

CMOS System Reset Monolithic IC PST38XXU Series

Outline

This open drain output system reset IC, developed using the CMOS process. Super low consumption current of 1.0 μ A typ. (PST3810 ~ PST3819) has been achieved through use of the CMOS process. Also, detection voltage is high precision detection of $\pm 2\%$.

Features

- | | |
|--------------------------------------|---|
| (1) Super low consumption current | 1.0 μ A typ. (when $V_{DD} = (-V_{DET}) + 2.0V$) PST3810 ~ PST3819 |
| (2) High precision detection voltage | $\pm 2\%$ |
| (3) Operating range | 0.7 ~ 10V |
| (4) Wide operating temperature range | -30 ~ +85°C |
| (5) Detection voltage | 0.9 ~ 6.0V (0.1V step) |

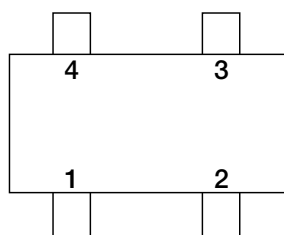
Package

SC-82AB

Applications

- (1) Microcomputer, CPU, MPU reset circuits
- (2) Logic circuit reset circuits
- (3) Battery voltage check circuits
- (4) Back-up circuit switching circuits
- (5) Level detection circuits

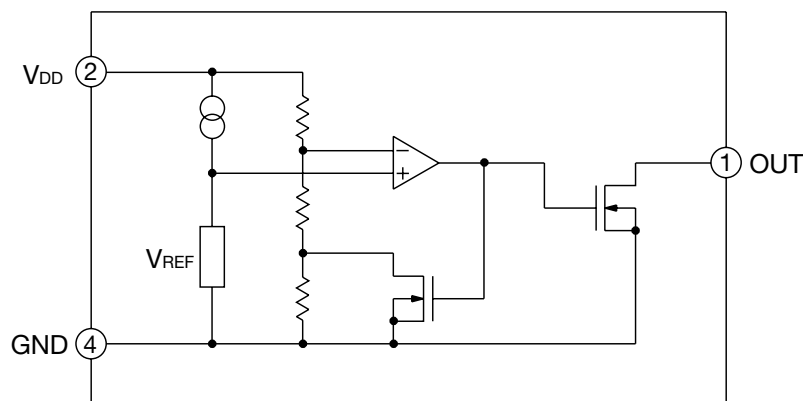
Pin Assignment



SC-82AB
(TOP VIEW)

1	OUT
2	V_{DD}
3	NC
4	GND

Block Diagram



Pin Explanations

Pin No.	Pin Name	Function
1	OUT	Reset Signal Output Pin
2	V _{DD}	V _{DD} Pin/Voltage Detect Pin
3	NC	
4	GND	GND Pin

Absolute Maximum Ratings (Ta=25°C)

Item	Symbol	Rating	Unit
Operating Temperature	T _{OPT}	-30~+85	°C
Storage Temperature	T _{STG}	-40~+125	°C
Supply Voltage	V _{DDmax.}	12	V
Output Voltage	V _{OUT}	V _{SS} -0.3~12	V
Output Current	I _{OUT}	70	mA
Power Dissipation	P _D	150	mW

Recommended Operating Conditions

Item	Symbol	Rating	Unit
Operating Temperature	T _{OPT}	-30~+85	°C
Supply Voltage	V _{DD}	+0.70~+10	V

Electrical Characteristics (Unless otherwise specified, Ta=25°C)

