

DATASHEET

4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER EL817-G Series



Features:

- Halogens free.
 (Br < 900ppm, Cl < 900ppm, Br+Cl < 1500ppm)
- Current transfer ratio
 (CTR: 50~600% at IF = 5mA, VcE = 5V)
- High isolation voltage between input and output (Viso = 5000Vrms)
- Creepage distance > 7.62mm
- Operating temperature up to +110°C
- Compact small outline package
- Compliance with EU REACH.
- •The product itself will remain within RoHS compliant version
- UL and cUL approved(No.E214129)
- VDE approved (No.132249)
- SEMKO approved
- NEMKO approved
- DEMKO approved
- FIMKO approved
- CQC approved

Description

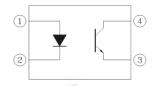
The EL817-G series of devices each consist of an infrared emitting diodes, optically coupled to a phototransistor detector.

They are packaged in a 4-pin DIP package and available in wide-lead spacing and SMD option.

Applications

- Programmable controllers
- System appliances, measuring instruments
- Telecommunication equipments
- Home appliances, such as fan heaters, etc.
- Signal transmission between circuits of different potentials and impedances

Schematic



Pin Configuration

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



Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Forward current	I _F	60	mA
Peak forward current (1us, pulse)	I _{FP}	1	А
Reverse voltage	V _R	6	V
Power dissipation	D	100	mW
Derating factor (above T _a = 100°C)	P_{D}	2.9	mW/°C
Power dissipation	D	150	mW
Derating factor (above T _a = 100°C)	PC	5.8	mW/°C
Collector current	I _C	50	mA
Collector-Emitter voltage	V _{CEO}	80	V
Emitter-Collector voltage	V_{ECO}	7	V
Dissipation	P _{TOT}	200	mW
oltage*1	V _{ISO}	5000	V rms
emperature	T _{OPR}	-55 to 110	°C
mperature	T _{STG}	-55 to 125	°C
emperature*2	T _{SOL}	260	°C
	Forward current Peak forward current (1us, pulse) Reverse voltage Power dissipation Derating factor (above T _a = 100°C) Power dissipation Derating factor (above T _a = 100°C) Collector current Collector-Emitter voltage Emitter-Collector voltage Dissipation oltage* cemperature mperature	Forward current I_F Peak forward current (1us, pulse) I_{FP} Reverse voltage V_R Power dissipation P_D Derating factor (above $T_a = 100^{\circ}C$) Power dissipation P_C Collector current I_C Collector-Emitter voltage V_{CEO} Emitter-Collector voltage V_{CEO} Dissipation P_{TOT} oltage*1 V_{ISO} Topa	$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$

Notes:

^{*1} AC for 1 minute, R.H.= $40 \sim 60\%$ R.H. In this test, pins 1, 2 are shorted together, and pins 3, 4 are shorted together.

^{*2} For 10 seconds



Electro-Optical Characteristics (Ta=25°C unless specified otherwise)

Input

Parameter	Symbol	Min.	Тур.	Max.	Unit	Condition
Forward Voltage	V_{F}	-	1.2	1.4	V	$I_F = 20 \text{mA}$
Reverse Current	I _R	-	-	10	μA	$V_R = 4V$
Input capacitance	C _{in}	-	30	250	pF	V = 0, $f = 1kHz$

Output

Parameter	Symbol	Min	Тур.	Max.	Unit	Condition	
Collector-Emitter dark	lasa	_	_	100	nA	$V_{CE} = 20V, I_{F} = 0mA$	
current	ICEO	-	-	100	ПА	VCE = 20 V, IF = OITIA	
Collector-Emitter	BV_CEO	80	_	_	V	$I_{\rm C} = 0.1 \rm mA$	
breakdown voltage	PACEO	00			V	IC = 0. IIIIA	
Emitter-Collector	D\/	7	_	_	V	I _F = 0.1mA	
breakdown voltage	BV_{ECO}	1	-	-	٧	IE – U. IIIIA	

