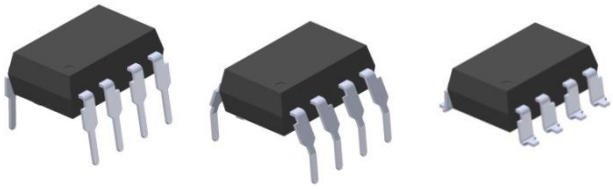
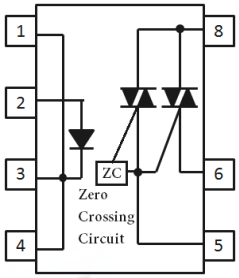
DATASHEET

7PIN DIP ZERO-CROSS PHOTO POWER TRIAC PHOTOCOUPLER
ELRX213 Series





LED Anode	2
LED Cathode	1, 3, 4
Triac Gate	5
Triac T1	6
Triac T2,,	8

Features

- Low trigger current I_{FT} 10mA
- Peak off state voltage 600V
- Load current 0.3，0.6，0.9，1.2A
- Wide operating temperature range of -40°C to 85°C
- High isolation voltage between input and output (Viso=5000 Vrms)
- Zero voltage crossing
- Compliance with EU REACH
- Pb free and RoHS compliant
- UL and cUL approved(No. E214129)
- VDE approved (No. 40028391)
- SEMKO approved
- NEMKO approved
- DEMKO approved
- FIMKO approved
- CQC approved

Description

The ELRX213 series of devices are each consist of a GaAs infrared emitting diode optically coupled to a monolithic silicon zero cross photo triac and a main output triac. They are designed for interfacing between electronic controls and loads to control inductive for 115 to 240 VAC operations. They are packaged in 8pin DIP package and available in surface mount SMD option.

Applications

- Home appliances
- Industrial equipment
- Switching motors, fans, heaters, solenoids and valces.
- Power control such as lighting and temperature control

Absolute Maximum Ratings (T_A=25℃, unless otherwise specified)

Parameter			Symbol	Rating	Unit
Input	Forward Current		I_F	60	mA
	Reverse Voltage		V_R	6	V
	Peak Forward Current*1		I_{FP}	1	A
Output	Repetitive Peak Off-state Voltage*2		V_{DRM}	600	V
	On-state RMS Current	ELR0213	$I_{T(RMS)}$	0.3	A
		ELR1213		0.6	
		ELR2213		0.9	
		ELR3213		1.2	
	Non-repetitive Surge Current*3	ELR0213	I_{TSM}	3	A
		ELR1213		6	
		ELR2213		9	
		ELR3213		12	
Isolation Voltage*4			V_{iso}	5000	Vrms
Storage Temperature			T_{STG}	-40 to 125	℃
Operating Temperature			T_{OPR}	-40 to 85	℃
Soldering Temperature*5			T_{SOL}	260	℃

Notes:
*1 f =100Hz, Duty Cycle = 0.1%
*2 Sine wave, 50 to 60Hz, I_{FT}=0mA.
*3 f=60Hz, one cycle.
*4 AC for 1 minute, R.H.= 40 ~ 60% R.H. In this test,
pins 1, 2, 3, 4 are shorted together, and pins 5, 6, 7, 8 are shorted together.
*5 For 10 seconds
*6 Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of this document. Exposure to absolute maximum ratings for extended periods of the time can adversely affect reliability. The absolute maximum Rating s are stress only T_A =25℃ unless otherwise specified.

