RATING

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

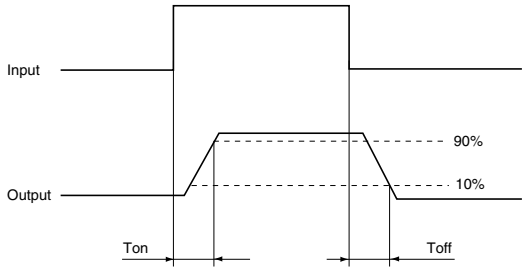
Item		Symbol	AQY222R2V	AQY225R2V	AQY225R3V	Remarks
Input side	LED forward current	I_F	50 mA			
	LED reverse voltage	V_R	5 V			
	Peak forward current	I_{FP}	1 A			f = 100 Hz, Duty factor = 0.1%
	Power dissipation	P_{in}	75 mW			
Output side	Load voltage (peak AC)	V_L	60 V	80 V	100 V	
	Continuous load current	I_L	0.4 A	0.12 A		Peak AC, DC
	Peak load current	I_{peak}	1.2 A	0.3 A		100 ms (1shot), V_L = DC
	Power dissipation	P_{out}	250 mW			
Total power dissipation		P_T	300 mW			
I/O isolation voltage		V_{iso}	1,500 V AC			
Operating temperature		T_{opr}	–40°C to +85°C –40°F to +185°F			Non-condensing at low temperatures
Storage temperature		T_{stg}	–40°C to +100°C –40°F to +212°F			

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

Item			Symbol	AQY222R2V	AQY225R2V	AQY225R3V	Condition
Input	LED operate current	Typical	I_{Fon}	0.5 mA			AQY222R2V: I_L = 400 mA AQY225R2V: I_L = 80 mA AQY225R3V: I_L = 80 mA
		Maximum		3.0 mA			
	LED turn off current	Minimum	I_{Foff}	0.1 mA			
		Typical		0.45 mA			
	LED dropout voltage	Typical	V_F	1.32 V (1.14 V at I_F = 5 mA)			I_F = 50 mA
		Maximum		1.5 V			
Output	On resistance	Typical	R_{on}	0.8Ω	10.5Ω	8.8Ω	AQY222R2V: I_F = 5 mA, I_L = 400 mA AQY225R2V: I_F = 5 mA, I_L = 80 mA AQY225R3V: I_F = 5 mA, I_L = 80 mA Within 1 s on time
		Maximum		1.25Ω	15Ω	14Ω	
	Output capacitance	Typical	C_{out}	27 pF	4.5 pF	5.8 pF	I_F = 0 mA, V_B = 0 V, f = 1 MHz
		Maximum		40 pF	6 pF	8 pF	
	Off state leakage current	Typical	I_{Leak}	—	0.01 nA		I_F = 0 mA, V_L = Max.
		Maximum		10 nA*			
Transfer characteristics	Turn on time**	Typical	T_{on}	0.15 ms	0.05 ms		AQY222R2V: I_F = 5 mA, V_L = 10 V, R_L = 100Ω AQY225R2V: I_F = 5 mA, V_L = 10 V, R_L = 125Ω AQY225R3V: I_F = 5 mA, V_L = 10 V, R_L = 125Ω
		Maximum		0.5 ms			
	Turn off time**	Typical	T_{off}	0.08 ms	0.05 ms		
		Maximum		0.2 ms			
	I/O capacitance	Typical	C_{iso}	0.8 pF			f = 1 MHz, V_B = 0 V
		Maximum		1.5 pF			
	Initial I/O isolation resistance	Minimum	R_{iso}	1,000 MΩ			500 V DC

Notes: 1. Please refer to the “Schematic and Wiring Diagrams” for connection method.
2. Variation possible through combinations of output capacitance and on resistance. For more information, please contact our sales office in your area.

*Available as custom orders (1 nA or less)
**Turn on/Turn off time



RECOMMENDED OPERATING CONDITIONS

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

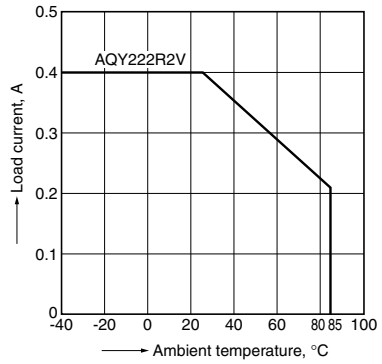
Item	Symbol	Recommended value	Unit
Input LED forward current	I_F	5	mA

■ **These products are not designed for automotive use.**
If you are considering to use these products for automotive applications, please contact your local Panasonic Corporation technical representative.

