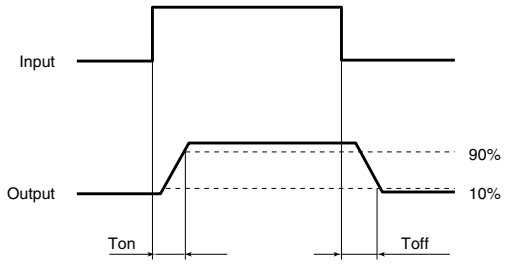
2. Electrical characteristics (Ambient temperature: 25°C 77°F)

Item			Symbol	AQS221R2S (R type)	AQS221N2S (C type)	Condition
Input	LED operate current	Typical	I_{Fon}	0.5 mA	0.9 mA	I_L = Max.
		Maximum		3.0 mA		
	LED turn off current	Minimum	I_{Foff}	0.1 mA		I_L = Max.
		Typical		0.4 mA	0.85 mA	
	LED dropout voltage	Typical	V_F	1.25 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	9.5Ω	I_F = 5 mA I_L = Max. Within 1 s on time
		Maximum		1.25Ω	12.5Ω	
	Output capacitance	Typical	C_{out}	13.0 pF	1.0 pF	I_F = 0 mA V_B = 0 V f = 1 MHz
		Maximum		18.0 pF	1.5 pF	
	Off state leakage current	Typical	I_{Leak}	0.03 nA	0.01 nA	I_F = 0 mA V_L = Max.
		Maximum		10 nA (1 nA or less)*		
Transfer characteristics	Turn on time**	Typical	T_{on}	0.15 ms	0.03 ms	I_F = 5 mA V_L = 10V R_L = 62.5Ω (R type), R_L = 500Ω (C type)
		Maximum		0.5 ms	0.2 ms	
	Turn off time**	Typical	T_{off}	0.06 ms	0.03 ms	I_F = 5 mA V_L = 10V R_L = 62.5Ω (R type), R_L = 500Ω (C type)
		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

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



RECOMMENDED OPERATING CONDITIONS

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

Item	Symbol	Recommended value	Unit
Input LED 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.

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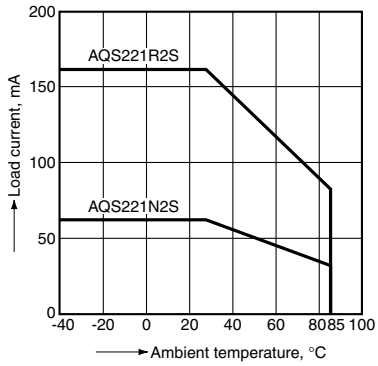
REFERENCE DATA

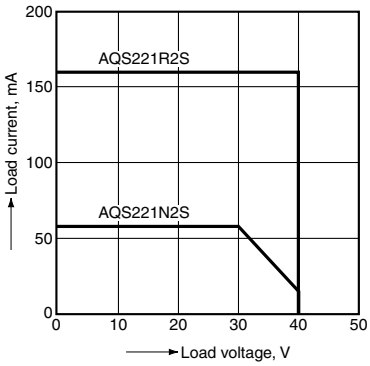
1. Load current vs. ambient temperature characteristics

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



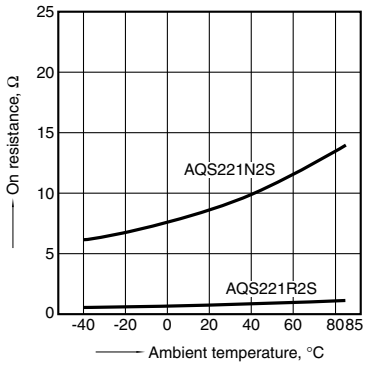
2. Load current vs. load voltage characteristics

Ambient temperature: 25°C 47°F



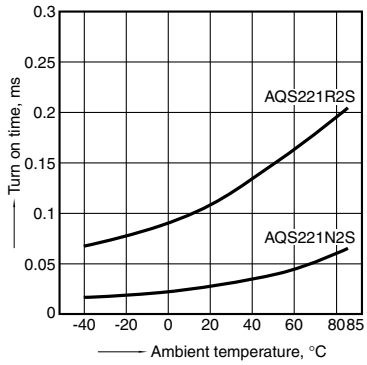
3. On resistance vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 10 V (DC);
Continuous load current: 160 mA (DC) R type/
60 mA (DC) C type



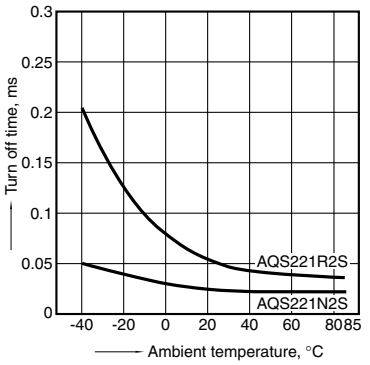
4. Turn on time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 10 V (DC);
Continuous load current: 160 mA (DC) R type/
20 mA (DC) C type



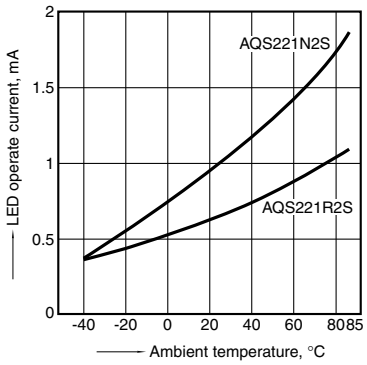
5. Turn off time vs. ambient temperature characteristics

LED current: 5 mA; Load voltage: 10 V (DC);
Continuous load current: 160 mA (DC) R type/
20 mA (DC) C type