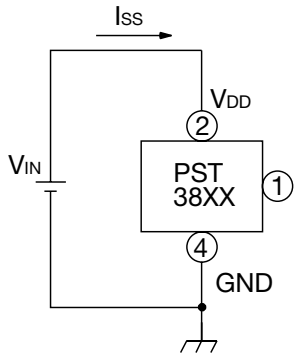
Product Name	Item													
	Detecting Voltage			Hysteresis Voltage			Supply Current1			Supply Current2				
	-V _{DET} (V)			V _{HYS} (V)			I _{SS1} (μA)			I _{SS2} (μA)				
	Test Circuit 2			Test Circuit 2			Test Circuit 1			Test Circuit 1				
Min.	Typ.	Max.	Min.	Typ.	Max.	Condition	Typ.	Max.	Condition	Typ.	Max.			
PST3809	0.882	0.900	0.918	0.027	0.045	0.063	V _{DD} = (-V _{DET}) -0.10V	1.5	3.7	V _{DD} = (-V _{DET}) +2.0V	0.9	2.7		
PST3810	0.980	1.000	1.020	0.030	0.050	0.070								
PST3811	1.078	1.100	1.122	0.033	0.055	0.077							1.8	4.5
PST3812	1.176	1.200	1.224	0.036	0.060	0.084								
PST3813	1.274	1.300	1.326	0.039	0.065	0.091		2.0	5.0					
PST3814	1.372	1.400	1.428	0.042	0.070	0.098								
PST3815	1.470	1.500	1.530	0.045	0.075	0.105		2.5	5.5					
PST3816	1.568	1.600	1.632	0.048	0.080	0.112								
PST3817	1.666	1.700	1.734	0.051	0.085	0.119								
PST3818	1.764	1.800	1.836	0.054	0.090	0.126								
PST3819	1.862	1.900	1.938	0.057	0.095	0.133		3.0	6.0					
PST3820	1.960	2.000	2.040	0.060	0.100	0.140								
PST3821	2.058	2.100	2.142	0.063	0.105	0.147								
PST3822	2.156	2.200	2.244	0.066	0.110	0.154								
PST3823	2.254	2.300	2.346	0.069	0.115	0.161								
PST3824	2.352	2.400	2.448	0.072	0.120	0.168								
PST3825	2.450	2.500	2.550	0.075	0.125	0.175								
PST3826	2.548	2.600	2.652	0.078	0.130	0.182								
PST3827	2.646	2.700	2.754	0.081	0.135	0.189		3.5	7.0					
PST3828	2.744	2.800	2.856	0.084	0.140	0.196								
PST3829	2.842	2.900	2.958	0.087	0.145	0.203	4.0	8.0						
PST3830	2.940	3.000	3.060	0.090	0.150	0.210								
PST3831	3.038	3.100	3.162	0.093	0.155	0.217								
PST3832	3.136	3.200	3.264	0.096	0.160	0.224								
PST3833	3.234	3.300	3.366	0.099	0.165	0.231								
PST3834	3.332	3.400	3.468	0.102	0.170	0.238								
PST3835	3.430	3.500	3.570	0.105	0.175	0.245								
PST3836	3.528	3.600	3.672	0.108	0.180	0.252								
PST3837	3.626	3.700	3.774	0.111	0.185	0.259								
PST3838	3.724	3.800	3.876	0.114	0.190	0.266								
PST3839	3.822	3.900	3.978	0.117	0.195	0.273	5.0	10.0						
PST3840	3.920	4.000	4.080	0.120	0.200	0.280								
PST3841	4.018	4.100	4.182	0.123	0.205	0.287								
PST3842	4.116	4.200	4.284	0.126	0.210	0.294								
PST3843	4.214	4.300	4.386	0.129	0.215	0.301								
PST3844	4.312	4.400	4.488	0.132	0.220	0.308								
PST3845	4.410	4.500	4.590	0.135	0.225	0.315								
PST3846	4.508	4.600	4.692	0.138	0.230	0.322								
PST3847	4.606	4.700	4.794	0.141	0.235	0.329	5.5	11.0						
PST3848	4.704	4.800	4.896	0.144	0.240	0.336								
PST3849	4.802	4.900	4.998	0.147	0.245	0.343	6.0	12.0						
PST3850	4.900	5.000	5.100	0.150	0.250	0.350								
PST3851	4.998	5.100	5.202	0.153	0.255	0.357								
PST3852	5.096	5.200	5.304	0.156	0.260	0.364								
PST3853	5.194	5.300	5.406	0.159	0.265	0.371								
PST3854	5.292	5.400	5.508	0.162	0.270	0.378								
PST3855	5.390	5.500	5.610	0.165	0.275	0.385								
PST3856	5.488	5.600	5.712	0.168	0.280	0.392								
PST3857	5.586	5.700	5.814	0.171	0.285	0.399								
PST3858	5.684	5.800	5.916	0.174	0.290	0.406								
PST3859	5.782	5.900	6.018	0.177	0.295	0.413	6.5	13.0						
PST3860	5.880	6.000	6.120	0.180	0.300	0.420								

