

CMOS System Reset Monolithic IC PST37XXU Series

Outline

This CMOS output type system reset IC, developed using the CMOS. Super low consumption current of 1.0μA typ. (PST3709 ~ PST3719) has been achieved through use of the CMOS process. Also, detection voltage is high precision detection of ±2%.

Features

- | | |
|--------------------------------------|---|
| (1) Super low consumption current | 1.0μA typ. (when $V_{DD} = (-V_{DET}) + 2.0V$) PST3709 ~ PST3719 |
| (2) High precision detection voltage | ±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) |

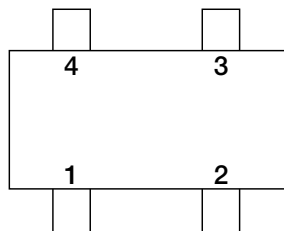
Package

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

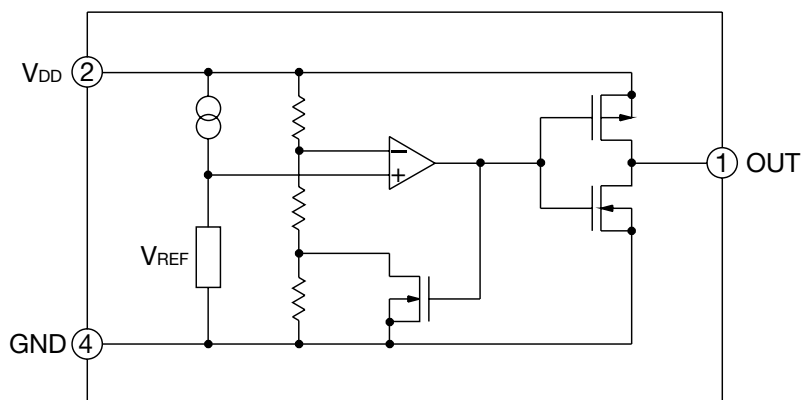
Pin Assignment



SC-82AB
(TOP VIEW)

1	OUT
2	V_{DD}
3	NC
4	GND

Block Diagram



Pin Explanations

Pin No.	Pin Name	Functions
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 _{OPR}	-30 ~ +85	°C
Storage Temperature	T _{STG}	-40 ~ +125	°C
Supply Voltage	V _{DD}	12	V
Output Voltage	V _{OUT}	V _{SS} - 0.3 ~ V _{DD} + 0.3	V
Output Current	I _{OUT}	70	mA
Power Dissipation	P _d	150	mW

Recommended Operating Conditions

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

Electrical Characteristics (Ta=25°C)

