



T-41-83

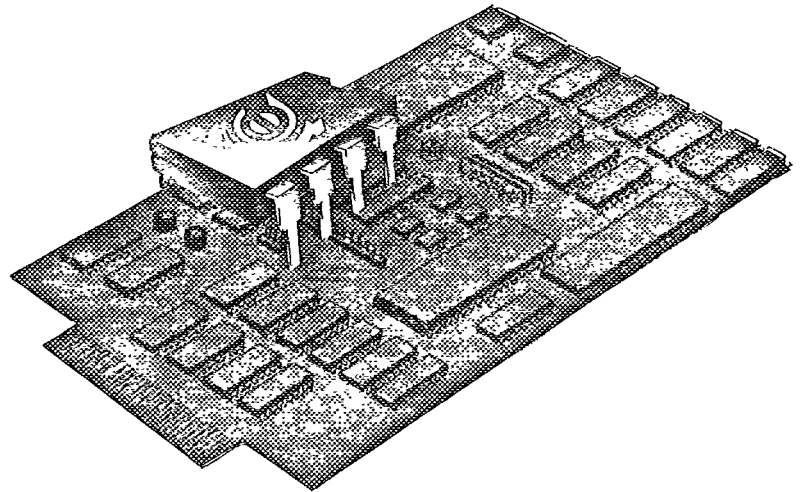
LDA Series

Solid-State Current Sensors

The Theta-J LDA Series of solid-state current sensors is a family of optically coupled phototransistors that service a wide range of control applications where input to output electrical isolation is desirable. The family includes both AC and DC input devices coupled to conventional and Darlington configured transistors.

Features:

- AC and DC input versions available
- 3,750 Volt input to output isolation
- small dual inline package
- broad selection includes multiple sensors in a single package
- 100 mA continuous load rating
- UL Recognized: File No. E76270
- VDE, CSA Compatible



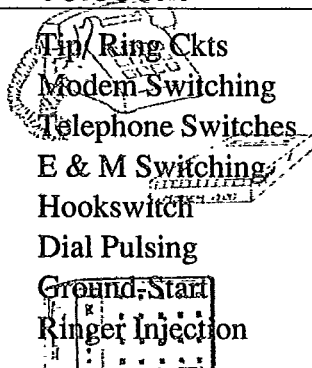
Product Overview:

The LDA series of solid-state current sensors provides the designer with an excellent optically isolated means of controlling application circuits. Applications include telecommunication, industrial control and instrumentation circuits where electrical isolation of the control circuitry is essential or desirable. Each package contains one or more phototransistors or Darlington phototransistors which are optically coupled with light emitting diodes. Shunt resistors can be used to program the threshold currents required to activate the output circuitry.

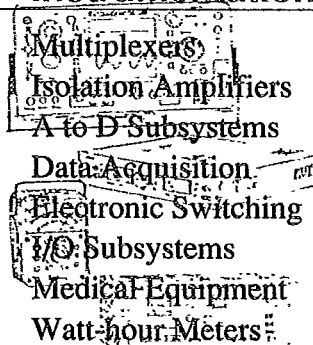
The LDA series contains sensors which allow for either AC or DC input circuits, single or Darlington outputs and single or multiple devices in single packages as shown inside this data sheet. Applications requiring linear or digital switching are made possible through the use of the LDA series.

Typical applications for the LDA series include:

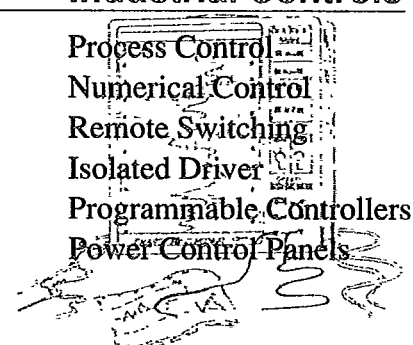
Telecom



Instrumentation



Industrial Controls



The LDA family is available in 6, 8 or 16 pin dual inline packages depending upon characteristics.

CP Clare
CORPORATION

THETA-J
Solid State Products Division

Solid State Current Sensors

Product Selector Guide:

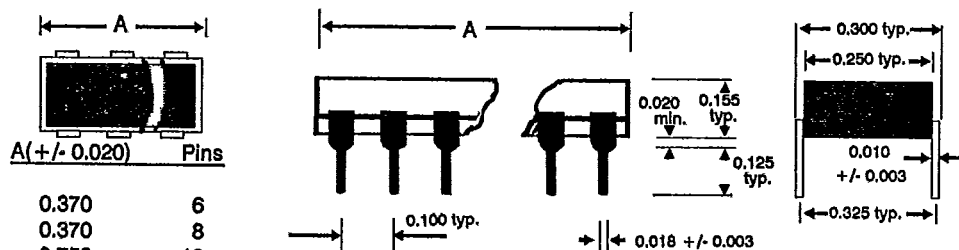
Part Number	Current Transfer Ratio (typical)	V _{ceo} (Volts)	V _{sat} (Volts)	Package Style
LDA100	100 %	50	0.3	A
LDA101	100 %	50	0.3	B
LDA110	750 %	50	1.0	C
LDA111	750 %	50	1.0	D
LDA200	100 %	50	0.3	E
LDA201	100 %	50	0.3	F
LDA210	750 %	50	1.0	G
LDA211	750 %	50	1.0	H
LDA401	100 %	50	0.3	I
LDA411	750 %	50	1.0	J

General Ratings: (at 25° C.)

