LDA211

Dual Unidirectional Input Darlington Transistor Output Optocoupler

Parameter	Rating	Units
Breakdown Voltage - BV_{CEO}	30	V_P
Current Transfer Ratio - CTR (typical)	8500	%
Saturation Voltage - $V_{CE(sat)}$	1	V
Input Control Current - I_F	1	mA

Features

- Unidirectional Input
- Small 8-Pin Package, Thru-Hole or Surface Mount
- 100mA Continuous Load Rating
- 3750V_{rms} Input/Output Isolation
- Machine Insertable, Wave Solderable
- Surface Mount Tape & Reel Packaging Available

Applications

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

Description

LDA211 is a dual unidirectional input optocoupler with Darlington transistor outputs. The LDA211 has a minimum current transfer ratio (CTR) of 300% with a typical value of 8500%.

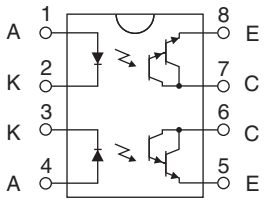
Approvals

- UL Recognized Component: File # E76270
- CSA Certified Component: Certificate # 1175739

Ordering Information

Part Number	Description
LDA211	8-Pin DIP (50/tube)
LDA211S	8-Pin Surface Mount (50/tube)
LDA211STR	8-Pin Surface Mount (1000/Reel)

Pin Configuration



Absolute Maximum Ratings

Parameter	Ratings	Units
Breakdown Voltage	30	V_P
Reverse Input Voltage	5	V
Input Control Current	100	mA
Peak (10ms)	1	A
Power Dissipation		
Input Power Dissipation [1]	150	mW
Phototransistor [2]	150	
Isolation Voltage, Input to Output	3750	V_{rms}
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°C

[1] Derate Linearly 1.33 mW/°C

[2] Derate Linearly 2.0 mW/°C

Absolute Maximum Ratings are stress ratings. Stresses in excess of these ratings can cause permanent damage to the device. Functional operation of the device at conditions beyond those indicated in the operational sections of this data sheet is not implied.

Electrical absolute maximum ratings are at 25°C

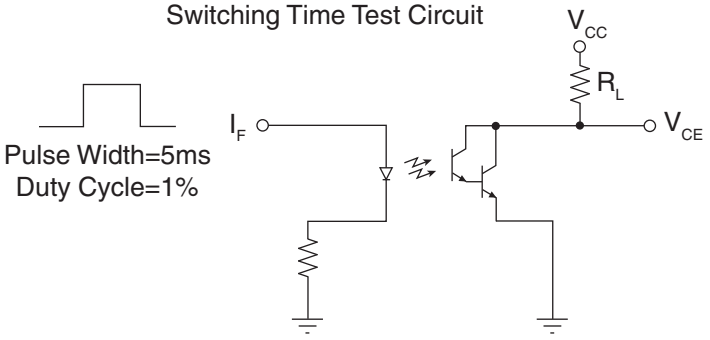
Electrical Characteristics

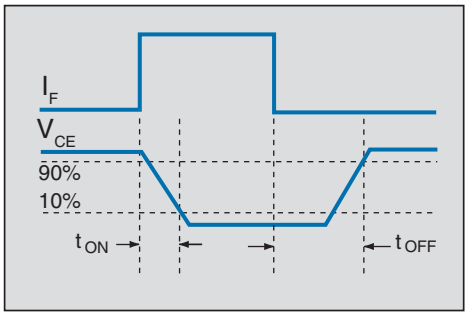
Parameter	Conditions	Symbol	Min	Typ	Max	Units
Output Characteristics @ 25°C						
Phototransistor Breakdown Voltage	I_C = 100µA	BV_{CEO}	30	50	-	V
Phototransistor Dark Current	V_{CEO} = 5V, I_F = 0mA	I_{CEO}	-	50	500	nA
Saturation Voltage	I_C = 3mA, I_F = 1mA	$V_{CE(sat)}$	-	-	1	V
Current Transfer Ratio	I_F = 1mA, V_{CE} = 2V	CTR	300	8500	30000	%
Output Capacitance	50V, f =1MHz	C_{OUT}	-	3	-	pF
Input Characteristics @ 25°C						
Input Control Current	I_C = 3mA, V_{CE} = 2V	I_F	-	0.07	1	mA
Input Voltage Drop	I_F = 5mA	V_F	0.9	1.2	1.4	V
Reverse Input Current	V_R = 5V	I_R	-	-	10	µA
Common Characteristics @ 25°C						
Capacitance, Input to Output	-	$C_{I/O}$	-	3	-	pF

