◆ Guaranteed 300mA Output
- ◆ Input Range up to 7.0V
- ◆ Thermal Shutdown
- ◆ Current Limiting
- ◆ Compact Package: TO-92, SOT-23-3, SOT-23-5, and SOT-89
- ◆ Factory Pre-set Output Voltages
- ◆ Short Circuit Current Fold-Back
- ◆ Low Temperature Coefficient

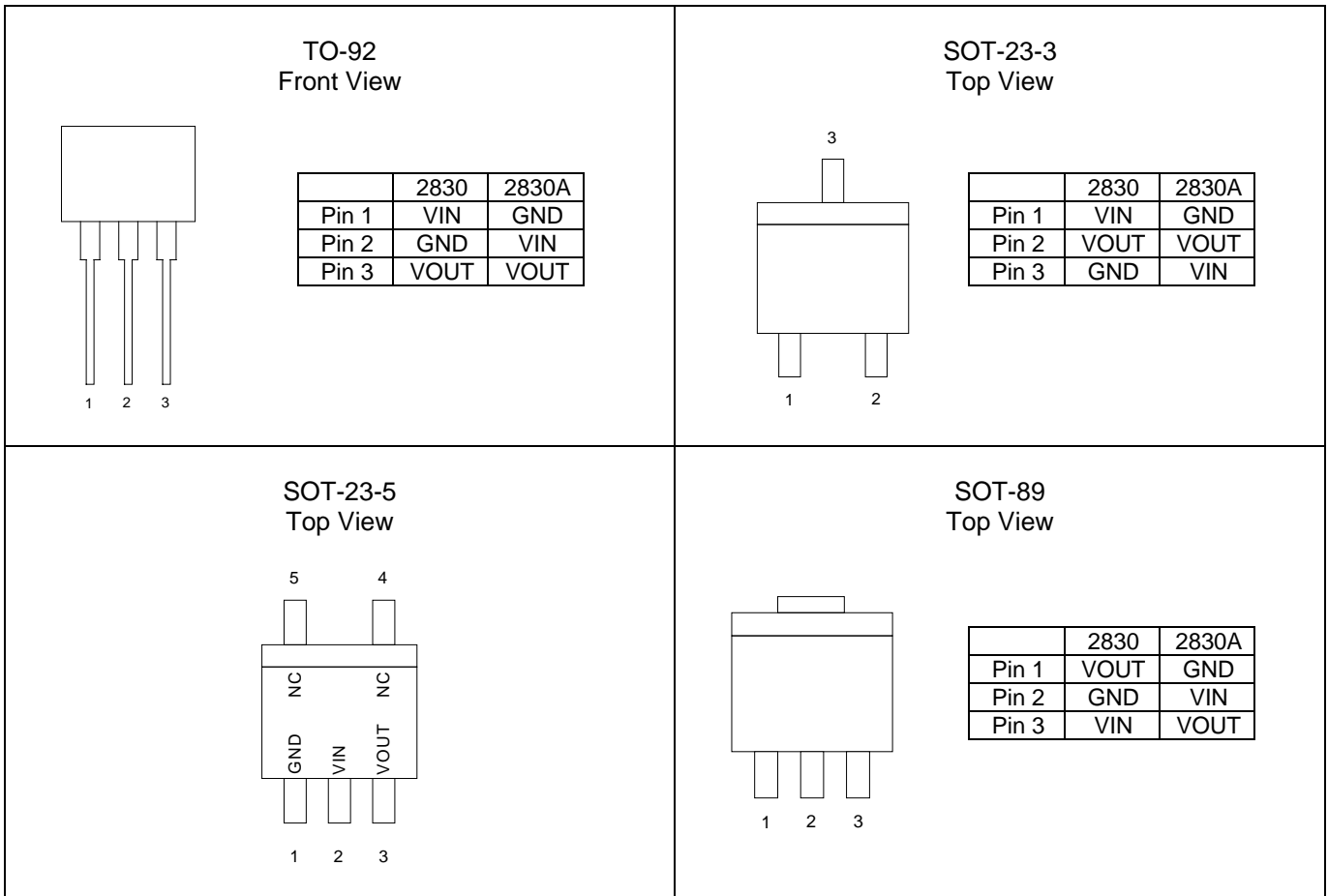
APPLICATIONS

- ◆ Battery-powered devices
- ◆ Personal communication devices
- ◆ Home electric/electronic appliances
- ◆ PC peripherals

