



**THE DATASHEET OF  
TPC817S1B RAG**



Small Signal Product

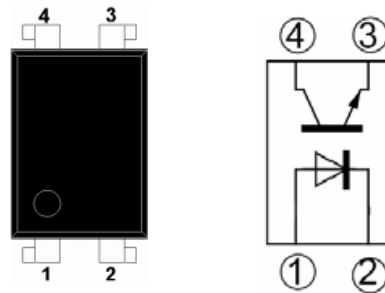
**4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER**

FEATURES

- Current transfer ratio  
(CTR: MIN.80% at  $I_F=5mA$ ,  $V_{CE}=5V$ )
- High isolation voltage between input and output ( $V_{iso}=5000V$  rms)
- Creepage distance  $> 7.62mm$
- UL Recognized File # E478892
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21
- Packing code with suffix "G" means green compound (halogen-free)



**DIP-4      DIP-4M      SOP-4**



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

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS ( $T_A=25^{\circ}C$ unless otherwise noted)				
PARAMETER		SYMBOL	RATING	UNIT
Input	Forward current	$I_F$	50	mA
	Reverse voltage	$V_R$	6	V
	Power dissipation	$P$	70	mW
Output	Collector-emitter voltage	$V_{CEO}$	80	V
	Emitter-collector voltage	$V_{ECO}$	6	V
	Collector current	$I_C$	50	mA
	Collector power dissipation	$P_C$	150	mW
Total power dissipation		$P_{tot}$	200	mW
Isolation voltage		$V_{iso}$	5000	Vrms
Rated impulse isolation voltage		$V_{IOTM}$	6000	V
Rated repetitive peak isolation voltage		$V_{IORM}$	630	V
Operating temperature		$T_{opr}$	-40 to +125	$^{\circ}C$
Storage temperature		$T_{stg}$	-55 to +125	$^{\circ}C$
Soldering temperature		$T_{sol}$	260	$^{\circ}C$

Small Signal Product

ELECTRICAL CHARACTERISTICS (T <sub>A</sub> =25°C unless otherwise noted)							
PARAMETER		SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNIT
Input	Forward voltage	V <sub>F</sub>	I <sub>F</sub> =20mA	-	1.2	1.4	V
	Reverse current	I <sub>R</sub>	V <sub>R</sub> =4V	-	-	10	μA
	Terminal capacitance	C <sub>t</sub>	V=0, f=1kHz	-	30	250	pF
Output	Collector dark current	I <sub>CEO</sub>	V <sub>CE</sub> =20V, I <sub>F</sub> =0	-	-	100	nA
	Collector-emitter breakdown voltage	BV <sub>CEO</sub>	I <sub>C</sub> =0.1mA, I <sub>F</sub> =0	80	-	-	V
	Emitter-collector breakdown voltage	BV <sub>ECO</sub>	I <sub>E</sub> =10μA, I <sub>F</sub> =0	6	-	-	V
Transfer Characteristics	Collector current	I <sub>C</sub>	I <sub>F</sub> =5mA, V <sub>CE</sub> =5V	2.5	-	30	mA
	Current transfer ration	CTR		80	-	600	%
	Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>F</sub> =20mA, I <sub>C</sub> =1mA	-	0.1	0.2	V
	Isolation resistance	R <sub>ISO</sub>	DC500V, 40 to 60%RH	5x10 <sup>10</sup>	10 <sup>11</sup>	-	Ω
	Floating capacitance	C <sub>f</sub>	V=0, f=1MHz	-	0.6	1.0	pF
	Cut-off frequency	f <sub>c</sub>	V <sub>CE</sub> =5V, I <sub>C</sub> =2mA, R <sub>L</sub> =100Ω, -3dB	-	80	-	KHz
	Response time	Rise time	t <sub>r</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =2mA, R <sub>L</sub> =100Ω	-	4	18
Fall time		t <sub>f</sub>	-		3	18	μs