Switching Characteristics @ 25ºC

Characteristic	Symbol	Test Condition	Typ	Units
Turn-On Time	t_{ON}	V_{CC}=5V, I_F=1mA, R_L=500Ω	8	µs
Turn-Off Time	t_{OFF}		345	

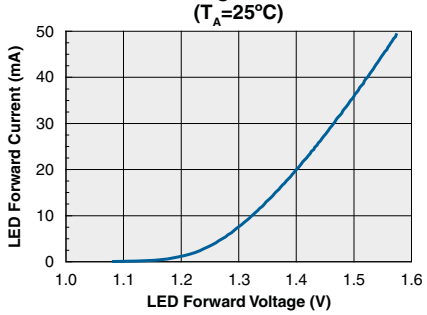
Switching Time Test Circuit



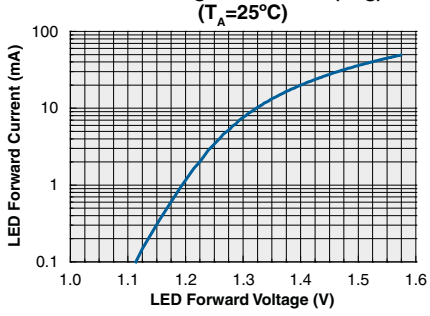


PERFORMANCE DATA*

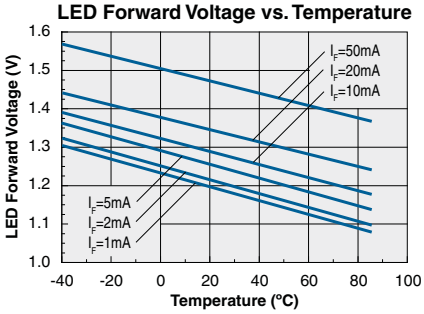
LDA211
LED Voltage vs. Current
(T_A=25°C)



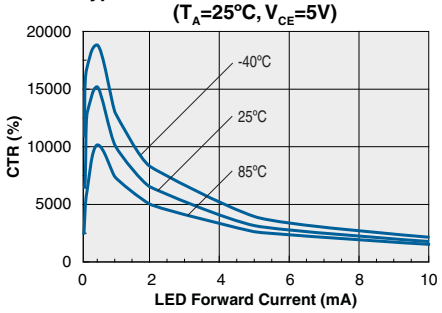
LDA211
LED Voltage vs. Current (Log)
(T_A=25°C)



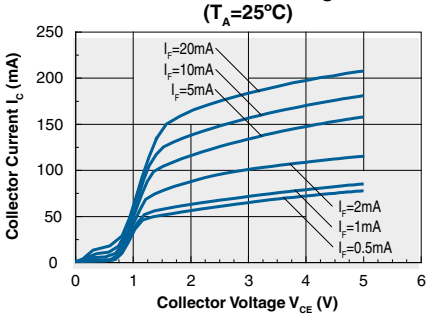
LDA211
LED Forward Voltage vs. Temperature



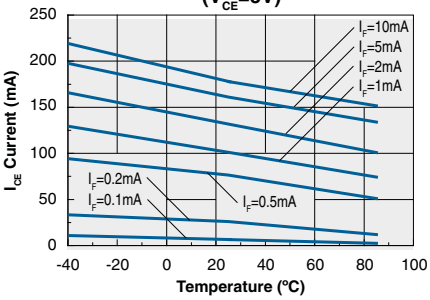
LDA211
Typical CTR vs. LED Forward Current
(T_A=25°C, V_{CE}=5V)



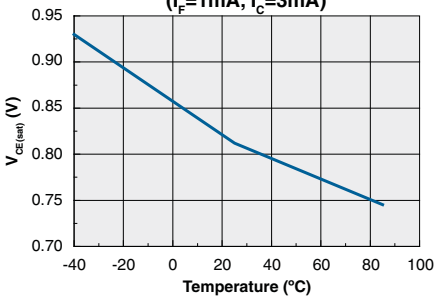
LDA211
Typical Collector Current
vs. Collector Voltage
(T_A=25°C)



