

High cost-performance DIP4&SOP4-pin type with reinforced insulation

FEATURES

1. Reinforced insulation of 5,000 V

More than 0.4 mm internal insulation distance between inputs and outputs. Con-forms to EN41003, EN60950 (reinforced insulation).

2. Controls low-level analog signals

PhotoMOS relays feature extremely low closed-circuit offset voltage to enable control of low-level analog signals without distortion.

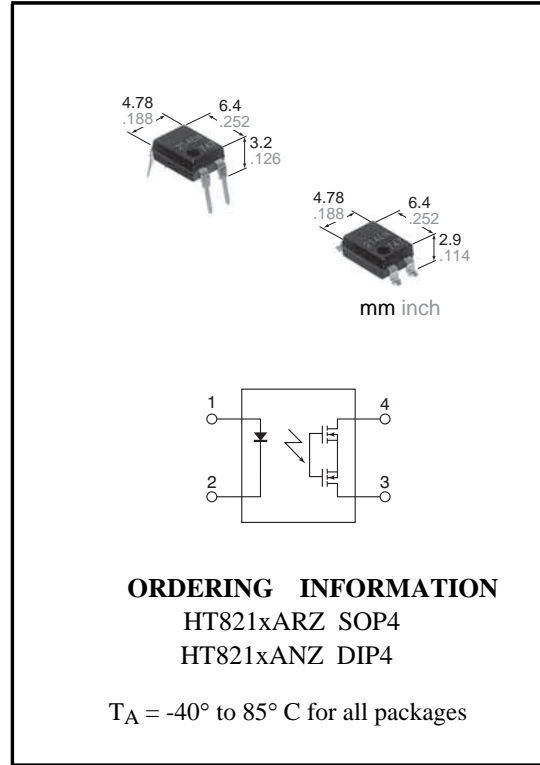
3. High sensitivity and low on-resistance

Can control max. 0.13 A load current with 5 mA input current. Low on-resistance of typ. 25Ω (HT8211A).

4. Low-level off state leakage current of max. 1 μA

TYPICAL APPLICATIONS

- Modem
- Telephone equipment
- Security equipment
- Sensing equipment



RATING

1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)

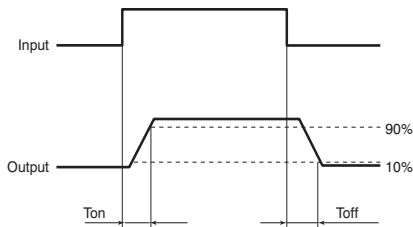
Item		Symbol	HT8211AR(N)	HT8212AR(N)	HT8210AR(N)	HT8214AR(N)	HT8216AR(N)	Remarks
Input	LED forward current	I_F	50mA					
	LED reverse voltage	V_R	5 V					
	Peak forward current	I_{FP}	1 A					f =100 Hz, Duty factor = 0.1%
	Power dissipation	P_{in}	75mW					
Output	Load voltage (peak AC)	V_L	30 V	60 V	350 V	400 V	650 V	
	Continuous load current	I_L	1 A	0.55 A	0.13 A	0.12 A	0.15 A	Peak AC, DC
	Peak load current	I_{peak}	3 A	1.5 A	0.4 A	0.3 A	0.42 A	100 ms (1 shot), $V_L = DC$
	Power dissipation	P_{out}	500mW					
Total power dissipation		P_T	550mW					
I/O isolation voltage		V_{iso}	5,000 V AC					
Temperature limits	Operating	T_{opr}	-40°C to +85°C -40°F to +185°F					Non-condensing at low temperatures
	Storage	T_{stg}	-40°C to +100°C -40°F to +212°F					

GU-E 1 Form A (HT821xA)