REFERENCE DATA

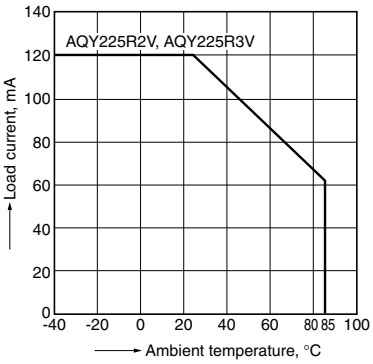
1.-(1) Load current vs. ambient temperature characteristics

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



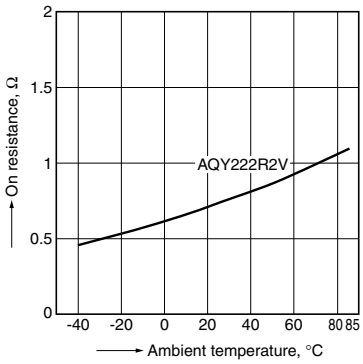
1.-(2) Load current vs. ambient temperature characteristics

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



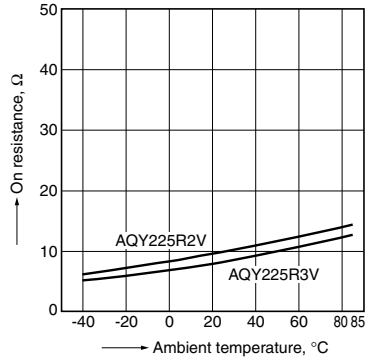
2.-(1) On resistance vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4
LED current: 5 mA; Load voltage: 10V (DC)
Continuous load current: Max. (DC)



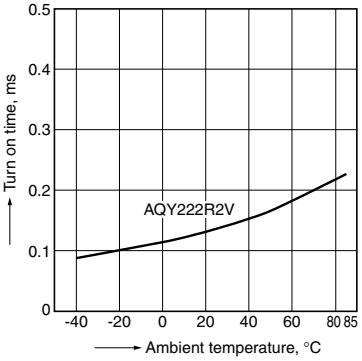
2.-(2) On resistance vs. ambient temperature characteristics

Measured portion: between terminals 3 and 4;
LED current: 5 mA; Load voltage: 10V (DC);
Continuous load current: 80mA (DC)



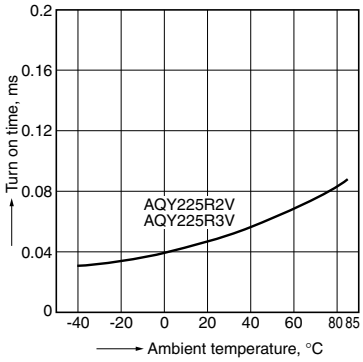
3.-(1) Turn on time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 10V (DC);
Continuous load current: 100mA (DC)



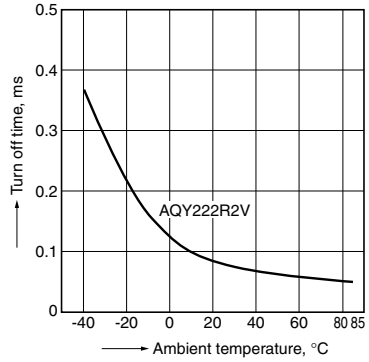
3.-(2) Turn on time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 10V (DC);
Continuous load current: 80mA (DC)



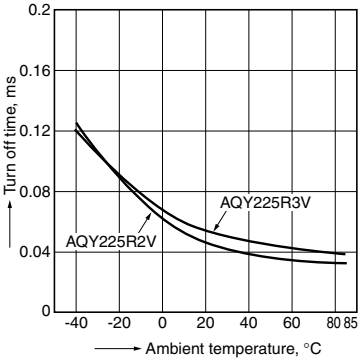
4.-(1) Turn off time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 10V (DC);
Continuous load current: 100mA (DC)