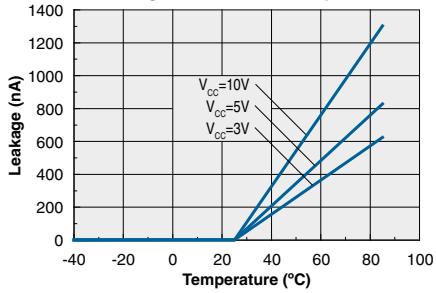
LDA211
I_{CE} Current vs. Temperature
(V_{CE}=5V)



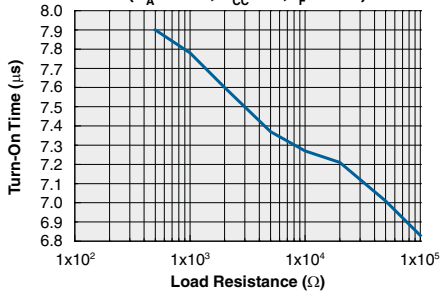
LDA211
$V_{CE(sat)}$ vs. Temperature
(I_F=1mA, I_C=3mA)



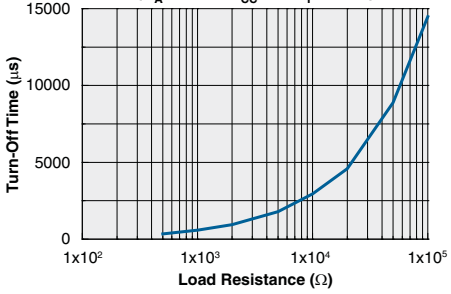
LDA211
Leakage Current vs. Temperature



LDA211
Turn-On Time vs. Load Resistance
(T_A=25°C, V_{CC}=5V, I_F=1mA)



LDA211
Turn-Off Time vs. Load Resistance
(T_A=25°C, V_{CC}=5V, I_F=1mA)



*The Performance data shown in the graphs above is typical of device performance. For guaranteed parameters not indicated in the written specifications, please contact our application department.

Manufacturing Information

Soldering

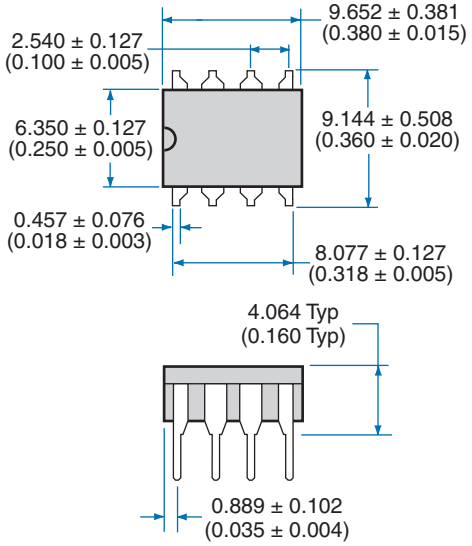
For proper assembly, the component must be processed in accordance with the current revision of IPC/JEDEC standard J-STD-020. Failure to follow the recommended guidelines may cause permanent damage to the device resulting in impaired performance and/or a reduced lifetime expectancy.

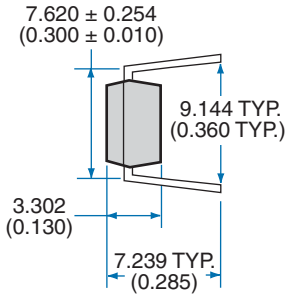
Washing

Clare does not recommend ultrasonic cleaning or the use of chlorinated solvents.