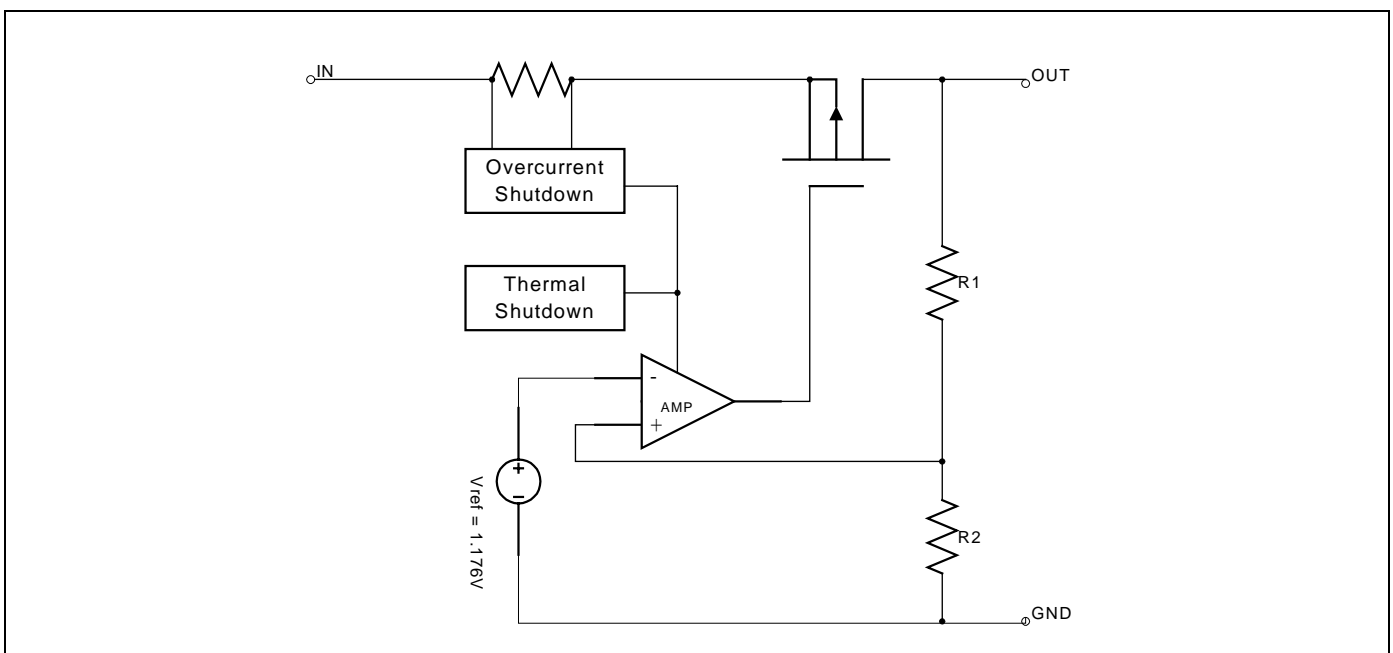
TYPICAL APPLICATIONS



PIN CONFIGURATION



BLOCK DIAGRAM



ORDERING INFORMATION**CM2830**

| Part Number | Output Voltage | Temperature Range | Package |
|-------------|----------------|-------------------|----------|
| CM2830AIN92 | 1.5V | -40°C ~ +85°C | TO-92 |
| CM2830AIM23 | 1.5V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AIM25 | 1.5V | -40°C ~ +85°C | SOT-23-5 |
| CM2830AIM89 | 1.5V | -40°C ~ +85°C | SOT-89 |
| CM2830DIN92 | 1.8V | -40°C ~ +85°C | TO-92 |
| CM2830DIM23 | 1.8V | -40°C ~ +85°C | SOT-23-3 |
| CM2830DIM25 | 1.8V | -40°C ~ +85°C | SOT-23-5 |
| CM2830DIM89 | 1.8V | -40°C ~ +85°C | SOT-89 |
| CM2830EIN92 | 1.9V | -40°C ~ +85°C | TO-92 |
| CM2830EIM23 | 1.9V | -40°C ~ +85°C | SOT-23-3 |
| CM2830EIM25 | 1.9V | -40°C ~ +85°C | SOT-23-5 |
| CM2830EIM89 | 1.9V | -40°C ~ +85°C | SOT-89 |
| CM2830FIN92 | 2.0V | -40°C ~ +85°C | TO-92 |
| CM2830FIM23 | 2.0V | -40°C ~ +85°C | SOT-23-3 |
| CM2830FIM25 | 2.0V | -40°C ~ +85°C | SOT-23-5 |
| CM2830FIM89 | 2.0V | -40°C ~ +85°C | SOT-89 |
| CM2830HIN92 | 2.2V | -40°C ~ +85°C | TO-92 |
| CM2830HIM23 | 2.2V | -40°C ~ +85°C | SOT-23-3 |
| CM2830HIM25 | 2.2V | -40°C ~ +85°C | SOT-23-5 |
| CM2830HIM89 | 2.2V | -40°C ~ +85°C | SOT-89 |
| CM2830KIN92 | 2.5V | -40°C ~ +85°C | TO-92 |
| CM2830KIM23 | 2.5V | -40°C ~ +85°C | SOT-23-3 |
| CM2830KIM25 | 2.5V | -40°C ~ +85°C | SOT-23-5 |
| CM2830KIM89 | 2.5V | -40°C ~ +85°C | SOT-89 |
| CM2830MIN92 | 2.7V | -40°C ~ +85°C | TO-92 |
| CM2830MIM23 | 2.7V | -40°C ~ +85°C | SOT-23-3 |
| CM2830MIM25 | 2.7V | -40°C ~ +85°C | SOT-23-5 |
| CM2830MIM89 | 2.7V | -40°C ~ +85°C | SOT-89 |
| CM2830NIN92 | 2.8V | -40°C ~ +85°C | TO-92 |
| CM2830NIM23 | 2.8V | -40°C ~ +85°C | SOT-23-3 |
| CM2830NIM25 | 2.8V | -40°C ~ +85°C | SOT-23-5 |
| CM2830NIM89 | 2.8V | -40°C ~ +85°C | SOT-89 |
| CM2830OIN92 | 2.9V | -40°C ~ +85°C | TO-92 |
| CM2830OIM23 | 2.9V | -40°C ~ +85°C | SOT-23-3 |
| CM2830OIM25 | 2.9V | -40°C ~ +85°C | SOT-23-5 |
| CM2830OIM89 | 2.9V | -40°C ~ +85°C | SOT-89 |
| CM2830PIN92 | 3.0V | -40°C ~ +85°C | TO-92 |
| CM2830PIM23 | 3.0V | -40°C ~ +85°C | SOT-23-3 |
| CM2830PIM25 | 3.0V | -40°C ~ +85°C | SOT-23-5 |
| CM2830PIM89 | 3.0V | -40°C ~ +85°C | SOT-89 |

ORDERING INFORMATION (CONTINUED)

| Part Number | Output Voltage | Temperature Range | Package |
|--------------|----------------|-------------------|----------|
| CM2830SIN92 | 3.3V | -40°C ~ +85°C | TO-92 |
| CM2830SIM23 | 3.3V | -40°C ~ +85°C | SOT-23-3 |
| CM2830SIM25 | 3.3V | -40°C ~ +85°C | SOT-23-5 |
| CM2830SIM89 | 3.3V | -40°C ~ +85°C | SOT-89 |
| CM2830UIN92 | 3.5V | -40°C ~ +85°C | TO-92 |
| CM2830UIM23 | 3.5V | -40°C ~ +85°C | SOT-23-3 |
| CM2830UIM25 | 3.5V | -40°C ~ +85°C | SOT-23-5 |
| CM2830UIM89 | 3.5V | -40°C ~ +85°C | SOT-89 |
| CM2830VIN92 | 3.6V | -40°C ~ +85°C | TO-92 |
| CM2830VIM23 | 3.6V | -40°C ~ +85°C | SOT-23-3 |
| CM2830VIM25 | 3.6V | -40°C ~ +85°C | SOT-23-5 |
| CM2830VIM89 | 3.6V | -40°C ~ +85°C | SOT-89 |
| CM2830XIN92 | 3.8V | -40°C ~ +85°C | TO-92 |
| CM2830XIM23 | 3.8V | -40°C ~ +85°C | SOT-23-3 |
| CM2830XIM25 | 3.8V | -40°C ~ +85°C | SOT-23-5 |
| CM2830XIM89 | 3.8V | -40°C ~ +85°C | SOT-89 |
| CM2830GAIN92 | 1.5V | -40°C ~ +85°C | TO-92 |
| CM2830GAIM23 | 1.5V | -40°C ~ +85°C | SOT-23-3 |
| CM2830GAIM25 | 1.5V | -40°C ~ +85°C | SOT-23-5 |
| CM2830GAIM89 | 1.5V | -40°C ~ +85°C | SOT-89 |
| CM2830GDIN92 | 1.8V | -40°C ~ +85°C | TO-92 |
| CM2830GDIM23 | 1.8V | -40°C ~ +85°C | SOT-23-3 |
| CM2830GDIM25 | 1.8V | -40°C ~ +85°C | SOT-23-5 |
| CM2830GDIM89 | 1.8V | -40°C ~ +85°C | SOT-89 |
| CM2830GEIN92 | 1.9V | -40°C ~ +85°C | TO-92 |
| CM2830GEIM23 | 1.9V | -40°C ~ +85°C | SOT-23-3 |
| CM2830GEIM25 | 1.9V | -40°C ~ +85°C | SOT-23-5 |
| CM2830GEIM89 | 1.9V | -40°C ~ +85°C | SOT-89 |
| CM2830GFIN92 | 2.0V | -40°C ~ +85°C | TO-92 |
| CM2830GFIM23 | 2.0V | -40°C ~ +85°C | SOT-23-3 |
| CM2830GFIM25 | 2.0V | -40°C ~ +85°C | SOT-23-5 |
| CM2830GFIM89 | 2.0V | -40°C ~ +85°C | SOT-89 |
| CM2830GHIN92 | 2.2V | -40°C ~ +85°C | TO-92 |
| CM2830GHIM23 | 2.2V | -40°C ~ +85°C | SOT-23-3 |
| CM2830GHIM25 | 2.2V | -40°C ~ +85°C | SOT-23-5 |
| CM2830GHIM89 | 2.2V | -40°C ~ +85°C | SOT-89 |
| CM2830GKIN92 | 2.5V | -40°C ~ +85°C | TO-92 |
| CM2830GKIM23 | 2.5V | -40°C ~ +85°C | SOT-23-3 |
| CM2830GKIM25 | 2.5V | -40°C ~ +85°C | SOT-23-5 |
| CM2830GKIM89 | 2.5V | -40°C ~ +85°C | SOT-89 |
| CM2830GMIN92 | 2.7V | -40°C ~ +85°C | TO-92 |
| CM2830GMIM23 | 2.7V | -40°C ~ +85°C | SOT-23-3 |
| CM2830GMIM25 | 2.7V | -40°C ~ +85°C | SOT-23-5 |
| CM2830GMIM89 | 2.7V | -40°C ~ +85°C | SOT-89 |