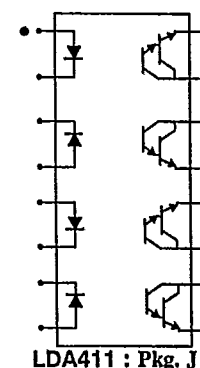
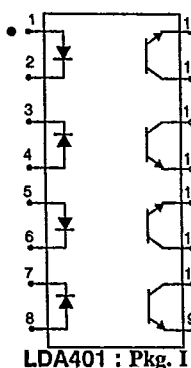
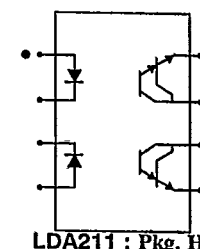
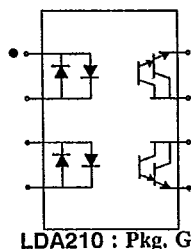
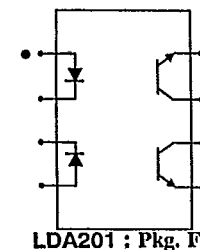
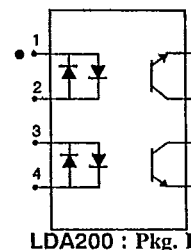
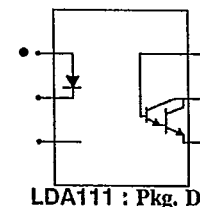
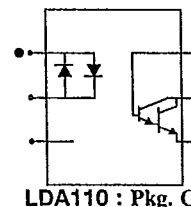
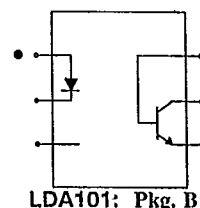
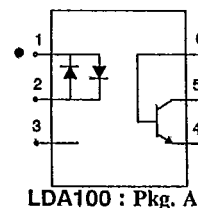
Input:	Min	Max	Units	Notes
Power Dissipation per stage		190	mW	Derate 1.33 mW/°C above 25° Ambient Pulse width 1μs 300 pps Not applicable for package styles A, C, E, G V=0; f= 1 MHz.
Forward Current (Cont.)		100	mA	
Forward Current (Peak)		3	A	
Reverse Voltage		10	V	
Forward Voltage	0.9	1.4	V	
Capacitance		50	pF	
Output:	Min	Max	Units	Notes
Collector Current		100	mA	Darlington Configuration Single Transistor Output V _{ce} = 10V; f = 1 MHz. V _{ce} = 10V; I _F = 0 mA.
Collector Current		100	mA	
Capacitance		3	pF	
Collector Dark Current		50	nA	

Coupled Characteristics:	Min	Max	Units	Notes
Isolation Voltage		2,500	V _{RMS}	3,750 V _{RMS} Isolation Voltage is available by specifying an "E" suffix.
Isolation Resistance (Input-to-output Voltage = 500 VDC)	10 ¹¹		Ohms	
Capacitance (Input-to-output)		2	pF	
Storage Temperature	-40	125	°C	
Operating Temperature	-40	85	°C	
Lead Soldering Time (260° C)		10	seconds	

All dimensions are in inches.

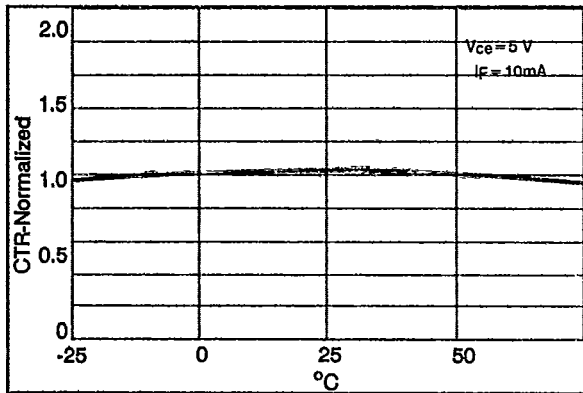


Note: Gull-Wing SMD Packages available.

