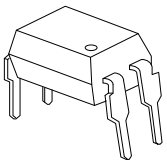
4 PIN DIP PHOTOTRANSISTOR PHOTOCOUPLER



DIP-4

■ DESCRIPTION

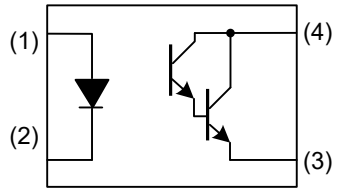
The UTC **UPC815** is a 4 pin phototransistor photocoupler, it uses UTC's advanced technology to provide the customers with high isolation voltage between input and output, etc.

The UTC **UPC815** is suitable for programmable controllers and telecommunication equipments, etc.

■ FEATURES

* Current transfer ratio (CTR: MIN. 600% at I_F=1mA, V_{CE}=2V)
* High input-output isolation voltage (V_{ISO}=5,000Vrms)
* Response time (t_r: TYP. 60μs at V_{CE}=2V, I_C=10mA, R_L=100Ω)
* Green Package

■ SYMBOL



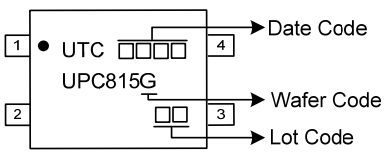
■ ORDERING INFORMATION

Ordering Number	Package	Pin Assignment				Packing
		1	2	3	4	
UPC815G-D04-T	DIP-4	A	K	E	C	Tape Reel

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

UPC815G-D04-T (1)Packing Type (2)Package Type (3)Wafer Code	(1) R: Tape Reel (2) D04: DIP-4 (3) Wafer Code

■ MARKING



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

PARAMETER		SYMBOL	RATINGS	UNIT
Input	Forward Current	I_F	50	mA
	Reverse Voltage	V_R	6	V
	Power Dissipation	P_D	70	mW
Output	Collector-Emitter Voltage	V_{CEO}	35	V
	Emitter-Collector Voltage	V_{ECO}	6	V
	Collector Current	I_C	80	mA
	Collector Power Dissipation	P_C	150	mW
Total Power Dissipation		P_{tot}	200	mW
Isolation Voltage (Note 2)		V_{ISO}	5000	Vrms
Operating Temperature		T_{OPR}	-30 ~ +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.

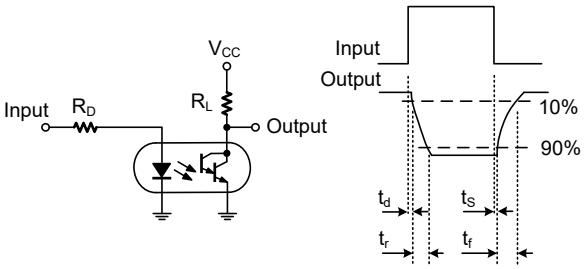
■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

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			250	pF
OUTPUT						
Collector-Emitter Dark Current	I_{CEO}	V_{CE}=35V, I_F=0			1	μA
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C=0.1mA, I_F=0	35			V
Emitter-Collector Breakdown Voltage	BV_{ECO}	I_E=0.1μA, I_F=0	6			V

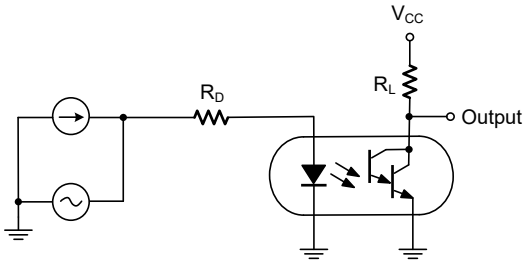
■ TRANSFER CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector Current	I_C	I_F=1mA,V_{CE}=2V	6		75	mA
Current Transfer Ratio	CTR	I_F=1mA ,V_{CE}=2V	600		7500	%
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	I_F=20mA , I_C=5mA			1.0	V
Isolation Resistance	R_{IO}	DC500V, 40~60% R.H.	5×10^{10}	1×10^{11}		Ω
Floating Capacitance	C_{IO}	V_{IO}=0, f=1MHz			1.0	pF
Cut-Off Frequency	f_C	V_{CE}=5V, I_C=2Ma R_L=100Ω, -3dB	1.0	6.0		kHz
Rise Time	t_r	V_{CE}=2V, I_C=10mA, R_L=100Ω			300	μs
Fall Time	t_f				250	μs

■ TEST CIRCUITS AND WAVEFORMS



Test Circuit for Response Time



Test Circuit for Frequency Response