ORDERING INFORMATION (CONTINUED)

| Part Number | Output Voltage | Temperature Range | Package |
|--------------|----------------|-------------------|----------|
| CM2830GNIN92 | 2.8V | -40°C ~ +85°C | TO-92 |
| CM2830GNIM23 | 2.8V | -40°C ~ +85°C | SOT-23-3 |
| CM2830GNIM25 | 2.8V | -40°C ~ +85°C | SOT-23-5 |
| CM2830GNIM89 | 2.8V | -40°C ~ +85°C | SOT-89 |
| CM2830GOIN92 | 2.9V | -40°C ~ +85°C | TO-92 |
| CM2830GOIM23 | 2.9V | -40°C ~ +85°C | SOT-23-3 |
| CM2830GOIM25 | 2.9V | -40°C ~ +85°C | SOT-23-5 |
| CM2830GOIM89 | 2.9V | -40°C ~ +85°C | SOT-89 |
| CM2830GPIN92 | 3.0V | -40°C ~ +85°C | TO-92 |
| CM2830GPIM23 | 3.0V | -40°C ~ +85°C | SOT-23-3 |
| CM2830GPIM25 | 3.0V | -40°C ~ +85°C | SOT-23-5 |
| CM2830GPIM89 | 3.0V | -40°C ~ +85°C | SOT-89 |
| CM2830GSIN92 | 3.3V | -40°C ~ +85°C | TO-92 |
| CM2830GSIM23 | 3.3V | -40°C ~ +85°C | SOT-23-3 |
| CM2830GSIM25 | 3.3V | -40°C ~ +85°C | SOT-23-5 |
| CM2830GSIM89 | 3.3V | -40°C ~ +85°C | SOT-89 |
| CM2830GUIN92 | 3.5V | -40°C ~ +85°C | TO-92 |
| CM2830GUIM23 | 3.5V | -40°C ~ +85°C | SOT-23-3 |
| CM2830GUIM25 | 3.5V | -40°C ~ +85°C | SOT-23-5 |
| CM2830GUIM89 | 3.5V | -40°C ~ +85°C | SOT-89 |
| CM2830GVIN92 | 3.6V | -40°C ~ +85°C | TO-92 |
| CM2830GVIM23 | 3.6V | -40°C ~ +85°C | SOT-23-3 |
| CM2830GVIM25 | 3.6V | -40°C ~ +85°C | SOT-23-5 |
| CM2830GVIM89 | 3.6V | -40°C ~ +85°C | SOT-89 |
| CM2830GXIN92 | 3.8V | -40°C ~ +85°C | TO-92 |
| CM2830GXIM23 | 3.8V | -40°C ~ +85°C | SOT-23-3 |
| CM2830GXIM25 | 3.8V | -40°C ~ +85°C | SOT-23-5 |
| CM2830GXIM89 | 3.8V | -40°C ~ +85°C | SOT-89 |

Note: For other pre-set output voltage, please contact Champion Sales office.

ORDERING INFORMATION (CONTINUED)**CM2830A**

| Part Number | Output Voltage | Temperature Range | Package |
|--------------|----------------|-------------------|----------|
| CM2830AAIN92 | 1.5V | -40°C ~ +85°C | TO-92 |
| CM2830AAIM23 | 1.5V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AAIM89 | 1.5V | -40°C ~ +85°C | SOT-89 |
| CM2830ADIN92 | 1.8V | -40°C ~ +85°C | TO-92 |
| CM2830ADIM23 | 1.8V | -40°C ~ +85°C | SOT-23-3 |
| CM2830ADIM89 | 1.8V | -40°C ~ +85°C | SOT-89 |
| CM2830AEIN92 | 1.9V | -40°C ~ +85°C | TO-92 |
| CM2830AEIM23 | 1.9V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AEIM89 | 1.9V | -40°C ~ +85°C | SOT-89 |
| CM2830AFIN92 | 2.0V | -40°C ~ +85°C | TO-92 |
| CM2830AFIM23 | 2.0V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AFIM89 | 2.0V | -40°C ~ +85°C | SOT-89 |
| CM2830AHIN92 | 2.2V | -40°C ~ +85°C | TO-92 |
| CM2830AHIM23 | 2.2V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AHIM89 | 2.2V | -40°C ~ +85°C | SOT-89 |
| CM2830AKIN92 | 2.5V | -40°C ~ +85°C | TO-92 |
| CM2830AKIM23 | 2.5V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AKIM89 | 2.5V | -40°C ~ +85°C | SOT-89 |
| CM2830AMIN92 | 2.7V | -40°C ~ +85°C | TO-92 |
| CM2830AMIM23 | 2.7V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AMIM89 | 2.7V | -40°C ~ +85°C | SOT-89 |
| CM2830ANIN92 | 2.8V | -40°C ~ +85°C | TO-92 |
| CM2830ANIM23 | 2.8V | -40°C ~ +85°C | SOT-23-3 |
| CM2830ANIM89 | 2.8V | -40°C ~ +85°C | SOT-89 |
| CM2830AOIN92 | 2.9V | -40°C ~ +85°C | TO-92 |
| CM2830AOIM23 | 2.9V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AOIM89 | 2.9V | -40°C ~ +85°C | SOT-89 |
| CM2830APIN92 | 3.0V | -40°C ~ +85°C | TO-92 |
| CM2830APIM23 | 3.0V | -40°C ~ +85°C | SOT-23-3 |
| CM2830APIM89 | 3.0V | -40°C ~ +85°C | SOT-89 |
| CM2830ASIN92 | 3.3V | -40°C ~ +85°C | TO-92 |
| CM2830ASIM23 | 3.3V | -40°C ~ +85°C | SOT-23-3 |
| CM2830ASIM89 | 3.3V | -40°C ~ +85°C | SOT-89 |
| CM2830AUIN92 | 3.5V | -40°C ~ +85°C | TO-92 |
| CM2830AUIM23 | 3.5V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AUIM89 | 3.5V | -40°C ~ +85°C | SOT-89 |
| CM2830AVIN92 | 3.6V | -40°C ~ +85°C | TO-92 |
| CM2830AVIM23 | 3.6V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AVIM89 | 3.6V | -40°C ~ +85°C | SOT-89 |
| CM2830AXIN92 | 3.8V | -40°C ~ +85°C | TO-92 |
| CM2830AXIM23 | 3.8V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AXIM89 | 3.8V | -40°C ~ +85°C | SOT-89 |