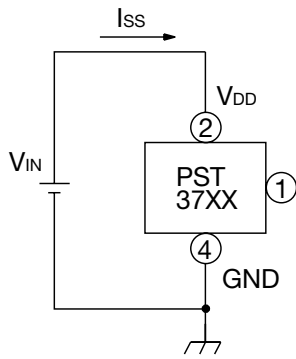
Product Name	Item											
	Detecting Voltage			Hysteresis Voltage			Supply Current 1			Supply Current 2		
	-V _{DET} (V)			V _{HYS} (V)			I _{SS1} (μA)			I _{SS2} (μA)		
	Test Circuit 2			Test Circuit 2			Test Circuit 1			Test Circuit 1		
Min.	Typ.	Max.	Min.	Typ.	Max.	Condition	Typ.	Max.	Condition	Typ.	Max.	
PST3709	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
PST3710	0.980	1.000	1.020	0.030	0.050	0.070		1.8	4.5			
PST3711	1.078	1.100	1.122	0.033	0.055	0.077		2.0	5.0			
PST3712	1.176	1.200	1.224	0.036	0.060	0.084						
PST3713	1.274	1.300	1.326	0.039	0.065	0.091		2.5	5.5		1.0	3.0
PST3714	1.372	1.400	1.428	0.042	0.070	0.098						
PST3715	1.470	1.500	1.530	0.045	0.075	0.105						
PST3716	1.568	1.600	1.632	0.048	0.080	0.112						
PST3717	1.666	1.700	1.734	0.051	0.085	0.119						
PST3718	1.764	1.800	1.836	0.054	0.090	0.126						
PST3719	1.862	1.900	1.938	0.057	0.095	0.133						
PST3720	1.960	2.000	2.040	0.060	0.100	0.140						
PST3721	2.058	2.100	2.142	0.063	0.105	0.147						
PST3722	2.156	2.200	2.244	0.066	0.110	0.154		3.0	6.0			
PST3723	2.254	2.300	2.346	0.069	0.115	0.161						
PST3724	2.352	2.400	2.448	0.072	0.120	0.168						
PST3725	2.450	2.500	2.550	0.075	0.125	0.175						
PST3726	2.548	2.600	2.652	0.078	0.130	0.182						
PST3727	2.646	2.700	2.754	0.081	0.135	0.189		3.5	7.0			
PST3728	2.744	2.800	2.856	0.084	0.140	0.196						
PST3729	2.842	2.900	2.958	0.087	0.145	0.203						
PST3730	2.940	3.000	3.060	0.090	0.150	0.210	V _{DD} = (-V _{DET}) -0.13V	4.0	8.0	1.2	3.6	
PST3731	3.038	3.100	3.162	0.093	0.155	0.217						
PST3732	3.136	3.200	3.264	0.096	0.160	0.224						
PST3733	3.234	3.300	3.366	0.099	0.165	0.231						
PST3734	3.332	3.400	3.468	0.102	0.170	0.238						
PST3735	3.430	3.500	3.570	0.105	0.175	0.245						
PST3736	3.528	3.600	3.672	0.108	0.180	0.252						
PST3737	3.626	3.700	3.774	0.111	0.185	0.259						
PST3738	3.724	3.800	3.876	0.114	0.190	0.266						
PST3739	3.822	3.900	3.978	0.117	0.195	0.273						
PST3740	3.920	4.000	4.080	0.120	0.200	0.280	V _{DD} = (-V _{DET}) -0.16V	5.0	10.0	1.3	3.9	
PST3741	4.018	4.100	4.182	0.123	0.205	0.287						
PST3742	4.116	4.200	4.284	0.126	0.210	0.294						
PST3743	4.214	4.300	4.386	0.129	0.215	0.301						
PST3744	4.312	4.400	4.488	0.132	0.220	0.308						
PST3745	4.410	4.500	4.590	0.135	0.225	0.315						
PST3746	4.508	4.600	4.692	0.138	0.230	0.322						
PST3747	4.606	4.700	4.794	0.141	0.235	0.329						
PST3748	4.704	4.800	4.896	0.144	0.240	0.336						
PST3749	4.802	4.900	4.998	0.147	0.245	0.343	V _{DD} = (-V _{DET}) -0.20V	6.0	12.0	1.4	4.2	
PST3750	4.900	5.000	5.100	0.150	0.250	0.350						
PST3751	4.998	5.100	5.202	0.153	0.255	0.357						
PST3752	5.096	5.200	5.304	0.156	0.260	0.364						
PST3753	5.194	5.300	5.406	0.159	0.265	0.371						
PST3754	5.292	5.400	5.508	0.162	0.270	0.378						
PST3755	5.390	5.500	5.610	0.165	0.275	0.385						
PST3756	5.488	5.600	5.712	0.168	0.280	0.392						
PST3757	5.586	5.700	5.814	0.171	0.285	0.399						
PST3758	5.684	5.800	5.916	0.174	0.290	0.406						
PST3759	5.782	5.900	6.018	0.177	0.295	0.413						
PST3760	5.880	6.000	6.120	0.180	0.300	0.420						

Electrical Characteristics (Ta=25°C)

