

CMJD0130
THRU
CMJD5750

**SURFACE MOUNT SILICON
CURRENT LIMITING DIODES**



www.centrasemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR CMJD0130 series devices are silicon field effect current regulator diodes designed for applications requiring a constant current over a wide voltage range. These devices are manufactured in the epoxy molded, low profile DFN123F case. Special selections of I_P (regulator current) are available for critical applications.

MARKING: SEE MARKING CODES ON ELECTRICAL CHARACTERISTICS TABLE



FEATURES:

- High reliability
- Special selections available
- Through hole devices available

MAXIMUM RATINGS: ($T_A=25^\circ\text{C}$)

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

SYMBOL

P_{OV}
 P_D
 P_D
 T_J, T_{stg}
 Θ_{JA}
 Θ_{JA}

UNITS

V
mW
mW
 $^\circ\text{C}$
 $^\circ\text{C/W}$
 $^\circ\text{C/W}$

Note: Mounted on 300mm² 4-layer PCB with 2-ounce copper traces.

ELECTRICAL CHARACTERISTICS: ($T_A=25^\circ\text{C}$ unless otherwise noted)

Type	Regulator Current (Note 1)			Minimum Dynamic Impedance	Minimum Knee Impedance	Maximum Limiting Voltage	Temperature Coefficient (Note 2)	Marking Code
	$I_P @ V_T=25V$			$Z_T @ V_T=25V$	$Z_K @ V_K=6.0V$	$V_L @ I_L=0.8 \times I_P \text{ MIN}$	TC	
	MIN mA	NOM mA	MAX mA	M Ω	k Ω	V	%/ $^\circ\text{C}$	
CMJD0130	0.05	0.13	0.21	6.0	2,000	0.6	+2.10 to +0.10	C101
CMJD0300	0.20	0.31	0.42	4.0	1,000	0.8	+0.40 to -0.20	C301
CMJD0500	0.40	0.515	0.63	2.0	500	1.1	+0.15 to -0.25	C501
CMJD0750	0.60	0.76	0.92	1.0	200	1.4	0.0 to -0.32	C701
CMJD1000	0.88	1.1	1.32	0.65	100	1.7	-0.10 to -0.37	C102
CMJD1500	1.28	1.5	1.72	0.45	70	2.0	-0.13 to -0.40	C152
CMJD2000	1.68	2.0	2.32	0.35	50	2.3	-0.15 to -0.42	C202
CMJD2700	2.28	2.69	3.1	0.30	30	2.7	-0.18 to -0.45	C272
CMJD3500	3.0	3.55	4.1	0.25	20	3.2	-0.20 to -0.47	C352
CMJD4500	3.9	4.5	5.1	0.20	10	3.7	-0.22 to -0.50	C452
CMJD5750	5.0	5.75	6.5	0.05	5.0	4.5	-0.25 to -0.53	C562

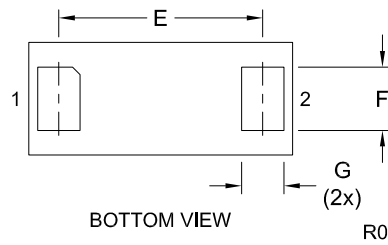
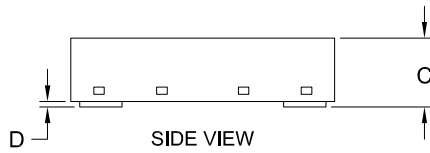
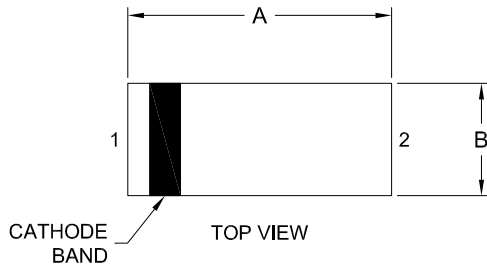
Notes: 1) Pulsed Method: Pulse Width (ms) = 27.5 divided by I_P NOM (mA)
2) The Temperature Coefficient is measured between +25 $^\circ\text{C}$ and +50 $^\circ\text{C}$.

