

## Features

- Current transfer ratio  
(CTR: 50~600% at  $I_F = 5\text{mA}$ ,  $V_{CE} = 5\text{V}$ )
- High isolation voltage between input and output ( $V_{iso} = 5000\text{V rms}$ )

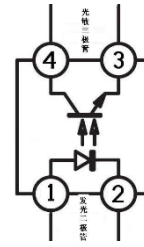
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## Applications

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

## Mechanical Data

- Case: DIP-4L, SOP-4L
- Molding Compound: UL Flammability Classification Rating 94V-0
- Terminals: Matte tin-plated leads; solderability-per MIL-STD-202, Method 208



## Ordering Information

Part Number	Package	Shipping Quantity	Marking Code
BL817	DIP-4L	100 pcs / Tube	BL817
BL817M	DIP-4L(leads with 0.4" spacing)	100 pcs / Tube	BL817
BL817S	SOP-4L	2000 pcs / Tape & Reel	BL817

## Maximum Ratings (@ $T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter		Symbol	Value	Unit
Input	Forward Current	$I_F$	50	mA
	Peak Forward Current <sup>*1</sup>	$I_{FM}$	1	A
	Reverse Voltage	$V_R$	6	V
	Power Dissipation	$P_D$	70	mW
Output	Collector Power Dissipation	$P_C$	150	mW
	Collector Current	$I_C$	50	mA
	Collector-Emitter Voltage	$V_{CEO}$	80	V
	Emitter-Collector Voltage	$V_{ECO}$	6	V

## Thermal Characteristics

Parameter	Symbol	Value	Unit
Total Power Dissipation	$P_{TOT}$	200	mW
Isolation Voltage <sup>*2</sup>	$V_{ISO}$	5000	V <sub>rms</sub>
Rated Impulse Isolation Voltage	$V_{IOTM}$	6000	V
Rated Repetitive Peak Isolation Voltage	$V_{IORM}$	630	V
Thermal Resistance Junction-to-Air	$R_{\theta JA}$	430	°C/W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	350	°C/W
Thermal Resistance Junction-to-Lead	$R_{\theta JL}$	368	°C/W
Operating Temperature	$T_{OPR}$	-55 ~ +110	°C
Storage Temperature Range	$T_{STG}$	-55 ~ +125	°C
Soldering Temperature <sup>*3</sup>	$T_{SOL}$	260	°C

Notes:

1. Pulse width  $\leq 1\mu s$ , Duty ratio: 0.001
2. 40 to 60% RH, AC for 1 minute
3. For 10 seconds

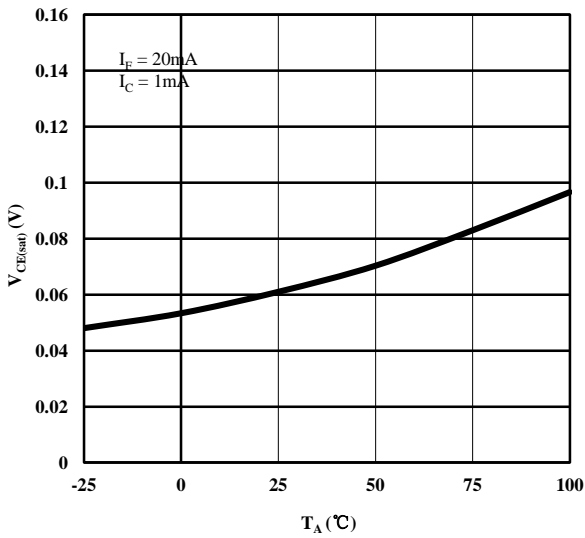
## Electrical Characteristics (@ $T_A = 25^\circ C$ unless otherwise specified)