Electro-Optical Characteristics (T_A=25℃)

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage	V_F	I_F = 20mA	-	1.2	1.4	V
	Reverse Current	I_R	V_R = 6V	-	-	10	uA
Output	Repetitive Peak Off-state Current	I_{DRM}	I_F = 0mA, V_{DRM} = 600V	-	-	100	uA
	On-state Voltage	V_{TM}	I_F = 10mA, I_{TM} = MAX.	-	-	2.5	V
	Critical Rate of Rise of Off-state Voltage	dv/dt	V_{DRM} = 600V×1/$\sqrt{2}$	200	-	-	V/us
	Holding Current	I_H	-	-	-	25	mA
	Inhibit Voltage (MT1-MT2 voltage above which device will not trigger)	V_{INH}	I_F = Rated I_{FT}	-	-	50	V
Transfer Characteristics	Minimum Trigger Current	I_{FT}	V_D = 6V, R_L = 100Ω	-	-	10	mA
	Turn On Time	T_{on}	I_F = 20 mA, V_D = 6V, R_L = 100Ω ,	-	-	10	us
	Isolation Resistance	R_{I-O}	V_{I-O} = 500V DC, 40 to 60%RH	-	$5x10^{11}$	-	Ω

Typical Electro-Optical Characteristics Curves

Fig.1 ON-state Current vs. Ambient Temperature

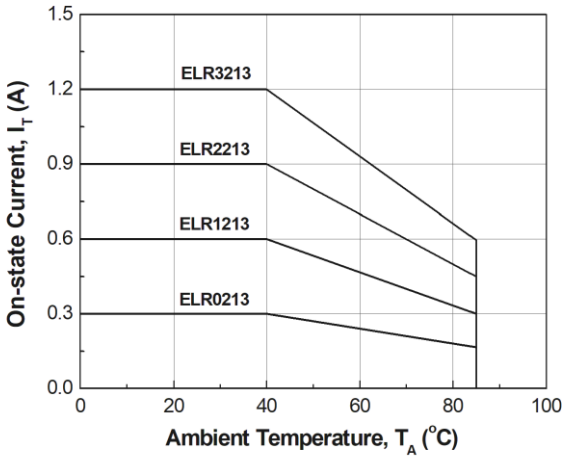


Figure 2. On Voltage vs. Ambient Temperature

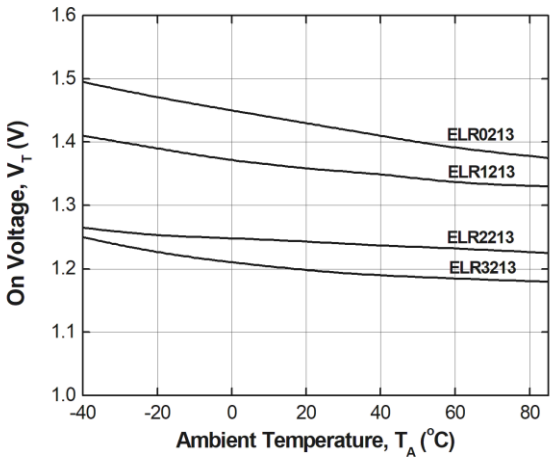


Figure 3. Trigger LED Current vs Ambient Temperature

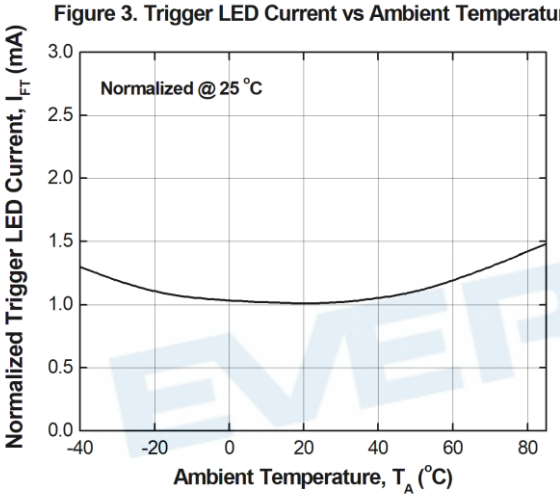


Figure 4. LED Dropout Voltage vs Ambient Temperature

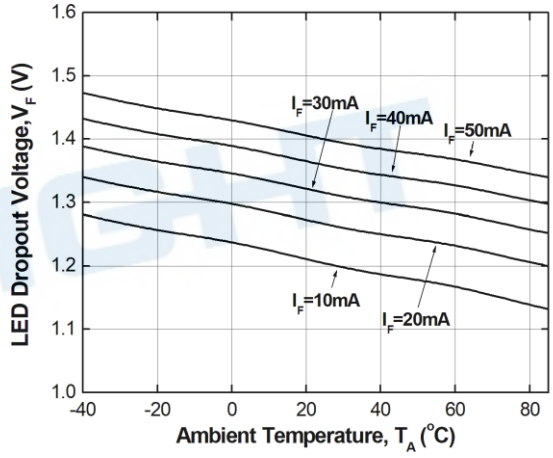


Figure 5. Turn on Time vs LED Current

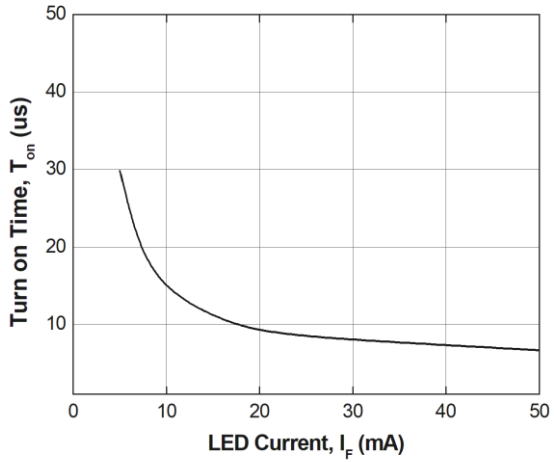


Figure 6. Off-state Leakage Current vs Load Voltage

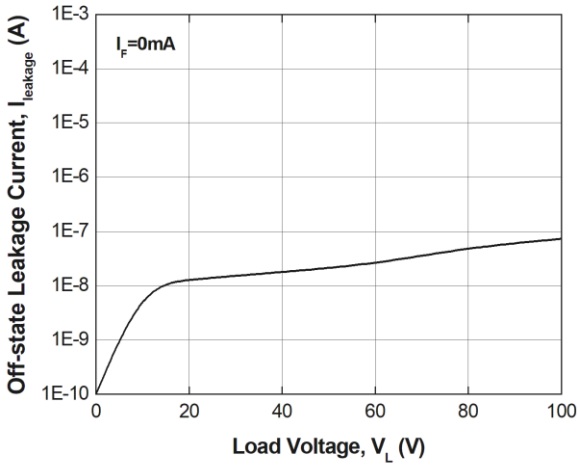


Figure 7. Holding Current vs. Ambient Temperature

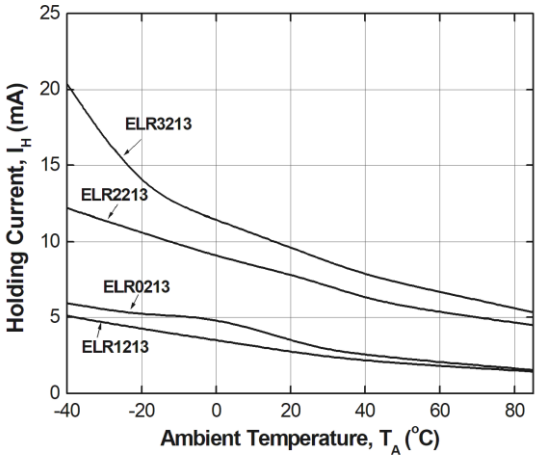
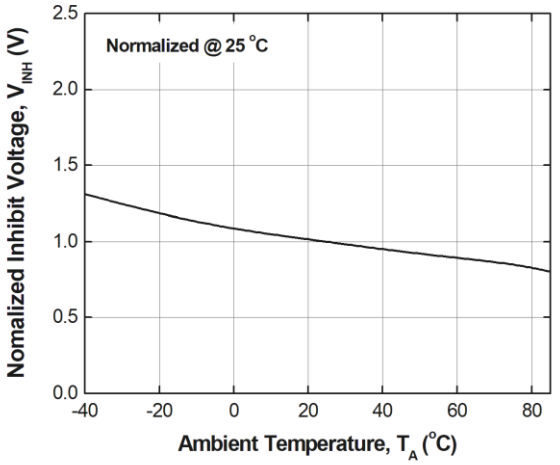