Electrical Characteristics (Unless otherwise specified, Ta=25°C)

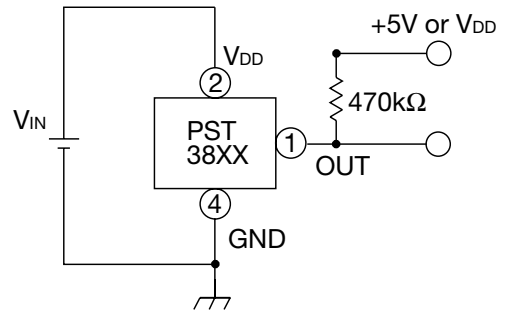
Product Name	Item									
	Output Current1			Output Current2			Leak Current			
	I _{OUT1} (mA)			I _{OUT2} (mA)			I _{LEAK} (μA)			
	Test Circuit 3			Test Circuit 3			Test Circuit 3			
	Condition	Min.	Typ.	Condition	Min.	Typ.	Condition	Typ.	Max.	
PST3809	N-ch V _{DS} = 0.05V V _{DD} = 0.7V	0.01	0.05	N-ch V _{DS} = 0.5V	V _{DD} =0.85V	0.05	0.5	V _{DD} = 10V V _{DS} = 10V	-	0.1
PST3810										
PST3811										
PST3812					V _{DD} =1.0V	0.2	1.0			
PST3813										
PST3814										
PST3815										
PST3816										
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PST3860										

Measuring Circuit

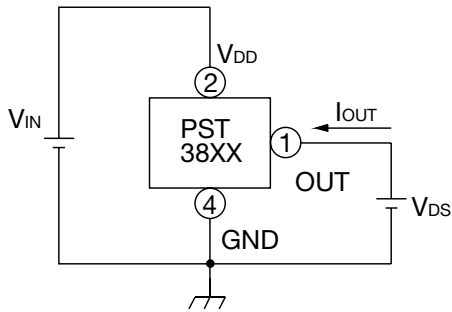
(1)



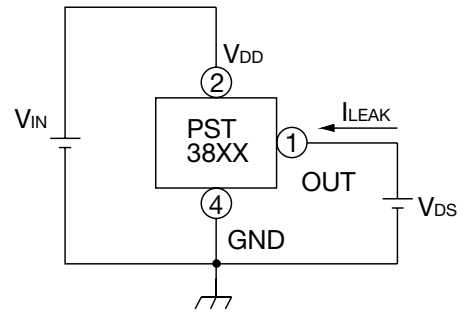
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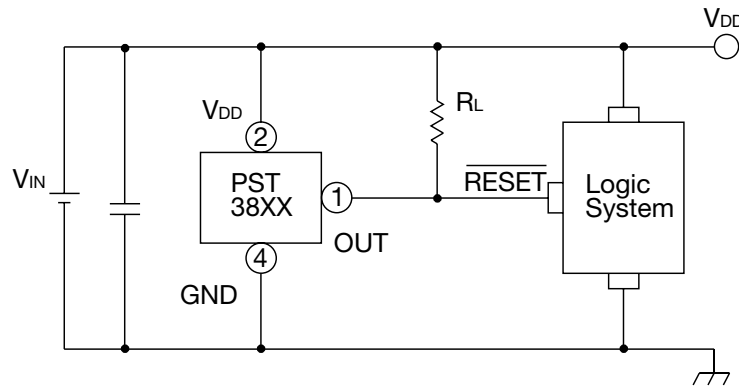
(3)



(4)

