



UPC354

Preliminary

PHOTOCOUPLER

SOP-4 PHOTOTRANSISTOR PHOTOCOUPLER

DESCRIPTION

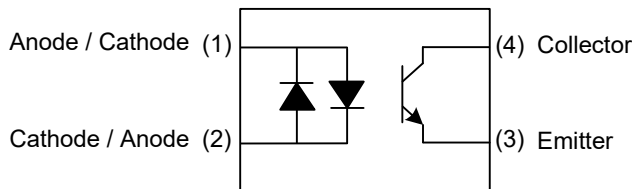
The UTC **UPC354** is a phototransistor photocoupler, it uses UTC's advanced technology to provide the customers with high isolation voltage between input and output, etc.

The UTC **UPC354** is suitable for programmable controllers and telecommunication equipments, etc.

FEATURES

- * Current transfer ratio (CTR: MIN. 20% at $I_F=1mA$, $V_{CE}=5V$)
- * 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 ($V_{CEO}=35V$)
- * Employs double transfer mold technology
- * AC input response

SYMBOL

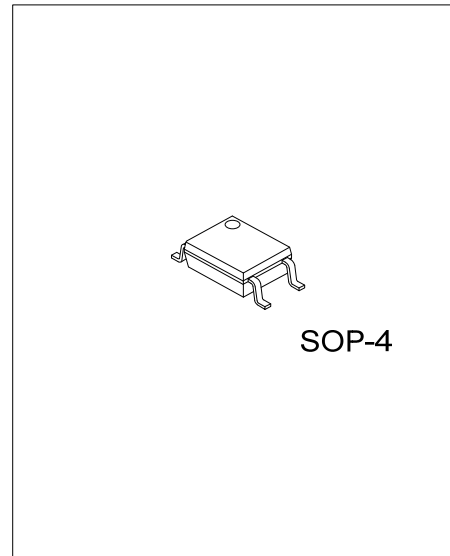


ORDERING INFORMATION

Ordering Number		Package	Pin Assignment				Packing
Lead Free	Halogen Free		1	2	3	4	
UPC354L-S04-R	UPC354G-S04-R	SOP-4	A / K	K / A	E	C	Tape Reel
UPC354xxL-S04-R	UPC354xxG-S04-R	SOP-4	A / K	K / A	E	C	Tape Reel

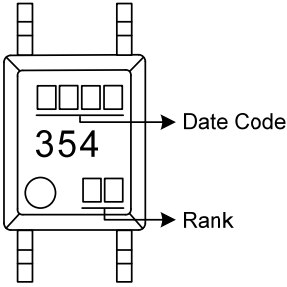
Note: Pin Assignment: A: Anode K: Cathode E: Emitter C: Collector

<p>UPC354xxG-S04-R</p> <p>(1)Packing Type</p> <p>(2)Package Type</p> <p>(3)Green Package</p> <p>(4)Rank</p>	<p>(1) R: Tape Reel</p> <p>(2) S04: SOP-4</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p> <p>(4) Refer to TRANSFER CHARACTERISTICS</p>
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SOP-4

■ MARKING



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

	PARAMETER	SYMBOL	RATINGS	UNIT
Input	Forward Current	I _F	±50	mA
	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	50	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.

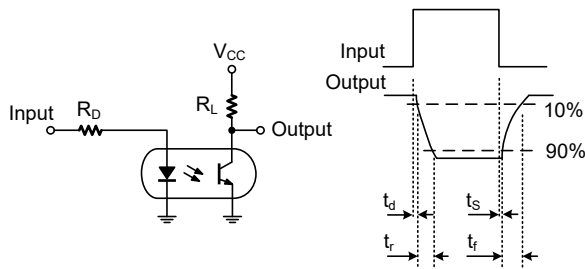
■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
INPUT						
Forward Voltage	V _F	I _F =±20mA		1.2	1.4	V
Terminal Capacitance	C _t	V=0, 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	35			V
Emitter-Collector Breakdown Voltage	BV _{ECO}	I _E =10μA, I _F =0	6			V

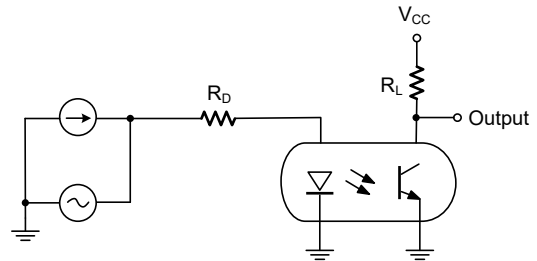
■ TRANSFER CHARACTERISTICS (T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT	
Current Transfer Ratio	CTR	I _F =±5mA, V _{CE} =5V	UPC354GR	50		300	%
		I _F =±1mA, V _{CE} =5V	UPC354	20		400	%
			UPC354A	50		150	%
			UPC354B	80		400	%
			UPC354B2	100		400	%
			UPC354C	200		400	%
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	I _F =±20mA, I _C =1mA		0.1	0.2	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		0.6	1.0	pF	
Rise Time	t _R	V _{CE} =2V, I _C =2mA, R _L =100Ω		4.0	18	μs	
Fall Time	t _F			3.0	18	μs	

■ TEST CIRCUITS AND WAVEFORMS



Test Circuit for Response Time



Test Circuit for Frequency Response

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