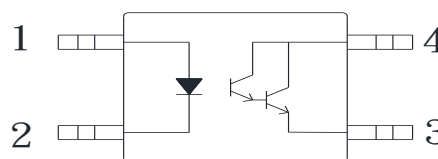


● Description

The KT1200 series consist of a photo darlington optically coupled to a gallium arsenide infrared-emitting diode in a 4 pin LSOP wide body package. It features a high current transfer ratio, low coupling capacitance and high isolation voltage.

● Schematic



- 1. Anode
- 2. Cathode
- 3. Emitter
- 4. Collector

● Features

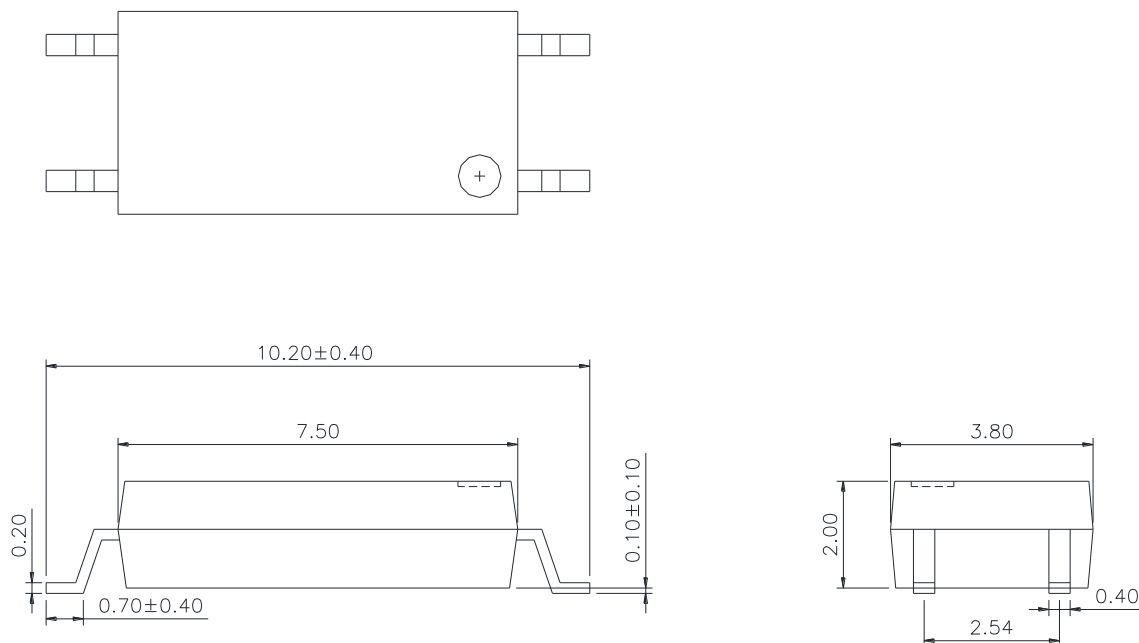
1. Halogen free
2. Pb free and RoHS compliant
3. High isolation voltage 5000Vrms
4. Opaque type, SMD low profile 4 lead package
5. High current transfer ratio
(CTR=2000%TYP.@ $I_F=1\text{mA}$, $V_{CE}=2\text{V}$)
6. 8mm outer creepage distance
7. MSL class 1
8. Agency Approvals:
 - UL Approved (No. E169586): UL1577
 - c-UL Approved (No. E169586)
 - VDE Approved (No. 40031267): DIN EN60747-5-5
 - FIMKO Approved: EN60065, EN60950, EN60335, EN60601
 - CQC Approved: GB8898-2011, GB4943.1-2011

● Applications

- System appliances, measuring instruments
- Industrial robots
- Copiers, automatic vending machines
- Signal transmission between circuits of different potentials and impedances
- Telephone sets
- Copiers, facsimiles
- Interface with various power supply circuits, power distribution boards
- Numerical control machines

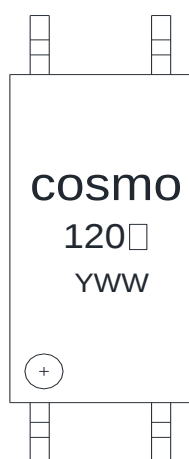
● Outside Dimension

Unit : mm



TOLERANCE : ±0.2mm

● Device Marking



Notes:

cosmo

120□

YWW

□: CTR rank

Y: Year code / WW: Week code

● Absolute Maximum Ratings

(Ta=25°C)

Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	Peak forward current	I_{FP}	1	A
	Reverse voltage	V_R	6	V
	Power dissipation	P_D	70	mW
Output	Collector-Emitter voltage	V_{CEO}	35	V
	Emitter-Collector voltage	V_{ECO}	5	V
	Collector current	I_C	150	mA
	Collector power dissipation	P_C	150	mW
Total power dissipation		P_{tot}	170	mW
Isolation voltage 1 minute		V_{iso}	5000	Vrms
Operating temperature		T_{opr}	-55 to +100	°C
Storage temperature		T_{stg}	-55 to +125	°C
Soldering temperature 10 seconds		T_{sol}	260	°C

● Electro-optical Characteristics

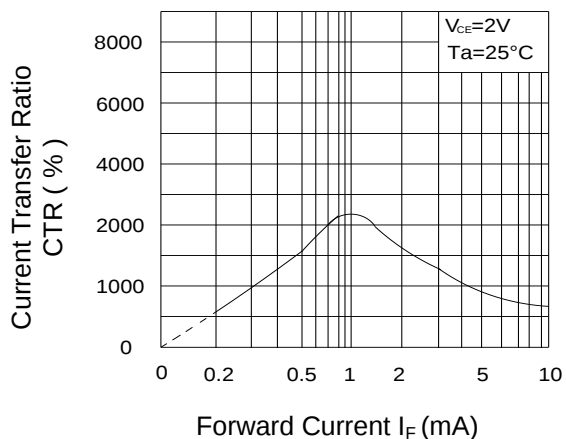
(Ta=25°C)

Parameter		Symbol	Conditions	Min.	Typ.	Max.	Unit
Input	Forward voltage	V_F	$I_F=20mA$	-	1.2	1.4	V
	Peak forward voltage	V_{FP}	$I_{FP}=0.5A$	-	-	3.5	V
	Reverse current	I_R	$V_R=4V$	-	-	10	uA
	Terminal capacitance	C_t	$V=0, f=1KHz$	-	30	-	pF
Output	Collector dark current	I_{CEO}	$V_{CE}=10V, I_F=0$	-	-	1.0	uA
Transfer characteristics	Current transfer ratio	CTR	$I_F=1mA, V_{CE}=2V$	200	2000	-	%
	Collector-Emitter saturation voltage	$V_{CE(sat)}$	$I_F=1mA, I_C=2mA$	-	-	1.0	V
	Isolation resistance	Riso	DC500V, 40 to 60%RH	5×10^{10}	10^{11}	-	Ω
	Floating capacitance	C_f	$V=0, f=1MHz$	-	0.4	-	pF
	Cut-off frequency	f_c	$V_{CC}=5V, I_C=2mA, R_L=100\Omega$	-	7	-	KHz
	Response time (Rise)	t_r	$V_{CC}=5V, I_C=2mA, R_L=100\Omega$	-	200	-	us
	Response time (Fall)	t_f		-	200	-	us

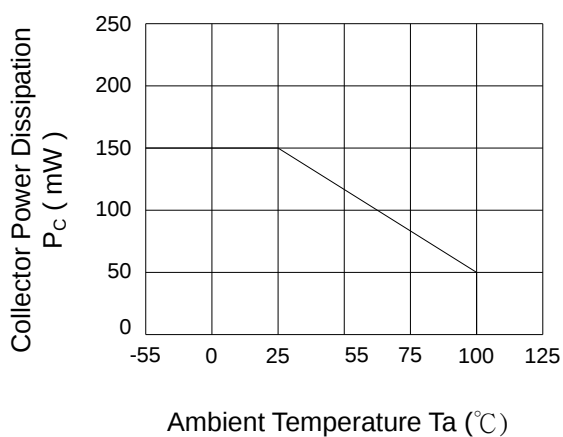
Classification table of current transfer ratio is shown below.

