

CMJA5050

**SURFACE MOUNT SILICON  
ADJUSTABLE  
CURRENT LIMITING DIODE  
50V, 50-80mA**



www.centrasemi.com

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMJA5050 is a silicon field effect adjustable current regulating diode designed for applications requiring a constant current over a wide voltage range.

**MARKING CODE: CA50**



**APPLICATIONS:**

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

**MAXIMUM RATINGS:** (T<sub>A</sub>=25°C)

Peak Operating Voltage  
 Power Dissipation  
 Power Dissipation (Note 1)  
 Operating and Storage Junction Temperature  
 Thermal Resistance  
 Thermal Resistance (Note 1)

**FEATURES:**

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

**SYMBOL**

SYMBOL		UNITS
P <sub>OV</sub>	50	V
P <sub>D</sub>	570	mW
P <sub>D</sub>	1.0	W
T <sub>J</sub> , T <sub>stg</sub>	-65 to +150	°C
θ <sub>JA</sub>	220	°C/W
θ <sub>JA</sub>	125	°C/W

Note 1: Mounted on 300mm<sup>2</sup> 4-layer PCB with 2-ounce copper traces.

**ELECTRICAL CHARACTERISTICS:** (T<sub>A</sub>=25°C)

Steady State Regulator Current*			Maximum Limiting Voltage	Maximum Temperature Coefficient**
I <sub>L</sub> @ V <sub>T</sub> =12V			V <sub>L</sub> @ I <sub>L</sub> =0.8 x I <sub>p</sub> MIN	TC
MIN mA	NOM mA	MAX mA	V	mA/°C
45	50	55	8.5	-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 300mm<sup>2</sup> in still air.

\*\*Measured between 25°C and 50°C.

Pulsed Regulator Current*			Maximum Limiting Voltage	Maximum Temperature Coefficient**
I <sub>p</sub> @ V <sub>T</sub> =20V			V <sub>L</sub> @ I <sub>L</sub> =0.8 x I <sub>p</sub> MIN	TC
MIN mA	NOM mA	MAX mA	V	mA/°C
72	80	88	8.0	-0.3

\*Pulse width ≤1.0ms

\*\*Measured between 25°C and 50°C.

R3 (10-August 2020)

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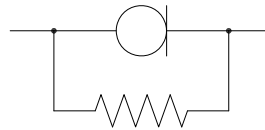


**Adjustment Compensation Resistance:**

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 $I_L @ V_T=12V$			Resistor (1/4W)
MIN mA	NOM mA	MAX mA	$\Omega$
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 3000 $\Omega$  resistor may be added to achieve more linear regulator current characteristics.

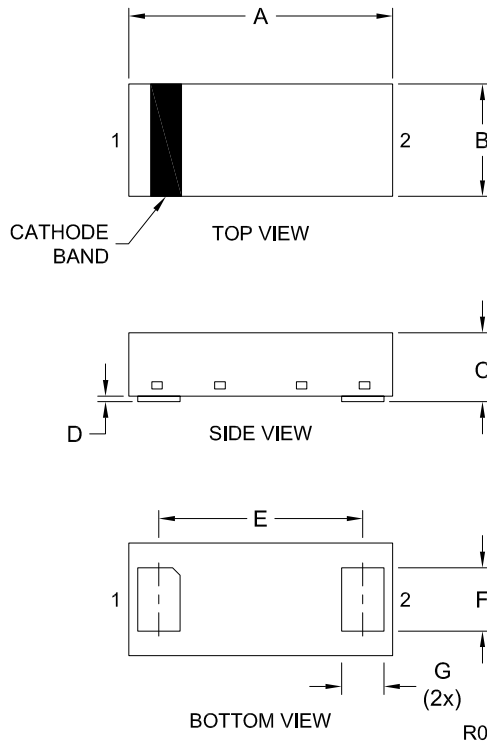
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DFN123F CASE - MECHANICAL OUTLINE



SYMBOL	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)

LEAD CODE:

- 1) Cathode
- 2) Anode

MARKING CODE: CA50

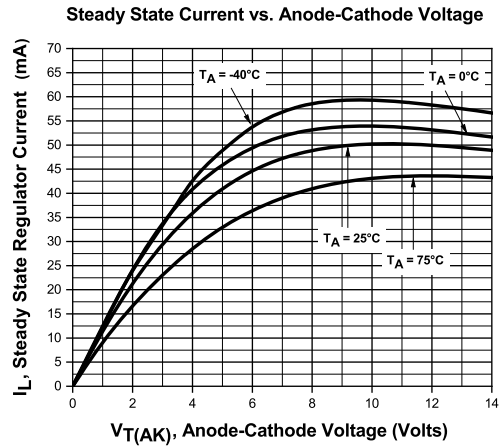
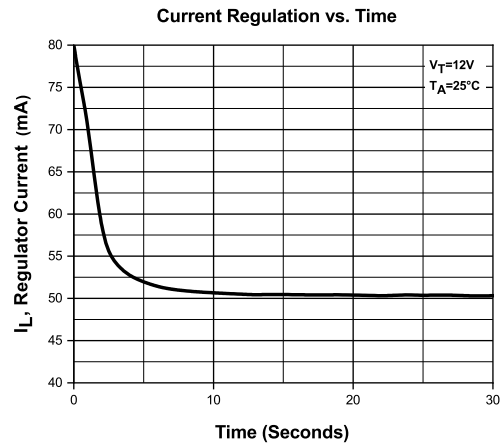
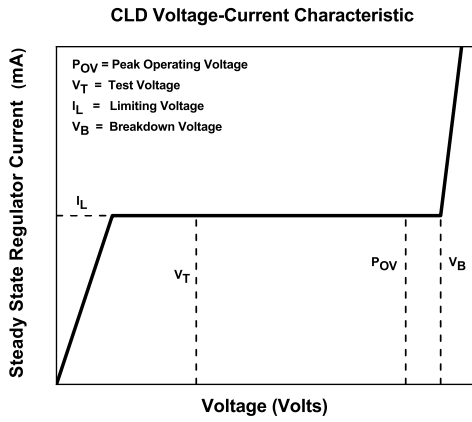
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### TYPICAL ELECTRICAL CHARACTERISTICS



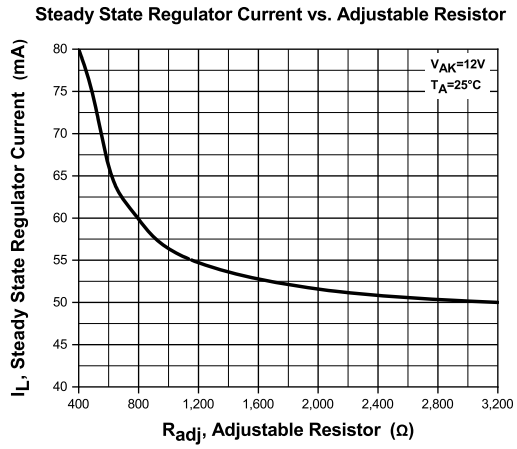
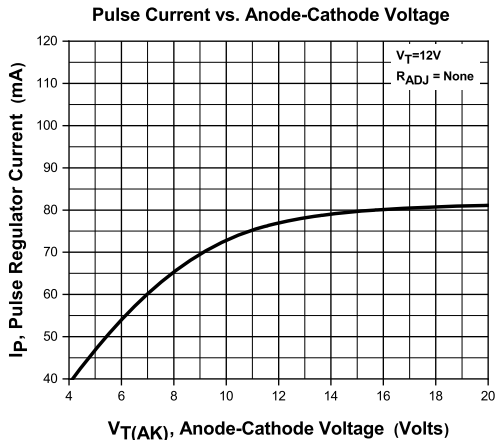
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## OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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### PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

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### DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2<sup>nd</sup> day air)
- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

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### REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix " TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix " PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

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### CONTACT US

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