

Product Brief

RoHS & REACH Compliant

CMJA5050

50V, 50-80mA Adjustable Current Limiting Diode in the DFN123F package



Central Semiconductor's **CMJA5050** is a 50V Current Limiting Diode (CLD) developed to meet design requirements for maintaining a constant current with adjustable current regulation from 50mA to 80mA. This adjustable device eliminates the need to use multiple CLDs in order to meet the current regulation values required. Packaged in the low profile DFN123F surface mount case, this device is ideal for any application requiring a space saving current regulating device, including LED lighting and test/measurement equipment.

Features

- Constant current range
- Adjustable regulation up to 80mA
- Wide operating voltage
- Negative temperature coefficient for LED protection

Applications

- LED lighting and displays
- AC lighting panels
- Decorative lighting
- Test and measurement equipment

Benefits

- Eliminates need for additional regulation
- Space savings
- Low profile package
- RoHS and REACH compliant

| Steady State Regulator Current* | | | Maximum Limiting Voltage | Maximum Temperature Coefficient** |
|---------------------------------|--------|--------|--|-----------------------------------|
| $I_L @ V_T=12V$ | | | $V_L @ I_L=0.8 \times I_p \text{ MIN}$ | TC |
| MIN mA | NOM mA | MAX mA | V | mA/°C |
| 45 | 50 | 55 | 8.5 | -0.3 |

| Pulsed Regulator Current* | | | Maximum Limiting Voltage | Maximum Temperature Coefficient** |
|---------------------------|--------|--------|--|-----------------------------------|
| $I_p @ V_T=20V$ | | | $V_L @ I_L=0.8 \times I_p \text{ MIN}$ | TC |
| MIN mA | NOM mA | MAX mA | V | mA/°C |
| 72 | 80 | 88 | 8.0 | -0.3 |

*Measured after applying DC test voltage for 90 seconds duration or greater with device mounted on FR-4 PC Board with 2oz. copper mounting pad area of 300mm² in still air.
 **Measured between 25°C and 50°C.

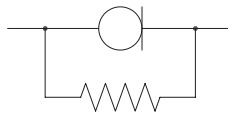
*Pulse width $\leq 1.0\text{ms}$
 **Measured between 25°C and 50°C.

Adjustment Compensation Resistance:

Placing resistors in parallel with a CLD allows the regulator current to be adjusted from 50mA to 80mA. This also corrects any current decrease when the applied voltage increases due to self heating.

REGULATOR CURRENT PER RESISTANCE:

| Steady State Regulator Current | | | Resistor (1/4W) |
|--------------------------------|--------|--------|-----------------|
| $I_L @ V_T=12V$ | | | Ω |
| MIN mA | NOM mA | MAX mA | Ω |
| 45 | 50 | 55 | none*** |
| 49.5 | 55 | 60.5 | 1000 |
| 54 | 60 | 66 | 800 |
| 58.5 | 65 | 71.5 | 600 |
| 67.5 | 75 | 82.5 | 500 |
| 72 | 80 | 88 | 400 |



***A 3000Ω resistor may be added to achieve more linear regulator current characteristics.

Custom solutions also available:

- custom device development
- special wafer diffusions
- custom interconnect options
- packaging options
- specialized parametric testing
- up-screening to MIL standard equivalents or to customer-specific criteria

SPICE Models, Package Details and other technical resources:

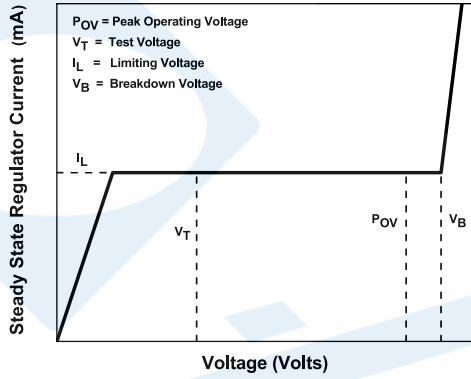
Engineering resources are available at www.centalsemi.com.

RoHS and REACH compliance declarations

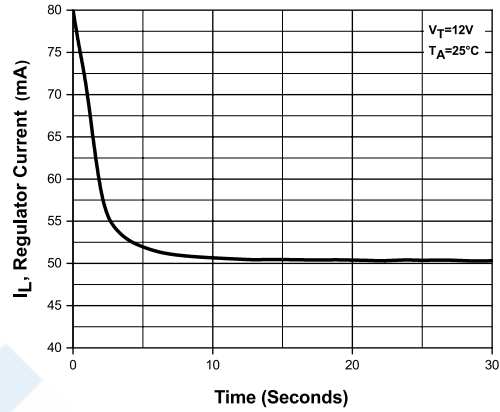
Visit the Quality section of Central's website to access.

