

1.Description

The UMW PC817 photocoupler consist of one piece of GaAs emitter and one piece of NPN transistor, BIN width of UMW PC817 is 2.54mm

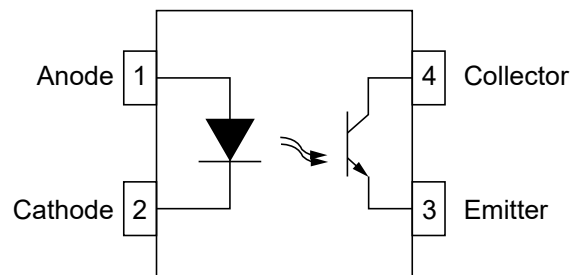
2.Applications

- Computer
- Instrumental application, measurement machine
- Imbursement equipments, duplicating machine, automat
- Family-use electric equipments, such as fans, etc...
- Signal transforming systems

3.Features

- Current Conversion Ratio (Min 50% Working Condition $I_F=5\text{mA}$, $V_{CE}=5\text{V}$)
- Insulation Voltage = 5,000Vrms
- Response Time (t_r : TYP. $4\mu\text{s}$ working condition)
- $V_{CE}=2\text{V}$, $I_C=2\text{mA}$, $R_L=100\ \Omega$)
- UL approved: UL1577, file No.E547318

4.Pinning information



DIP-4/SOP-4



5. Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
INPUT			
Forward Current	I_F	50	mA
Reverse Voltage	V_R	6	V
Consume Power	P	70	mW
OUTPUT			
Collector and Emitter Voltage	V_{CEO}	35	V
Emitter and Collector Voltage	V_{ECO}	6	V
Collector Current	I_C	50	mA
Consume Power	P_C	150	mW
Total Consume Power	P_{TOT}	200	mW
Isolation Voltage (1)	V_{ISO}	5000	Vrms
Max Insulation Voltage	V_{IOTM}	6000	V
Rated Impulse Insulation Voltage	V_{IORM}	630	V
Working Temperature	T_{OPR}	-30 to 100	°C
Deposit Temperature	T_{STG}	-55 to 125	°C
Soldering Temperature (2)	T_{SOL}	260	°C

Notes:

1. AC Test, 1 minute, humidity = 40~60%

Insulation test method as below:

- (1) Short circuit both terminals of photocoupler
- (2) No current when testing insulation voltage
- (3) Adding sine wave voltage when testing

2. Soldering time is 10 seconds



6. Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Input						
Forward Voltage	V_F	$I_F=20\text{mA}$		1.2	1.4	V
Reverse Current	I_R	$V_R=4\text{V}$			10	μA
Collector Capacitance	C_t	$V=0, f=1\text{kHz}$		30	250	pF
Output						
Collector to emitter Current	I_{CEO}	$V_{CE}=20\text{V}, I_F=0$			100	nA
Collector and Emitter attenuation Voltage	BV_{CEO}	$I_C=0.1\text{mA}, I_F=0$	35			V
Emitter and Collector Attenuation Voltage	BV_{ECO}	$I_E=0.1\mu\text{A}, I_F=0$	6			V
Transfer Characteristics						
Collector Current	I_C	$I_F=5\text{mA}, V_{CE}=5\text{V}$	2.5		30	mA
Current Conversion Ratio	CTR		50		600	%
Collector and Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F=20\text{mA}, I_C=1\text{mA}$		0.1	0.2	V
Insulation Impedance	R_{ISO}	DC500V, 40 ~ 60% R.H.	5×10^{10}	1×10^{11}		Ω
Capacotance	C_f	$V=0, f=1\text{kHz}$		0.6	1	pF
Transforming Frequency	F_C	$V_{CE}=5\text{V}, I_C=2\text{mA}, R_L=100\Omega, -3\text{dB}$		80		kHz
Risetime	T_r	$V_{CE}=2\text{V}, I_C=2\text{mA}$		4	18	μs
Descend Time	T_f			3	18	μs