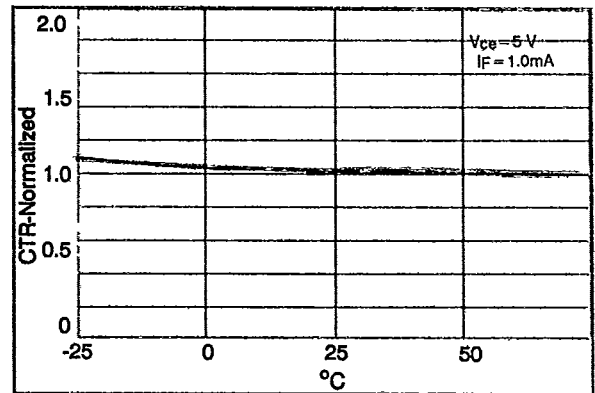


● Indicates pin 1

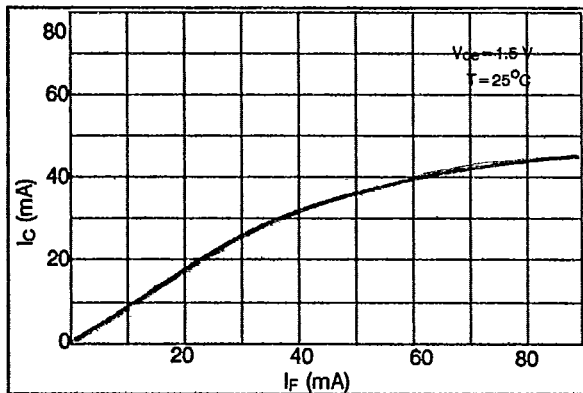




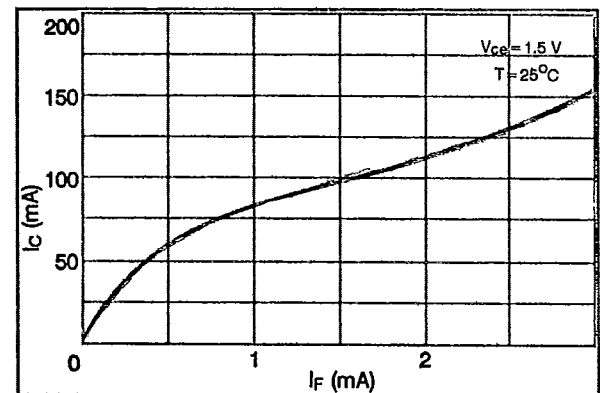
Normalized Current Ratio vs. Temperature
Single Transistor Output



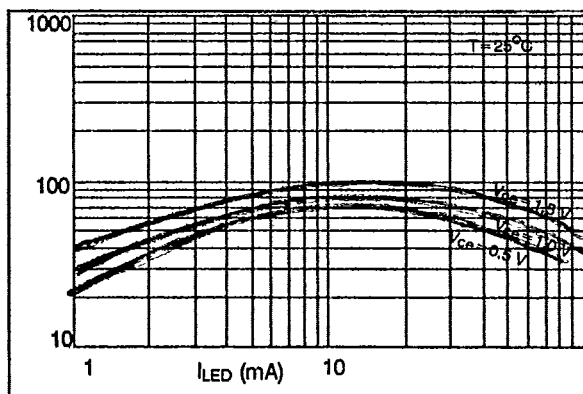
Normalized Current Ratio vs. Temperature
Darlington Transistor Output



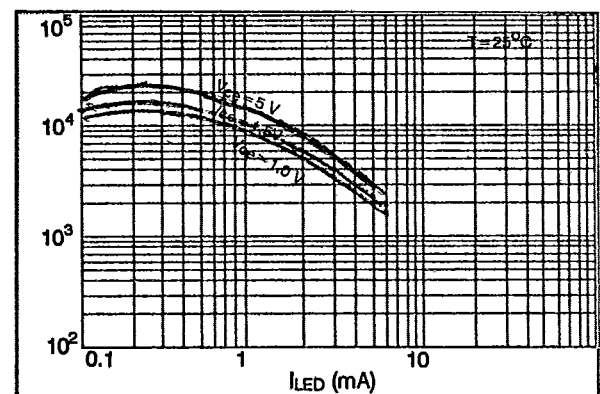
Transfer Characteristics
Single Transistor Output



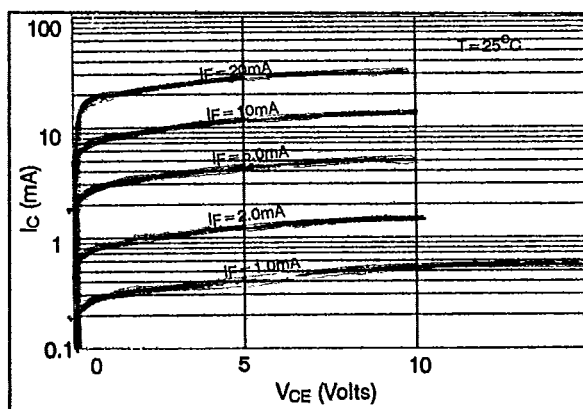
Transfer Characteristics
Darlington Transistor Output