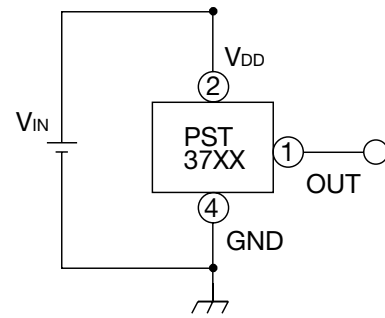
Product Name	Item												
	Output Current 1			Output Current 2			Output Current 3						
	I _{OUT1} (mA)			I _{OUT2} (mA)			I _{OUT3} (mA)						
	Test Circuit 3			Test Circuit 3			Test Circuit 4						
	Condition	Min.	Typ.	Condition	Min.	Typ.	Condition	Typ.	Max.				
PST3709	N-ch V _{DS} = 0.05V V _{DD} = 0.7V	0.01	0.05	N-ch V _{DS} = 0.5V	V _{DD} = 0.85V	0.05	0.5	P-ch V _{DS} = -2.1V V _{DD} = 4.5V	1.0	2.0			
PST3710													
PST3711													
PST3712					V _{DD} = 1.0V	0.2	1.0						
PST3713													
PST3714													
PST3715													
PST3716													
PST3717													
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PST3730													
PST3731													
PST3732													
PST3733					N-ch V _{DD} = 1.5V	1.0	2.0				P-ch V _{DS} = -2.1V V _{DD} = 8.0V	1.5	3.0
PST3734													
PST3735													
PST3736													
PST3737													
PST3738													
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Measuring Circuit

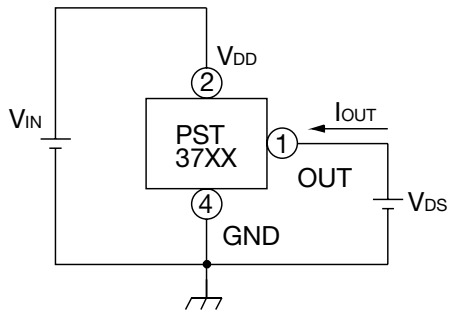
(1)



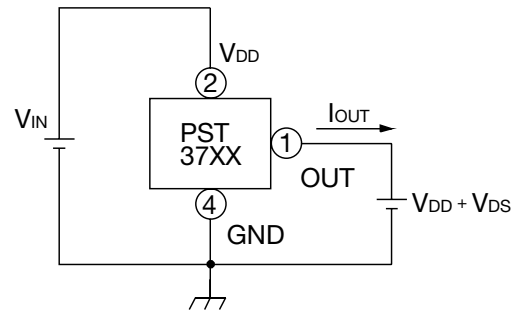
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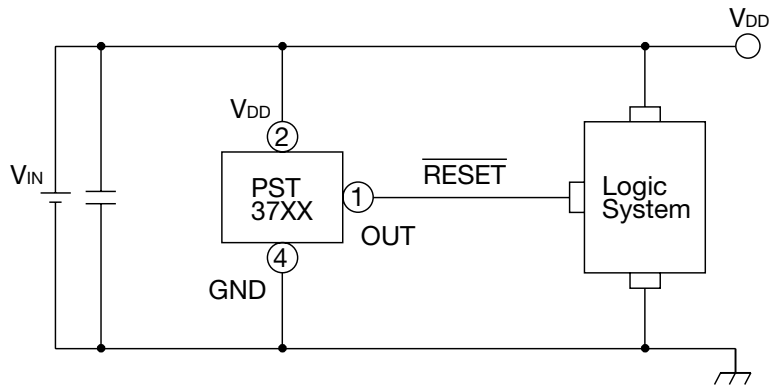
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(4)