Current Conversion Ratio = $I_C / I_F \times 100\%$



7.Grades of Current Conversion Ratio

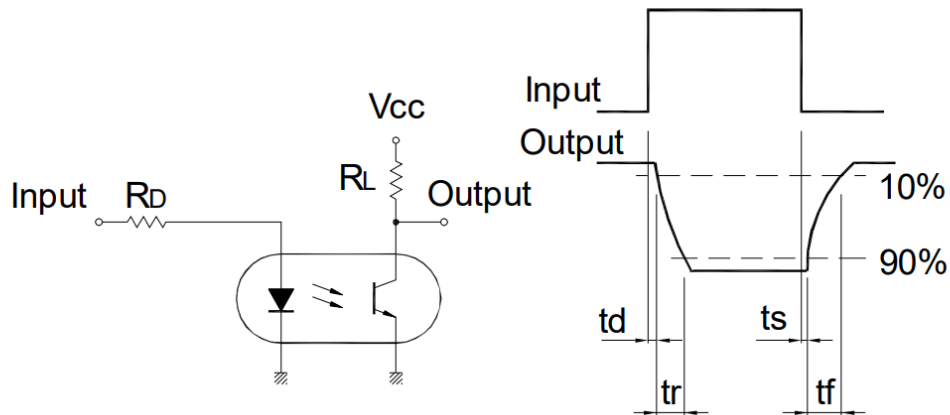
Grade Sign	Min (%)	Max (%)
L	50	100
A	80	160
B	130	260
C	200	400
D	300	600
L or A or B or C or D	50	600

Note: Working condition: $I_F=5mA$, $V_{CE}=5V$, $T_a=25^{\circ}C$.

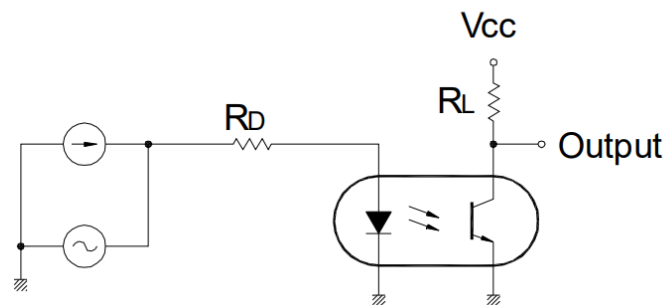


8. Test circuit

Test Circuit for Response Time

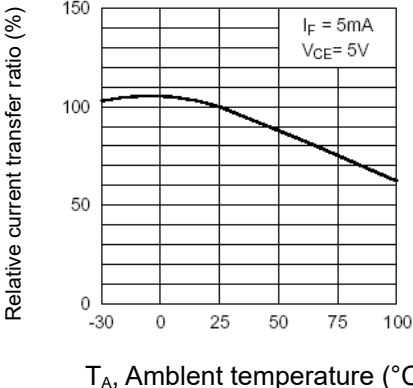
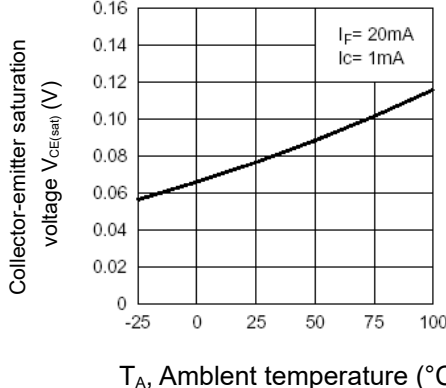
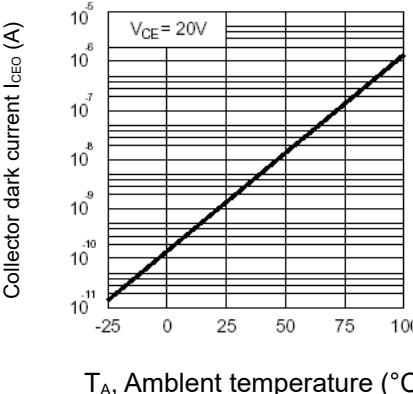
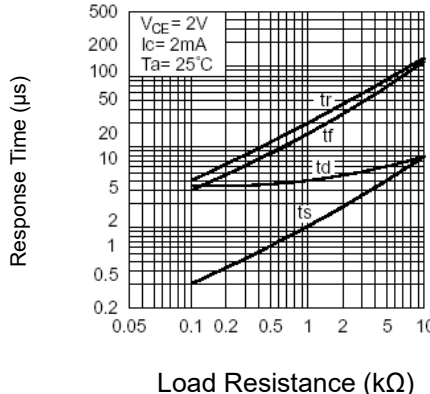
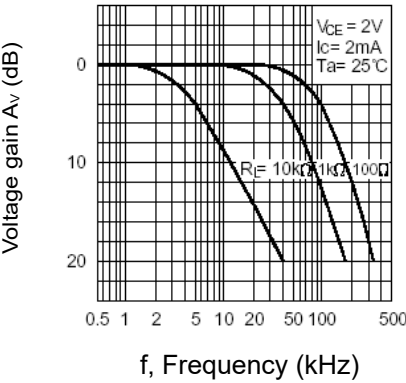