Figure 8. Inhibit Voltage vs. Ambient Temperature



Order Information

Part Number

ELRX213Y(Z)-V

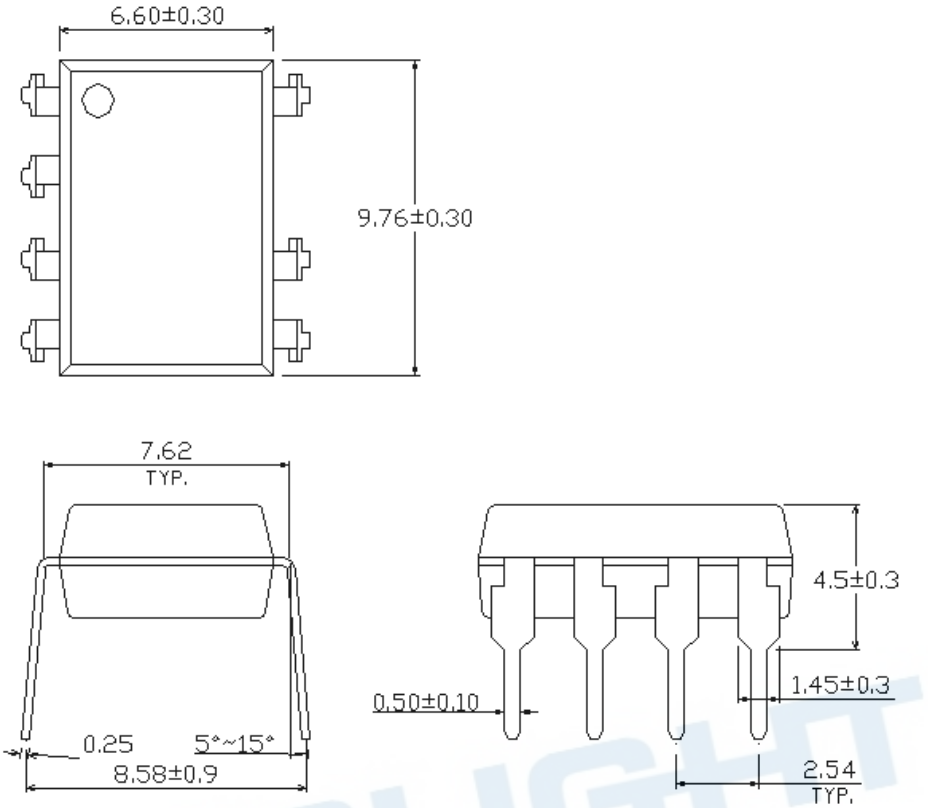
Note

X = (0 or 1 or 2 or 3) for ELX213 part no.
Y = Lead form option (S, S1, M or none)
Z = Tape and reel option (TA, TB or none).
V = VDE (optional)