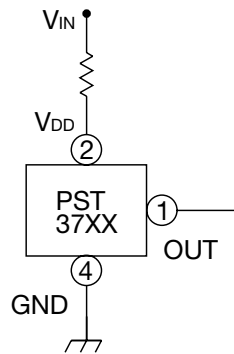


Application Circuits



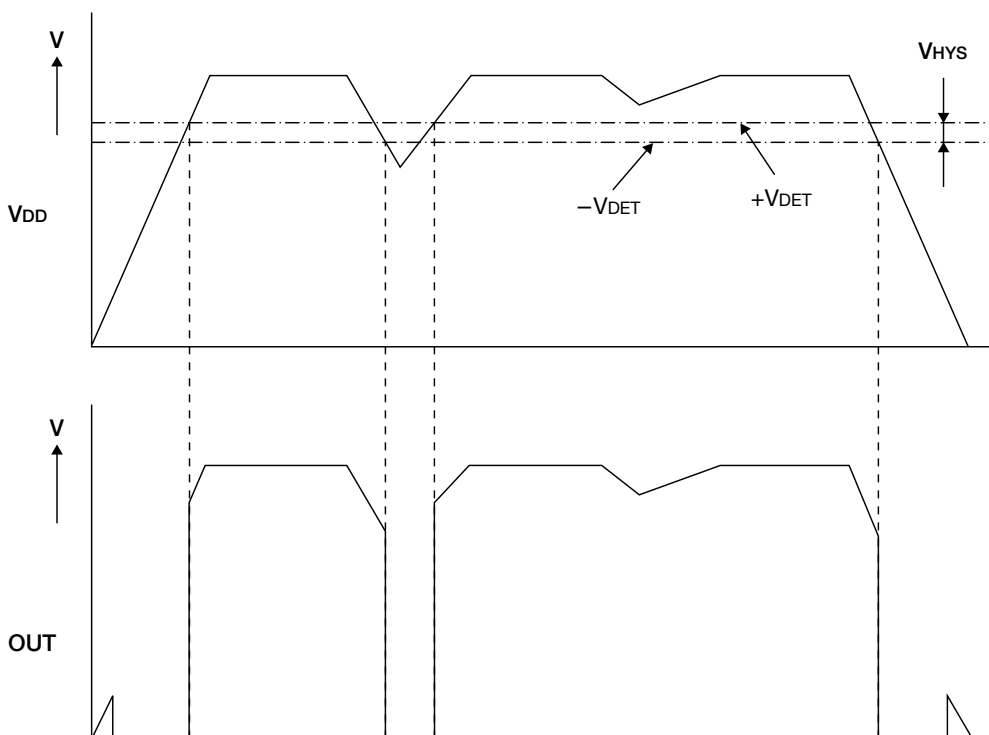
We shall not be liable for any trouble or damage caused by using this circuit.

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 therefore.



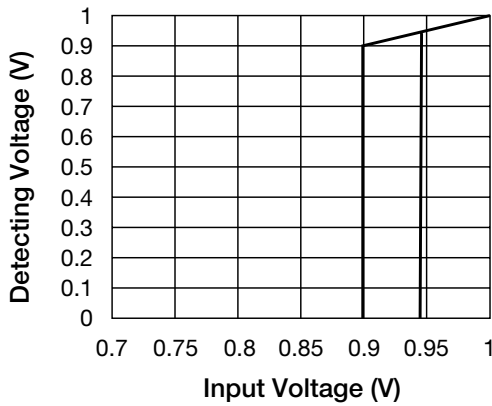
Please note that there is any possibility of circuit oscillation when resistance put in the line V_{IN} .