ORDERING INFORMATION (CONTINUED)

| Part Number | Output Voltage | Temperature Range | Package |
|---------------|----------------|-------------------|----------|
| CM2830AGAIN92 | 1.5V | -40°C ~ +85°C | TO-92 |
| CM2830AGAIM23 | 1.5V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AGAIM89 | 1.5V | -40°C ~ +85°C | SOT-89 |
| CM2830AGDIN92 | 1.8V | -40°C ~ +85°C | TO-92 |
| CM2830AGDIM23 | 1.8V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AGDIM89 | 1.8V | -40°C ~ +85°C | SOT-89 |
| CM2830AGEIN92 | 1.9V | -40°C ~ +85°C | TO-92 |
| CM2830AGEIM23 | 1.9V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AGEIM89 | 1.9V | -40°C ~ +85°C | SOT-89 |
| CM2830AGFIN92 | 2.0V | -40°C ~ +85°C | TO-92 |
| CM2830AGFIM23 | 2.0V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AGFIM89 | 2.0V | -40°C ~ +85°C | SOT-89 |
| CM2830AGHIN92 | 2.2V | -40°C ~ +85°C | TO-92 |
| CM2830AGHIM23 | 2.2V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AGHIM89 | 2.2V | -40°C ~ +85°C | SOT-89 |
| CM2830AGKIN92 | 2.5V | -40°C ~ +85°C | TO-92 |
| CM2830AGKIM23 | 2.5V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AGKIM89 | 2.5V | -40°C ~ +85°C | SOT-89 |
| CM2830AGMIN92 | 2.7V | -40°C ~ +85°C | TO-92 |
| CM2830AGMIM23 | 2.7V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AGMIM89 | 2.7V | -40°C ~ +85°C | SOT-89 |
| CM2830AGNIN92 | 2.8V | -40°C ~ +85°C | TO-92 |
| CM2830AGNIM23 | 2.8V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AGNIM89 | 2.8V | -40°C ~ +85°C | SOT-89 |
| CM2830AGOIN92 | 2.9V | -40°C ~ +85°C | TO-92 |
| CM2830AGOIM23 | 2.9V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AGOIM89 | 2.9V | -40°C ~ +85°C | SOT-89 |
| CM2830AGPIN92 | 3.0V | -40°C ~ +85°C | TO-92 |
| CM2830AGPIM23 | 3.0V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AGPIM89 | 3.0V | -40°C ~ +85°C | SOT-89 |
| CM2830AGSIN92 | 3.3V | -40°C ~ +85°C | TO-92 |
| CM2830AGSIM23 | 3.3V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AGSIM89 | 3.3V | -40°C ~ +85°C | SOT-89 |
| CM2830AGUIN92 | 3.5V | -40°C ~ +85°C | TO-92 |
| CM2830AGUIM23 | 3.5V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AGUIM89 | 3.5V | -40°C ~ +85°C | SOT-89 |
| CM2830AGVIN92 | 3.6V | -40°C ~ +85°C | TO-92 |
| CM2830AGVIM23 | 3.6V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AGVIM89 | 3.6V | -40°C ~ +85°C | SOT-89 |
| CM2830AGXIN92 | 3.8V | -40°C ~ +85°C | TO-92 |
| CM2830AGXIM23 | 3.8V | -40°C ~ +85°C | SOT-23-3 |
| CM2830AGXIM89 | 3.8V | -40°C ~ +85°C | SOT-89 |

Note: For other pre-set output voltage, please contact Champion Sales office.

ABSOLUTE MAXIMUM RATINGS

Input Voltage +7V
 Output Current $P_D / (V_{IN} - V_o)$
 Output Voltage GND-0.3V to $V_{IN}+0.3V$
 ESD Classification B

OPERATING RATINGS

Ambient Temperature Range (T_A) -40°C to +85°C
 Junction Temperature Range -40°C to +125°C

THERMAL INFORMATION

| Parameter | | Maximum | Unit |
|--|------------------|---------|------|
| Thermal Resistance (θ_{jc}) | SOT-23-3 | 170 | °C/W |
| | SOT-23-5 | 160 | |
| | SOT-89 | 100 | |
| | TO-92 | 100 | |
| Thermal Resistance (θ_{ja}) | SOT-23-3 | 330 | °C/W |
| | SOT-23-5 | 320 | |
| | SOT-89 | 300 | |
| | TO-92 | 300 | |
| Internal Power Dissipation (P_D) ($\Delta T = 100^\circ\text{C}$) | SOT-23-3 | 225 | mW |
| | SOT-23-5 | 250 | |
| | SOT-89 (CM2830) | 500 | |
| | SOT-89 (CM2830A) | 400 | |
| | TO-92 | 500 | |
| Maximum Junction Temperature | | 150 | °C |
| Maximum Lead Temperature (10 Sec) | | 300 | °C |

*With Junction sink capable of twice times of θ_{jc}

Caution: Stress above the listed absolute rating may cause permanent damage to the device.

ELECTRICAL CHARACTERISTICS

T_A = +25°C; unless otherwise noted

| Parameter | Test Conditions | CM2830/CM2830A | | | Unit |
|-----------------------------|--|---------------------------------|------|------|--------|
| | | Min. | Typ. | Max. | |
| Input Voltage | | Note 1 | | 7 | V |
| Output Voltage Accuracy | I _o = 1mA | -1.5 | | 1.5 | % |
| Dropout Voltage | I _o = 300mA, V _{OUT} =V _{O(NOM)} -1.5%, | 1.2V<V _{O(NOM)} <=2.0V | | 1300 | mV |
| | | 2.0V<V _{O(NOM)} <=2.5V | | 800 | |
| | | 2.5V<V _{O(NOM)} | | 300 | |
| Output Current | V _{OUT} > 1.2V | 300 | | | mA |
| Short Circuit Current | V _{OUT} < 1.05V | | 150 | 300 | mA |
| Current Limit | V _{OUT} >1.2V | 300 | 450 | | mA |
| Quiescent Current | V _{IN} =5V, No Load | | 30 | 35 | μ A |
| Ground Pin Current | I = 1mA to 300mA | | 30 | 35 | μ A |
| Line Regulation | I _{OUT} =5mA, V _{IN} =V _{OUT} +1 to V _{OUT} +2, V _{OUT} <= 3.0V | -0.15 | 0.03 | 0.15 | % |
| | I _{OUT} =5mA, V _{IN} =V _{OUT} +1 to V _{OUT} +2, V _{OUT} > 3.0V | -0.3 | 0.06 | 0.3 | |
| Load Regulation | I _o =1mA to 300mA | -1 | 0.2 | 1 | % |
| Power Supply Rejection | I _o = 100mA C _O =2.2 μ F ceramic | f=1KHz | | 60 | dB |
| | | f=10KHz | | 50 | |
| | | f=100KHz | | 40 | |
| Over Temperature Shutdown | | | 150 | | °C |
| Over Temperature Hysteresis | | | 30 | | °C |
| Output Noise | F=10Hz to 100kHz, C _O =2.2 μ F, I _o = 10mA | | 30 | | μ Vrms |
| Output Voltage Temp. Coeff. | | | 25 | | ppm/°C |

Note 1. V_{IN(MIN)} = V_{OUT} + V_{DROPOUT}

DETAILED DESCRIPTION

The CM2830/CM2830A family of CMOS regulators contain a PMOS pass transistor, voltage reference, error amplifier, over-current protection, thermal shutdown, and short circuit protection.