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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: SEE ELECTRICAL
CHARACTERISTICS TABLE

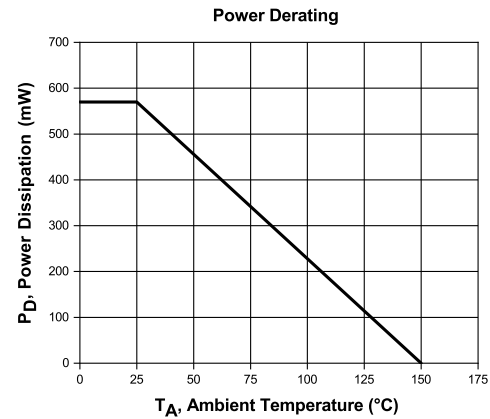
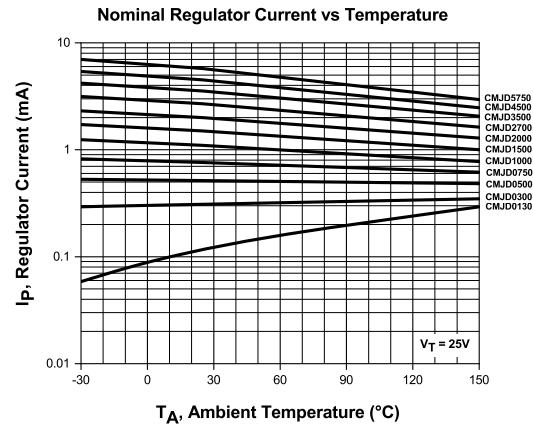
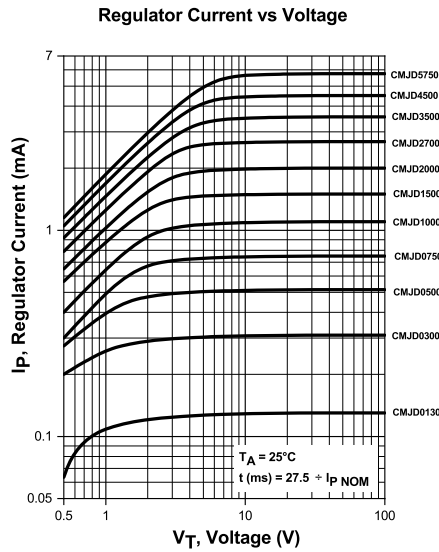
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TYPICAL ELECTRICAL CHARACTERISTICS



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TYPICAL APPLICATIONS

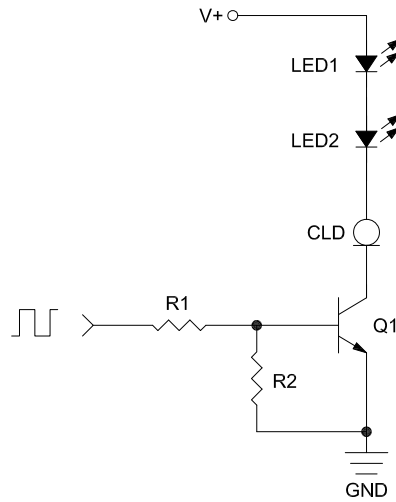


Figure 1. CLDs can be used to limit the current flowing through LED strings. Their dynamic performance make them an excellent replacement for current limiting resistors, as they allow for continuous current regulation regardless of input voltage. LED strings like this are commonly used in dimming lighting systems. By using a PWM input to control the transistor, the LED luminosity can be controlled by extending or decreasing the pulse width, allowing for control over the brightness of the LED.

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TYPICAL APPLICATIONS

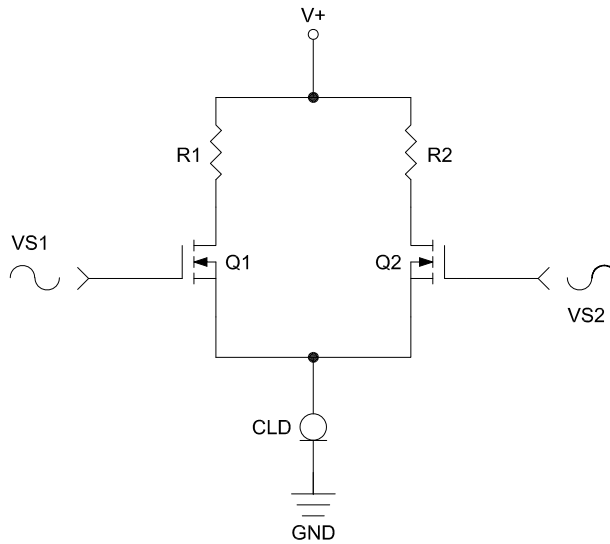


Figure 2. When designing differential amplifiers, it is essential to use a high impedance tail resistor to control both differential and common mode function. For differential signals, the tail resistor effectively splits the current amongst the transistors. This ensures proportional current increase and decrease between the transistors. The high impedance drives down the common mode gain and increases the common mode rejection ratio, thus yielding a more ideal amplifier. Ideally, an infinite impedance current source would be used in place of the tail resistor. While the ideal current source doesn't exist, CLDs serve as an excellent replacement for the tail resistor and also perform much like an active current source, both regulating the circuit to a constant current and presenting a large tail impedance. This yields a larger CMRR than using a high impedance tail resistor would.

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OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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

DESIGNER SUPPORT/SERVICES

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

- Free quick ship samples (2nd 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

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).

CONTACT US

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