



CPC1302 Dual Optocoupler High-Voltage Darlington Output

Parameter	Rating	Units
Breakdown Voltage - BV _{CEO}	350	V _P
Current Transfer Ratio - CTR	1000-8000	%

Features

- 350V_P Breakdown Voltage
- 3750 V_{rms} Input/Output Isolation
- Machine Insertable, Wave Solderable
- Surface Mount Tape & Reel Version Available

Applications

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

Description

The CPC1302 is a dual optocoupler with two identical, independent channels, each having a unidirectional input and a high-voltage Darlington output. Light output from the highly efficient GaAlAs infrared LED activates its associated, optically coupled silicon NPN photo-Darlington output transistor. The input LED and the output transistor are separated by a $3750V_{rms}$ isolation barrier.

With a LED current of only 1mA, a current transfer ratio of 1000% to 8000% is guaranteed at the collector of the 350V Darlington output transistor.

The CPC1302's low input current capability with high current transfer ratios, output voltage capability, and isolation barrier rating make it ideal for many applications such as telecom, industrial, and power control.

Approvals

- UL 1577 Approved Component: File E76270
- CSA Certified Component: Certificate 1172007
- EN 60950 Certified Component: TUV Certificate B 10 05 49410 006

Ordering Information

Part Number	Description
CPC1302G	8-Pin DIP (50/Tube)
CPC1302GS	8-Pin Surface Mount (50/Tube)
CPC1302GSTR	8-Pin Surface Mount (1000/Reel)

Pin Configuration







Absolute Maximum Ratings @ 25°C

Parameter	Ratings	Units
Breakdown Voltage, BV _{CEO}	350	V _P
Reverse Input Voltage	5	V
Input Control Current	50	mA
Peak (10ms)	1	A
Input Power Dissipation ¹ (Each)	150	mW
Phototransistor Power Dissipation ² (Each)	150	mW
Isolation Voltage, Input to Output	3750	V _{rms}
Operational Temperature	-40 to +85	°C
Storage Temperature	-40 to +125	°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.

¹ Derate linearly 1.33 mW / °C ² Derate linearly 1.5 mW / °C

Electrical Characteristics @ 25°C

Parameters	Conditions	Symbol	Min	Тур	Max	Units
Output Characteristics	1					
Phototransistor Breakdown Voltage	Ι _{CEO} =100μΑ	BV _{CEO}	350	-	-	V _P
Emitter-Collector Breakdown Voltage	I _E =0.1mA	BV _{ECO}	0.3	-	-	V
Phototransistor Output (Dark) Current	V _{CEO} =200V, I _F =0mA	I _{CEO}	-	-	100	nA
Saturation Voltage	I _C =10mA, I _F =1mA	V	-	-	1	V
	I _C =100mA, I _F =10mA	V _{CE(sat)}	-	-	1.2	V
Current Transfer Ratio	I _F =1mA, V _{CE} =1V	CTR	1000	5500	8000	%
Output Capacitance	V _{CEO} =50V, f=1MHz	C _{OUT}	-	13	-	pF
Input Characteristics	ł	- · · · ·			•	•
Input Control Current	I _C =10mA, V _{CE} =1V	I _F	-	0.07	1	mA
Input Voltage Drop	I _F =5mA	V _F	0.9	1.2	1.4	V
Input Reverse Current V _R =5V		I _R	-	-	10	μA
Common Characteristics		_, _, _,				
Input to Output Capacitance	-	C _{I/O}	-	3	-	pF

Switching Characteristics @ 25°C

Characteristic	Symbol	Test Condition	Тур	Units
Rise Time	t _R		40	
Fall Time	t _F	V _{CC} =10V	5	
Turn-On Time	t _{on}	I _F =10mA	5	
Storage Time	t _s	$R_L = 100\Omega$	20	
Turn-Off Time	t _{off}		60	μs
Turn-On Time	t _{on}	V _{CC} =10V	1	
Storage Time	t _s	I _F =16mA	40	
Turn-Off Time	t _{off}	$R_L = 180\Omega$	80	







CPC1302

80 100

80 100

85

PERFORMANCE DATA*



*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.

1K

Load Resistance (Ω)

10K

100K

100



Manufacturing Information

Moisture Sensitivity

All plastic encapsulated semiconductor packages are susceptible to moisture ingression. IXYS Integrated Circuits Division classified all of its plastic encapsulated devices for moisture sensitivity according to the latest version of the joint industry standard, **IPC/JEDEC J-STD-020**, in force at the time of product evaluation. We test all of our products to the maximum conditions set forth in the standard, and guarantee proper operation of our devices when handled according to the limitations and information in that standard as well as to any limitations set forth in the information or standards referenced below.

Failure to adhere to the warnings or limitations as established by the listed specifications could result in reduced product performance, reduction of operable life, and/or reduction of overall reliability.

This product carries a **Moisture Sensitivity Level (MSL) rating** as shown below, and should be handled according to the requirements of the latest version of the joint industry standard **IPC/JEDEC J-STD-033**.

Device	Moisture Sensitivity Level (MSL) Rating
CPC1302G / CPC1302GS	MSL 1

ESD Sensitivity



This product is ESD Sensitive, and should be handled according to the industry standard JESD-625.

Reflow Profile

This product has a maximum body temperature and time rating as shown below. All other guidelines of **J-STD-020** must be observed.

Device	Maximum Temperature x Time
CPC1302G / CPC1302GS	250°C for 30 seconds

Board Wash

IXYS Integrated Circuits Division recommends the use of no-clean flux formulations. However, board washing to remove flux residue is acceptable. Since IXYS Integrated Circuits Division employs the use of silicone coating as an optical waveguide in many of its optically isolated products, the use of a short drying bake could be necessary if a wash is used after solder reflow processes. Chlorine- or Fluorine-based solvents or fluxes should not be used. Cleaning methods that employ ultrasonic energy should not be used.





MECHANICAL DIMENSIONS

CPC1302G







PCB Hole Pattern



Dimensions mm (inches)

CPC1302GS





CPC1302

MECHANICAL DIMENSIONS

CPC1302GSTR Tape & Reel



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