TYPICAL ELECTRICAL CHARACTERISTICS

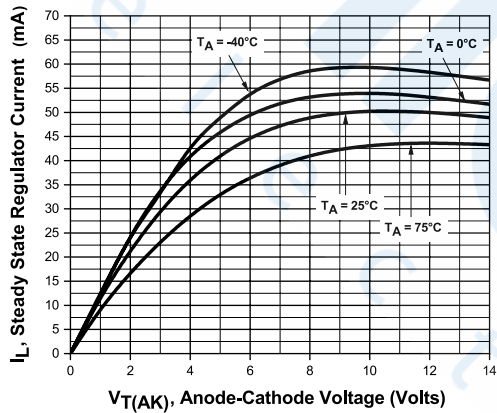
CLD Voltage-Current Characteristic



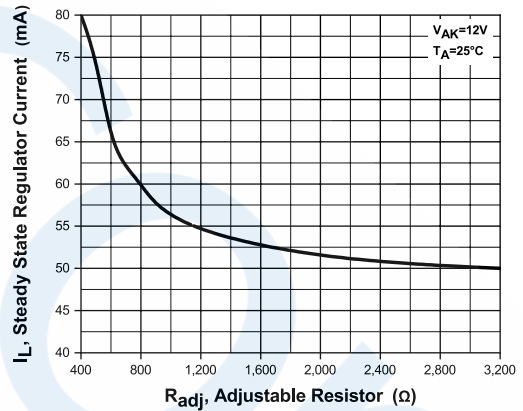
Current Regulation vs. Time



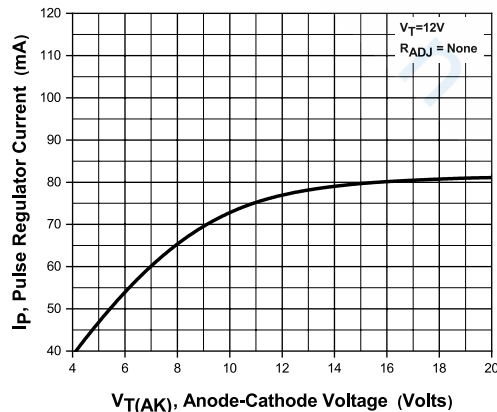
Steady State Current vs. Anode-Cathode Voltage



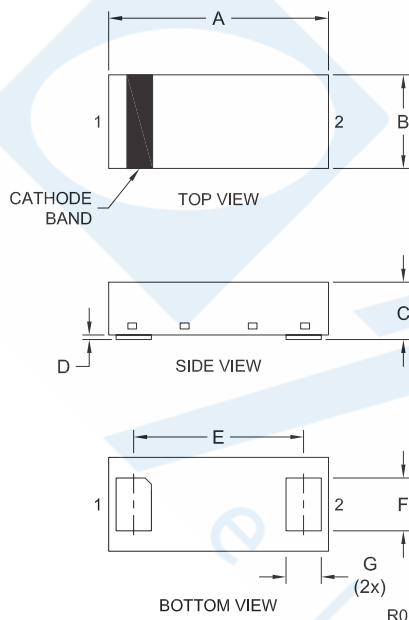
Steady State Regulator Current vs. Adjustable Resistor



Pulse Current vs. Anode-Cathode Voltage



Mechanical Drawing: DFN123F

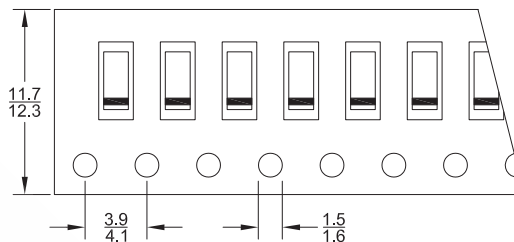


| SYMBOL | DIMENSIONS | | | |
|--------|------------|-------|-------------|------|
| | INCHES | | MILLIMETERS | |
| | MIN | MAX | MIN | MAX |
| A | 0.144 | 0.152 | 3.65 | 3.85 |
| B | 0.059 | 0.067 | 1.50 | 1.70 |
| C | 0.031 | 0.039 | 0.80 | 1.00 |
| D | 0.000 | 0.002 | 0.00 | 0.05 |
| E | 0.110 | 0.118 | 2.80 | 3.00 |
| F | 0.033 | 0.037 | 0.85 | 0.95 |
| G | 0.020 | 0.028 | 0.50 | 0.70 |

DFN123F (REV: R0)

Part Marking: 4-6 Character Alpha/Numeric Code

Tape Dimensions and Orientation (Dimensions in mm)

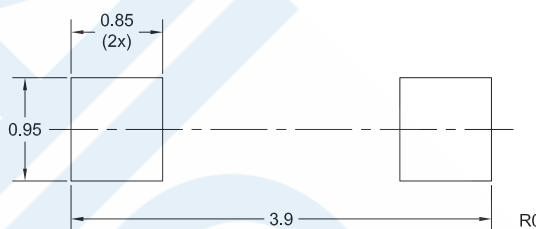


Devices are taped in accordance with Electronic Industries Association Standard EIA-481-D

← Direction of Unreeling

Tape Width: 12mm

Mounting Pad Geometry (Dimensions in mm)



Packaging Base

| Reel Size | Quantity |
|-----------|-------------|
| 7" | 3,000 pcs. |
| 13" | 10,000 pcs. |

Reel Packing Information

| Reel Size | Reels per Box (Maximum) | Parts per Box (Maximum) | Box Dimensions | | Shipping Weight (Max.) | |
|-----------|-------------------------|-------------------------|----------------|----------|------------------------|----|
| | | | INCH | CM | LB | KG |
| 7" | 9 | 27,000 | 9x9x5 | 23x23x13 | 7 | 4 |
| | 18 | 54,000 | 9x9x9 | 23x23x23 | 14 | 7 |
| | 40 | 120,000 | 21x9x9 | 53x23x23 | 30 | 14 |
| | 108 | 324,000 | 27x9x17 | 69x23x43 | 78 | 36 |
| 13" | 5 | 25,000 | 15x4x15 | 38x10x38 | 7 | 4 |
| | 14 | 70,000 | 15x15x9 | 38x38x23 | 17 | 8 |
| | 26 | 130,000 | 15x15x18 | 38x38x46 | 30 | 14 |

Ordering Information

| Reel Size | Orderable Part No. | Marking Code |
|-----------|---|--------------|
| 7" | Add "TR" as suffix to Central part no. (example: CMJA5050 TR) | CA50 |
| 13" | Add "TR13" as suffix to Central part no. (example: CMJA5050 TR13) | |