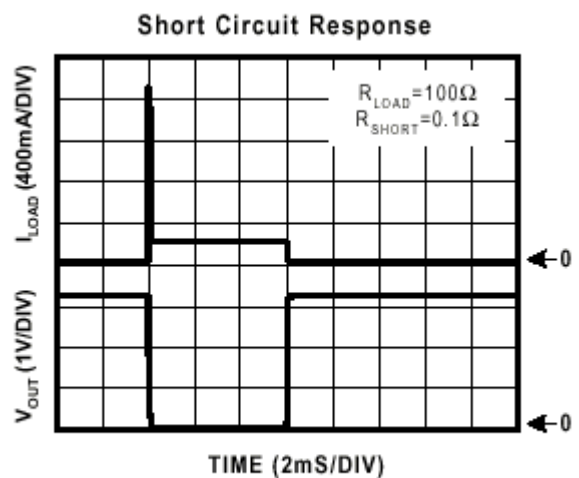
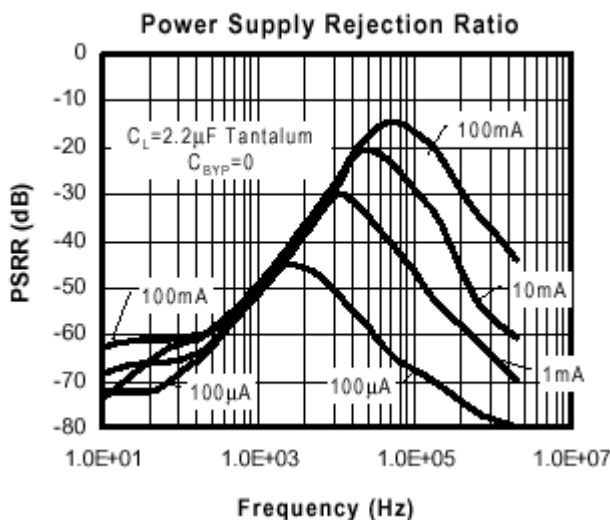
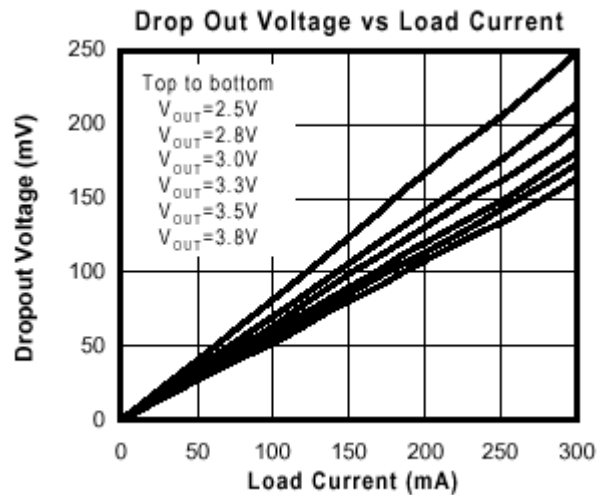
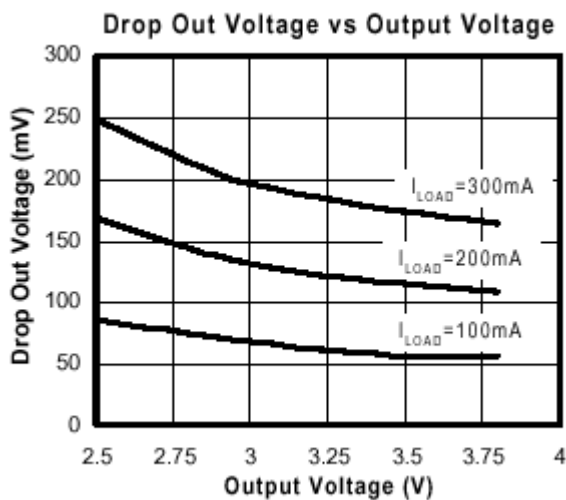
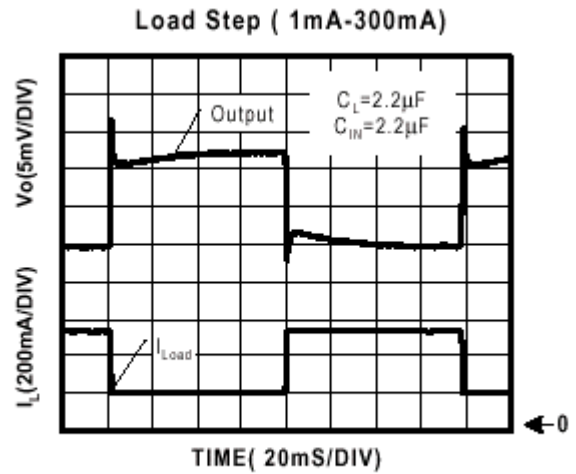
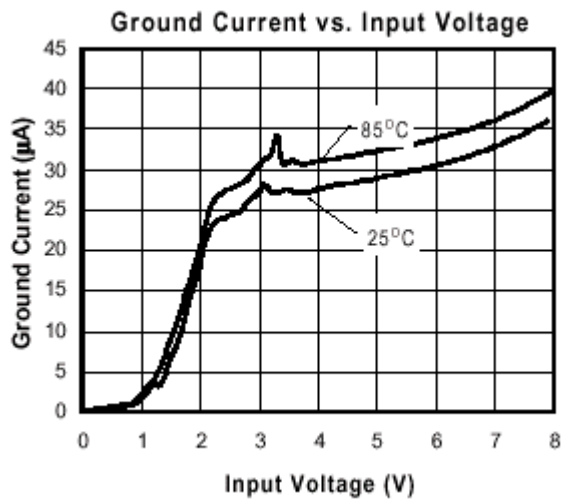
The P-channel pass transistor receives data from the error amplifier, over-current shutdown, short output protection, and thermal protection circuits. During normal operation, the error amplifier compares the output voltage to a precision reference. Over-current and Thermal shutdown circuits become active when the junction temperature exceeds 150°C, or the current exceeds 300mA. During thermal shutdown, the output voltage remains low. Normal operation is restored when the junction temperature drops below 120°C.

