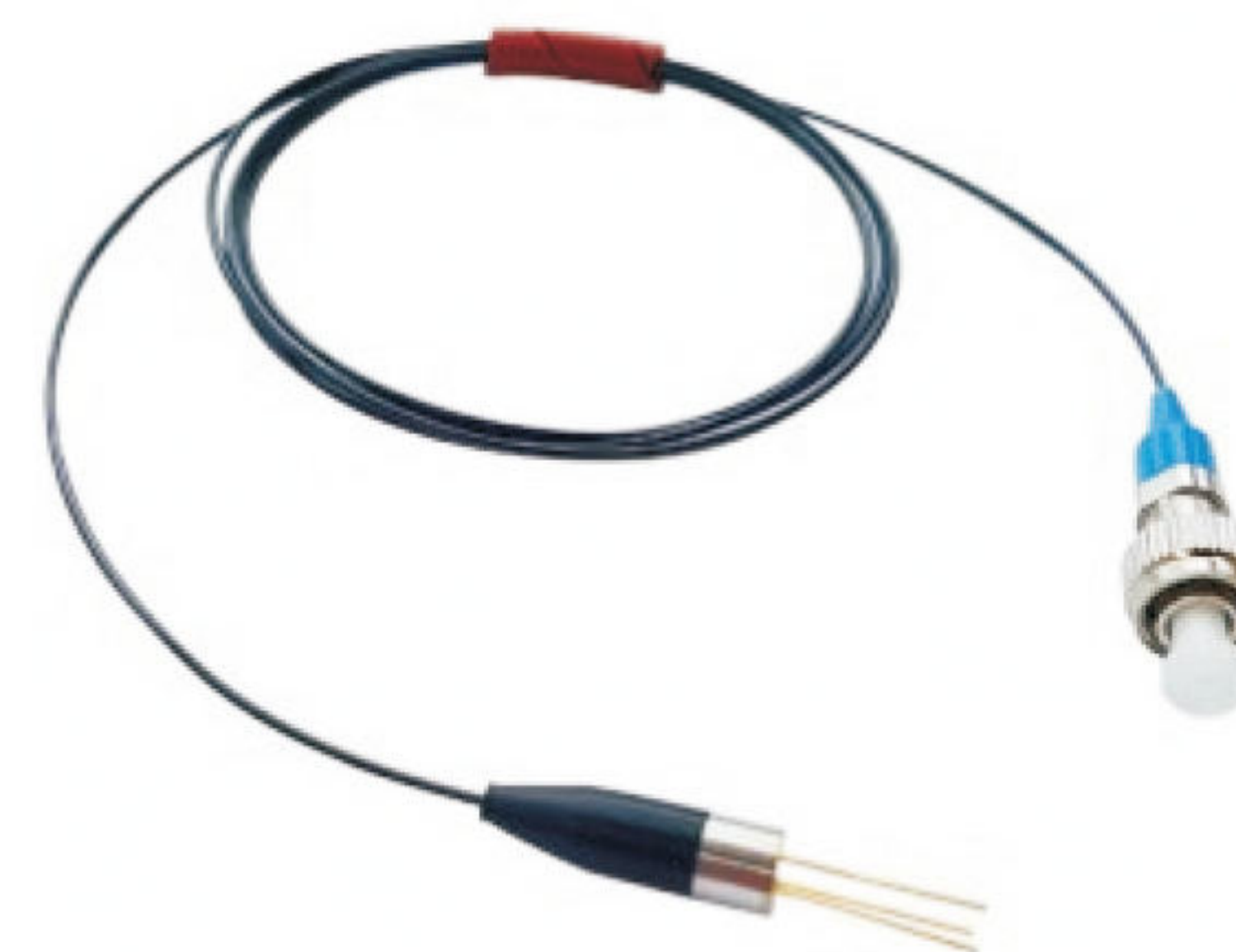


OP300D InGaAs Geiger Mode Avalanche Photodiode

Product Features

OP300D is an InGaAs avalanche photodiode device. The product is based on the high gain characteristics of the Geiger mode, which multiplies the detected photon Geiger into a macroscopic current. It is designed for single photon detection applications. OP300D adopts TO coaxial pigtail package structure, and the incoming optical interface is single/multimode fiber with FC/UPC connector (0.9mm tight sleeve protection tube).



