

## SOLID STATE CURRENT SENSORS

### LDA100/LDA101/LDA110/LDA111



## DESCRIPTION

The LDA100/LDA101/LDA110/LDA111 are optocouplers with a single or darlington transistor outputs. A bi-directional or uni-directional input is available depending on which model you choose. Current transfer ratios range from 33% to 1000%.

## FEATURES

- AC and DC Input Versions Available
- Small 6 Pin DIP Package
- 100mA Continuous Load Rating
- 3750 V<sub>RMS</sub> Input/Output Isolation
- Machine Insertable, Wave Solderable
- Surface Mount and Tape Reel Versions Available

## APPLICATIONS

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

## APPROVALS

- UL Recognized: File Number E76270
- CSA Certified: File Number LR 43639-10
- BSI Certified:
  - BS EN 60950:1992 (BS7002:1992) Certificate #:7344
  - BS EN 41003:1993 Certificate #:7344

## OPTIONS / SUFFIXES

- S: Surface Mount Package
- TR: Tape & Reel

## RATINGS (@ 25° C)

Parameter	Min	Typ	Max	Units
Input Power Dissipation	-	-	150 <sup>1</sup>	mW
Input Control Current	-	-	100	mA
Peak (10ms)	-	-	1	A
Reverse Input Voltage	-	-	5	V
Phototransistor	-	-	150 <sup>2</sup>	mW
Power Dissipation	-	-	800 <sup>3</sup>	mW
Total Package Dissipation	-	-	800 <sup>3</sup>	mW
Capacitance	-	3	-	pF
Input to Output	-	3	-	pF
Isolation Voltage	3750	-	-	V <sub>RMS</sub>
Input to Output	3750	-	-	V <sub>RMS</sub>
Operational Temperature	-40	-	+85	°C
Storage Temperature	-40	-	+125	°C
Soldering Temperature	-	-	+260	°C
DIP Package	-	-	+260	°C
Surface Mount Package (10 Seconds Max.)	-	-	+220	°C

<sup>1</sup> Derate Linearly 1.33 mw/°C

<sup>2</sup> Derate Linearly 2.0 mw/°C

<sup>3</sup> Derate Linearly 6.67 mw/°C

Note: For Mechanical Dimensions See Pages 408-415

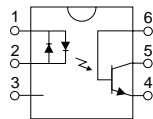
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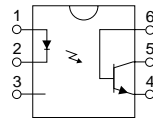
## SPECIFICATIONS

PARAMETER	CONDITIONS	SYMBOL	LDA100/LDA101			LDA110/LDA111			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	
<b>Output Characteristics @ 25°C</b>									
Phototransistor Blocking Voltage	$I_C=10\mu\text{A}$	$BV_{CEO}$	20	50	-	20	50	-	V
Phototransistor Output Current	$V_{CE}=5\text{V}, I_F=0\text{mA}$	$I_{CEO}$	-	50	500	-	50	500	nA
Saturation Voltage	$I_C=2\text{mA}, I_F=16\text{mA}$ $I_C=.15\text{mA}, I_F=.05\text{mA}$	$V_{SAT}$	-	0.3	0.5	-	-	-	V
			-	-	-	-	0.5	0.5	V
Current Transfer Ratio	$I_F=6\text{mA}, V_{CE}=0.5\text{V}$	CTR	33	100	-	300	1000	-	%
Output Capacitance	50V, f=1 MHz	$C_{OUT}$	-	3	-	-	3	-	pF
<b>Input Characteristics @ 25°C</b>									
Input Control Current	$I_C=2\text{mA}, V_{CE}=0.5\text{V}$	$I_F$	6	2	100	2	1	100	mA
Input Voltage Drop	$I_F=5\text{mA}$	$V_F$	0.9	1.2	1.4	0.9	1.2	1.4	V
Input Reverse Voltage (LDA101, LDA111)	-	$V_R$	-	-	5	-	-	5	V
Input Reverse Current (LDA101, LDA111)	$V_R=5\text{V}$	$I_R$	-	-	10	-	-	10	nA
<b>Common Characteristics @ 25°C</b>									
Input to Output Isolation	-	$V_{IO}$	3750	-	-	3750	-	-	$V_{RMS}$

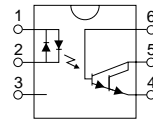
LDA100 Pinout



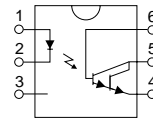
LDA101 Pinout



LDA110 Pinout



LDA111 Pinout



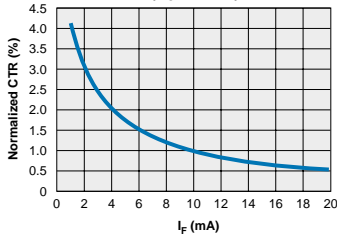
Note: For Mechanical Dimensions See Pages 408-415

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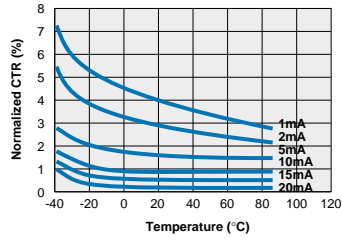
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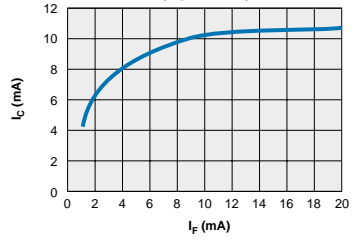
LDA100/LDA101  
Typical Normalized CTR vs. Forward Current  
( $V_{CE} = 0.5V$ )



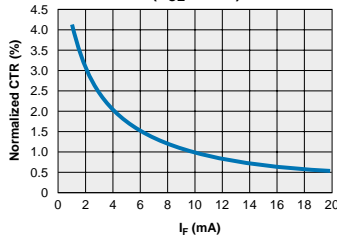
LDA100/LDA101  
Typical Normalized CTR vs. Temperature  
( $V_{CE} = 0.5V$ )



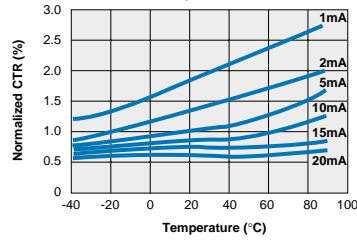
LDA100/LDA101  
Typical Collector Current vs. Forward Current  
( $V_{CE} = 0.5V$ )



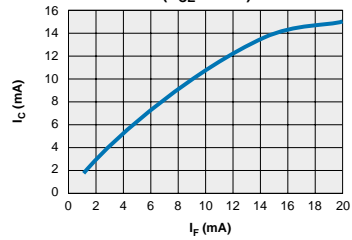
LDA100/LDA101  
Typical Normalized CTR vs. Forward Current  
( $V_{CE} = 0.5V$ )



LDA110/LDA111  
Typical Normalized CTR vs. Temperature  
( $V_{CE} = 0.8V$ )



LDA110/LDA111  
Typical Collector Current vs. Forward Current  
( $V_{CE} = 0.8V$ )



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