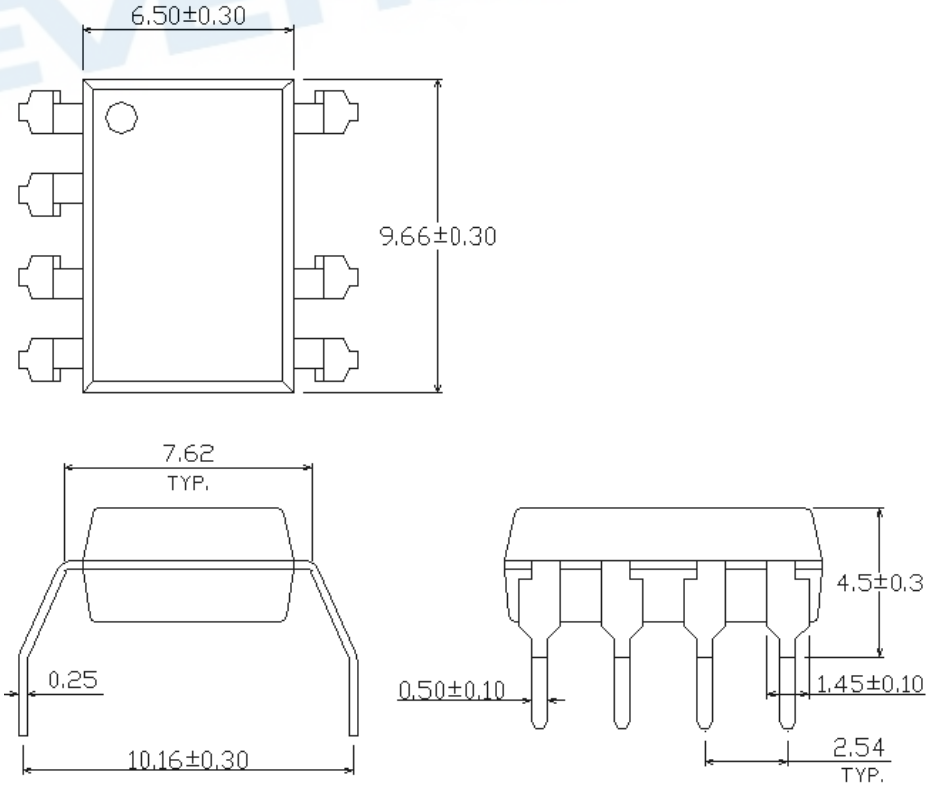
Option	Description	Packing quantity
None	Standard DIP-8	45 units per tube
M	Wide lead bend (0.4 inch spacing)	45 units per tube
S (TA)	Surface mount lead form + TA tape & reel option	1000 units per reel
S (TB)	Surface mount lead form + TB tape & reel option	1000 units per reel
S1 (TA)	Surface mount lead form (low profile) + TA tape & reel option	1000 units per reel
S1 (TB)	Surface mount lead form (low profile) + TB tape & reel option	1000 units per reel