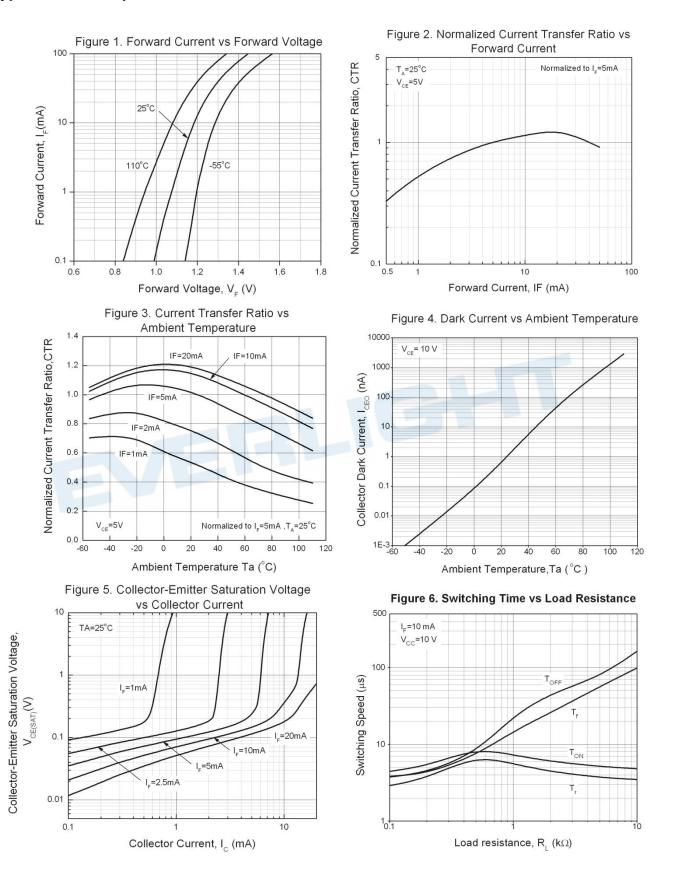
Transfer Characteristics

Para	meter	Symbol	Min	Тур.	Max.	Unit	Condition
	EL817		50		600		
	EL817A		80	_	160		
Current	EL817B		130	-	260		
Transfer	EL817C	CTR	200	-	400	%	$I_F = 5mA$, $V_{CE} = 5V$
ratio	EL817D		300	-	600		
	EL817X		100	-	200		
	EL817Y		150	-	300		
Collector-E saturation v		$V_{\text{CE(sat)}}$	-	0.1	0.2	V	$I_F = 20 \text{mA}, I_C = 1 \text{mA}$
Isolation re	sistance	R _{IO}	5×10 ¹⁰	-	-	Ω	V _{IO} = 500Vdc, 40~60% R.H.
Floating ca	pacitance	C_{IO}	-	0.6	1.0	рF	$V_{IO} = 0$, $f = 1MHz$
Cut-off freq	luency	fc	-	80	-	kHz	$V_{CE} = 5V$, $I_{C} = 2mA$ $R_{L} = 100\Omega$, $-3dB$
Rise time		t_{r}	-	6	18	μs	$V_{CE} = 2V$, $I_C = 2mA$,
Fall time		t _f	-	8	18	μs	$R_L = 100\Omega$

^{*} Typical values at T_a = 25°C



Typical Electro-Optical Characteristics Curves





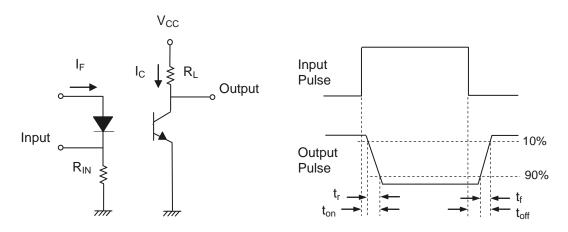


Figure 7. Switching Time Test Circuit & Waveforms





Order Information

Part Number

EL817X(Y)(Z)-FVG

Note

X = Lead form option (S, S1, S2, M or none)

Y = CTR Rank (A, B, C, D, X, Y or none)

Z = Tape and reel option (TU, TD or none)

F = Lead frame option (F: Iron, None: copper)

V = VDE safety (optional)

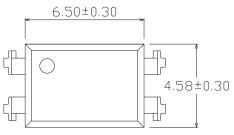
G = Halogens free

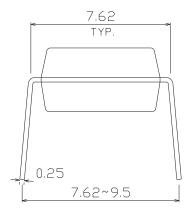
Option	Description	Packing quantity
None	Standard DIP-4	100 units per tube
М	Wide lead bend (0.4 inch spacing)	100 units per tube
S (TU)	Surface mount lead form + TU tape & reel option	1500 units per reel
S (TD)	Surface mount lead form + TD tape & reel option	1500 units per reel
S1 (TU)	Surface mount lead form (low profile) + TU tape & reel option	1500 units per reel
S1 (TD)	Surface mount lead form (low profile) + TD tape & reel option	1500 units per reel
S2 (TU)	Surface mount lead form (low profile) + TU tape & reel option	2000 units per reel
S2 (TD)	Surface mount lead form (low profile) + TD tape & reel option	2000 units per reel

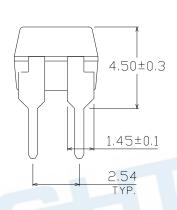


Package Dimension (Dimensions in mm)

