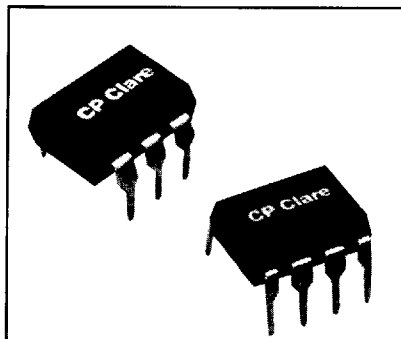


Solid State Current Sensors

DESCRIPTION



CP Clare's LDA series solid state current sensors provide an optically isolated means of switching control circuits. Applications include Telecom, Industrial Control and Instrumentation circuits, where electrical isolation of the control circuitry is critical. Each package contains one or two phototransistors or darlington phototransistors which are optically coupled with LEDs. Shunt resistors can be used to adjust the threshold currents required to activate the output circuitry. The LDA contains sensors which allow for either AC or DC input circuits and single transistor or darlington transistor outputs.

FEATURES

- AC and DC Input Versions Available
- Small 6 or 8 pin DIP Package
- 100mA Continuous Load Rating
- 3750 V_{RMS} Input/Output Isolation
- Machine Insertable, Wave Solderable
- Surface Mount and Tape & Reel Version Available
- UL Recognized: File Number E76270
- CSA, VDE Compatible
- BAPT: Certified to BS415: 1990- Certificate Number 7023
- BAPT: Certified to BS7002: 1989, EN60950: 1988 Certificate Number 7344
- BAPT: Complies with EN41003: 1991 and BS6301: 1989 (Supplementary Insulation) Clause 3.2.3.2

APPLICATIONS

- Telecom Switching
- Tip/Ring Circuits
- Modem Switching (Laptop, Notebook, Pocket Size)
- Loop Detect
- Ring Detect
- Current Sensor

RATINGS (@ 25°C)

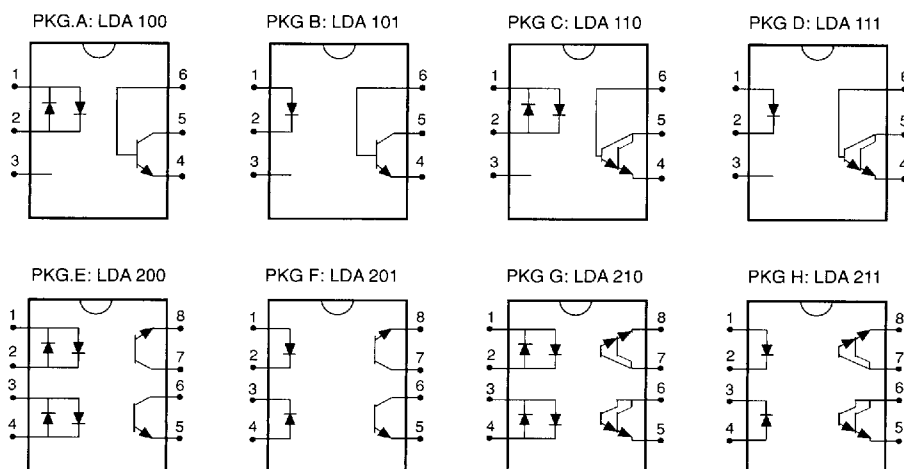
Parameter	Min	Typ	Max	Units
Input Power Dissipation	—	—	150 ¹	mW
Input Control Current	—	—	100	mA
Peak (10mSec)	—	—	1	A
Reverse Input Voltage	—	—	5	V
Phototransistor	—	—	150 ²	mW
Power Dissipation	—	—	—	—
Total Package Dissipation	—	—	800 ³	mW
Capacitance	—	—	—	—
Input to Output	—	3	—	pF
Isolation Voltage	—	—	—	—
Input to Output	2500	—	—	V _{RMS}
"E" Suffix (Optional)	3750	—	—	V _{RMS}
Operating Temperature	-40	—	85	°C
Storage Temperature	-40	—	125	°C
Soldering Temperature (10 Seconds Max)	—	—	260	°C

¹ Derate Linearly 1.33 mW/°C.

³ Derate Linearly 6.67 mW/°C.

² Derate Linearly 2.0 mW/°C.