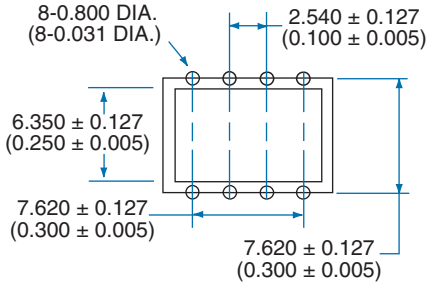
MECHANICAL DIMENSIONS

8-Pin DIP Through-Hole Package



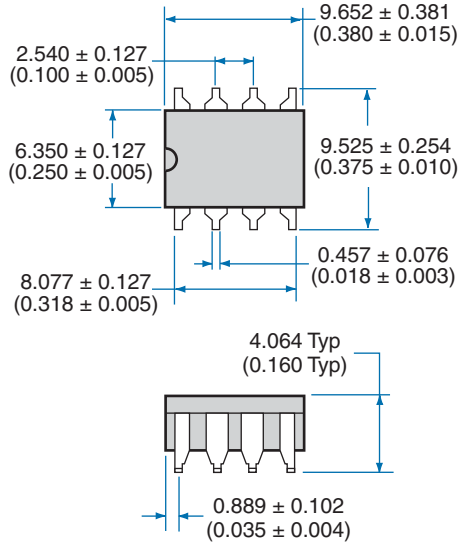


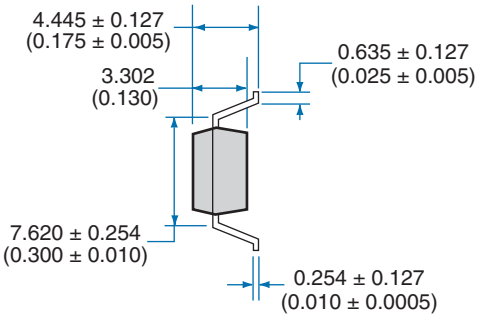
PC Board Pattern



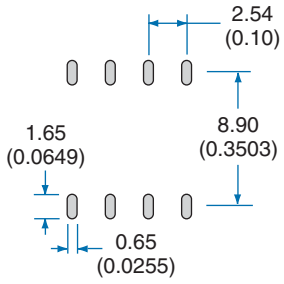
Dimensions
mm
(inches)

8-Pin Surface Mount Package





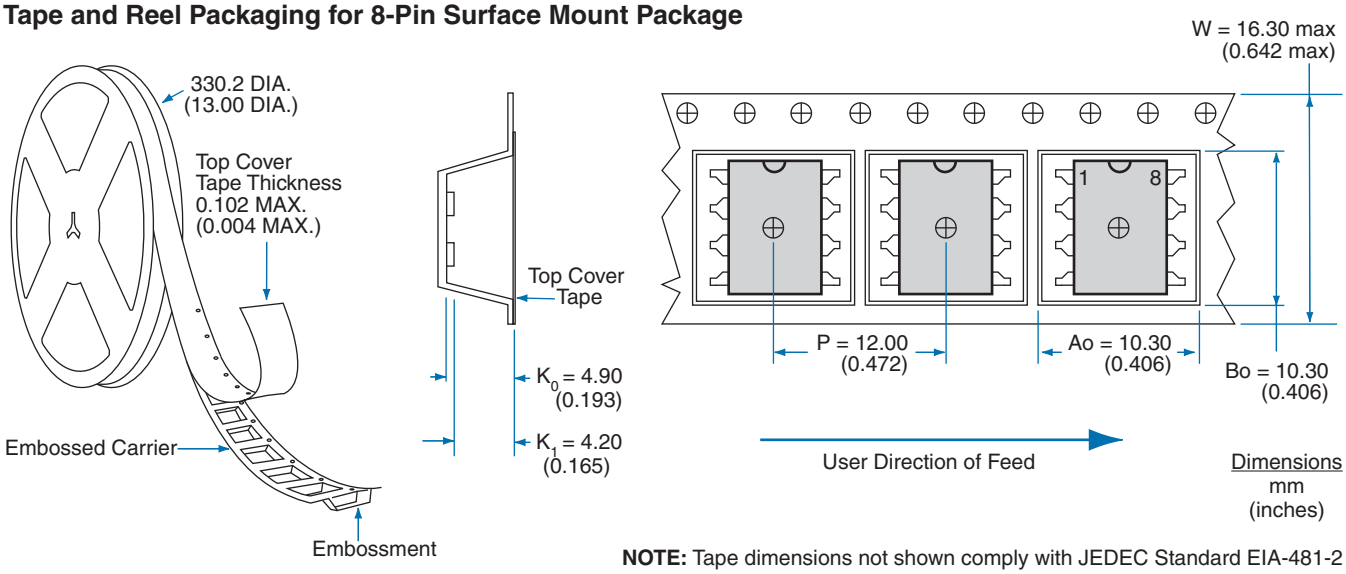
Recommended PCB Land Pattern



Dimensions
mm
(inches)

MECHANICAL DIMENSIONS

Tape and Reel Packaging for 8-Pin Surface Mount Package



NOTE: Tape dimensions not shown comply with JEDEC Standard EIA-481-2

For additional information please visit our website at: www.clare.com

Specification: DS-LDA211-R02

4/21/08