CDCLD025 CDCLD100
CDCLD040 CDCLD120
CDCLD080

SURFACE MOUNT SILICON
CURRENT LIMITING DIODES

DPAK CASE

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DESCRIPTION:

The CENTRAL SEMICONDUCTOR CDCLD025 series devices are Current Limiting Diodes (CLDs) specifically designed for applications requiring a constant current over a wide voltage range. The series is designed with a unique process that holds regulator current constant over temperature excursions (zero temperature coefficient). The devices are available in the thermally efficient DPAK package outline.

MARKING: FULL PART NUMBER

FEATURES:

- Zero temperature coefficient
- High regulator currents available
- Industry standard thermally efficient DPAK

MAXIMUM RATINGS: (T_A=25°C unless otherwise noted)

	SYMBOL	CDCLD025 CDCLD040	CDCLD080 CDCLD100	CDCLD120	UNITS
Peak Operating Voltage	P_{OV}	50	50	45	V
Peak Operating Voltage (T_C=122°C)	P_{OV}			50	V
Power Dissipation (Note 1)	P_D		6.25		W
Power Dissipation (T_C=35°C) (Note 1)	P_D		28.75		W
Thermal Resistance	Θ_{JC}		4.0		°C/W
Operating and Storage Junction Temperature	T_J, T_{stg}		-55 to +150		°C

Note 1: Mounted on 900mm^2 4-layer PCB with 2-ounce copper traces.

ELECTRICAL CHARACTERISTICS: (T_A=25°C)

Type	Regulator Current (tp=4.5ms) I_P @ V_T=5.0V			Maximum Limiting Voltage (tp=5.0ms) V_L @ 0.8 x I_P MIN
	MIN mA	NOM mA	MAX mA	V
CDCLD025	22.5	25	27.5	1.5
CDCLD040	36	40	44	1.5
CDCLD080	72	80	88	1.8
CDCLD100	85	100	115	2.0
CDCLD120	102	120	138	2.0

R5 (1-April 2021)

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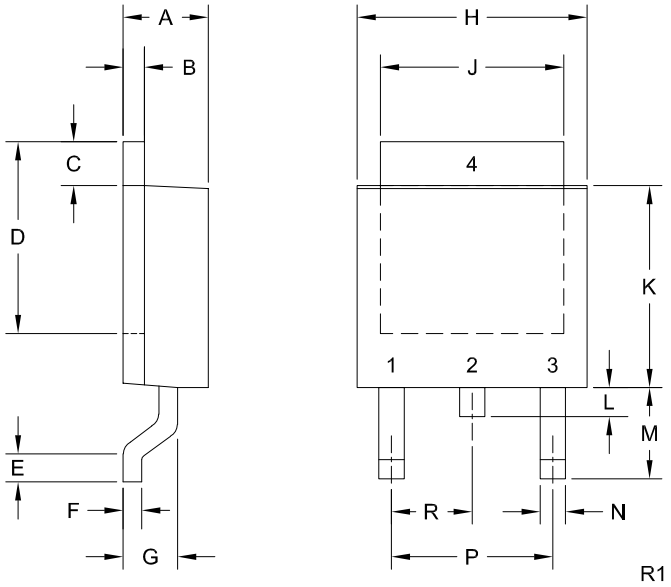
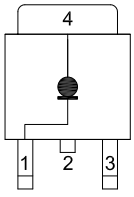
DPAK CASE - MECHANICAL OUTLINE



LEAD CODE:
1) Cathode
2) Anode
3) No Connection
4) Anode
Pin 2 is common to the tab (4)

MARKING: FULL PART NUMBER



DIMENSIONS				
	INCHES		MILLIMETERS	
SYMBOL	MIN	MAX	MIN	MAX
A	0.083	0.108	2.10	2.75
B	0.016	0.032	0.40	0.81
C	0.035	0.063	0.89	1.60
D	0.203	0.228	5.15	5.79
E	0.020	-	0.51	-
F	0.016	0.024	0.40	0.60
G	0.051	0.071	1.30	1.80
H	0.248	0.268	6.30	6.81
J	0.197	0.217	5.00	5.50
K	0.209	0.245	5.30	6.22
L	0.025	0.040	0.64	1.02
M	0.090	0.115	2.30	2.91
N	0.012	0.045	0.30	1.14
P	0.180		4.60	
R	0.090		2.30	

DPAK (REV: R1)

R5 (1-April 2021)