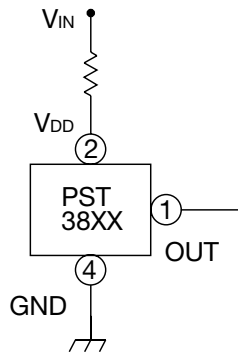


Application Circuits



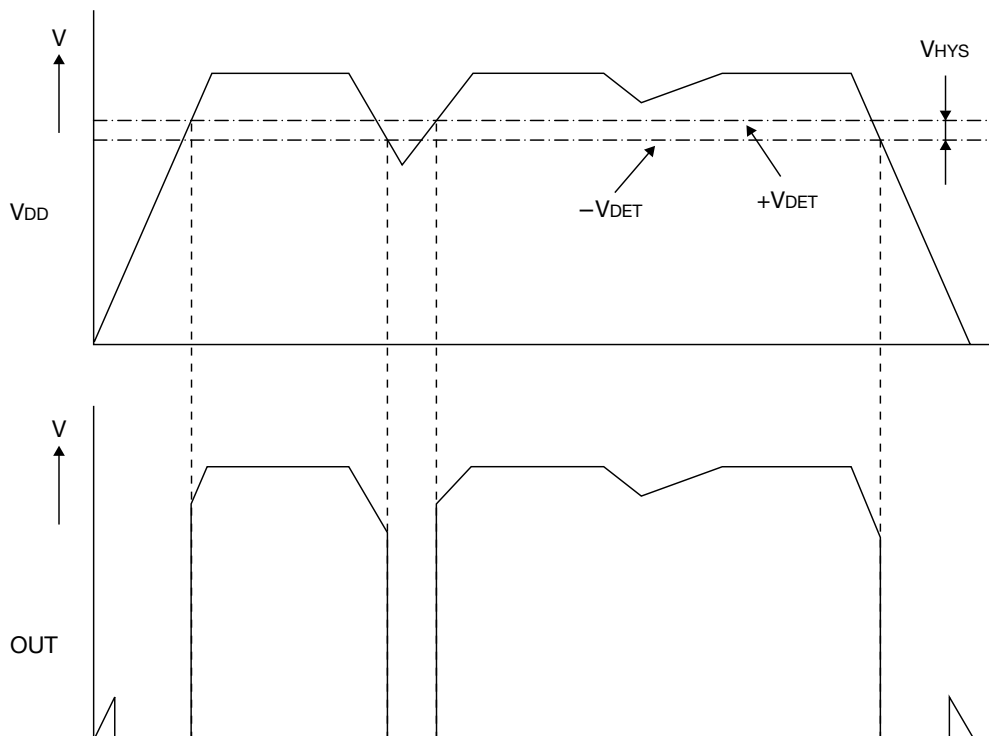
We shall not be liable for any trouble or damage caused by using this circuit.

In the event a problem which may affect industrial property or any other rights of us or a third party is encountered during the use of information described in these circuit, Mitsumi Electric Co., Ltd. shall not be liable for any such problem, nor grant a license therefor.



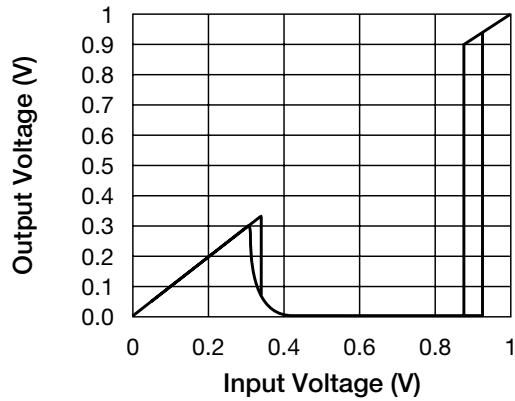
Please note that there is any possibility of circuit oscillation when resistance put in the line V_{IN} .

Timing Chart

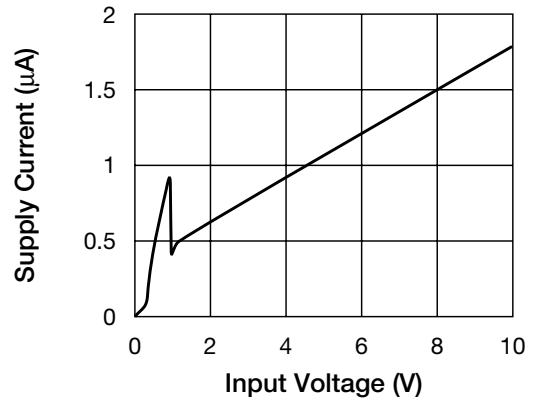


Characteristics PST3809 ($-V_{DET}=0.9V$)