CTR RANK	CTR (%)
KT1200	Min.200

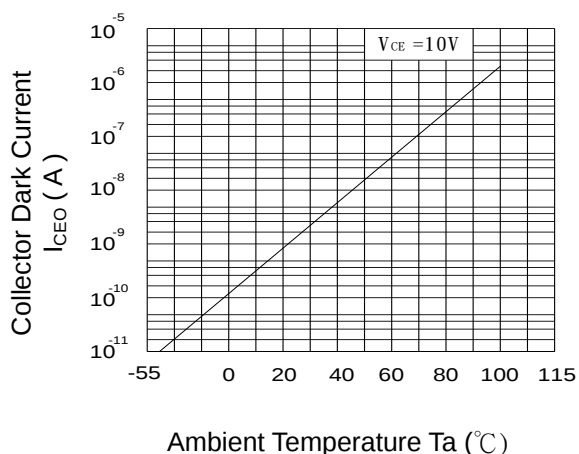
**Fig.1 Current Transfer Ratio
vs. Forward Current**



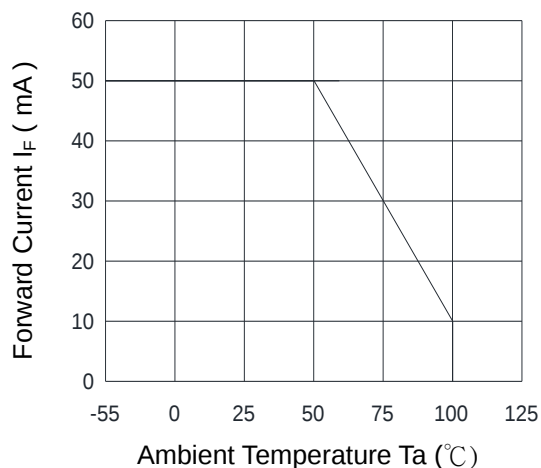
**Fig.2 Collector Power Dissipation
vs. Ambient Temperature**



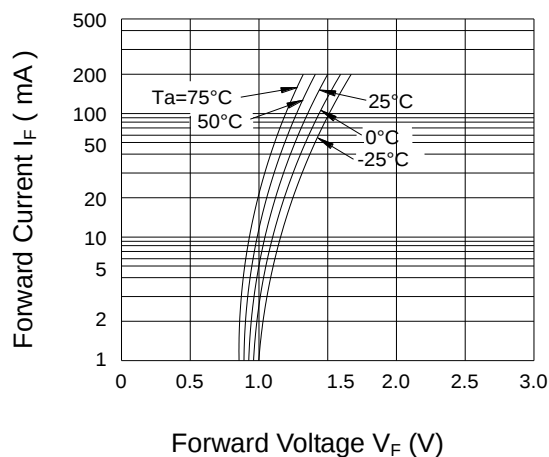
**Fig.3 Collector Dark Current
vs. Ambient Temperature**



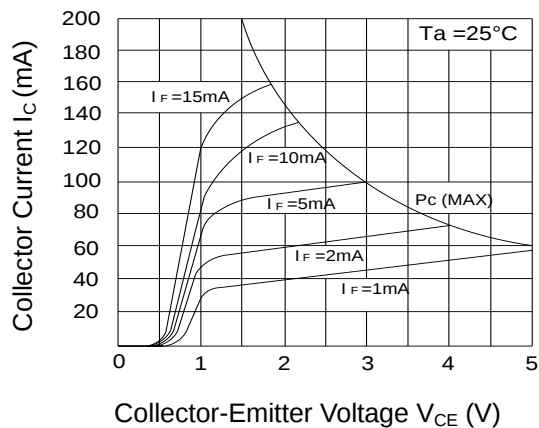
**Fig.4 Forward Current
vs. Ambient Temperature**



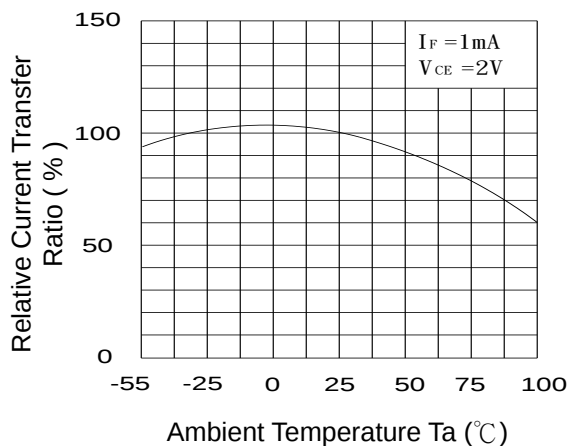
**Fig.5 Forward Current
vs. Forward Voltage**