Package Dimension

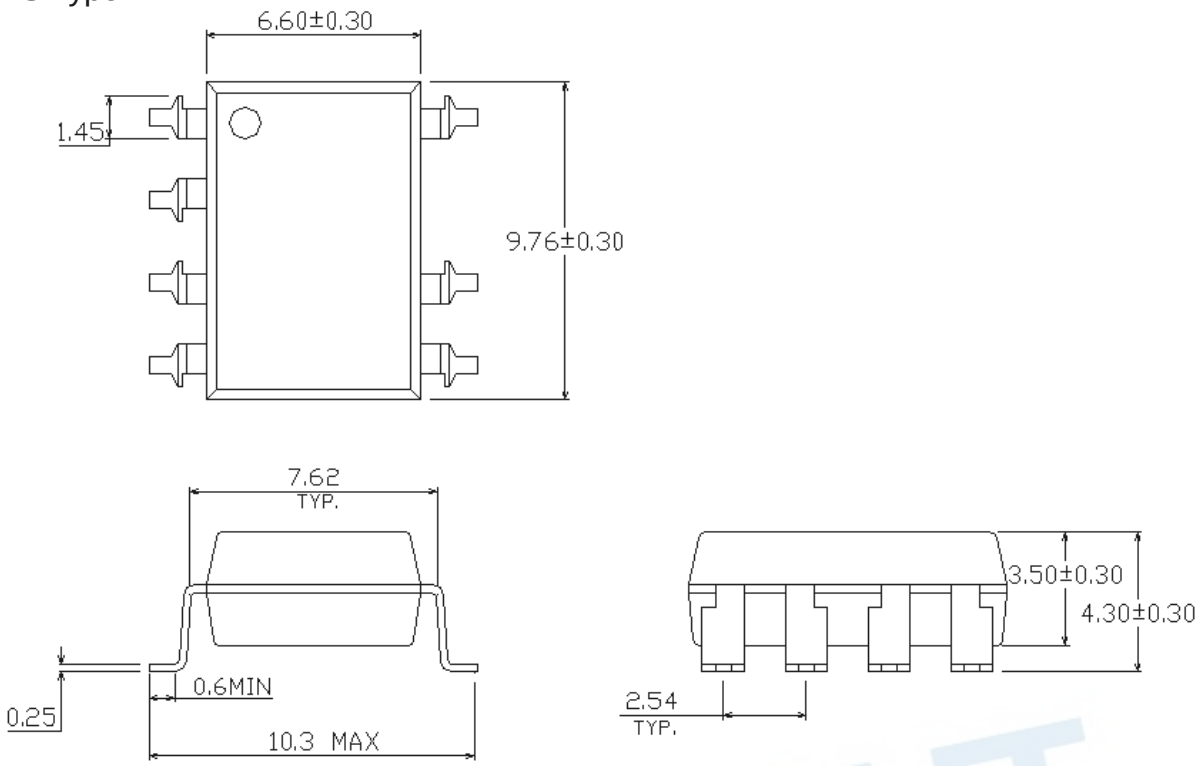
Standard DIP Type



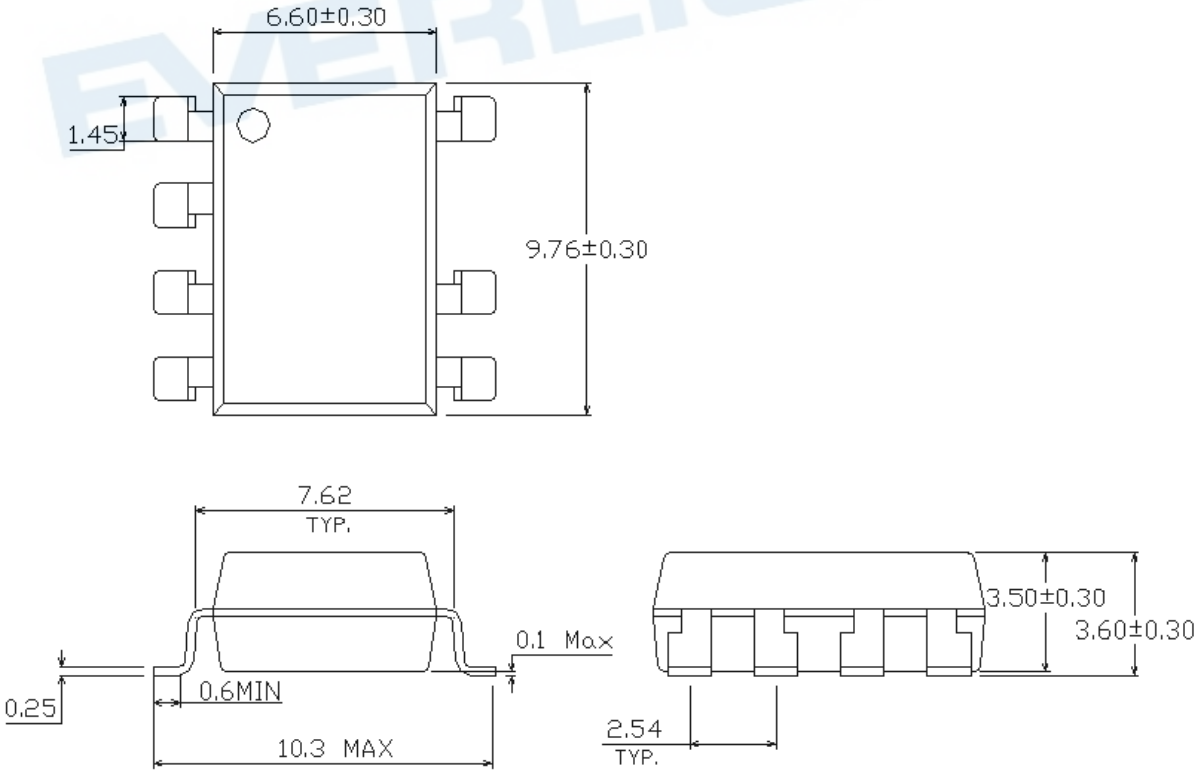
Option M Type



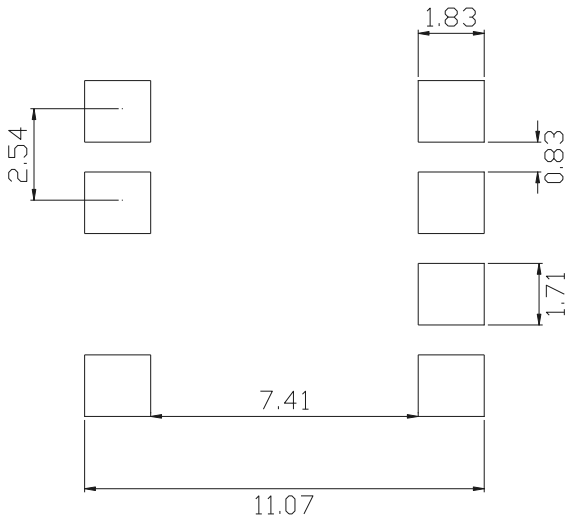
Option S Type



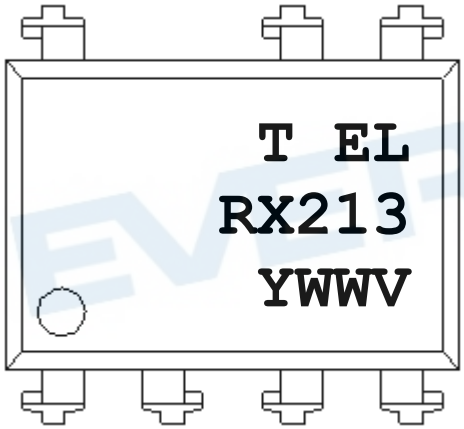
Option S1 Type



Recommended pad layout for surface mount leadform



Device Marking

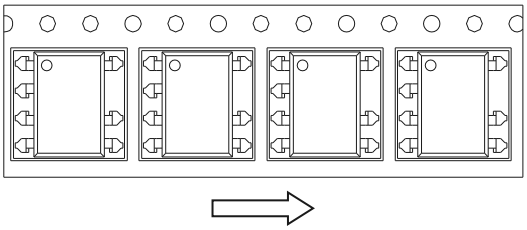


Notes

T	denotes Factory No code : made in China T : made in Taiwan
EL	denotes EVERLIGHT
RX223	denotes Device Number(X = 0 or 1 or 2 or 3 for ELX213 part no.)
Y	denotes 1 digit Year code
WW	denotes 2 digit Week code
V	denotes VDE (optional)