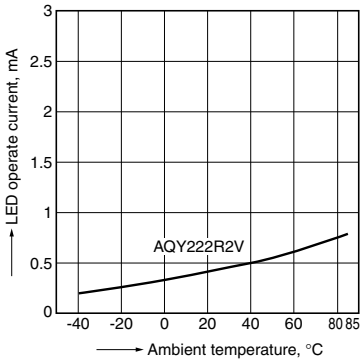
4.-(2) Turn off time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 10V (DC);
Continuous load current: 80mA (DC)

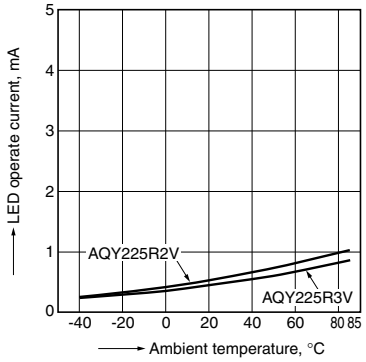


5.-(1) LED operate current vs. ambient temperature characteristics

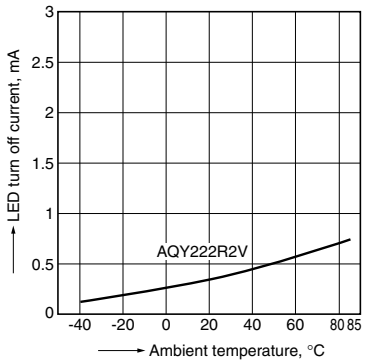
Load voltage: 10V (DC);
Continuous load current: 400mA (DC)



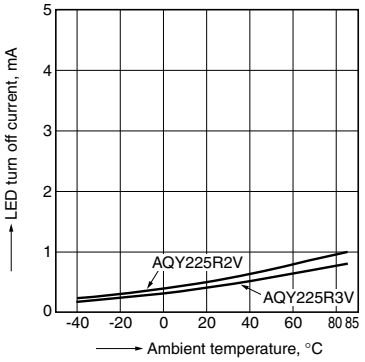
5.-(2) LED operate current vs. ambient temperature characteristics
Load voltage: 10V (DC);
Continuous load current: 80mA (DC)



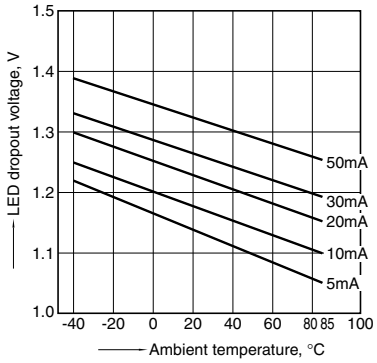
6.-(1) LED turn off current vs. ambient temperature characteristics
Load voltage: 10V (DC);
Continuous load current: 400mA (DC)



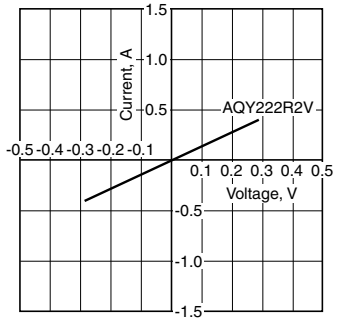
6.-(2) LED turn off current vs. ambient temperature characteristics
Load voltage: 10V (DC);
Continuous load current: 80mA (DC)



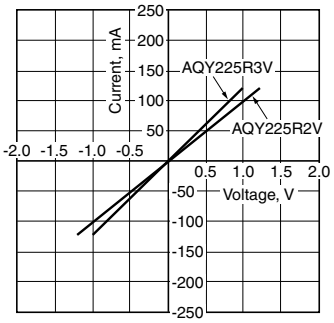
7. LED dropout voltage vs. ambient temperature characteristics
LED current: 5 to 50 mA



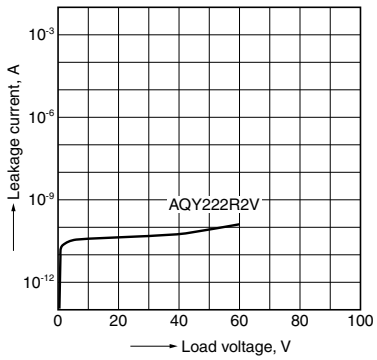
8.-(1) Current vs. voltage characteristics of output at MOS portion
Measured portion: between terminals 3 and 4;
Ambient temperature: 25°C 77°F