Timing Chart

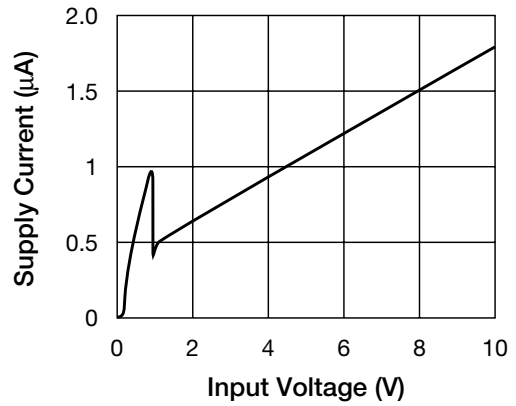


Characteristics Typical Performance Characteristics 0.9V

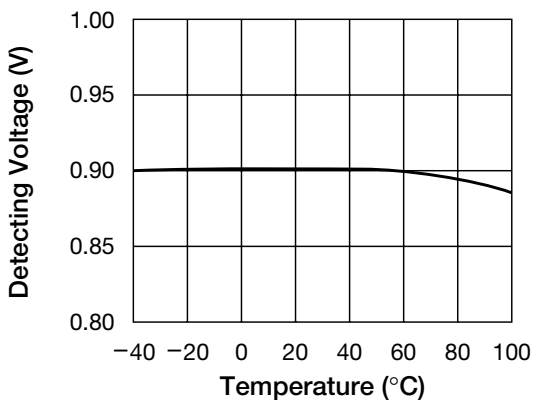
■ Detecting Voltage



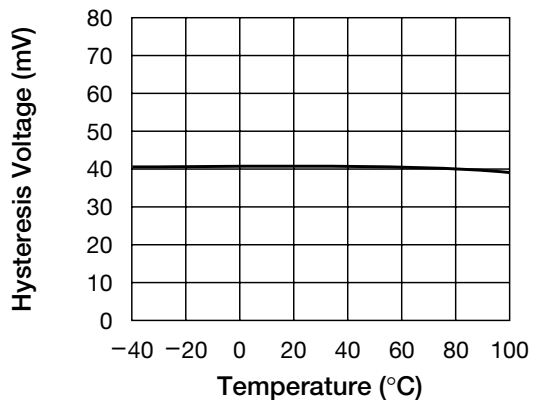
■ Supply Current



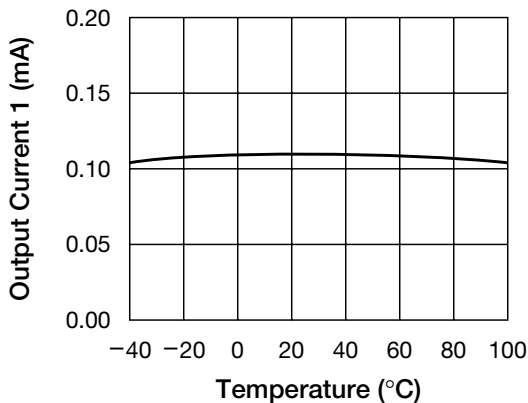
■ Detecting Voltage vs Temperature



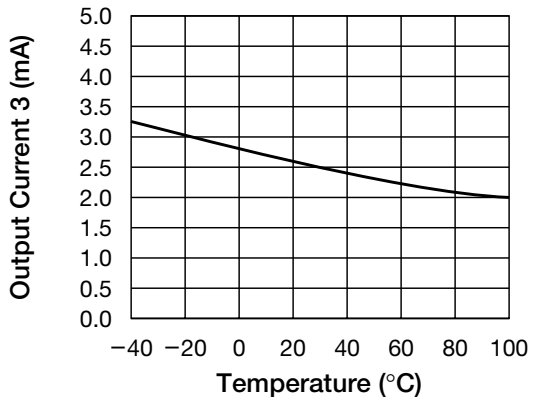
■ Hysteresis Voltage vs Temperature



■ Output Current1 (N-ch) vs Temperature (V_{DD} = 0.7V, V_{DS} = 0.05V)



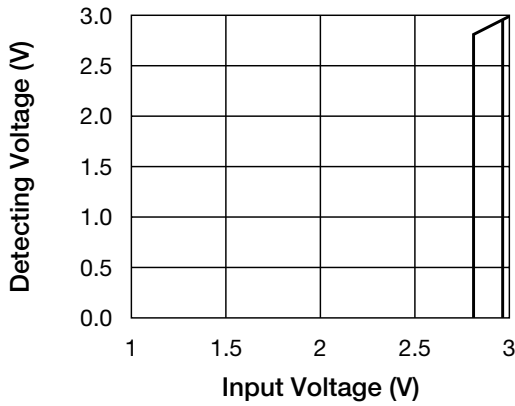
■ Output Current3 (P-ch) vs Temperature (V_{DD} = 4.5V, V_{DS} = -2.1V)