Note 4: Classification table of current transfer ratio is shown below

RANK TABLE OF CURRENT TRANSFER RATIO, CTR

RANK MARK	MIN (%)	MAX (%)
A	80	160
B	130	260
C	200	400
D	300	600

ORDERING INFORMATION

PART NO. (Note 1, 2)	PACKING CODE	PACKING CODE SUFFIX	PACKAGE	PACKING
TPC817x	C9	G	DIP-4	100 / TUBE
TPC817Mx	C9		DIP-4M (Leads with 0.4" spacing)	100 / TUBE
TPC817S1x	RA		SOP-4	2K / 13" Reel

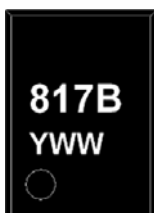
Note 1: "x" defines CTR rank from "A" to "D"

Note 2: Whole series with green compound

EXAMPLE

PREFERRED P/N	PART NO.	PACKING CODE	PACKING CODE SUFFIX	DESCRIPTION
TPC817A C9G	TPC817A	C9	G	Green compound

MARKING



Note:

817: Product type

B: CTR rank mark

YWW: Date code

Small Signal Product

RATINGS AND CHARACTERISTICS CURVES

( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 Forward Current vs. Ambient Temperature

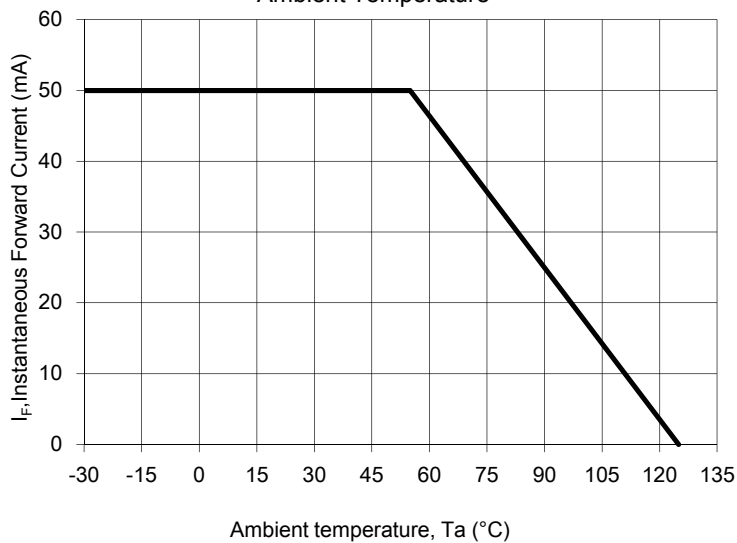


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

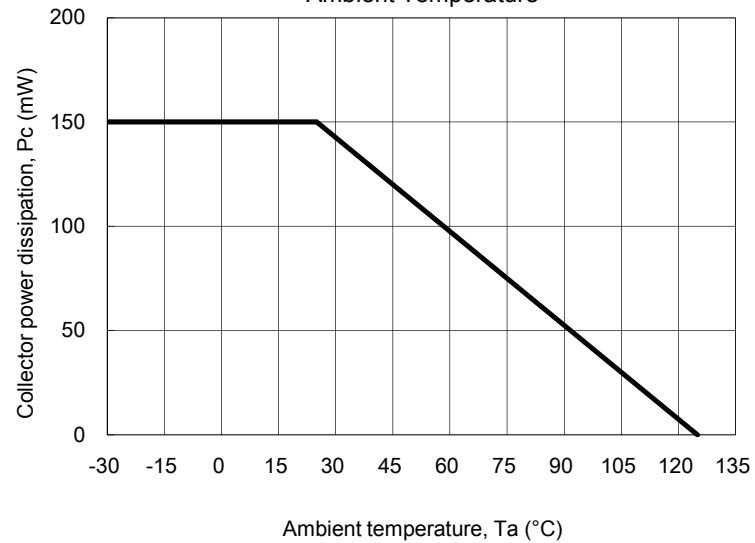


Fig. 3 Collector-emitter Saturation Voltage vs

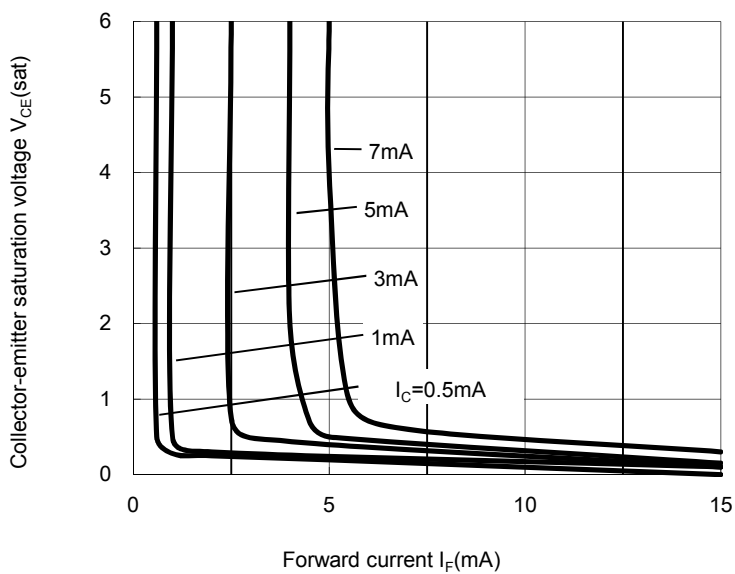
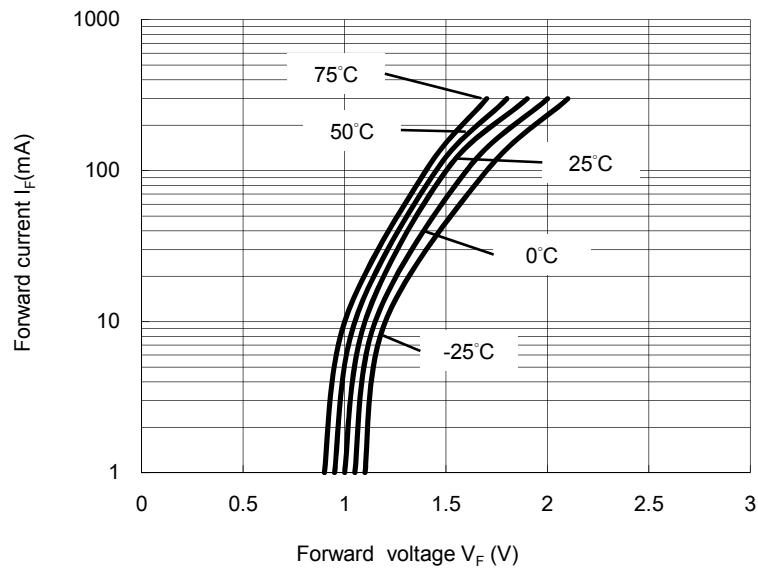