Parameter		Symbol	Test Condition	Min.	Typ.	Max.	Unit
Input	Forward Voltage	$V_F$	$I_F = 20mA$	-	1.2	1.4	V
	Peak Forward Voltage	$V_{FM}$	$I_{FM} = 0.5A$	-	-	3.0	V
	Reverse Current	$I_R$	$V_R = 4V$	-	-	10	$\mu A$
	Input Capacitance	$C_{in}$	$V_R = 0V, f = 1kHz$	-	30	250	pF
Output	Collector-Emitter Dark Current	$I_{CEO}$	$V_{CE} = 20V, I_F = 0$	-	-	100	nA
	Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C = 0.1mA, I_F = 0$	80	-	-	V
	Emitter-Collector Breakdown Voltage	$BV_{ECO}$	$I_E = 10\mu A, I_F = 0$	6	-	-	V
Transfer Characteristics	Collector Current	$I_C$	$I_F = 5mA, V_{CE} = 5V$	2.5	-	30	mA
	Current Transfer Ratio	CTR	$I_F = 5mA, V_{CE} = 5V$	50	-	600	%
	Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F = 20mA, I_C = 1mA$	-	0.1	0.2	V
	Isolation Resistance	$R_{IO}$	$V_{IO} = 500V_{dc}$ 40~60% R.H.	$5 \times 10^{10}$	$1 \times 10^{11}$	-	$\Omega$
	Floating Capacitance	$C_{IO}$	$V_{IO} = 0, f = 1MHz$	-	0.6	1.0	pF
	Cut-off frequency	$f_c$	$V_{CE} = 5V, I_C = 2mA$ $RL = 100\Omega, -3dB$	-	80	-	kHz
	Turn On Time	$T_{on}$	$V_{CE} = 2V, RL = 100\Omega$	-	4	18	$\mu s$
	Turn Off Time	$T_{off}$	$I_C = 2mA$	-	3	18	

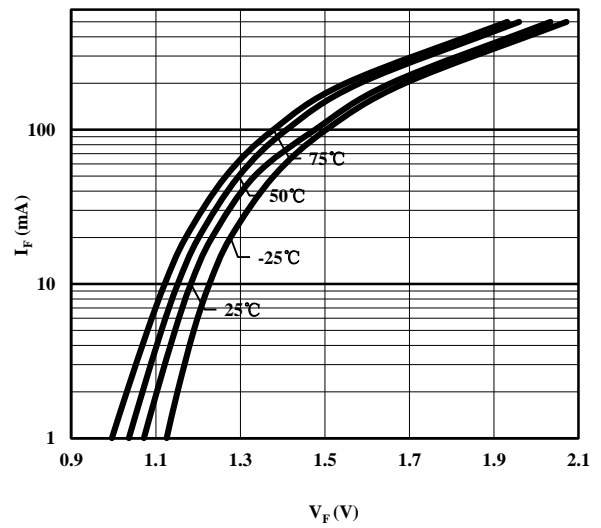
**Rank Table of Current Transfer Ratio CTR**

Rank Mark	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

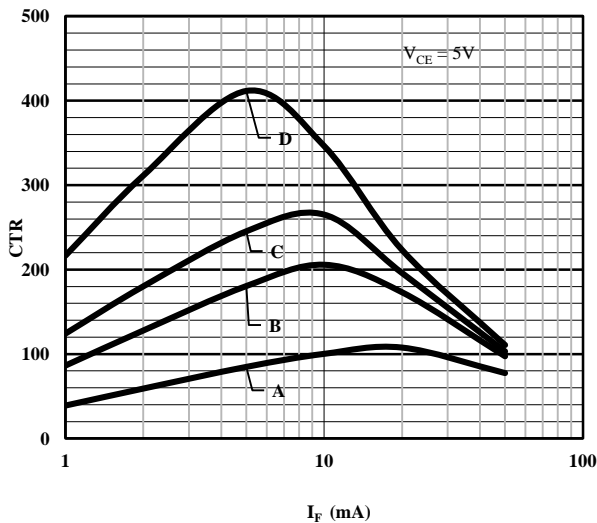
**Ratings and Characteristics Curves** (@  $T_A = 25^\circ\text{C}$  unless otherwise specified)



**Fig. 1 Collector-Emitter Saturation Voltage vs. Ambient Temperature**



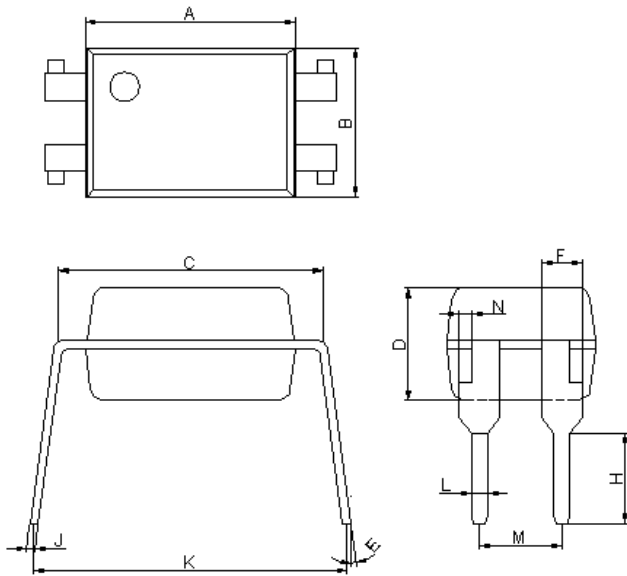
**Fig. 2 Forward Current vs. Forward Voltage**