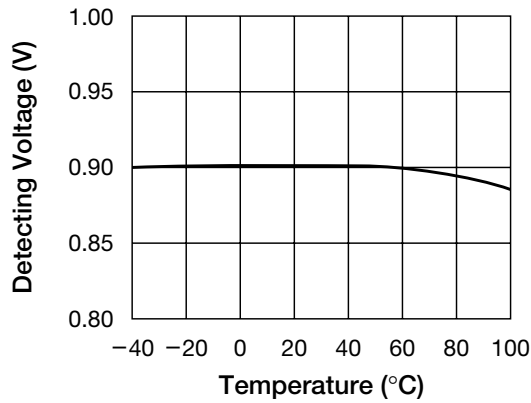
■ Detecting voltage



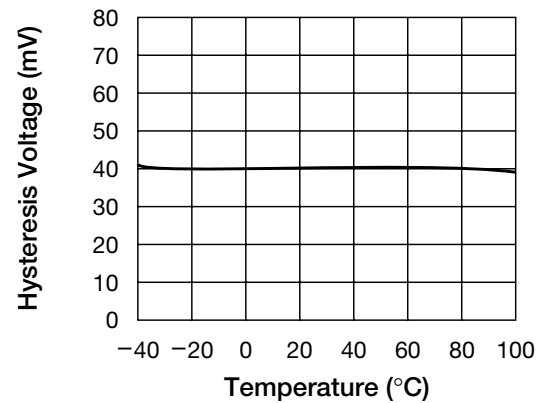
■ Supply Current



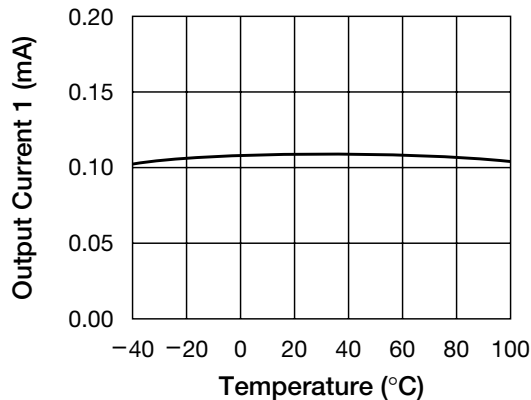
■ Detecting voltage vs temperature



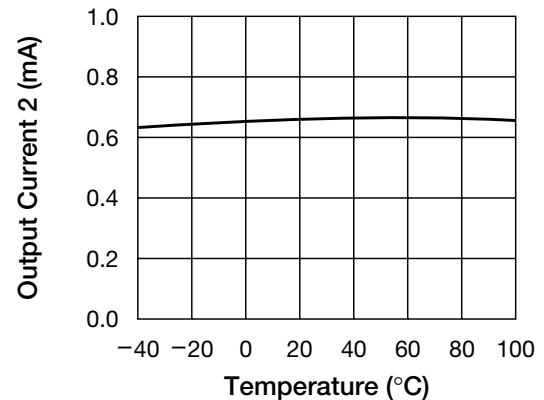
■ Hysteresis voltage vs temperature



■ Output current 1 vs temperature



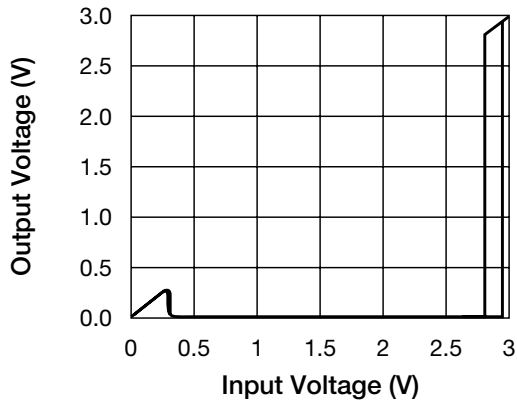
■ Output current 2 vs temperature



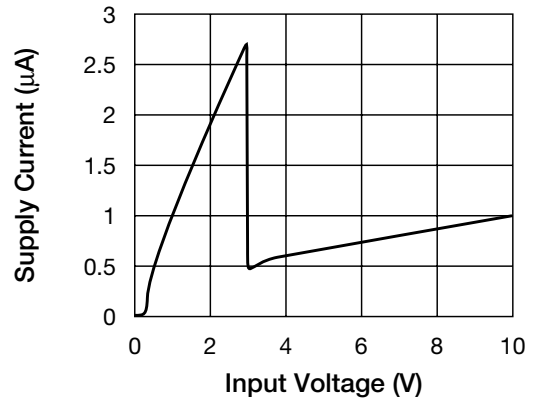
Note: These are typical characteristics.