Main photoelectric indicators

Linear mode parameters

Characteristic parameters	Test conditions (TC=25±5°C unless otherwise specified)	Minimal	Greatest	Unit
Effective detection surface diameter	-	25	-	μm
Spectral Response Range	-	950	1650	nm
Reverse breakdown voltage V_{BR}	$I_R=10\ \mu A, \Phi_e=0$	60	85	V
Responsiveness R_e	$\Phi_e=1\ \mu W, VR=(V_{BR}-1)V, \lambda=1550nm\pm 50nm$	8	-	A / W
Dark Current I_D	$V_{DC}=(V_{BR}-1)V, \Phi_e=0$	-	1	nA
Capacitance C_{tot}	$V_{DC}=(V_{BR}-1)V, f=1MHz$	-	0.6	pF
Temperature coefficient of breakdown voltage η	$T_C=-45\sim +30^\circ C, I_R=10\ \mu A, \phi_e=0$	0.10	0.15	V / °C

Geiger model parameters

Characteristic parameters	Test Condition	Minimal	Greatest	Unit
Single Photon Detection Efficiency PDE	$T_A=-40\pm 5^\circ C, f_g=10MHz, f_p=100kHz, DCR=10kHz, \lambda=1.55\ \mu m$	15	-	%
Dark Count Rate DCR	$T_A=-40\pm 5^\circ C, g=10MHz, f_p=100kHz, SPDE=15\%, \lambda=1.55\ \mu m$	-	10	kHz
Post-Pulse Probability APP (2us)	$T_A = -40\pm 5^\circ C, f_g = 10\ MHz, f_p = 100\ kHz, SPDE = 15\%, \Delta t = 1\ \mu s, \lambda = 1.55\ \mu m$	-	2	%
Time Jitter T_J	SPDE=15%	-	800	ps

Note: λ is the wavelength of incident light, T_A is the value of test temperature, μ is the average number of photons per pulse, f_g is the frequency of gating signal, and f_p is the frequency of optical pulse signal.

Absolute maximum ratings and recommended operating conditions

Serial Number	Parameters	Rating Value
Absolutely Maximum Rating	1 Storage temperature T_{STG}	-50°C~+85°C
	2 Operating ambient temperature T_C	-50°C~60°C
	3 Welding temperature $T_{sld}(\text{time})$	260° C(10s)
	4 Reverse DC bias voltage V_{DC}	$V_{BR}+5V$
	5 Input optical power ϕ_e (continuous)	1mW
	6 Forward current I_F (continuous)	200μA
	7 Electrostatic Discharge Sensitivity ESD	≥300V
	8 Pigtail Tension	3.0N

Serial Number	Parameters	Rating Value
Recommendation Working Conditions	1 APD chip operating temperature T_{th}	-50°C~-30°C
	2 Reverse DC bias voltage V_{DC}	$V_{BR}+1V$ to $V_{BR}+5V$