2. Electrical characteristics (Ambient temperature: 25°C 77°F)

Item		Symbol	HT8211AR(N)	HT8212AR(N)	HT8210AR(N)	HT8214AR(N)	HT8216AR(N)	Condition
Input	LED operate current	Typical	1.2mA					I _L =Max.
		Maximum	3.0mA					
	LED turn off current	Minimum	0.4mA					
		Typical	1.1mA					
LED dropout voltage	Typical	1.25 (1.14 V at I _F =5mA)					I _F =50mA	
	Maximum	1.5V						
Output	On resistance	Typical	0.25Ω	0.85Ω	18Ω	26Ω	45Ω	I _F =5mA I _L =Max. Within 1 s on time
		Maximum	0.5Ω	2.5Ω	25Ω	35Ω	100Ω	
	Off state leakage current	Maximum	1μA					
Transfer characteristics	Turn on time*	Typical	1.5ms	1ms	0.5ms		I _F =5mA I _L =Max.	
		Maximum	5ms	4ms	2.0ms			
	Turn off time*	Typical	0.1ms	0.05ms	0.08ms		I _F =5mA I _L =Max.	
		Maximum	1.0ms					
	I/O capacitance	Typical	0.8pF					f = 1MHz V _B = 0V
		Maximum	1.5pF					
Initial I/O isolation resistance	Minimum	R _{iso}	1,000Ω					500V DC

*Turn on/Turn off time



RECOMMENDED OPERATING CONDITIONS

Please obey the following conditions to ensure proper relay operation and resetting.

Item	Symbol	Recommended value	Unit
Input LED current	I _F	5 to 10	mA

■ Dimensions

■ Schematic and Wiring Diagrams

■ Cautions for Use

■ These products are not designed for automotive use.

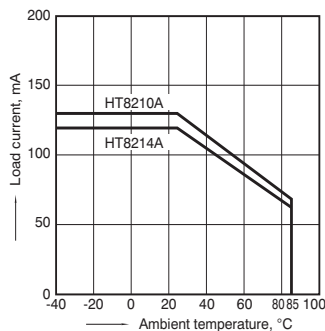
If you are considering to use these products for automotive applications, please contact your local Panasonic technical representative.

Please refer to our information on [PhotoMOS Relays for Automotive Applications](#).

REFERENCE DATA

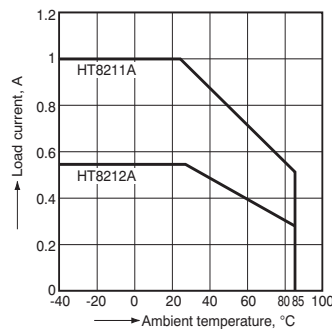
1-(1). Load current vs. ambient temperature characteristics

Allowable ambient temperature: -40°C to +85°C
-40°F to +185°F



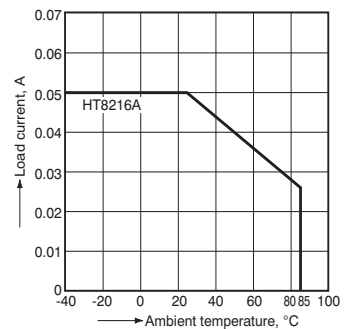
1-(2). Load current vs. ambient temperature characteristics

Allowable ambient temperature: -40°C to +85°C
-40°F to +185°F



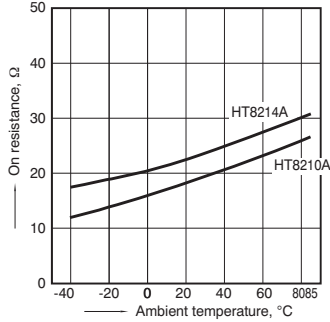
1-(3). Load current vs. ambient temperature characteristics

Allowable ambient temperature: -40°C to +85°C
-40°F to +185°F



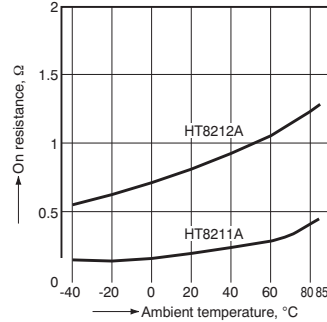
2-(1). On resistance vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4;
 LED current: 5 mA; Load voltage: Max. (DC);
 Continuous load current: Max. (DC)



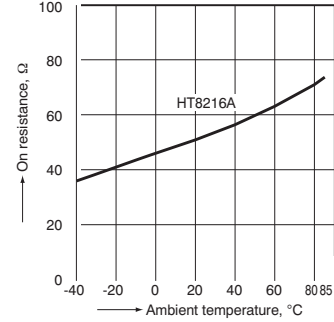
2-(2). On resistance vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4;
 LED current: 5 mA; Load voltage: Max. (DC);
 Continuous load current: Max. (DC)



