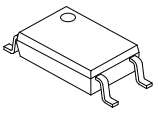
# SSOP-4 PHOTOTRANSISTOR PHOTOCOUPLER



SSOP-4

## ■ DESCRIPTION

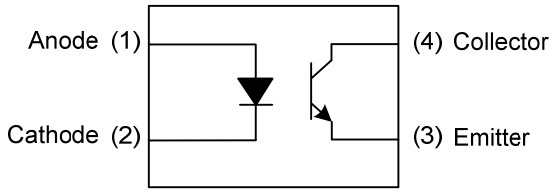
The UTC **UPC217** is a phototransistor photocoupler, it uses UTC's advanced technology to provide the customers with high isolation voltage between input and output, etc.

The UTC **UPC217** is suitable for programmable controllers and telecommunication equipments, etc.

## ■ FEATURES

* Current transfer ratio (CTR: MIN. 50% at $I_F$=5mA,$V_{CE}$=5V)
* Isolation voltage between input and output ($V_{ISO}$=3750 Vrms)
* High collector-emitter voltage ($V_{CEO}$=80V)
* Employs double transfer mold technology

## ■ SYMBOL




## ■ ORDERING INFORMATION

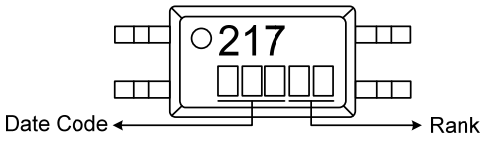
| Ordering Number | | Package | Pin Assignment | | | | Packing |
|---|---|---|---|---|---|---|---|
| Lead Free | Halogen Free | | 1 | 2 | 3 | 4 | |
| UPC217L-R04-R | UPC217G-R04-R | SSOP-4 | A | K | E | C | Tape Reel |
| UPC217xxL-R04-R | UPC217xxG-R04-R | SSOP-4 | A | K | E | C | Tape Reel |

Note: Pin Assignment: A: Anode K: Cathode E: Emitter C: Collector

UPC217xxG-R04-R
(1)Packing Type
(2)Package Type
(3)Green Package
(4)Rank

(1) R: Tape Reel
(2) R04: SSOP-4
(3) G: Halogen Free and Lead Free, L: Lead Free
(4) Refer to TRANSFER CHARACTERISTICS

## ■ MARKING





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## ■ ABSOLUTE MAXIMUM RATING ($T_A$=25°C, unless otherwise specified)

| PARAMETER | | SYMBOL | RATINGS | UNIT |
|---|---|---|---|---|
| Input | Forward Current | $I_F$ | 50 | mA |
| | Peak Forward Current (1μs, Pulse) | $I_{FP}$ | 1 | A |
| | Reverse Voltage | $V_R$ | 6 | V |
| | Power Dissipation | $P_D$ | 70 | mW |
| | Derating Factor | | 1 | mW/°C |
| Output | Power Dissipation | $P_C$ | 150 | mW |
| | Derating Factor | | 1.5 | mW/°C |
| | Collector Current | $I_C$ | 50 | mA |
| | Collector-Emitter Voltage | $V_{CEO}$ | 80 | V |
| | Emitter-Collector Voltage | $V_{ECO}$ | 7 | V |
| Power Dissipation | | $P_D$ | 200 | mW |
| Isolation Voltage (Note 2) | | $V_{ISO}$ | 3750 | Vrms |
| Operating Temperature | | $T_{OPR}$ | -55 ~ +110 | °C |
| Storage Temperature | | $T_{STG}$ | -55 ~ +125 | °C |

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.
2. AC for 1 minute, R.H.= 40~60% R.H. In this test, pins 1, 2 are shorted together, and pins 3, 4 are shorted together.

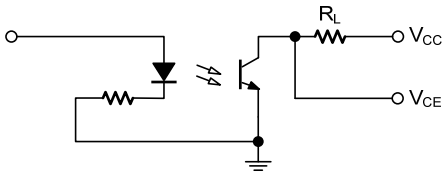
## ■ ELECTRICAL CHARACTERISTICS ($T_A$=25°C, unless otherwise specified)

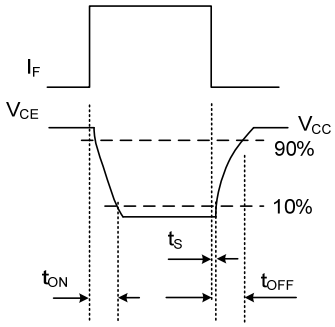
| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| **INPUT** | | | | | | |
| Forward Voltage | $V_F$ | $I_F$=20mA | | 1.2 | 1.4 | V |
| Reverse Current | $I_R$ | $V_R$=4V | | | 10 | μA |
| Input Capacitance | $C_{IN}$ | V=0, f=1kHz | | 30 | 250 | pF |
| **OUTPUT** | | | | | | |
| Collector-Emitter Dark Current | $I_{CEO}$ | $V_{CE}$=20V, $I_F$=0mA | | | 100 | nA |
| Collector-Emitter Breakdown Voltage | $BV_{CEO}$ | $I_C$=0.1mA | 80 | | | V |
| Emitter-Collector Breakdown Voltage | $BV_{ECO}$ | $I_E$=0.1mA | 7 | | | V |

## ■ TRANSFER CHARACTERISTICS ($T_A$=25°C, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|---|
| Current Transfer Ratio | CTR | $I_F$=5mA ,$V_{CE}$=5V | UPC217 | 50 | | 600 | % |
| | | | UPC217A | 80 | | 160 | % |
| | | | UPC217A1 | 100 | | 160 | % |
| | | | UPC217B | 130 | | 260 | % |
| | | | UPC217C | 200 | | 400 | % |
| | | | UPC217D | 300 | | 600 | % |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_F$=8mA , $I_C$=2.4mA | | | | 0.4 | V |
| Isolation Resistance | $R_{IO}$ | $V_{IO}$=500Vdc, 40~60% R.H. | | $5\times10^{10}$ | $1\times10^{11}$ | | Ω |
| 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, $R_L$=100Ω, -3dB | | | 80 | | kHz |
| Rise Time | $t_R$ | $V_{CE}$=2V, $I_C$=2mA, $R_L$=100Ω | | | 4 | 18 | μs |
| Fall Time | $t_F$ | | | | 3 | 18 | μs |

## ■ SWITCHING TIME TEST CIRCUIT




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