EQUIVALENT CIRCUIT



NOTE:
For Mechanical Dimensions refer to page 20.

Specifications

Part Number	LDA100	LDA101	LDA110	LDA111	LDA200	LDA201	LDA210	LDA211	Units
Package Style	A	B	C	D	E	F	G	H	

Output Characteristics @ 25°C

Collector Current		100	100	100	100	100	100	100	mA
Phototransistor BV_{CEO} @ $I_C = 10\mu A$	Min Typ	20 50	20 50	20 50	20 50	20 50	20 50	20 50	V
Phototransistor I_{CEO} $V_{CE} = 5V, I_{LED} = 0mA$	Typ Max	50 500	50 500	100 1000	100 1000	50 500	50 500	100 1000	nA
Saturation Voltage $I_C = 2mA, I_{LED} = 16mA$ $I_C = .15mA, I_{LED} = .05mA$	Typ Max	0.3 0.5	0.3 0.5	0.5^A 0.8^A	0.5^A 0.8^A	0.3 0.5	0.3 0.5	0.5^A 0.8^A	V
Current Transfer Ratio $I_{LED} = 6mA, V_{CE} = 0.5V$ $I_{LED} = 0.5mA, V_{CE} = 0.8V$	Min Typ	33 100	33 100	300^B 1000^B	300^B 1000^B	33 100	33 100	300^B 1000^B	%
Output Capacitance @ 50V, $f = 1MHz$	Typ	3	3	3	3	3	3	3	pF

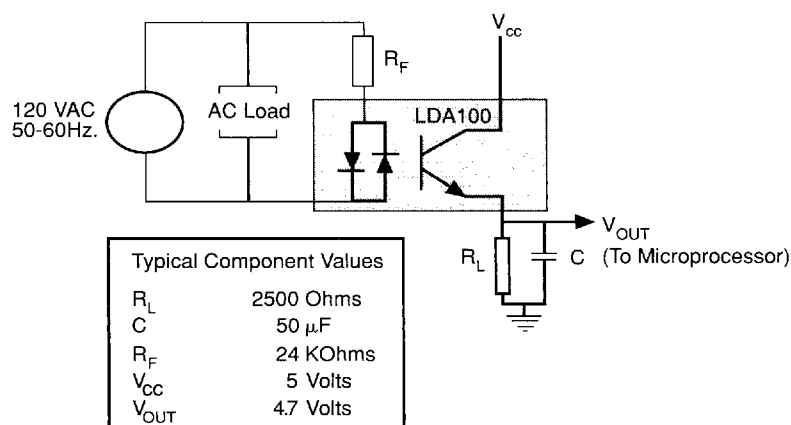
Input Characteristics @ 25°C

Input Control Current $I_C = 2mA, V_{CE} = 0.5V$ $I_C = 20mA, V_{CE} = 0.8V$	Typ Max	2 6	2 6	1^C 2^C	1^C 2^C	2 6	2 6	1^C 2^C	1^C 2^C	mA
Input Voltage Drop $V_F @ 5mA$	Min Typ Max	0.9 1.2 1.4	0.9 1.2 1.4	0.9 1.2 1.4	0.9 1.2 1.4	0.9 1.2 1.4	0.9 1.2 1.4	0.9 1.2 1.4	0.9 1.2 1.4	V
Input Capacitance @ 0V, $f = 1MHz$	Max	50	50	50	50	50	50	50	50	pF

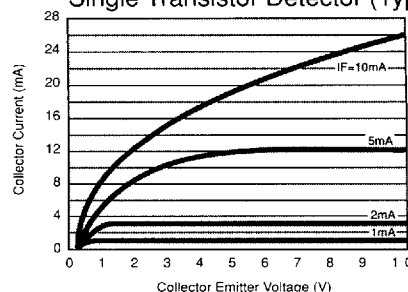
Input to Output Isolation with "E" Suffix (optional)	2500 3750	2500 3750	2500 3750	2500 3750	2500 3750	2500 3750	2500 3750	2500 3750	V_{RMS}
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Typical Application Circuit: AC to DC Detector Circuit

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



Transfer Characteristics of
Single Transistor Detector (Typical)



Transfer Characteristics of
Darlington Transistor Detector (Typical)