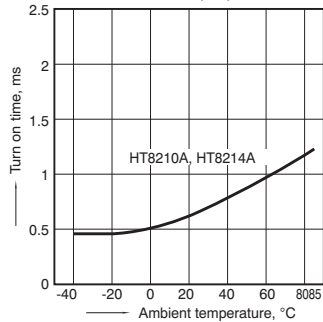
2-(3). On resistance vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4;
 LED current: 5 mA; Load voltage: Max. (DC);
 Continuous load current: Max. (DC)



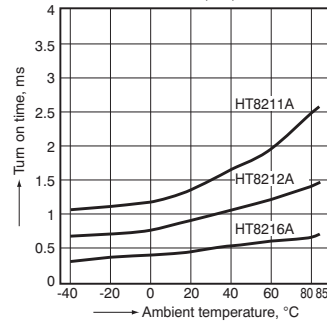
3-(1). Turn on time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: Max. (DC);
 Continuous load current: Max. (DC)



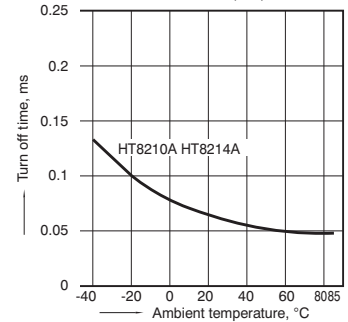
3-(2). Turn on time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: Max. (DC);
 Continuous load current: Max. (DC)



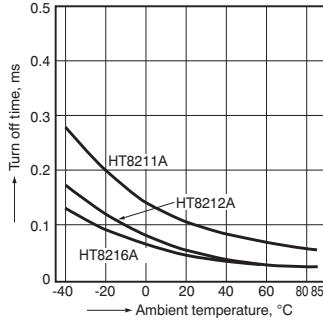
4-(1). Turn off time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: Max. (DC);
 Continuous load current: Max. (DC)



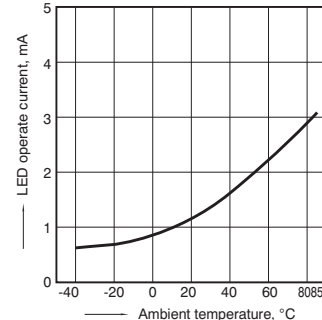
4-(2). Turn off time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: Max. (DC);
 Continuous load current: Max. (DC)



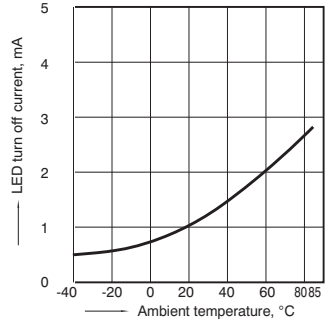
5. LED operate current vs. ambient temperature characteristics

Sample: All types; Load voltage: Max. (DC);
 Continuous load current: Max. (DC)



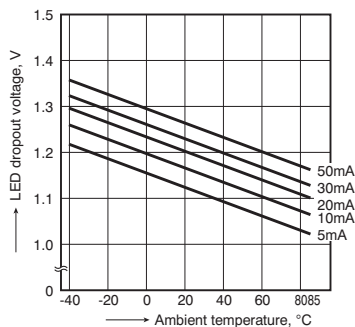
6. LED turn off current vs. ambient temperature characteristics

Sample: All types; Load voltage: Max. (DC);
 Continuous load current: Max. (DC)



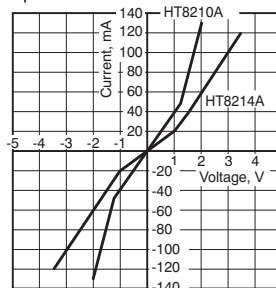
7. LED dropout voltage vs. ambient temperature characteristics

Sample: All types; LED current: 5 to 50 mA



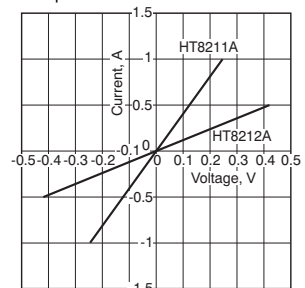
8-(1). Current vs. voltage characteristics of output at MOS portion

Measured portion: between terminals 3 and 4;
 Ambient temperature: 25°C 77°F



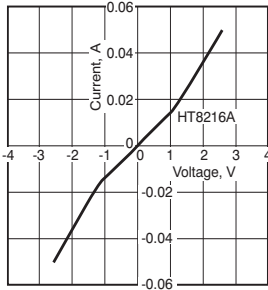
8-(2). Current vs. voltage characteristics of output at MOS portion