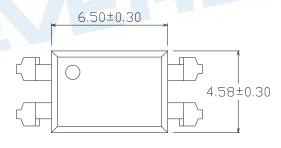
Standard DIP Type

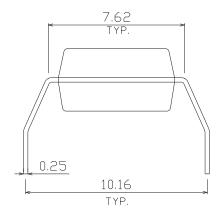


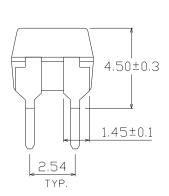




Option M Type

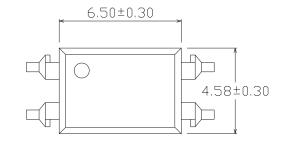


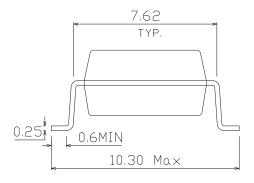


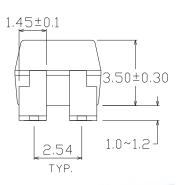




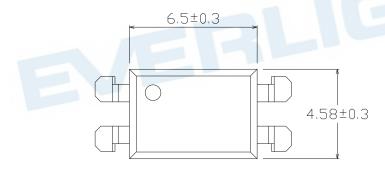
Option S Type

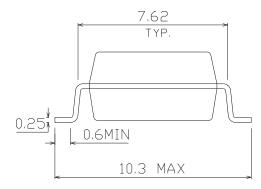


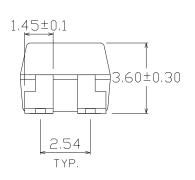




Option S1 Type

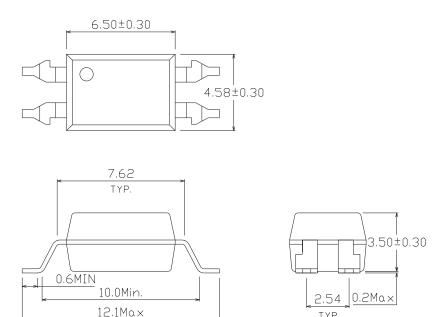






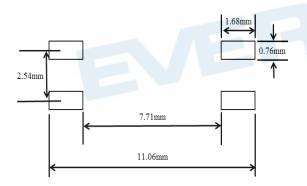


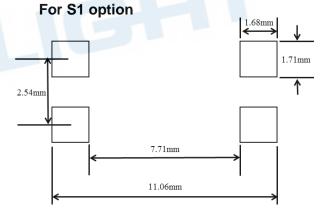
Option S2 Type



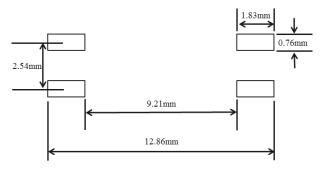
Recommended pad layout for surface mount leadform







For S2 option



Notes

Suggested pad dimension is just for reference only.

Please modify the pad dimension based on individual need.



Device Marking



Notes

EL	denotes EVERLIGHT
817	denotes Device Number

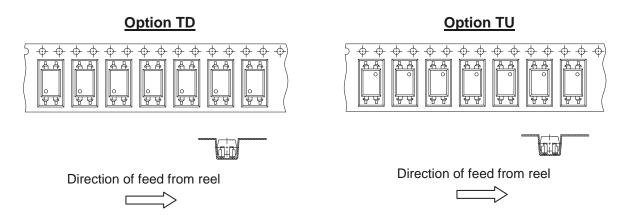
F denotes Factory Code (G: China and Green part)
R denotes CTR Rank (A, B, C, D, X, Y or none)

Y denotes 1 digit Year code WW denotes 2 digit Week code V denotes VDE (optional)

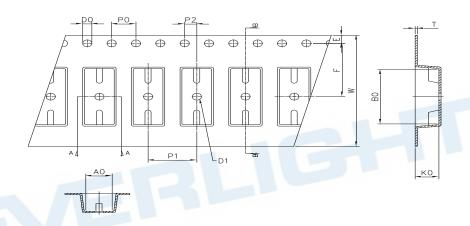




Tape & Reel Packing Specifications



Tape dimensions



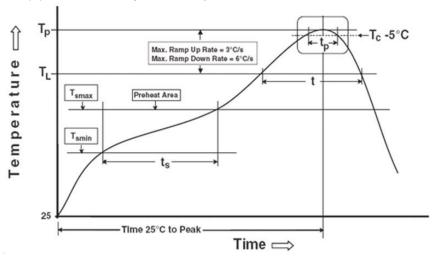
Dimension No.	Ao	Во	Do	D1	E	F
Dimension (mm) S.S1	4.90±0.1	10.40±0.1	1.5±0.1	1.50±0.1	1.75±0.1	7.50±0.1
Dimension (mm) S2	4.88±0.1	12.55±0.1	1.5±0.1	1.50±0.1	1.75±0.1	11.5±0.1
Dimension No.	Ро	P1	P2	t	w	Ко
Dimension No. Dimension (mm) S.S1	Po 4.00±0.1	P1 8.00±0.1	P2 2.00±0.1	t 0.40±0.1	W 16.00±0.3	Ko 4.60±0.1



Precautions for Use

1. Soldering Condition

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



Note:

Preheat

Temperature min (T_{smin})

Temperature max (T_{smax})

Time $(T_{smin} \text{ to } T_{smax}) (t_s)$

Average ramp-up rate (T_{smax} to T_p)

Other

Liquidus Temperature (T_L)

Time above Liquidus Temperature (t₁)

Peak Temperature (T_P)

Time within 5 °C of Actual Peak Temperature: T_P - 5°C

Ramp- Down Rate from Peak Temperature

Time 25°C to peak temperature

Reflow times

Reference: IPC/JEDEC J-STD-020D

150 °C

200°C

60-120 seconds

3 °C/second max

217 °C

60-100 sec

260°C

30 s

6°C /second max.

8 minutes max.

3 times



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