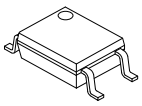
SOP-4 PHOTODARLINGTON PHOTOCOUPLER



SOP-4

■ DESCRIPTION

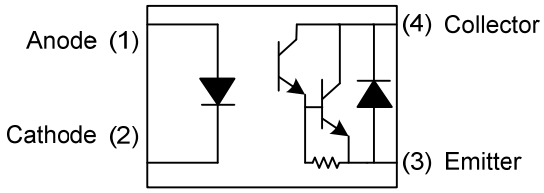
The UTC **UPC352** is a photodarlington photocoupler, it uses UTC's advanced technology to provide the customers with high isolation voltage between input and output, etc.

The UTC **UPC352** is suitable for programmable controllers and telecommunication equipments, etc.

■ FEATURES

* Current transfer ratio (CTR: MIN. 1000% at I_F=1mA,V_{CE}=2V)
* Isolation voltage between input and output (V_{ISO}=3750 Vrms)
* High collector-emitter voltage (V_{CEO}=300V)
* Employs double transfer mold technology

■ SYMBOL



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment				Packing
Lead Free	Halogen Free		1	2	3	4	
UPC352L-S04-R	UPC352G-S04-R	SOP-4	A	K	E	C	Tape Reel

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

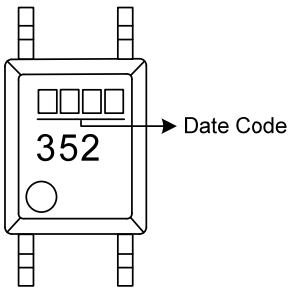
UPC352G-S04-R

(1)Packing Type — (1) R: Tape Reel

(2)Package Type — (2) S04: SOP-4

(3)Green Package — (3) G: Halogen Free and Lead Free L: Lead Free

■ 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}	300	V
	Emitter-Collector Voltage	V_{ECO}	0.1	V
	Collector Current	I_C	150	mA
	Collector Power Dissipation	P_C	150	mW
Power Dissipation		P_D	170	mW
Isolation Voltage (Note 2)		V_{ISO}	3750	V_{rms}
Junction Temperature		T_J	+125	°C
Operating Temperature		T_{OPR}	-55 ~ +110	°C
Storage Temperature		T_{STG}	-55 ~ +150	°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%.
   Isolation voltage shall be measured using the following method.
   (1) Short between anode and cathode on the primary side and between collector and emitter on the secondary side.
   (2) The isolation voltage tester with zero-cross circuit shall be used.
   (3) The waveform of applied voltage shall be a sine wave.

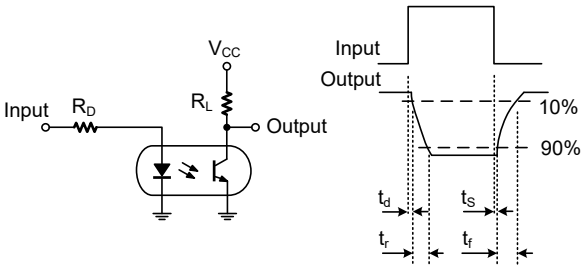
■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
INPUT						
Forward Voltage	V_F	I_F=±10mA		1.2	1.4	V
Reverse Current	I_R	V_R=4V			10	μA
Terminal Capacitance	C_t	V=0, f=1KHz			250	pF
OUTPUT						
Collector-Emitter Dark Current	I_{CEO}	V_{CE}=200V, I_F=0			200	nA
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C=0.1mA, I_F=0	300			V
Emitter-Collector Breakdown Voltage	BV_{ECO}	I_E=10μA, I_F=0	0.1			V

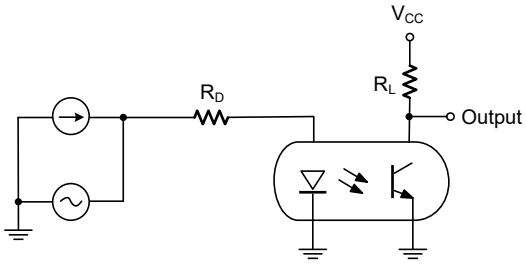
■ TRANSFER CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector Current	I_C	I_F=1mA, V_{CE}=2V	10			mA
Current Transfer Ratio	CTR	I_F=1mA, V_{CE}=2V	1000			%
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	I_F=20mA , I_C=100mA			1.2	V
Isolation Resistance	R_{IO}	V_{IO}=500Vdc, 40~60% R.H.	5×10^{10}	1×10^{11}		Ω
Floating Capacitance	C_{IO}	V=0, f=1MHz			1	pF
Rise Time	t_R	V_{CE}=2V, I_C=20mA, R_L=100Ω			300	μs
Fall Time	t_F				100	μs

■ TEST CIRCUITS AND WAVEFORMS



Test Circuit for Response Time



Test Circuit for Frequency Response