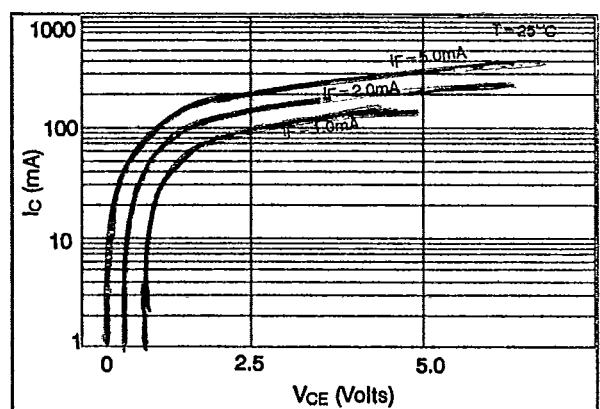
% Current Transfer vs. I_{LED}
Single Transistor Output



% Current Transfer vs. I_{LED}
Darlington Transistor Output



Characteristic Curves
Single Transistor Output

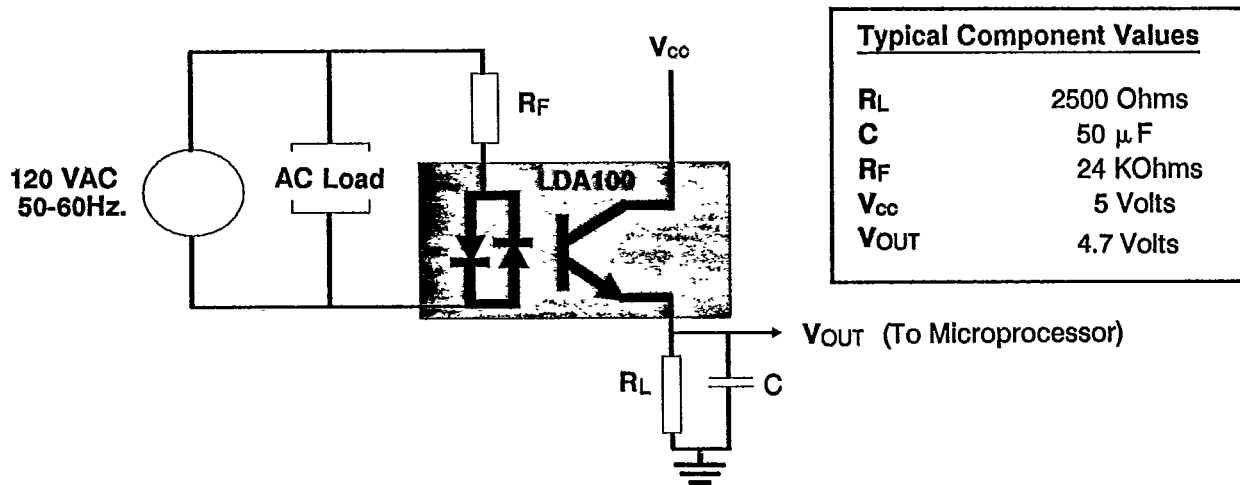


Characteristic Curves
Darlington Transistor Output

Typical Application Circuit: AC to DC Detector Circuit

Shown below is an AC to DC detector circuit, a typical application for the LDA current sensors. Component values may vary depending upon the details of the ac-

tual application. The resistor R_L represents the actual load device. R_F represents the limiting resistor for the input diodes.



Ordering Information

Specifying the correct part number for the proper LDA current sensor requires three parameters X, Y and Z which combine to form a part number "LDAXYZ" as follows:

- X: The desired number of sensors per package (1, 2 or 4)
- Y: Single transistor ("0") or Darlington transistor ("1") output configuration.
- Z: Number of input diodes (1= single input diode 0= two input diodes)
- Add "E" Suffix to specify 3,750 Isolation Voltage
- Use the "S" Suffix to specify Gull Wing packaging
- Use the "B" Suffix to specify Butt End-cut packaging

As an example, the LDA4 1 1 specifies:

$Z=1$ DC Operation with a single input diode
 $Y=1$ Darlington transistor output
 $X=4$ There are four sensors in this package.

Note: Special part numbers are available on an application/request basis.

* Please request Application Brief 114 for more information about SMD package styles.

CP Clare
CORPORATION

THETA-J
Solid State Products Division

107 Audubon Rd., Wakefield, MA 01880 ■ (617) 246-4000 ■ TWX 310 681-7300

■ FAX (617) 246-1356

DSCS881115/25K

Copyright © 1989 by CP Clare Corporation