The CM2830/CM2830A switches from voltage mode to current mode when the load exceeds the rated output current. This prevents over-stress. The CM2830 also incorporates current fold-back to reduce power dissipation when the output is short-circuited. This feature becomes active when the output drops below 1.05V, and reduces the current flow by 65%. Full current is restored when the voltage exceeds 1.05V.

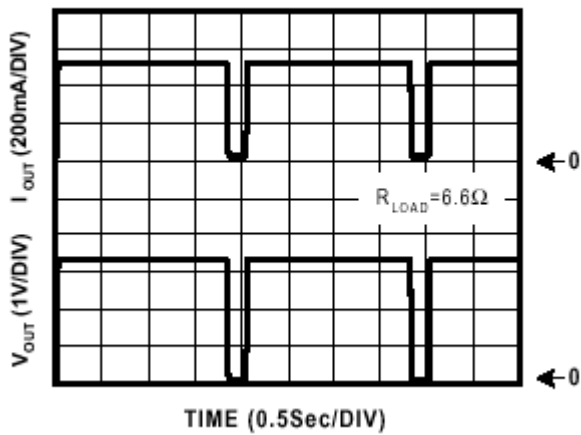
EXTERNAL CAPACITOR

The CM2830/2830A is stable with an output capacitor to ground of 2.2 μ F or greater. It can keep stable even with higher or poor ESR capacitors. A second capacitor is recommended between the input and ground to stabilize V_{IN}. The input capacitor should be larger than 0.1 μ F to have a beneficial effect. All capacitors should be placed in close proximity to the pins. A "quiet" ground termination is desirable.

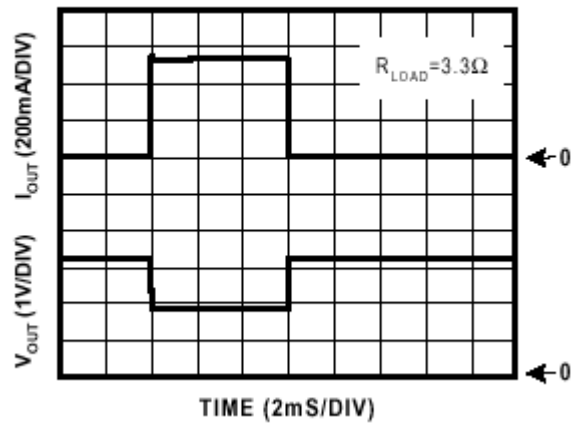
TYPICAL ELECTRICAL CHARACTERISTICS



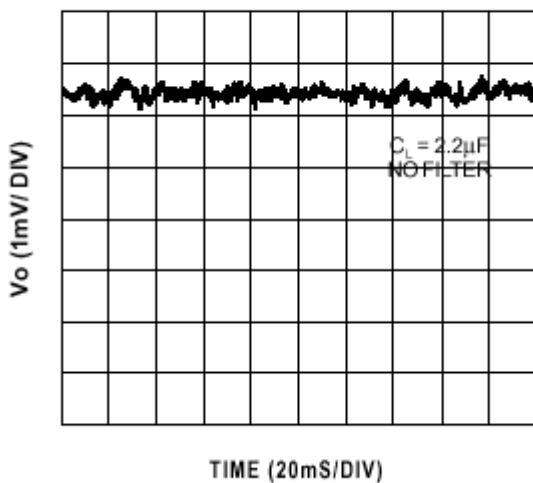
Overtemperature Shutdown



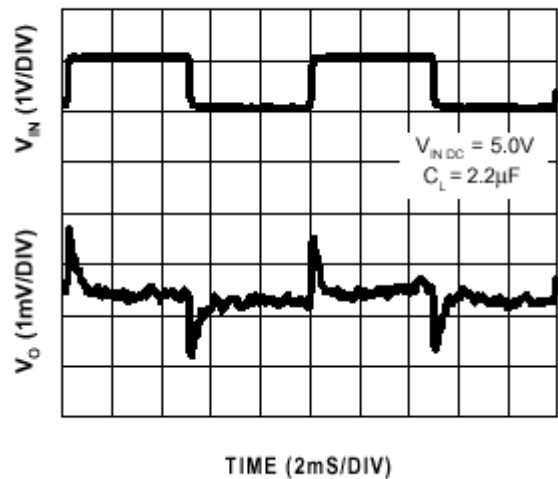
Current Limit Response



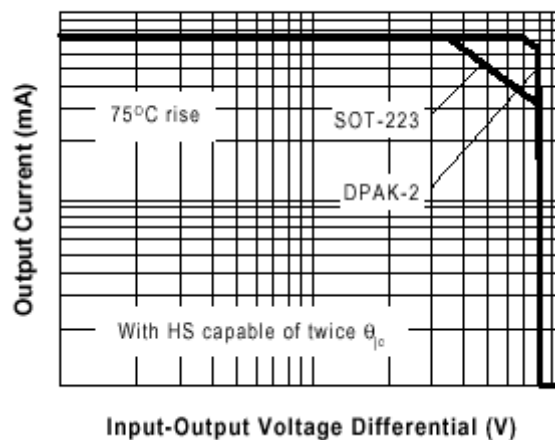
Noise Measurement

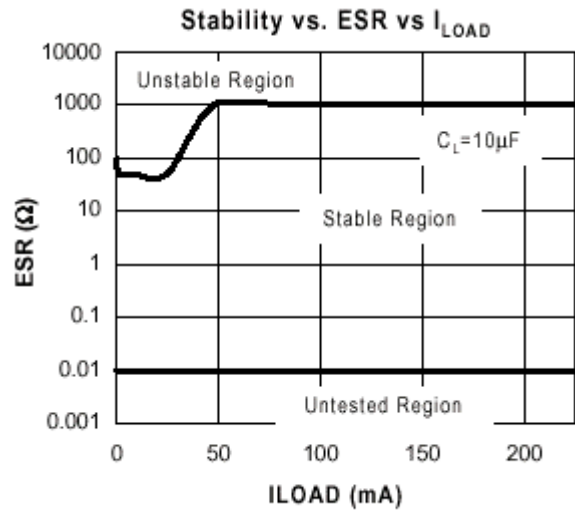
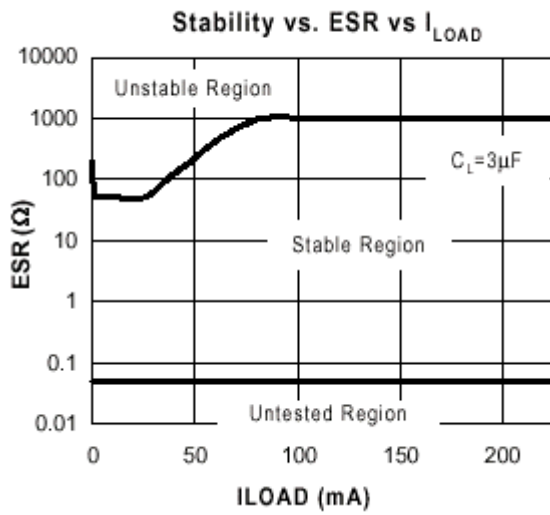
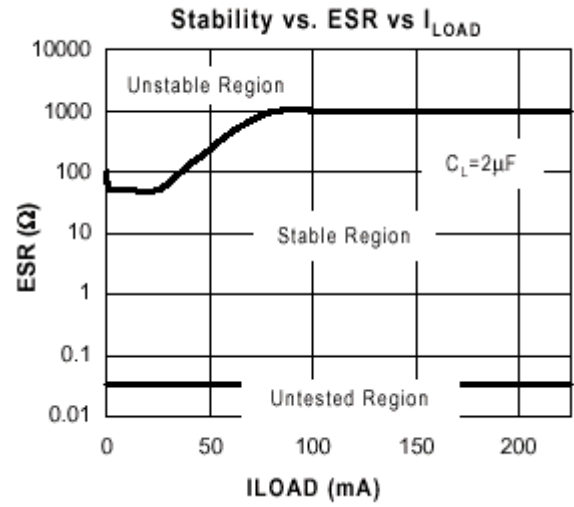
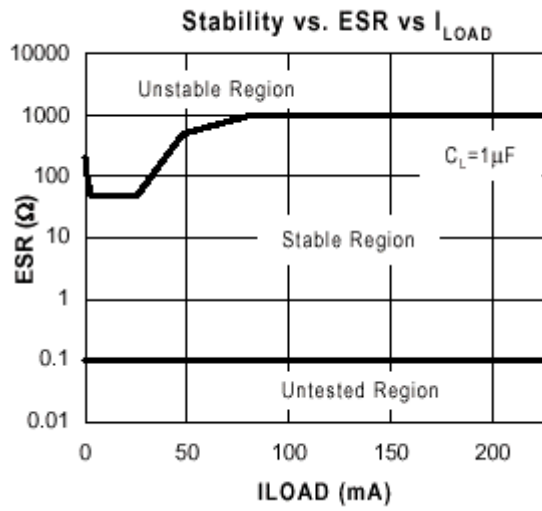