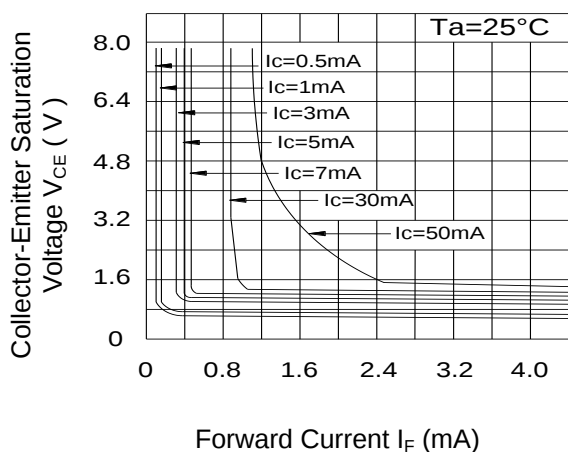
**Fig.6 Collector Current
vs. Collector-Emitter Voltage**



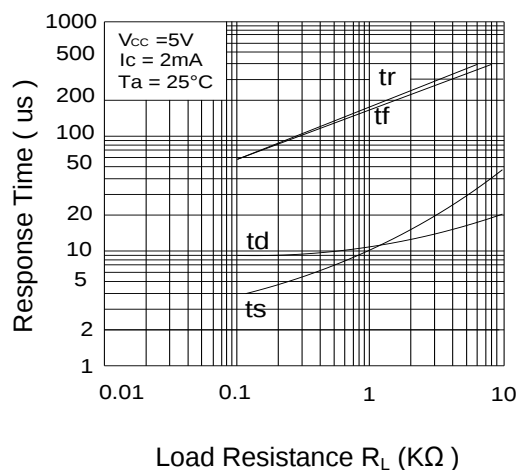
**Fig.7 Relative Current Transfer Ratio
vs. Ambient Temperature**



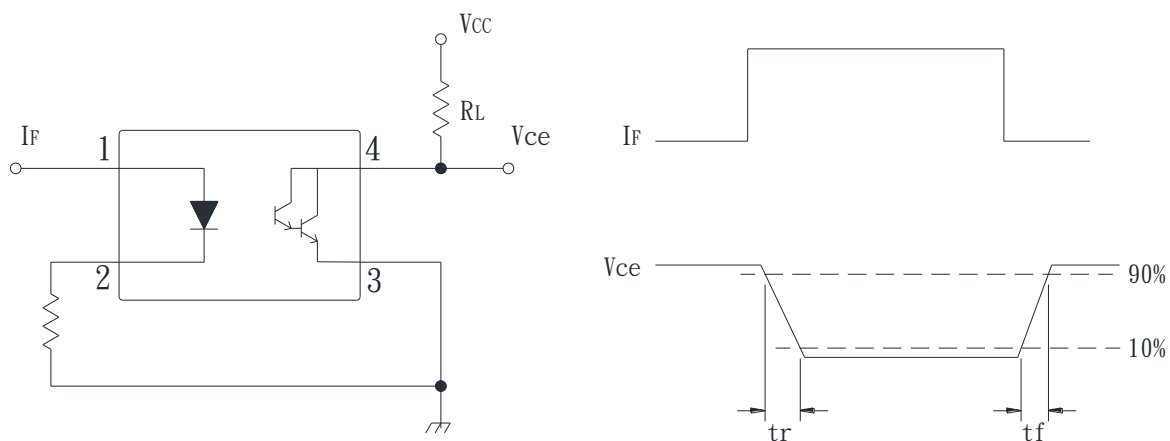
**Fig.8 Collector-Emitter Saturation
Voltage vs. Forward Current**



