

CNC1S171 (ON3171)

Optoisolator

For isolated signal transmission

Features

- High current transfer ratio : CTR >50%
- High I/O isolation voltage :
 $V_{ISO} = 5000 V_{rms} (min.)$
- Fast response :
 $t_r = 2 \mu s, t_f = 3 \mu s (typ.)$
- Low dark current : $I_{CEO} < 100 nA$
- VDE approved (VDE0884)
- UL listed (No. E79920)
- BSI certified
(BS415 No. 7889, BS7002 No. 7890)
- SEMKO certified (No. 9625004)
- DEMKO certified (No. 305848)
- NEMKO certified (No. 199633176)
- FIMKO certified (No. 191784)
- CSA approved (No. CA109151)

Absolute Maximum Ratings (Ta = 25°C)

	Parameter	Symbol	Ratings	Unit
Input (Light emitting diode)	Reverse voltage (DC)	V_R	6	V
	Forward current (DC)	I_F	50	mA
	Pulse forward current	I_{FP}^{*1}	1	A
	Power dissipation	P_D^{*2}	75	mW
Output (Photo transistor)	Collector current	I_C	50	mA
	Collector to emitter voltage	V_{CEO}	80	V
	Emitter to collector voltage	V_{ECO}	7	V
	Collector power dissipation	P_C^{*3}	150	mW
Isolation voltage, input to output		V_{ISO}	5000	V_{rms}
Total power dissipation		P_T	200	mW
Operating ambient temperature		T_{opr}	-30 to +100	°C
Storage temperature		T_{stg}	-55 to +125	°C

Electrical Characteristics (Ta = 25°C)

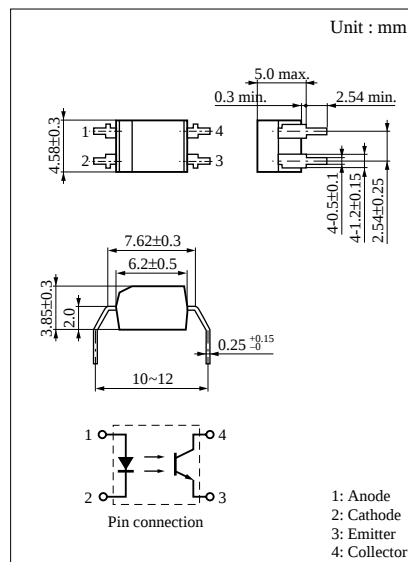
	Parameter	Symbol	Conditions	min	typ	max	Unit
Input characteristics	Reverse current (DC)	I_R	$V_R = 3V$			10	μA
	Forward voltage (DC)	V_F	$I_F = 50mA$		1.35	1.5	V
	Capacitance between pins	C_t	$V_R = 0V, f = 1MHz$		15		pF
Output characteristics	Collector cutoff current	I_{CEO}	$V_{CE} = 20V$		5	100	nA
	Collector to emitter voltage	V_{CEO}	$I_C = 100\mu A$	80			V
	Collector to emitter capacitance	C_C	$V_{CE} = 10V, f = 1MHz$		10		pF
Transfer characteristics	DC current transfer ratio	CTR^{*1*4}	$V_{CE} = 10V, I_F = 5mA$	50		600	%
	Isolation voltage, input to output	V_{ISO}	$t = 1 min., RH < 60\%$	5000			V_{rms}
	Isolation capacitance, input to output	C_{ISO}	$f = 1MHz$		0.7		pF
	Isolation resistance, input to output	R_{ISO}	$V_{ISO} = 500V$	10^{11}			Ω
	Rise time	t_r^{*2}	$V_{CC} = 10V, I_C = 5mA,$		2		μs
	Fall time	t_f^{*3}	$R_L = 100\Omega$		3		μs
	Collector to emitter saturation voltage	$V_{CE(sat)}$	$I_F = 20mA, I_C = 1mA$		0.1	0.2	V

*1 DC current transfer ratio (CTR) is a ratio of output current against DC input current.

*2 t_r : Time required for the collector current to increase from 10% to 90% of its final value

*3 t_f : Time required for the collector current to decrease from 90% to 10% of its initial value

Note) The part number in the parenthesis shows conventional part number.