Transient Line Response



Safe Operating Area



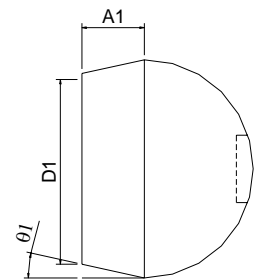
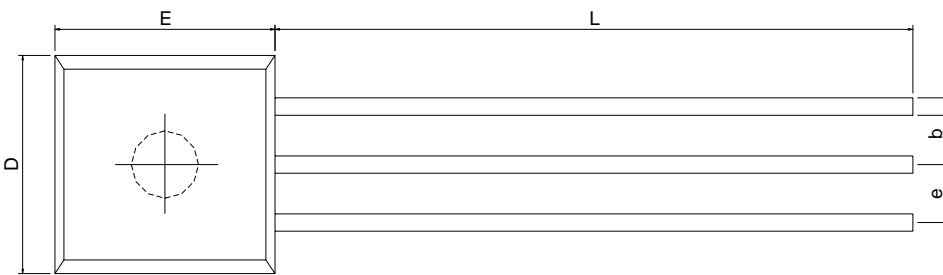


PACKAGE DIMENSION

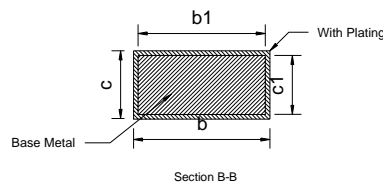
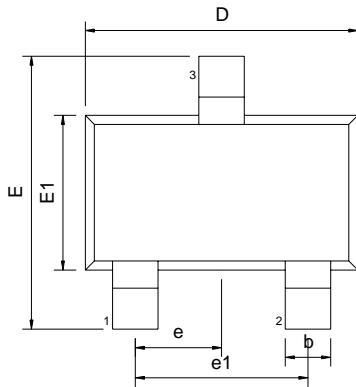
TO-92 (N92)



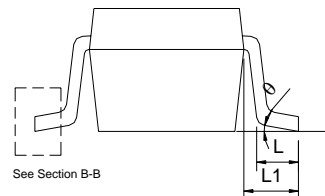
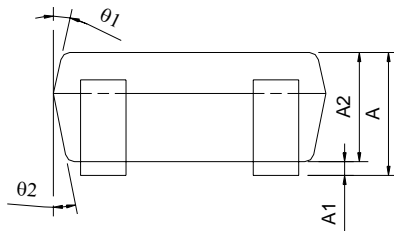
| SYMBOLS | DIMENSIONS IN MILLIMETERS | | | DIMENSIONS IN INCHES | | |
|---------|---------------------------|-------|-------|----------------------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 3.45 | 3.56 | 3.66 | 0.136 | 0.140 | 0.144 |
| A1 | 1.22 | 1.30 | 1.37 | 0.048 | 0.051 | 0.054 |
| b | --- | 0.38 | --- | --- | 0.015 | --- |
| D | 4.27 | 4.52 | 4.78 | 0.168 | 0.178 | 0.188 |
| D1 | 4.14 | 4.29 | 4.45 | 0.163 | 0.169 | 0.175 |
| E | 4.32 | 4.57 | 4.83 | 0.170 | 0.180 | 0.190 |
| L | 12.98 | 13.49 | 14.00 | 0.511 | 0.531 | 0.551 |
| e | --- | 1.27 | --- | --- | 0.050 | --- |
| theta | --- | 5° | --- | --- | 5° | --- |
| theta1 | --- | 5° | --- | --- | 5° | --- |



SOT-23-3 (M23)

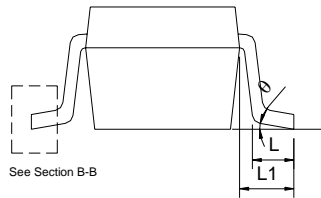
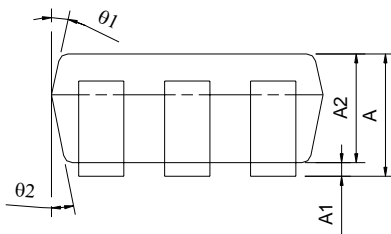
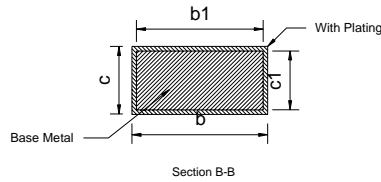
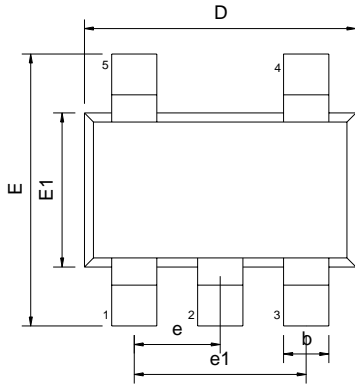