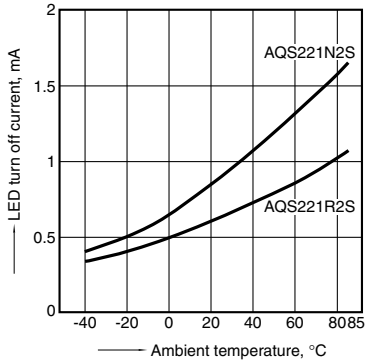
6. LED operate current vs. ambient temperature characteristics

Load voltage: 10 V (DC);
Continuous load current: 160 mA (DC) R type/
60 mA (DC) C type



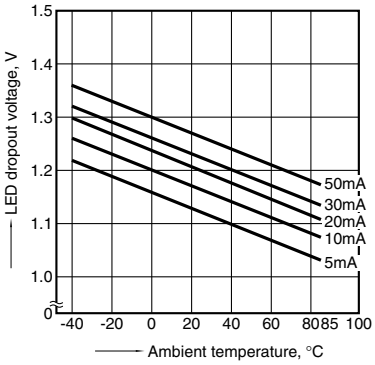
7. LED turn off current vs. ambient temperature characteristics

Load voltage: 10 V (DC);
Continuous load current: 160 mA (DC) R type/
60 mA (DC) C type



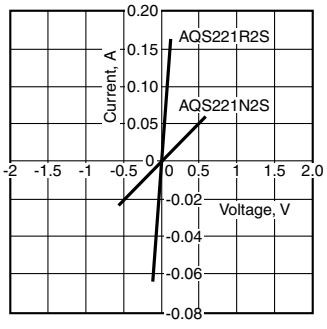
8. LED dropout voltage vs. ambient temperature characteristics

LED current: 5 to 50 mA



9. Current vs. voltage characteristics of output at MOS portion

Ambient temperature: 25°C 77°F



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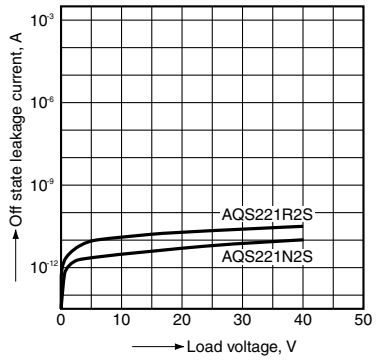
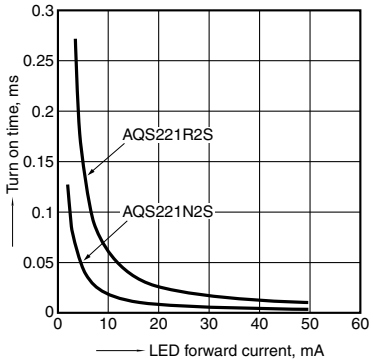
10. Off state leakage current vs. load voltage characteristics

Ambient temperature: 25°C 77°F



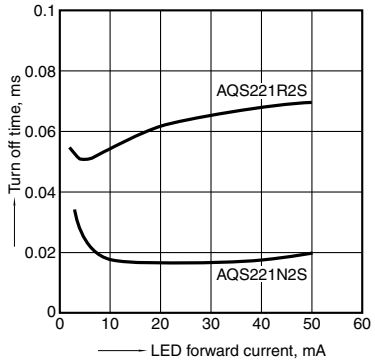
11. Turn on time vs. LED forward current characteristics

Load voltage: 10 V (DC);
Continuous load current: 160 mA (DC) R type/
20 mA (DC) C type
Ambient temperature: 25°C 77°F



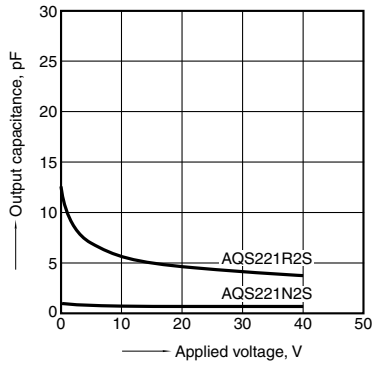
12. Turn off time vs. LED forward current characteristics

Load voltage: 10 V (DC);
Continuous load current: 160 mA (DC) R type/
20 mA (DC) C type
Ambient temperature: 25°C 77°F



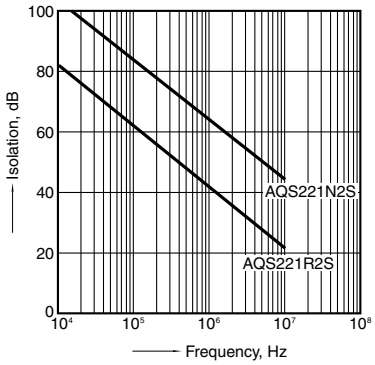
13. Output capacitance vs. applied voltage characteristics

Frequency: 1 MHz, 30 mVrms;
Ambient temperature: 25°C 77°F



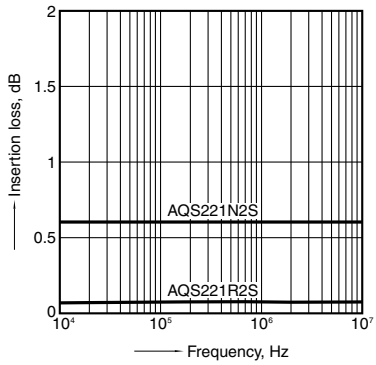
14. Isolation vs. frequency characteristics (50Ω impedance)

Ambient temperature: 25°C 77°F



15. Insertion loss vs. frequency characteristics (50Ω impedance)

Ambient temperature: 25°C 77°F



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