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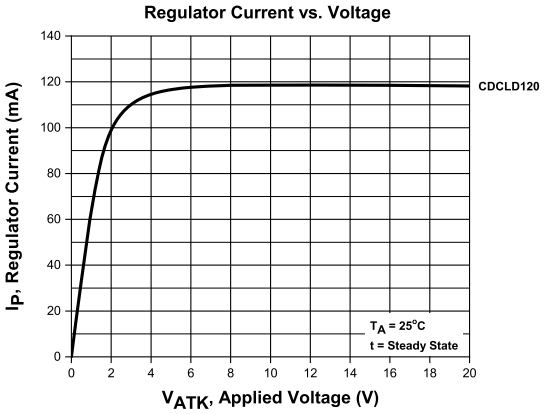
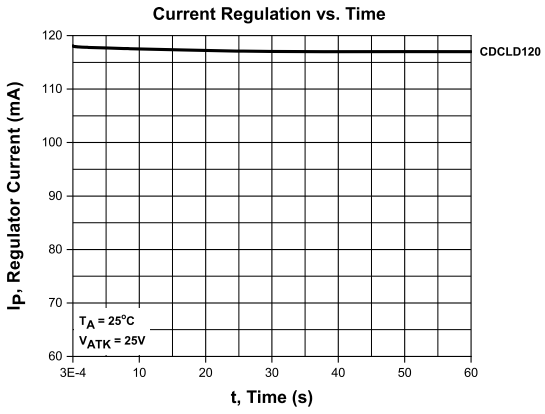
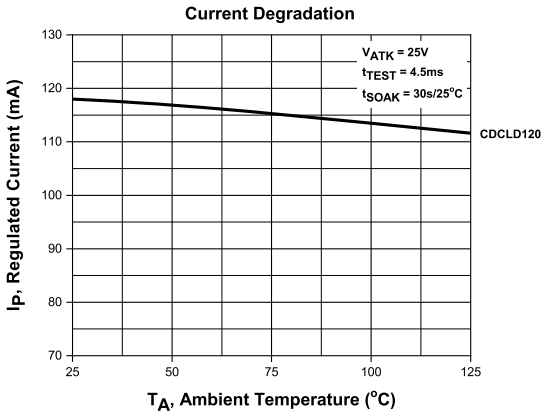
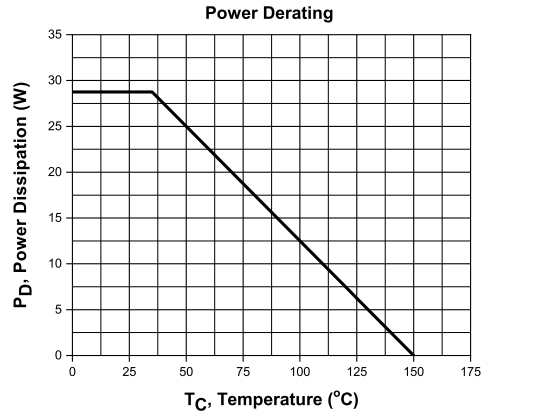
TYPICAL ELECTRICAL CHARACTERISTICS









TYPICAL APPLICATIONS

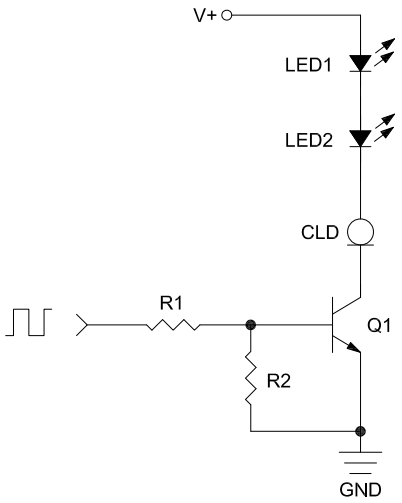


Figure 1. CLDs can be used to limit the current flowing through LED strings. Their dynamic performance make them an excellent replacement for current limiting resistors, as they allow for continuous current regulation regardless of input voltage. LED strings like this are commonly used in dimming lighting 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.

TYPICAL APPLICATIONS

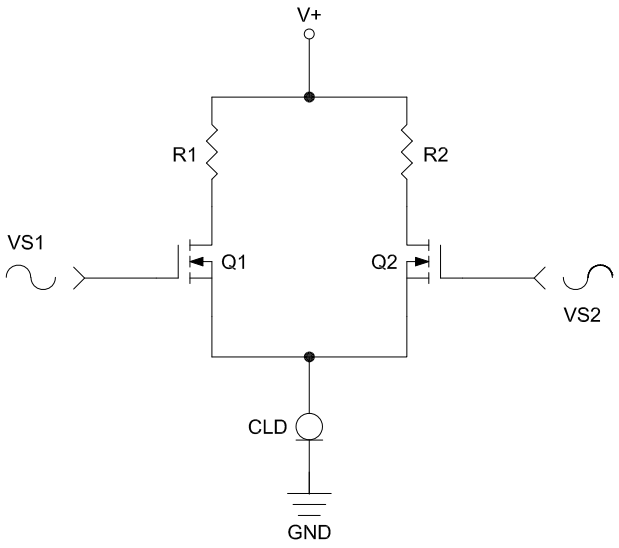


Figure 2. When designing differential amplifiers, it is essential to use a high impedance tail resistor to control both differential and common mode function. For differential signals, the tail resistor effectively splits the current amongst the transistors. This ensures proportional current increase 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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