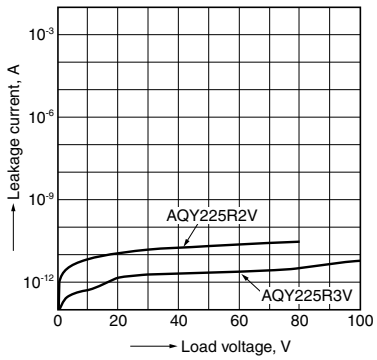
8.-(2) Current vs. voltage characteristics of output at MOS portion
Measured portion: between terminals 3 and 4;
Ambient temperature: 25°C 77°F



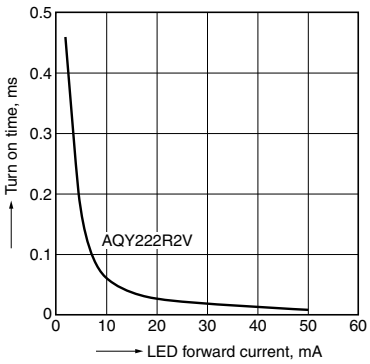
9.-(1) Off state leakage current vs. load voltage characteristics
Measured portion: between terminals 3 and 4;
Ambient temperature: 25°C 77°F



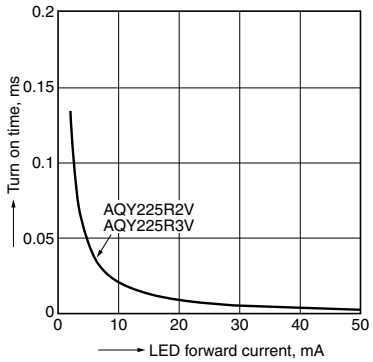
9.-(2) Off state leakage current vs. load voltage characteristics
Measured portion: between terminals 3 and 4;
Ambient temperature: 25°C 77°F



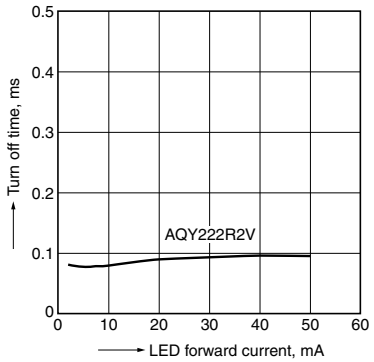
10.-(1) Turn on time vs. LED forward current characteristics
Measured portion: between terminals 3 and 4;
Load voltage: 10V (DC); Continuous load current: 100mA (DC); Ambient temperature: 25°C 77°F



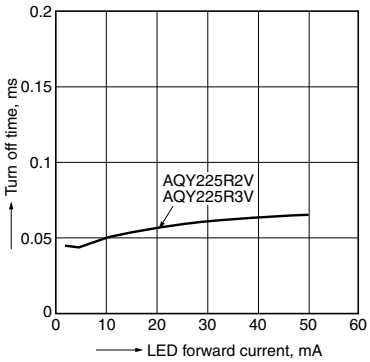
10.-(2) Turn on time vs. LED forward current characteristics
Measured portion: between terminals 3 and 4;
Load voltage: 10V (DC); Continuous load current: 80mA (DC); Ambient temperature: 25°C 77°F



11.-(1) Turn off time vs. LED forward current characteristics
Measured portion: between terminals 3 and 4;
Load voltage: 10V (DC); Continuous load current: 100mA (DC); Ambient temperature: 25°C 77°F

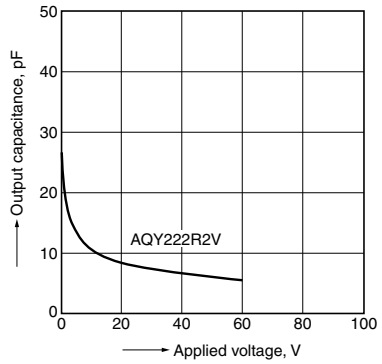


11.-(2) Turn off time vs. LED forward current characteristics
Measured portion: between terminals 3 and 4;
Load voltage: 10V (DC); Continuous load current: 80mA (DC); Ambient temperature: 25°C 77°F



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

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



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

Measured portion: between terminals 3 and 4;
Measurement signal: 1 MHz (30m Vrms);
Ambient temperature: 25°C 77°F