**Fig.9 Response Time
vs. Load Resistance**



● Test Circuit for Response Time

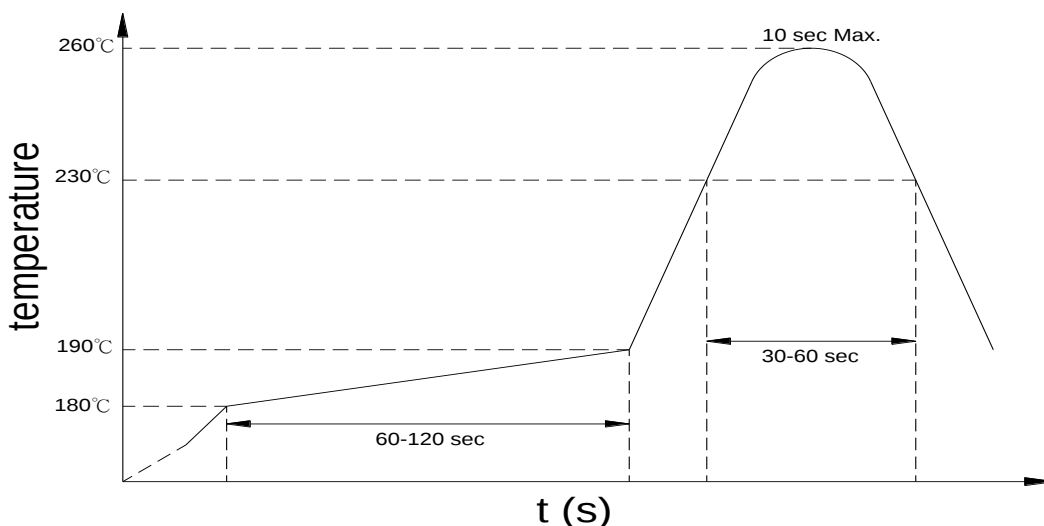


● Recommended Soldering Conditions

(a) Infrared reflow soldering :

- | | |
|--|--|
| ■ Peak reflow soldering : | 260°C or below (package surface temperature) |
| ■ Time of peak reflow temperature : | 10 sec |
| ■ Time of temperature higher than 230°C : | 30-60 sec |
| ■ Time to preheat temperature from 180~190°C : | 60-120 sec |
| ■ Time(s) of reflow : | Two |
| ■ Flux : | Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt% is recommended.) |

Recommended Temperature Profile of Infrared Reflow



(b) Wave soldering :

- | | |
|---------------------------|--|
| ■ Temperature : | 260°C or below (molten solder temperature) |
| ■ Time : | 10 seconds or less |
| ■ Preheating conditions : | 120°C or below (package surface temperature) |
| ■ Time(s) of reflow : | One |
| ■ Flux : | Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt% is recommended.) |

(c) Cautions :

- Fluxes : Avoid removing the residual flux with freon-based and chlorine-based cleaning solvent.
- Avoid shorting between portion of frame and leads.

● Numbering System



Notes:

KT1200 = Part No.

Z = Tape and reel option (TLD、TRU)

Option	Description	Packing quantity
TLD	TLD tape & reel option	3000 units per reel
TRU	TRU tape & reel option	3000 units per reel

Technical drawing of a mechanical part, showing a side view and a top view. The side view (top) shows a rectangular block with a central horizontal slot. The top view (bottom) shows a rectangular block with a central horizontal slot. Dimensions are provided for the side view and the top view.

Side View Dimensions:

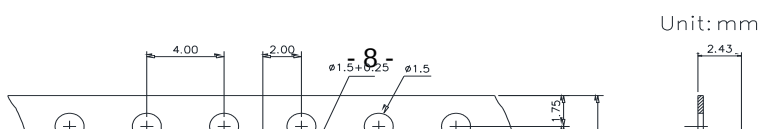
- Overall height: 3.6
- Height of the upper section: 2.54
- Height of the lower section: 1.4

Top View Dimensions:

- Overall width: 11.0
- Width of the central slot: 8.0
- Width of the upper section: 1.5
- Width of the lower section: 1.1

Unit : mm

Cosmo Electronics Corp.
Document No. 69P20005.3



<http://www.cosmo-ic.com>



KT1200 Series

4PIN LSOP PHOTODARLINGTON
PHOTOCOUPLER

- **Application Notice**



KT1200 Series

4PIN LSOP PHOTODARLINGTON PHOTOCOUPLER

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- d. Instrumentation
- e. Electrical application
- f. Measurement equipment
- g. Consumer electronics
- h. Telecommunication

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- b. Space application
- c. Telecommunication equipment (trunk lines)
- d. Nuclear power control
- e. Equipment used for automotive vehicles, trains, ships...etc.

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