

CNC7S102

Optoisolators

Overview

CNC7S102 is an AC input compatible optoisolator in which two GaAs high output infrared light emitting diode chips are connected in reverse parallel as light emitting elements, and optically are connected to a high sensitivity Si phototransistor chip as a light detecting element in a small DIL 4-pin package.

Features

- Large current input support : $I_F = 150 \text{ mA (max.)}$
- AC input support
- High I/O isolation voltage : $V_{ISO} = 5000 \text{ V}_{rms} \text{ (min.)}$
- UL listed (UL File No. E79940)

Applications

- Telephones / Telephone switchers
- Fax, Modem
- AC/DC input modules

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Parameter		Symbol	Ratings	Unit
Input (Light emitting diode)	Forward current (DC)	I_F	± 150	mA
	Pulse forward current	I_{FP}	± 1	A
	Power dissipation	P_D	250	mW
Output (Photo transistor)	Collector current	I_C	80	mA
	Collector to emitter voltage	V_{CEO}	55	V
	Emitter to collector voltage	V_{ECO}	7	V
	Collector power dissipation	P_C	150	mW
Isolation voltage, input to output		V_{ISO}	5000	V_{rms}
Operating ambient temperature		T_{opr}	$-30 \text{ to } +100$	$^\circ\text{C}$
Storage temperature		T_{stg}	$-55 \text{ to } +125$	$^\circ\text{C}$

Electrical Characteristics ($T_a = 25^\circ\text{C}$)

Parameter		Symbol	Conditions	min	typ	max	Unit
Input characteristics	Forward voltage (DC)	V_F	$I_F = \pm 100 \text{ mA}$		1.3	1.7	V
	Capacitance between pins	C_t	$V_R = 0 \text{ V}, f = 1 \text{ MHz}$		35		pF
Output characteristics	Collector cutoff current	I_{CEO}	$V_{CE} = 20 \text{ V}$		5	100	nA
	Collector to emitter voltage	V_{CEO}	$I_C = 100 \mu\text{A}$	55			V
	Emitter to collector voltage	V_{ECO}	$I_E = 10 \mu\text{A}$	7			V
	Collector to emitter capacitance	C_C	$V_{CE} = 10 \text{ V}, f = 1 \text{ MHz}$		10		pF
Transfer characteristics	DC current transfer ratio	CTR	$V_{CE} = 1 \text{ V}, I_F = \pm 20 \text{ mA}$	25	100		%
	DC current transfer ratio(High)	CTR(High)	$V_{CE} = 1 \text{ V}, I_F = \pm 100 \text{ mA}$	20		80	%
	Isolation capacitance, input to output	C_{ISO}	$f = 1 \text{ MHz}$		0.6		pF
	Isolation resistance, input to output	R_{ISO}	$V_{ISO} = 500 \text{ V}$	10^{11}			Ω
	Rise time	t_r	$V_{CC} = 10 \text{ V}, I_C = 2 \text{ mA},$ $R_L = 100 \Omega$		4		μs
	Fall time	t_f			3		μs
	Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_F = \pm 20 \text{ mA}, I_C = 1 \text{ mA}$		0.1	0.2	V
	Collector current ratio	$I_{C(Ratio)}$	$V_{CE} = 1 \text{ V}, I_F = 20 \text{ mA}$	0.33	1.0	3.0	—