Test Circuit for Frequency Response



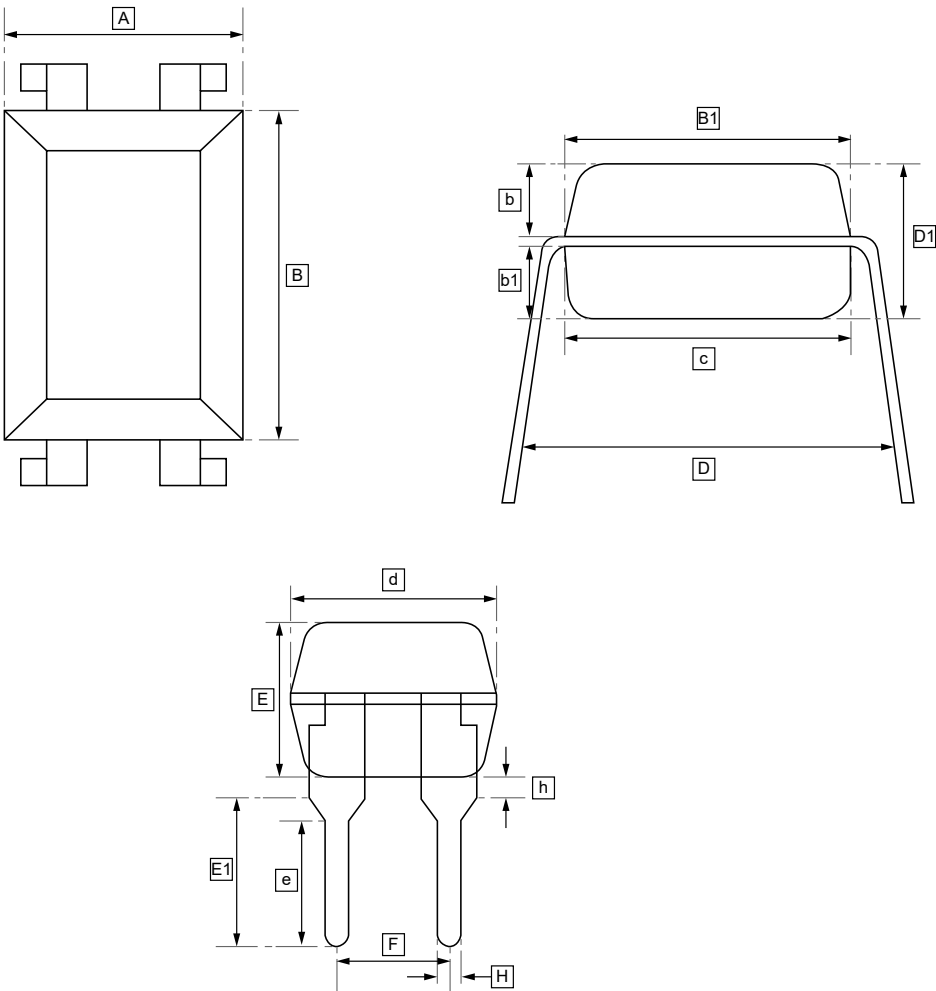


9. Typical Characteristic

 Relative current transfer ratio (%) $I_F = 5\text{mA}$ $V_{CE} = 5\text{V}$ T_A, Ambient temperature ($^{\circ}\text{C}$)	 Collector-emitter saturation voltage $V_{CE(sat)}$ (V) $I_F = 20\text{mA}$ $I_C = 1\text{mA}$ T_A, Ambient temperature ($^{\circ}\text{C}$)
Figure 7: Relative Current Transfer Ratio vs. Ambient Temperature	Figure 8: Relative Current Transfer Ratio vs. Ambient Temperature
 Collector dark current I_{CEO} (A) $V_{CE} = 20\text{V}$ T_A, Ambient temperature ($^{\circ}\text{C}$)	 Response Time (μs) $V_{CE} = 2\text{V}$ $I_C = 2\text{mA}$ $T_a = 25^{\circ}\text{C}$ Load Resistance ($\text{k}\Omega$)
Figure 9: Collector Dark Current vs. Ambient Temperature	Figure 10: Response Time vs. Load Resistance
 Voltage gain A_v (dB) $V_{CE} = 2\text{V}$ $I_C = 2\text{mA}$ $T_a = 25^{\circ}\text{C}$ $R_L = 10\text{k}\Omega, 1\text{k}\Omega, 100\Omega$ f, Frequency (kHz)	
Figure 11: Frequency Response	