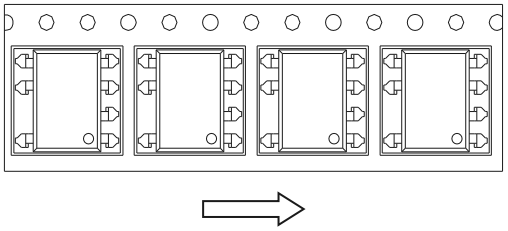
Tape & Reel Packing Specifications

Option TA



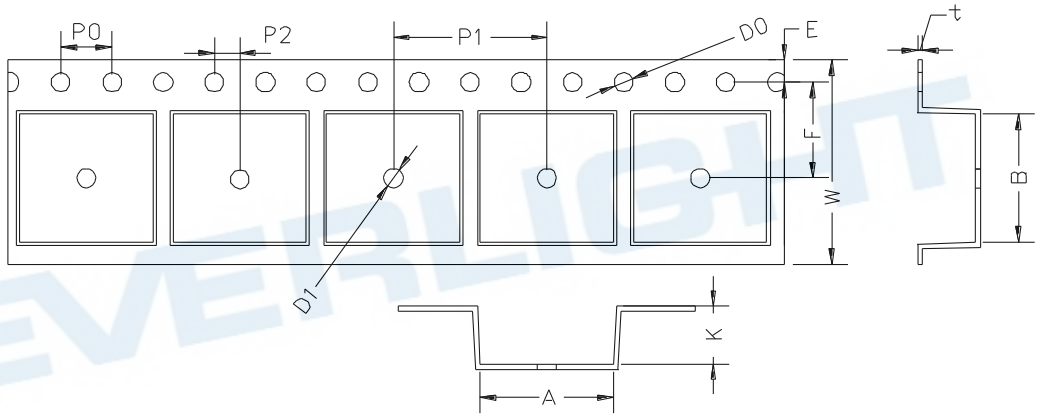
Direction of feed from reel

Option TB



Direction of feed from reel

Tape dimension

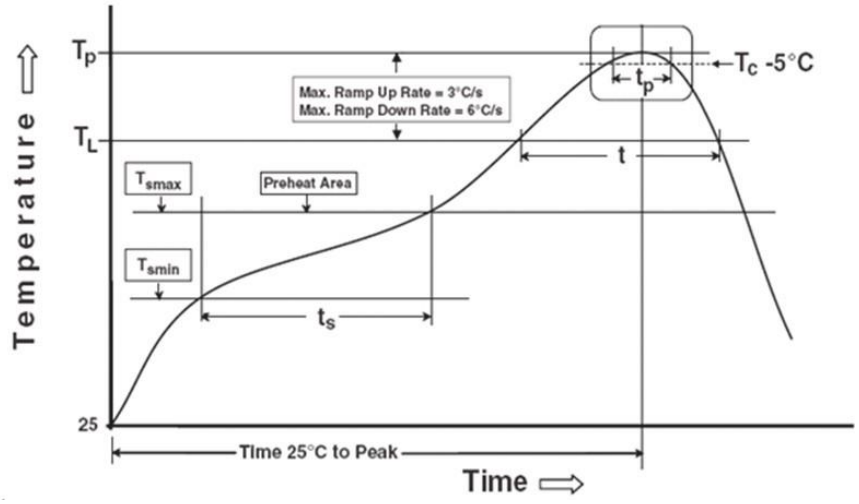


Dimension No.	A	B	Do	D1	E	F
Dimension(mm)	10.4±0.1	10.0±0.1	1.5+0.1/-0	1.5±0.25/-0	1.75±0.1	7.5±0.1
Dimension No.	**Po**	**P1**	**P2**	**t**	**W**	**K**
Dimension(mm)	4.0±0.1	12.0±0.1	2.0±0.05	0.4±0.05	16.0±0.3/	4.5±0.1

Precautions for Use

1. Soldering Condition

1.1 (A) Maximum Body Case Temperature Profile for evaluation of Reflow Profile



Note: Reference: IPC/JEDEC J-STD-020D

Preheat	
Temperature min (T_{smin})	150 °C
Temperature max (T_{smax})	200°C
Time (T_{smin} to T_{smax}) (t_s)	60-120 seconds
Average ramp-up rate (T_{smax} to T_p)	3 °C/second max
Other	
Liquidus Temperature (T_L)	217 °C
Time above Liquidus Temperature (t_L)	60-100 sec
Peak Temperature (T_P)	260°C
Time within 5 °C of Actual Peak Temperature: T_P - 5°C	30 s
Ramp- Down Rate from Peak Temperature	6°C /second max.
Time 25°C to peak temperature	8 minutes max.
Reflow times	3 times

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