Characteristics PST3828 ($-V_{DET}=2.8V$)

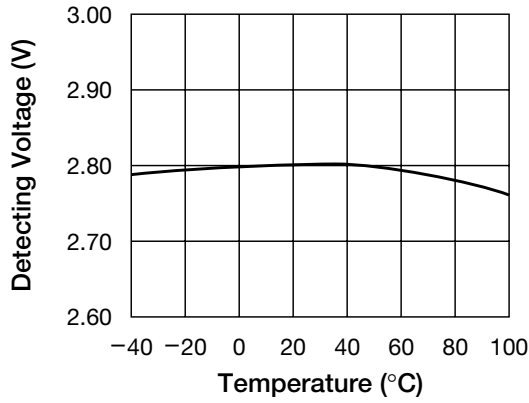
■ Detecting voltage



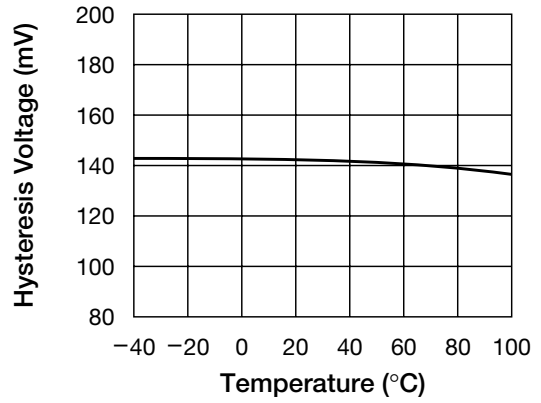
■ Supply current



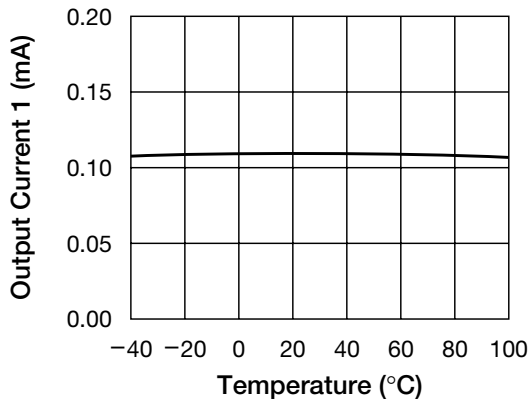
■ Detecting voltage vs temperature



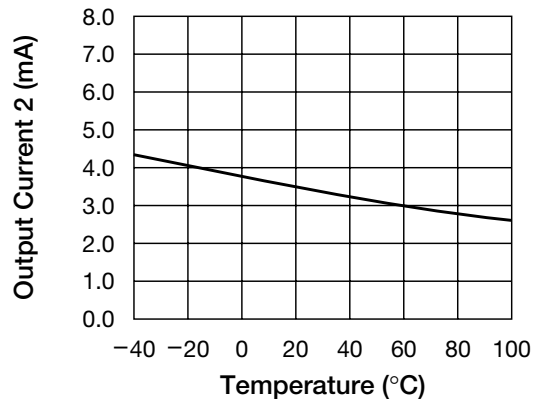
■ Hysteresis voltage vs temperature



■ Output current 1 vs temperature



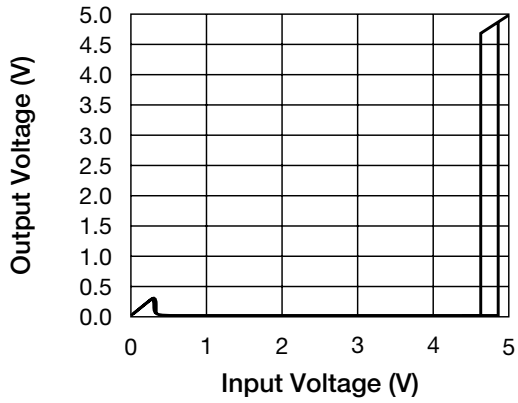
■ Output current 2 vs temperature



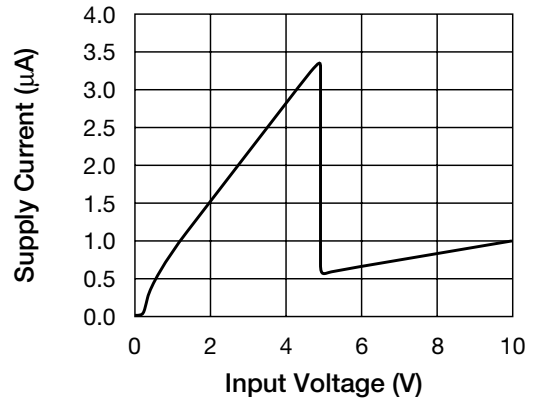