**Fig. 3 Current Transfer Ratio vs. Forward Current**

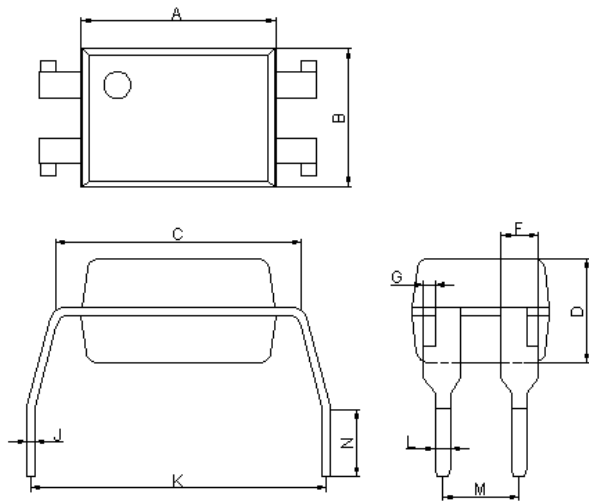
**Package Outline Dimensions** (unit: mm)

**BL817**



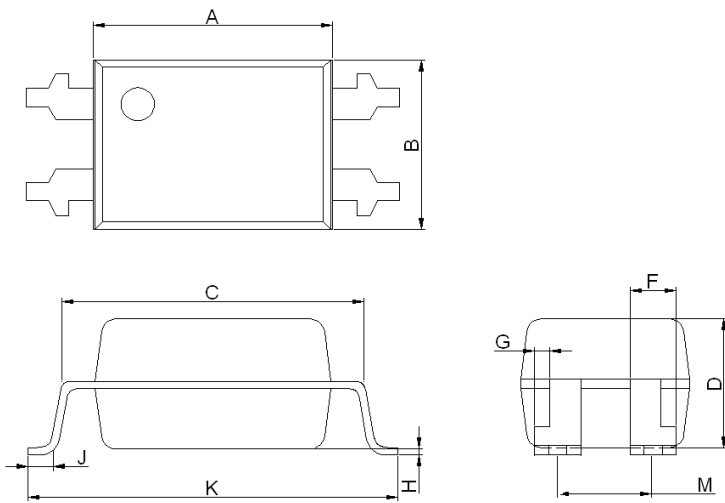
Dim	Min	Max
A	6.40	6.60
B	4.50	4.70
C	7.90	8.30
D	3.28	3.68
E	2°	8°
F	1.15	1.35
H	2.70	2.90
J	0.20	0.30
K	8.86	9.31
L	0.40	0.60
M	2.44	2.64
N	0.30	0.50

**BL817M**



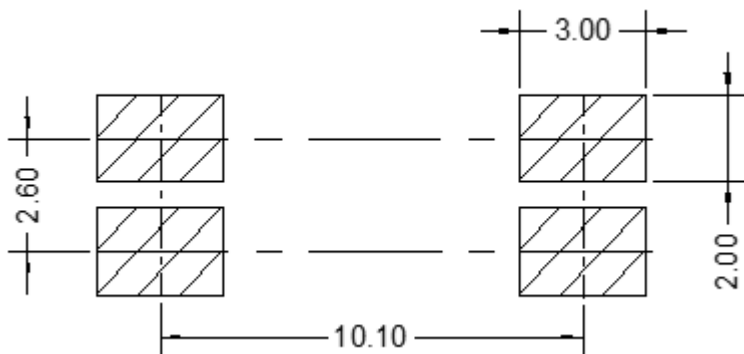
Dim	Min	Max
A	6.40	6.60
B	4.50	4.70
C	7.90	8.30
D	3.28	3.68
F	1.15	1.35
G	0.30	0.50
J	0.20	0.30
K	9.86	10.46
L	0.40	0.60
M	2.44	2.64
N	2.40	2.90

**BL817S**



Dim	Min	Max
A	6.40	6.60
B	4.50	4.70
C	7.90	8.30
D	3.28	3.68
F	1.15	1.35
G	0.30	0.50
H	0.00	0.20
J	0.9	1.2
K	9.80	10.30
M	2.49	2.69

**SOLDERING FOOTPRINT** (unit: mm)



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