Typical Characteristic Curve

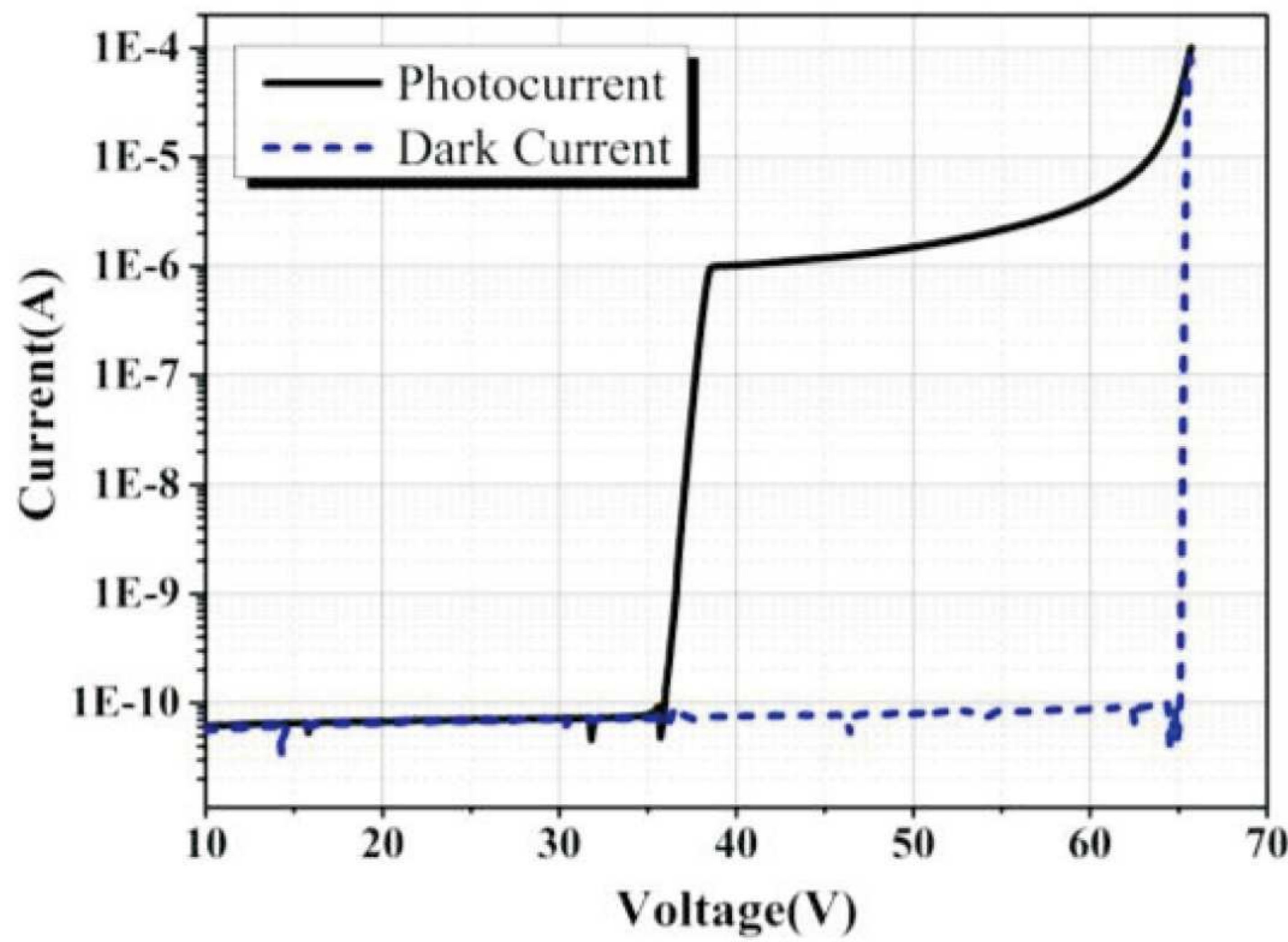


Fig. 1 Photocurrent and dark current curves

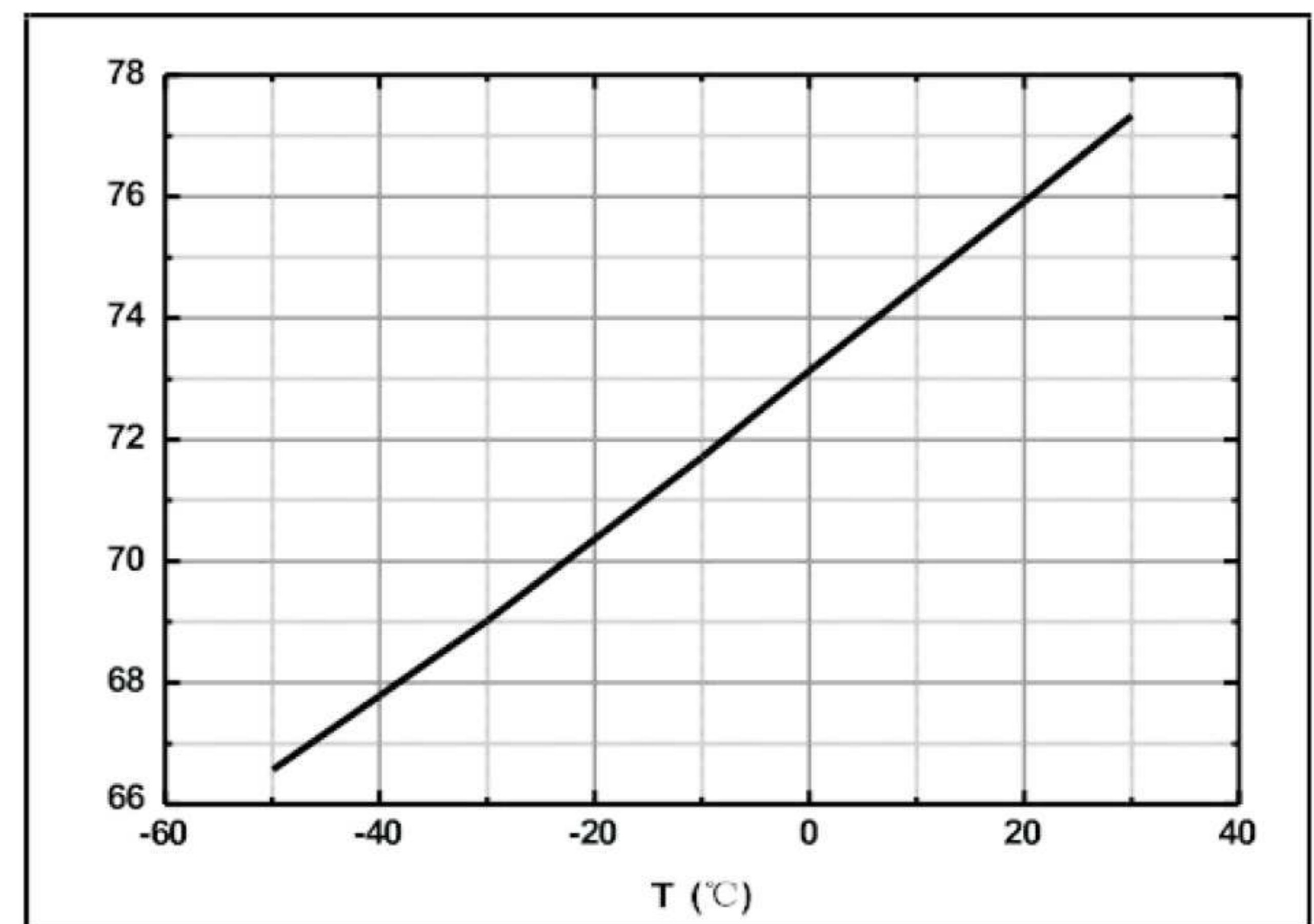
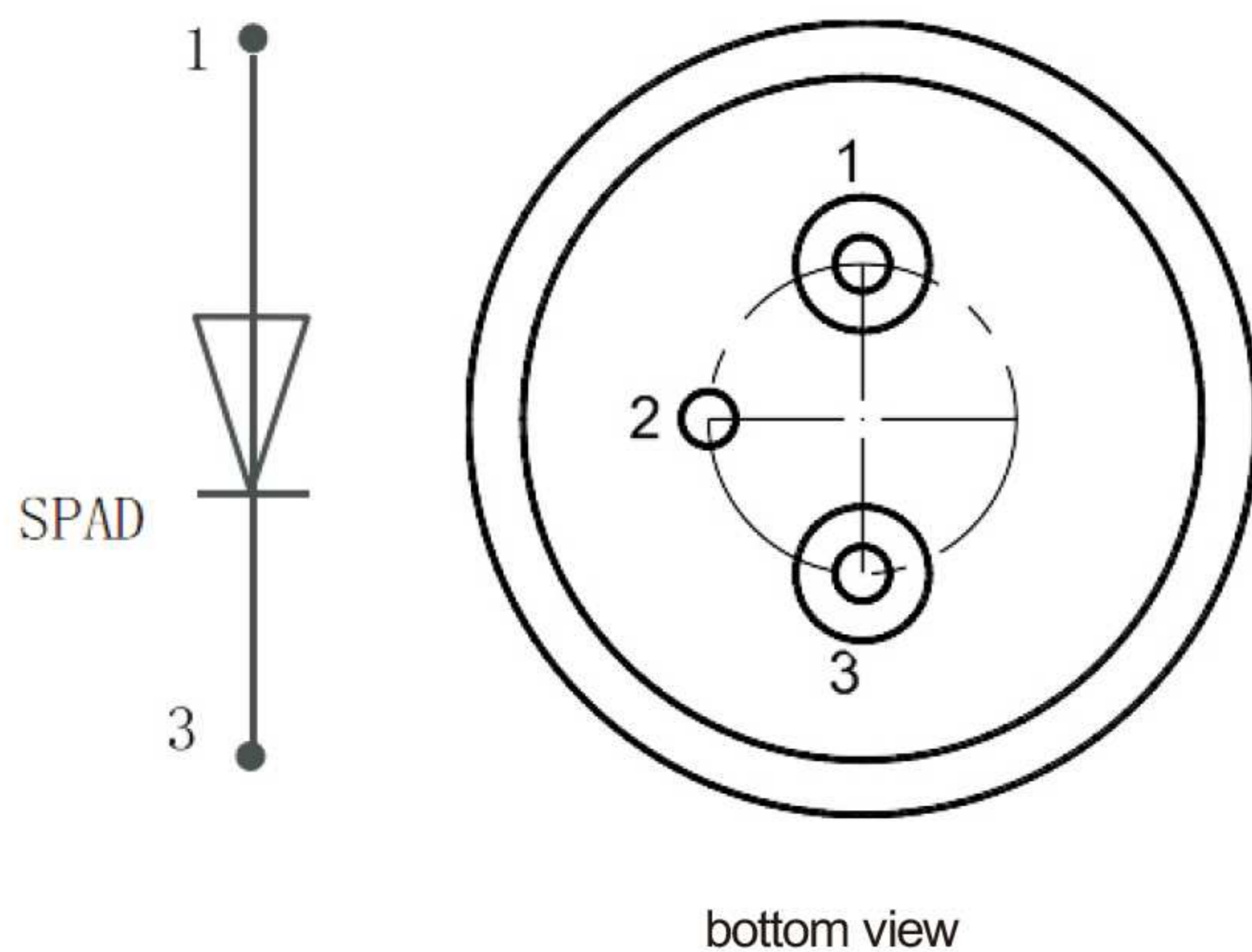