Measured portion: between terminals 3 and 4;
 Ambient temperature: 25°C 77°F



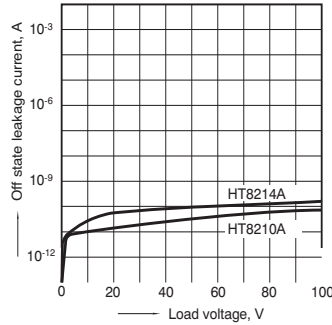
8-(3). Current vs. voltage characteristics of output at MOS portion

Measured portion: between terminals 3 and 4;
Ambient temperature: 25°C 77°F



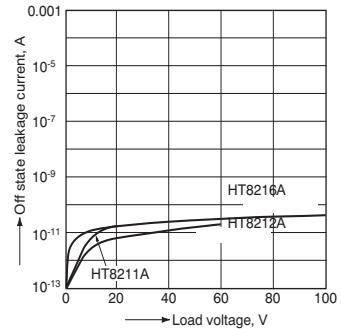
9-(1). Off state leakage current vs. load voltage characteristics

Measured portion: between terminals 3 and 4;
Ambient temperature: 25°C 77°F



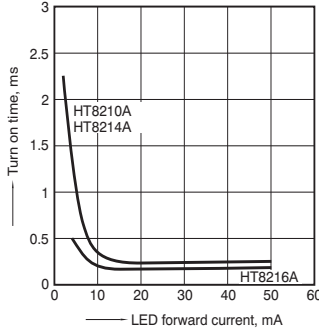
9-(2). Off state leakage current vs. load voltage characteristics

Measured portion: between terminals 3 and 4;
Ambient temperature: 25°C 77°F



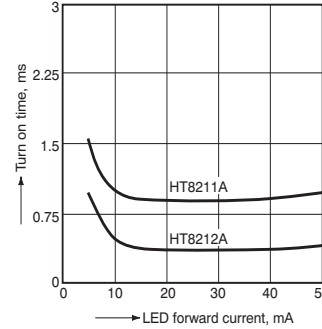
10-(1). Turn on time vs. LED forward current characteristics

Measured portion: between terminals 3 and 4;
Load voltage: Max. (DC); Continuous load current: Max. (DC); Ambient temperature: 25°C 77°F



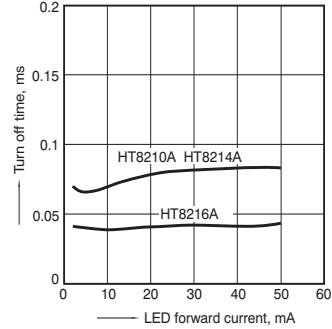
10-(2). Turn on time vs. LED forward current characteristics

Measured portion: between terminals 3 and 4;
Load voltage: Max. (DC); Continuous load current: Max. (DC); Ambient temperature: 25°C 77°F



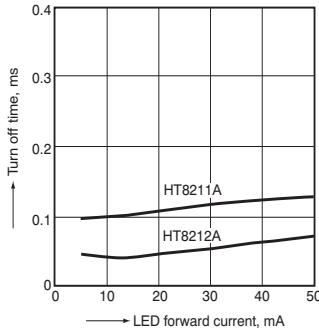
11-(1). Turn off time vs. LED forward current characteristics

Measured portion: between terminals 3 and 4;
Load voltage: Max. (DC); Continuous load current: Max. (DC); Ambient temperature: 25°C 77°F



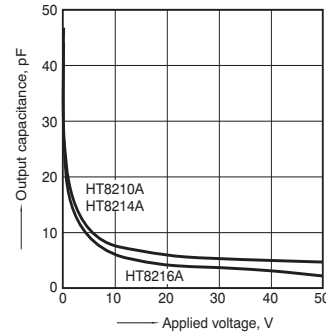
11-(2). Turn off time vs. LED forward current characteristics

Measured portion: between terminals 3 and 4;
Load voltage: Max. (DC); Continuous load current: Max. (DC); Ambient temperature: 25°C 77°F



12-(1). Output capacitance vs. applied voltage characteristics

Measured portion: between terminals 3 and 4;
Frequency: 1 MHz; Ambient temperature: 25°C 77°F



12-(2). Output capacitance vs. applied voltage characteristics

Measured portion: between terminals 3 and 4;
Frequency: 1 MHz; Ambient temperature: 25°C 77°F