Fig. 4 Forward Current vs. Forward Voltage



Small Signal Product

Fig. 5 Current Transfer Ratio vs. Forward Current

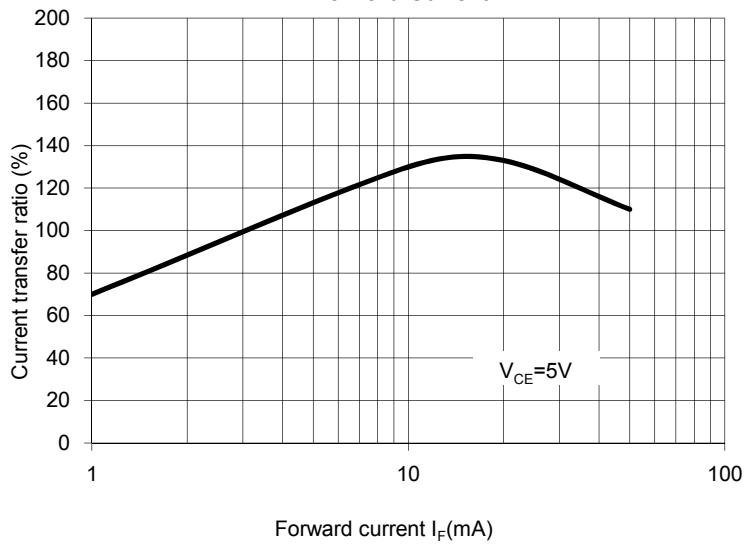


Fig. 6 Collector Current vs. Collector-emitter Voltage

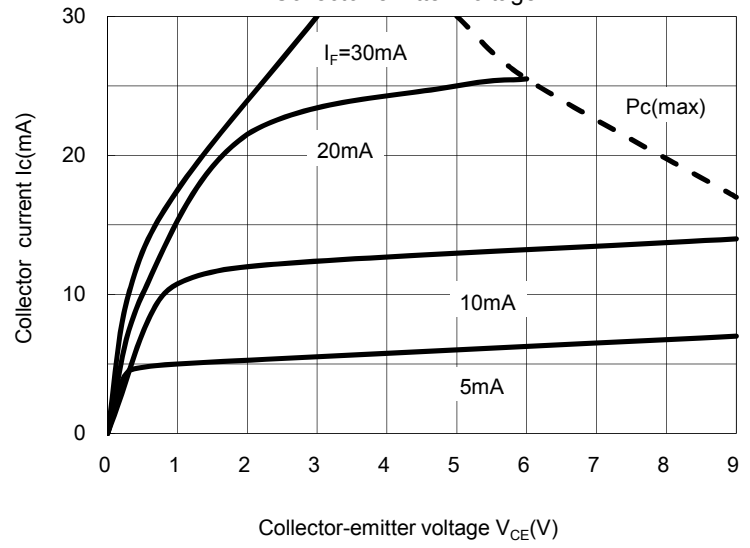


Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature

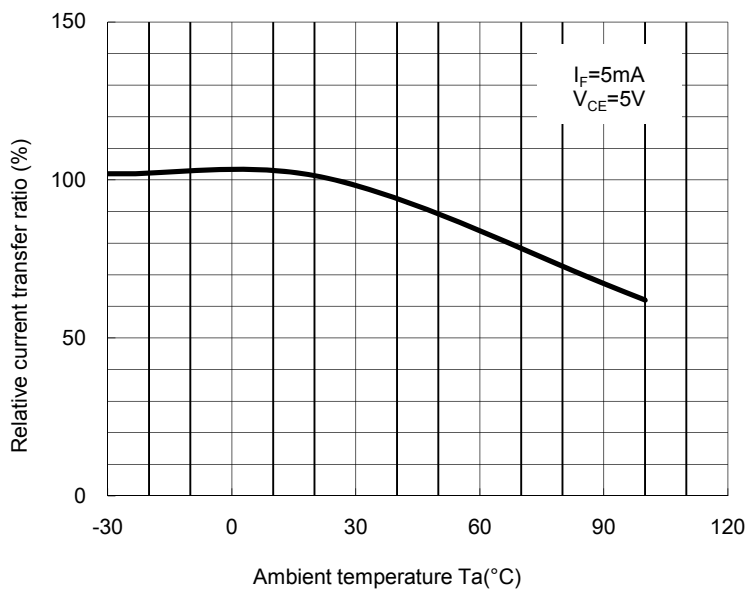
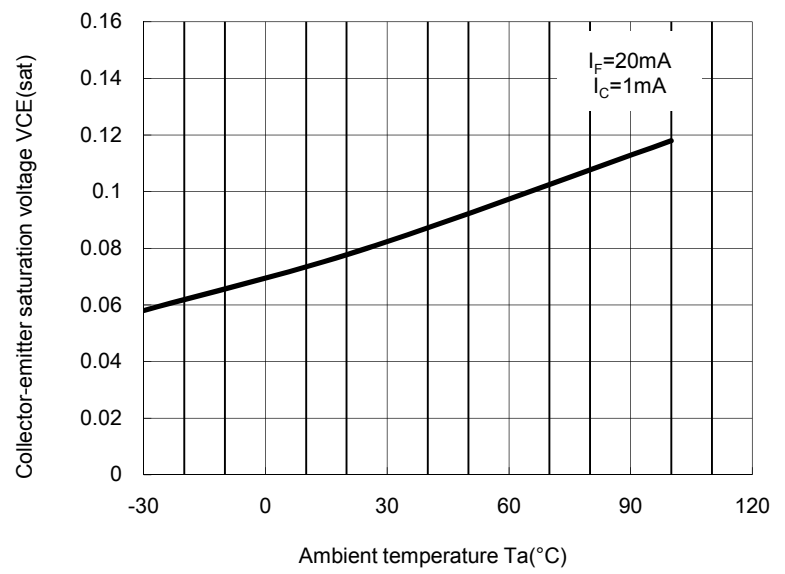


Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature



Small Signal Product

Fig. 9 Collector Dark Current vs. Ambient temperature

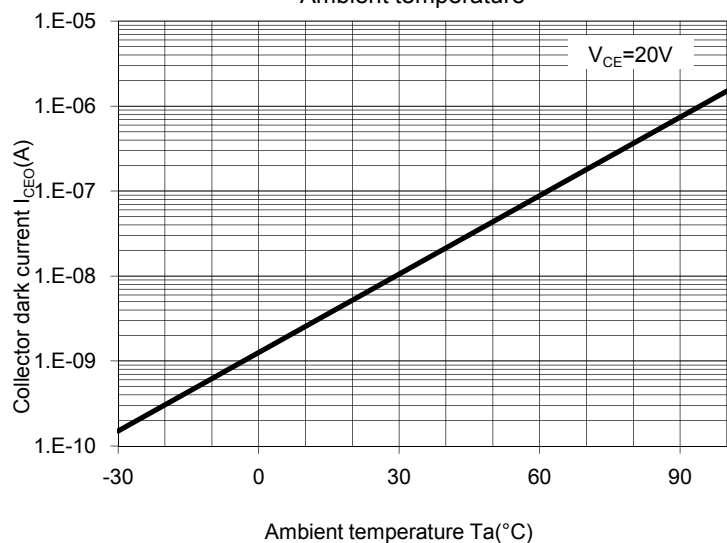


Fig. 10 Response Time vs. Load Resistance

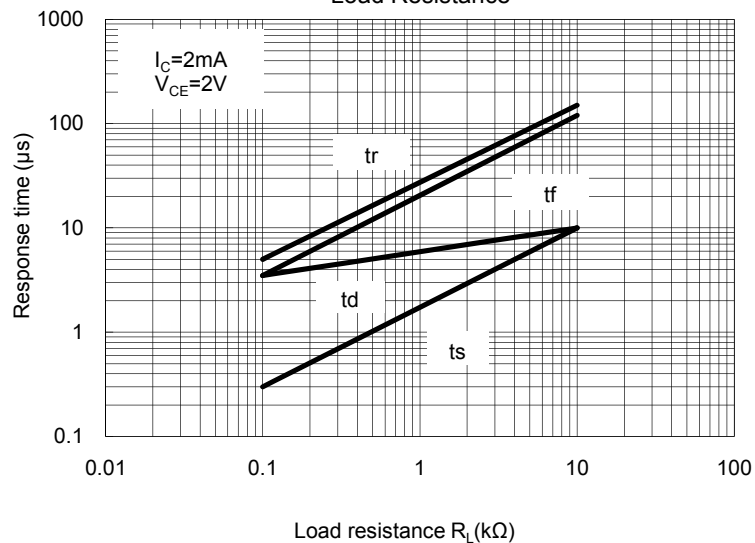
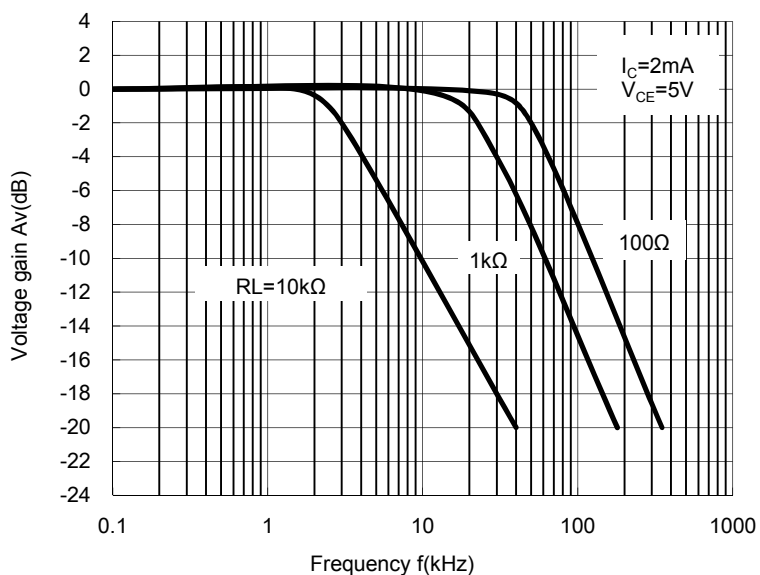
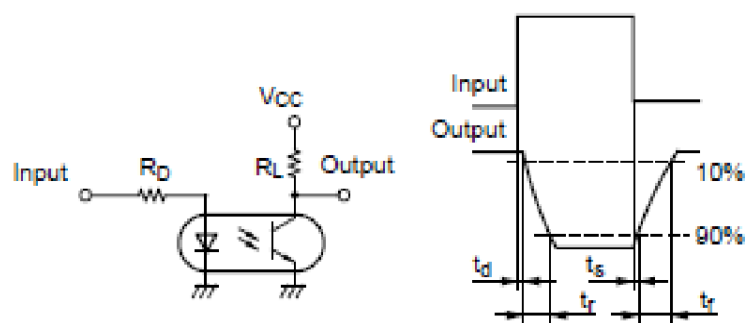