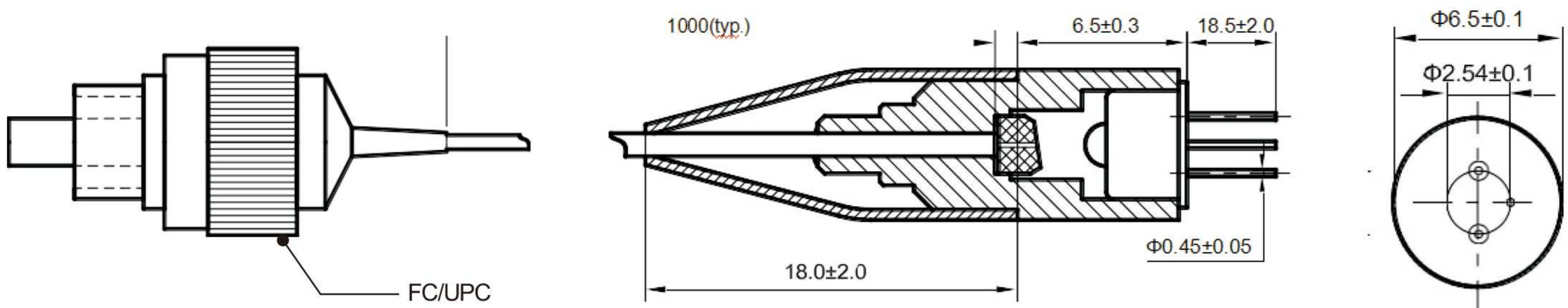


Fig. 2 Temperature coefficient of breakdown voltage

Package form factor, dimensions, equivalent circuitry, and pin definitions (in mm)



PIN#	Sym.	Description
1	P	P (Anode)
2	G	Ground
3	N	N (Cathode)

Note: If not specifically required, the fiber optic interface is singlemode fiber (0.9mm tight protection tube), fiber length 1.0 m.