Note: These are typical characteristics.

Characteristics PST3846 ($-V_{DET}=4.6V$)

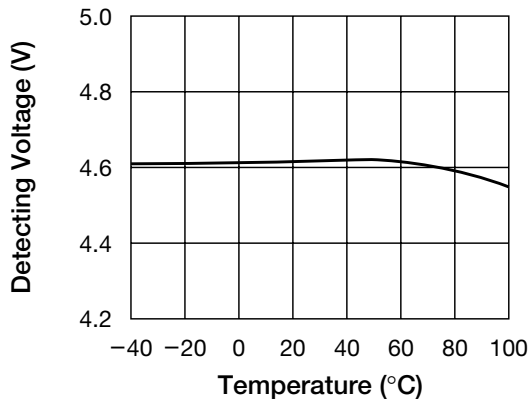
■ Detecting voltage



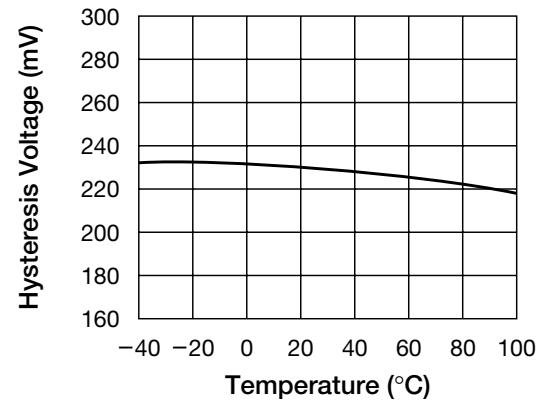
■ Supply current



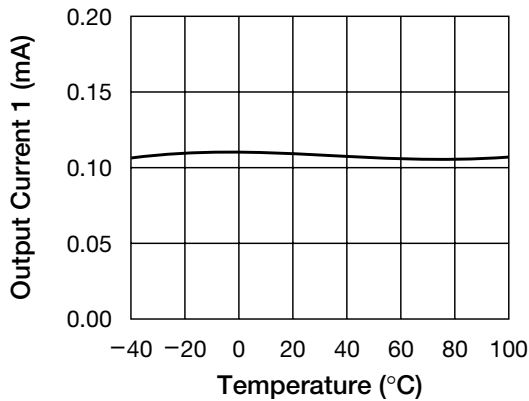
■ Detecting voltage vs temperature



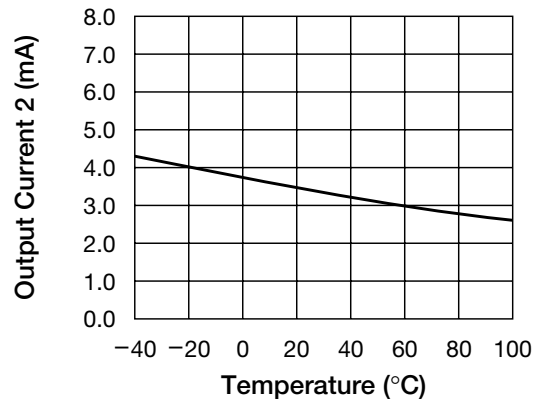
■ Hysteresis voltage vs temperature



■ Output current 1 vs temperature



■ Output current 2 vs temperature



Note: These are typical characteristics.