10.1 DIP-4 Package Outline Dimensions



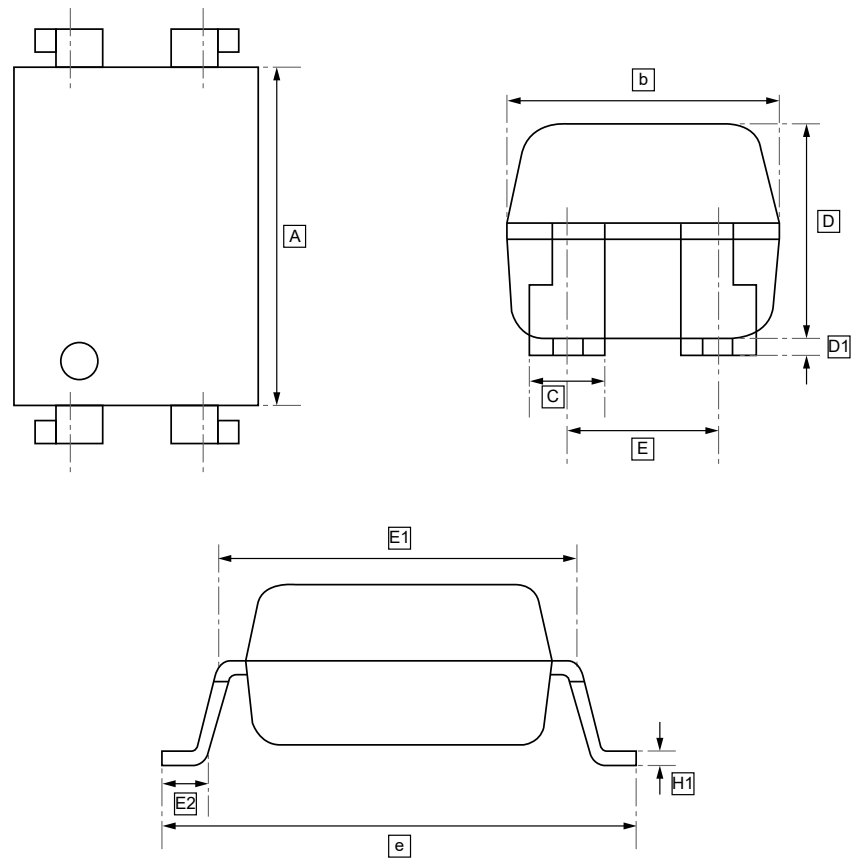
DIMENSIONS (mm are the original dimensions)

Symbol	A	B	B1	b	b1	c	D	D1	d	E	E1	e
Min	4.60	6.40	6.35	1.64	1.60	6.45	8.86	3.43	4.55	3.48	3.05	2.55
Max			6.45			6.55		3.53			3.55	3.05

Symbol	F	H	h
Min	2.29	0.50	0.50
Max	2.79		



10.2 SOP-4 Package Outline Dimensions

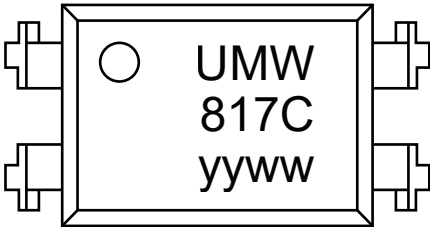


DIMENSIONS (mm are the original dimensions)

Symbol	A	b	C	D	D1	E	E1	E2	e	H1
Min	6.15	4.33	1.1	3.4	0.05	2.29	7.37	0.75	9.85	0.26
Max	6.65	4.83	1.3	3.9	0.6	2.79	7.87	1.25	10.45	



11.Ordering information



yy: Year Code
ww: Week Code

Order Code	Marking	Package	Base QTY	Delivery Mode
UMW PC817B	817B	DIP-4	5000	Tube and box
UMW PC817B-S	817B	SOP-4	2000	Tape and reel
UMW PC817C	817C	DIP-4	5000	Tube and box
UMW PC817C-S	817C	SOP-4	2000	Tape and reel
UMW PC817D-S	817D	SOP-4	2000	Tape and reel



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