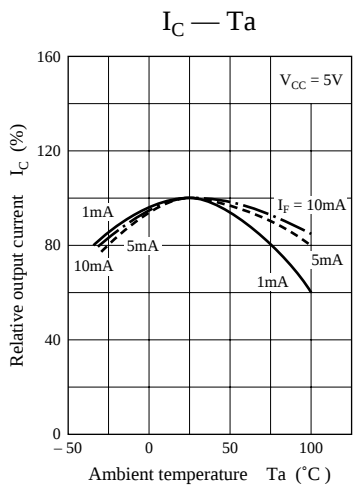
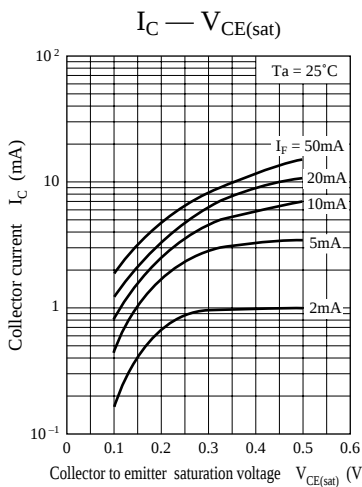
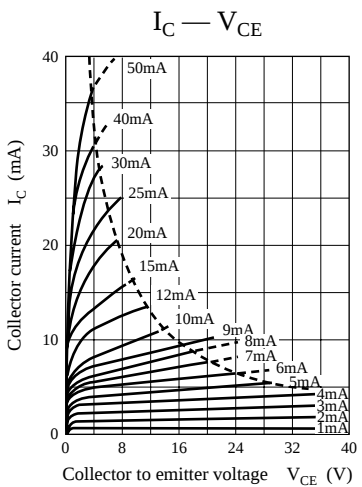
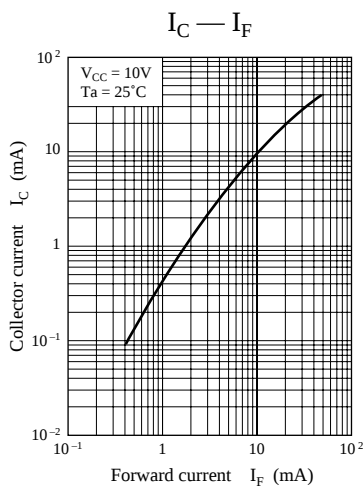
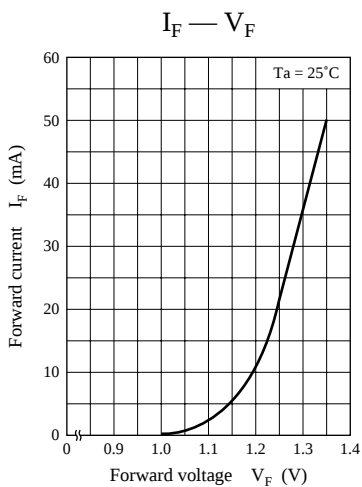
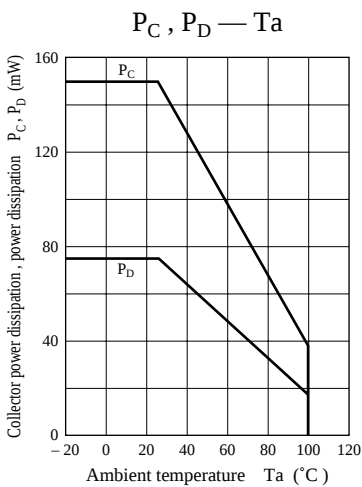
*1 Pulse width ≤ 100 μs , repeat 100 pps

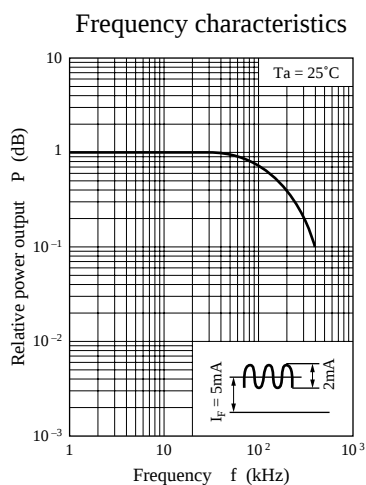
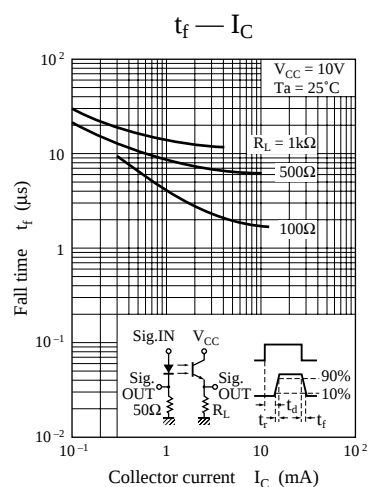
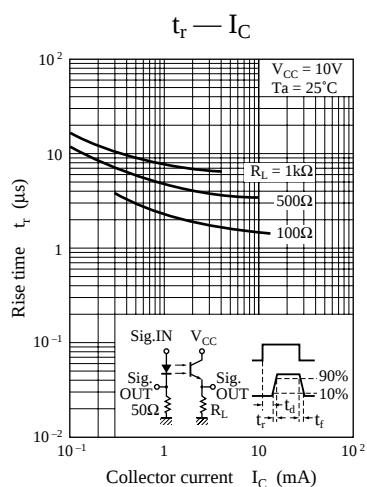
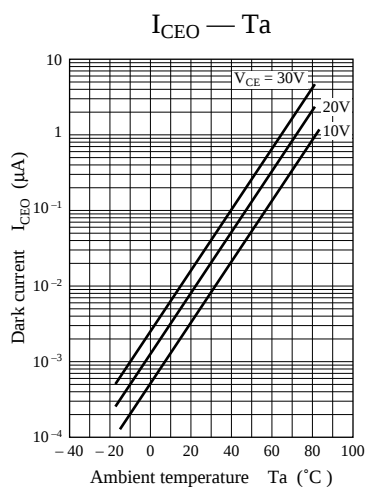
*2 Input power derating ratio is
0.75 mW/°C at $T_a \geq 25^\circ C$.

*3 Output power derating ratio is
1.5 mW/°C at $T_a \geq 25^\circ C$.

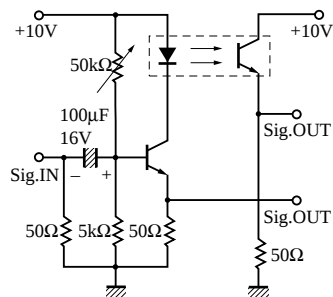
*4 CTR classifications

Class	Q	R	S
CTR (%)	50 to 120	100 to 250	200 to 600





Measurement circuit of frequency characteristics



Caution for Safety

 **DANGER**

Gallium arsenide material (GaAs) is used in this product.

Therefore, do not burn, destroy, cut, crush, or chemically decompose the product, since gallium arsenide material in powder or vapor form is harmful to human health.

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