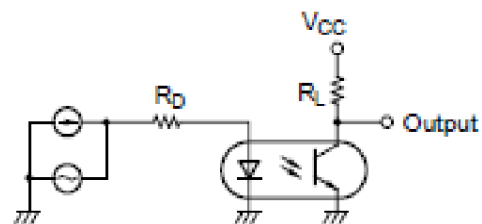
Fig. 11 Frequency Response



Test Circuit Response Time



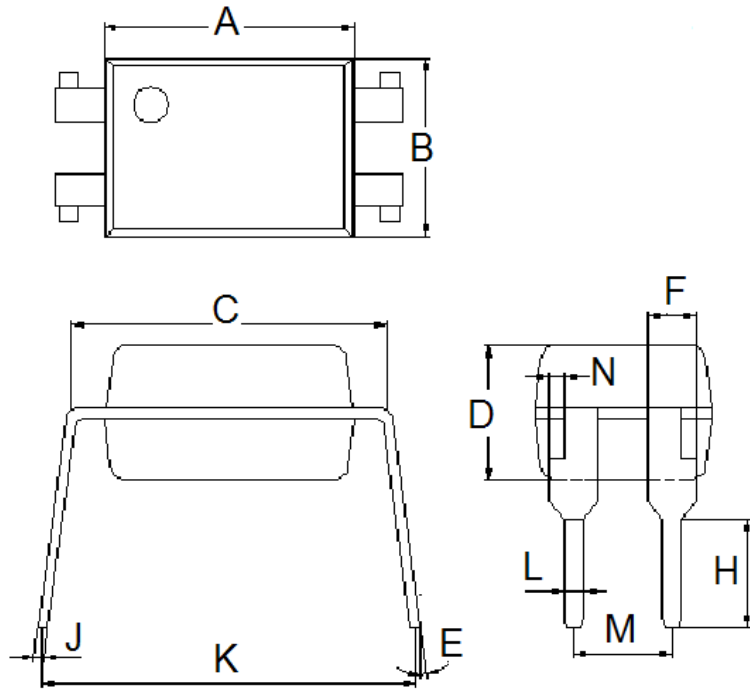
Test Circuit for Frequency Response



Small Signal Product

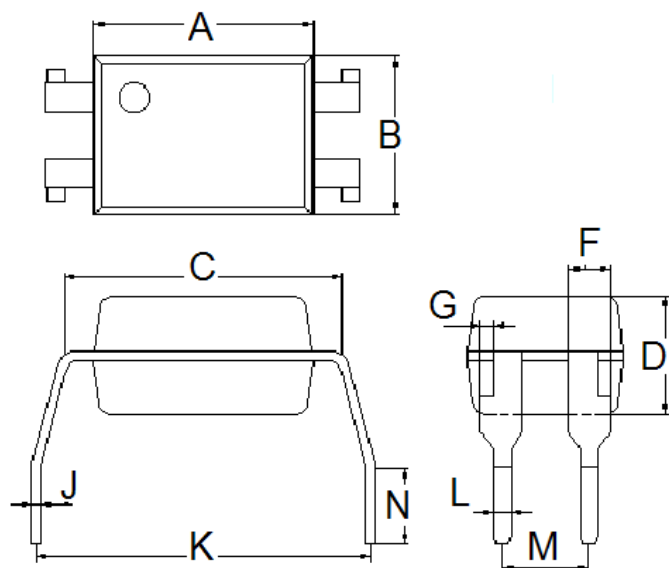
DIMENSIONS

**DIP-4**



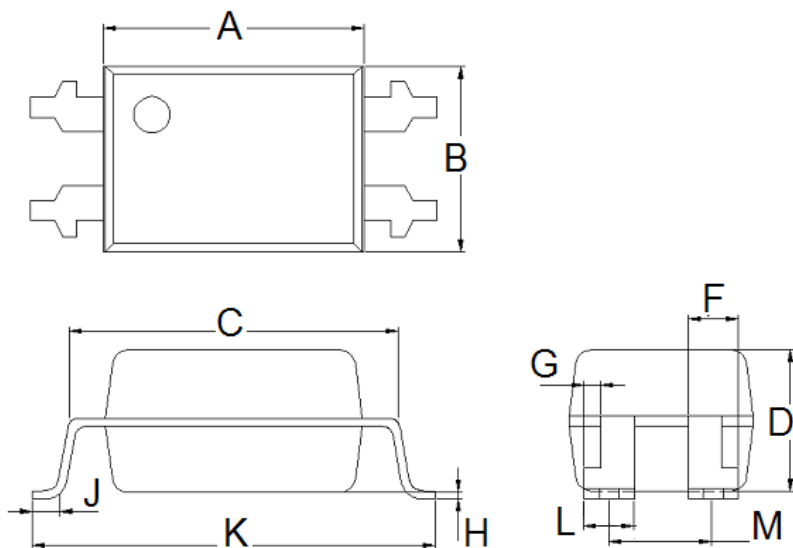
DIM.	Unit (mm)	
	Min	Max
A	6.40	6.60
B	4.50	4.70
C	7.90	8.30
D	3.28	3.68
E	2°	8°
F	1.25 typ.	
H	2.70	2.90
J	0.23	0.26
K	8.86	9.31
L	0.50 typ.	
M	2.44	2.64
N	0.40 typ.	

**DIP-4M (Leads with 0.4" spacing)**



DIM.	Unit (mm)	
	Min	Max
A	6.40	6.60
B	4.50	4.70
C	7.90	8.30
D	3.28	3.68
F	1.25 typ.	
G	0.40 typ.	
J	0.23	0.26
K	9.86	10.46
L	0.50 typ.	
M	2.44	2.64
N	2.08	2.48

**SOP-4**



DIM.	Unit (mm)	
	Min	Max
A	6.40	6.60
B	4.50	4.70
C	7.90	8.30
D	3.28	3.68
F	1.25 typ.	
G	0.40 typ.	
H	0.00	0.20
J	0.50	0.70
K	9.80	10.30
L	1.25 typ.	
M	2.49	2.69

Small Signal Product

### Notice

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale.

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

[View TPC817S1B RAG on WIN SOURCE](#)

[Taiwan Semiconductor Information](#)

## Optimize Your Supply Chain with WIN SOURCE Solutions

- ✓ Global Sourcing Solution
- ✓ Obsolete Management
- ✓ Cost Control Management
- ✓ Shortage Management
- ✓ Alternative Solution
- ✓ Excess Inventory Management