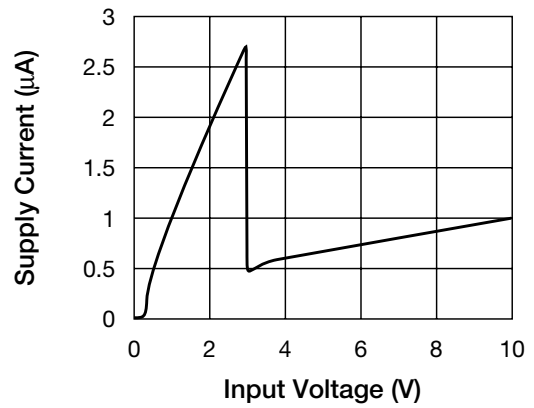
note : these are typical characteristics

Characteristics Typical Performance Characteristics 2.8V

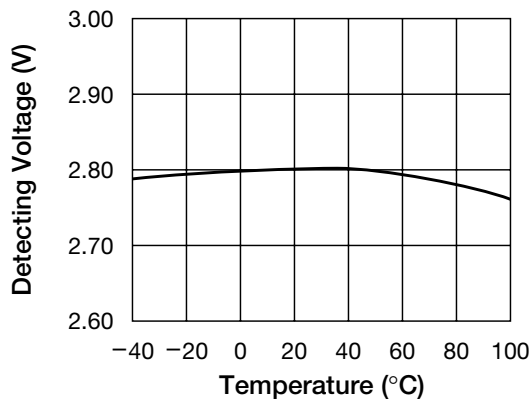
■ Detecting Voltage



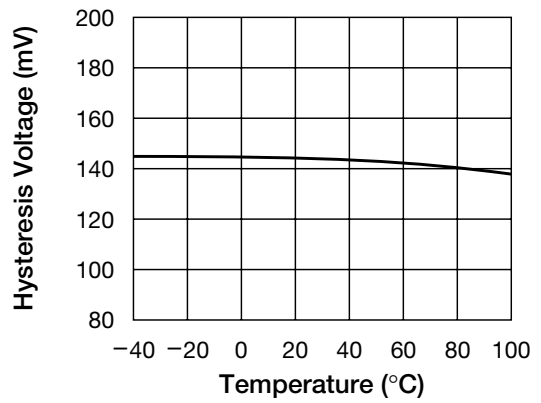
■ Supply Current



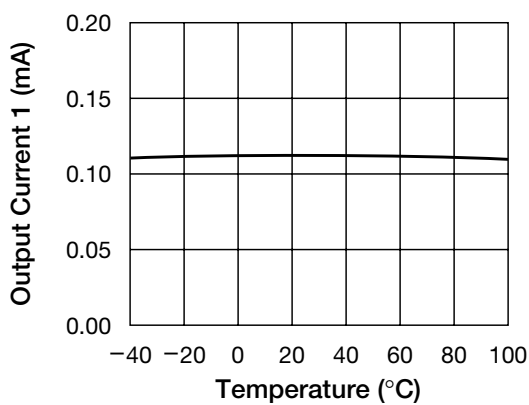
■ Detecting Voltage vs Temperature



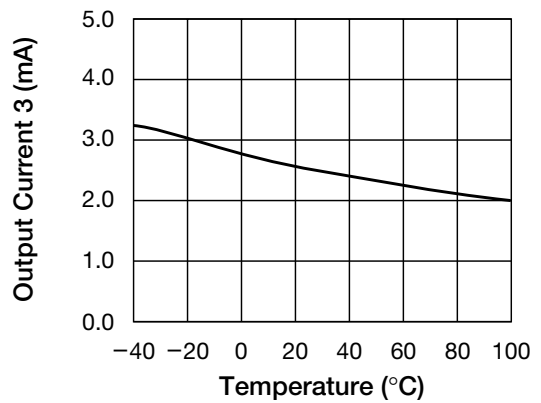
■ Hysteresis Voltage vs Temperature



■ Output Current1 (N-ch) vs Temperature ($V_{DD} = 0.7V, V_{DS} = 0.05V$)