| SYMBOLS | DIMENSIONS IN MILLIMETERS | | | DIMENSIONS IN INCHES | | |
|---------|---------------------------|------|------|----------------------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 1.05 | --- | 1.35 | 0.041 | --- | 0.053 |
| A1 | 0.05 | --- | 0.15 | 0.002 | --- | 0.006 |
| A2 | 1.00 | 1.10 | 1.20 | 0.039 | 0.043 | 0.047 |
| b | 0.25 | --- | 0.50 | 0.010 | --- | 0.020 |
| b1 | 0.25 | 0.40 | 0.45 | 0.010 | 0.016 | 0.018 |
| c | 0.08 | --- | 0.20 | 0.003 | --- | 0.008 |
| c1 | 0.08 | 0.11 | 0.15 | 0.003 | 0.004 | 0.006 |
| D | 2.70 | 2.90 | 3.00 | 0.106 | 0.114 | 0.118 |
| E | 2.60 | 2.80 | 3.00 | 0.102 | 0.110 | 0.118 |
| E1 | 1.50 | 1.60 | 1.70 | 0.059 | 0.063 | 0.067 |
| L | 0.35 | 0.45 | 0.55 | 0.014 | 0.018 | 0.022 |
| L1 | 0.60 REF | | | 0.024 REF | | |
| e | 0.95 BSC | | | 0.037 BSC | | |
| e1 | 1.90 BSC | | | 0.075 BSC | | |
| theta | 0° | 5° | 10° | 0° | 5° | 10° |
| theta1 | 3° | 5° | 7° | 3° | 5° | 7° |
| theta2 | 6° | 8° | 10° | 6° | 8° | 10° |



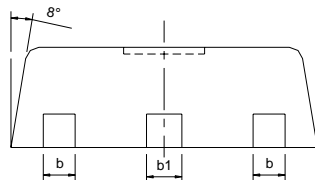
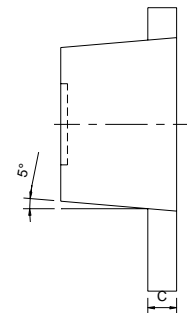
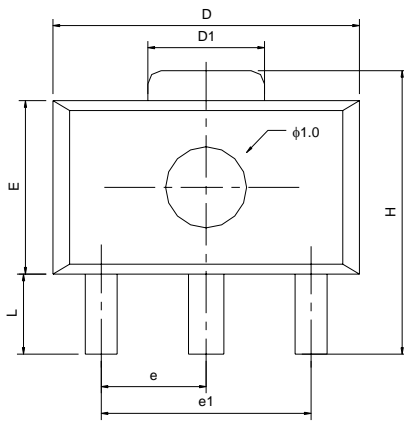
PACKAGE DIMENSION (CONTINUED)

SOT-23-5 (M25)



| SYMBOLS | DIMENSIONS IN MILLIMETERS | | | DIMENSIONS IN INCHES | | |
|---------|---------------------------|------|------|----------------------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 1.05 | --- | 1.35 | 0.041 | --- | 0.053 |
| A1 | 0.05 | --- | 0.15 | 0.002 | --- | 0.006 |
| A2 | 1.00 | 1.10 | 1.20 | 0.039 | 0.043 | 0.047 |
| b | 0.25 | --- | 0.50 | 0.010 | --- | 0.020 |
| b1 | 0.25 | 0.40 | 0.45 | 0.010 | 0.016 | 0.018 |
| c | 0.08 | --- | 0.20 | 0.003 | --- | 0.008 |
| c1 | 0.08 | 0.11 | 0.15 | 0.003 | 0.004 | 0.006 |
| D | 2.70 | 2.90 | 3.00 | 0.106 | 0.114 | 0.118 |
| E | 2.60 | 2.80 | 3.00 | 0.102 | 0.110 | 0.118 |
| E1 | 1.50 | 1.60 | 1.70 | 0.059 | 0.063 | 0.067 |
| L | 0.35 | 0.45 | 0.55 | 0.014 | 0.018 | 0.022 |
| L1 | 0.60 REF | | | 0.024 REF | | |
| e | 0.95 BSC | | | 0.037 BSC | | |
| e1 | 1.90 BSC | | | 0.075 BSC | | |
| theta | 0° | 5° | 10° | 0° | 5° | 10° |
| theta1 | 3° | 5° | 7° | 3° | 5° | 7° |
| theta2 | 6° | 8° | 10° | 6° | 8° | 10° |

SOT-89 (M89)



| SYMBOLS | DIMENSIONS IN MILLIMETERS | | | DIMENSIONS IN INCHES | | |
|---------|---------------------------|------|------|----------------------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 1.40 | 1.50 | 1.60 | 0.055 | 0.059 | 0.063 |
| L | 0.80 | --- | 1.20 | 0.031 | --- | 0.047 |
| b | 0.36 | 0.42 | 0.48 | 0.014 | 0.016 | 0.018 |
| b1 | 0.41 | 0.47 | 0.53 | 0.016 | 0.018 | 0.020 |
| C | 0.38 | 0.40 | 0.43 | 0.014 | 0.015 | 0.017 |
| D | 4.40 | 4.50 | 4.60 | 0.173 | 0.177 | 0.181 |
| D1 | 1.40 | 1.60 | 1.75 | 0.055 | 0.062 | 0.069 |
| H | 3.94 | --- | 4.25 | 0.155 | --- | 0.167 |
| E | 2.40 | 2.50 | 2.60 | 0.094 | 0.098 | 0.102 |
| e1 | 2.90 | 3.00 | 3.10 | 0.114 | 0.118 | 0.122 |
| e | 1.45 | 1.50 | 1.55 | 0.057 | 0.059 | 0.061 |

NUMBERING SCHEME

Ordering Number: CM2830XYZ/CM2830AXYZ (note1)

Ordering Number: CM2830GXYZ/CM2830AGXYZ (note2)

note1:

CM2830/CM2830A : 300mA CMOS LDO
X : Suffix for voltage output (note 3)
Y : Suffix for Temperature Range (note 4)
Z : Suffix for Package Type (note 5)

note2:

CM2830/CM2830A : 300mA CMOS LDO
G : Suffix for Pb Free Product
X : Suffix for voltage output (note 3)
Y : Suffix for Temperature Range (note 4)
Z : Suffix for Package Type (note 5)

note 3: see CMOS LDO Voltage Suffix Table

CM2830/A will provide options of A (1.5V), D(1.8V), E (1.9V), F(2.0V), H (2.2V), K(2.5V), M(2.7V), N(2.8V), O (2.9V), P(3.0V), S(3.3V), U(3.5V), V(3.6V), X(3.8V)

note 4:

Y= I : -40°C ~+85°C (only I grade support for all CMOS LDOs)

note 5:

Z is single alphabet with or without digits
M23 : SOT-23 (TR only)
N92 : TO-92 (TA only)
M25 : SOT-25 (TR only)
M89 : SOT-89 (TR only)

CMOS LDO Voltage Suffix Table

| Output Voltage | Suffix | Output Voltage | Suffix |
|----------------|--------|----------------|--------|
| 1.5V | A | 3.0V | P |
| 1.6V | B | 3.1V | Q |
| 1.7V | C | 3.2V | R |
| 1.8V | D | 3.3V | S |
| 1.9V | E | 3.4V | T |
| 2.0V | F | 3.5V | U |
| 2.1V | G | 3.6V | V |
| 2.2V | H | 3.7V | W |
| 2.3V | I | 3.8V | X |
| 2.4V | J | 3.9V | Y |
| 2.5V | K | 4.0V | Z |
| 2.6V | L | | |
| 2.7V | M | | |
| 2.8V | N | | |
| 2.9V | O | | |

IMPORTANT NOTICE

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