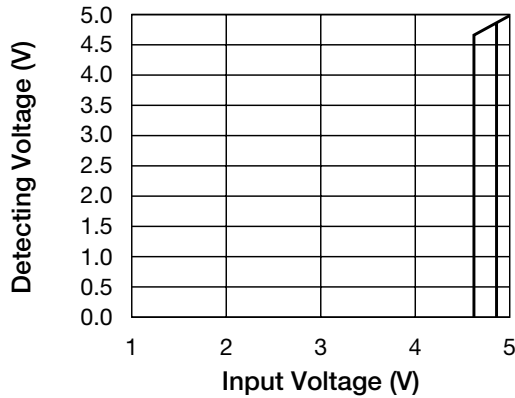
■ Output Current3 (P-ch) vs Temperature ($V_{DD} = 4.5V, V_{DS} = -2.1V$)



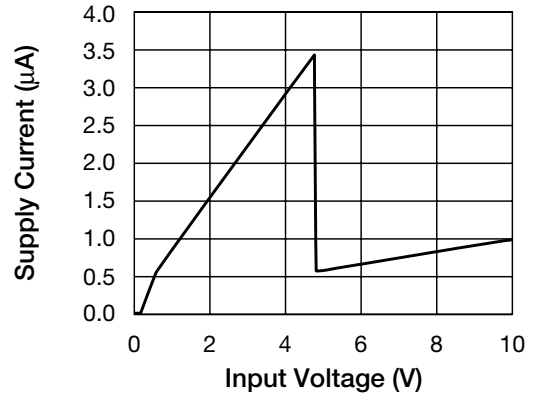
note : these are typical characteristics

Characteristics Typical Performance Characteristics 4.6V

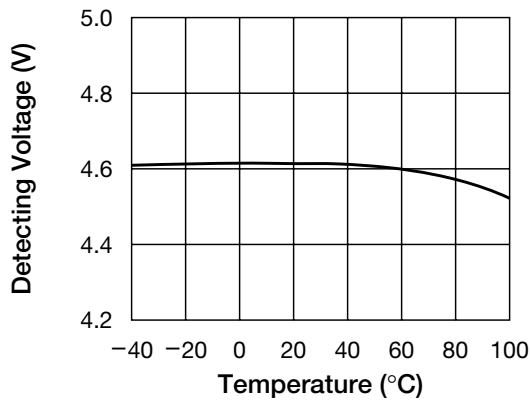
■ Detecting Voltage



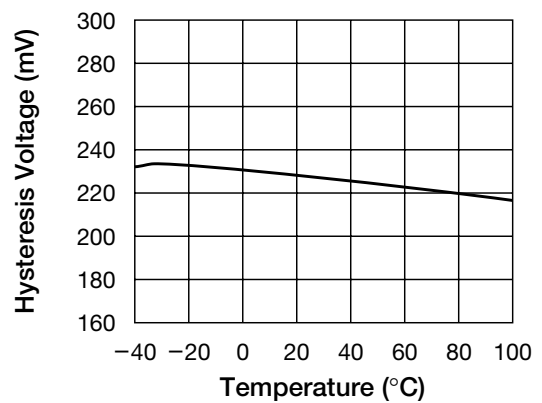
■ Supply Current



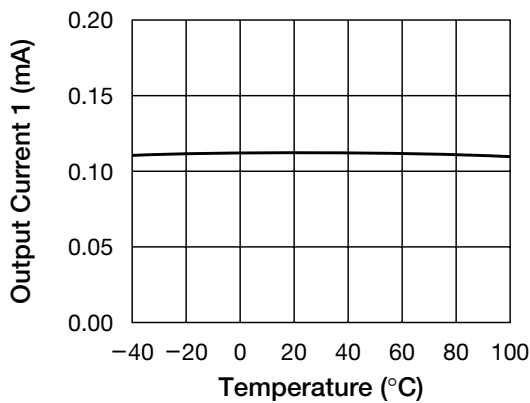
■ Detecting Voltage vs Temperature



■ Hysteresis Voltage vs Temperature



■ Output Current1 (N-ch) vs Temperature ($V_{DD} = 0.7V, V_{DS} = 0.05V$)



■ Output Current3 (P-ch) vs Temperature ($V_{DD} = 4.5V, V_{DS} = -2.1V$)

