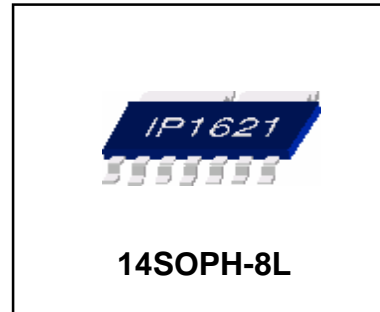


**DESCRIPTION**

The IP1621 is an integrated circuit that has triple LDO regulators and one reset circuit. All the LDO regulators have their own internal npn power transistors and their nominal output voltages are 2.67V and 3.4V, respectively. The reset circuit monitors the status of the regulator input voltage and outputs the **RESET** signal. **RESET** becomes high after the delay time that is determined by the external capacitor at Td pin. The delay time begins to start after the input voltage reaches above 4.2V.



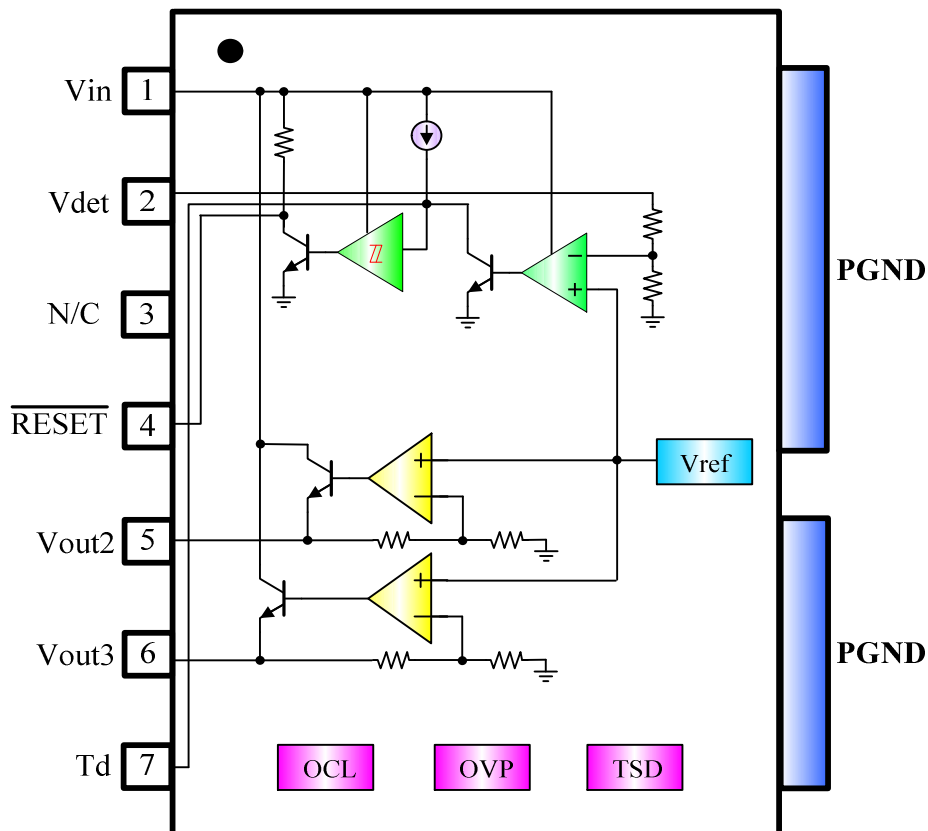
**FEATURES**

- 1-Fixed 3.4V LDO regulator with internal NPN TR.
- 1-Fixed 2.67V LDO regulator with internal NPN TR.
- Typical reset detection voltage of 4.2V.
- Built-in TSD circuit.
- Built-in current limit circuit.
- Built-in over voltage protection circuit.
- Output voltage trimmed to +/-3% tolerance.

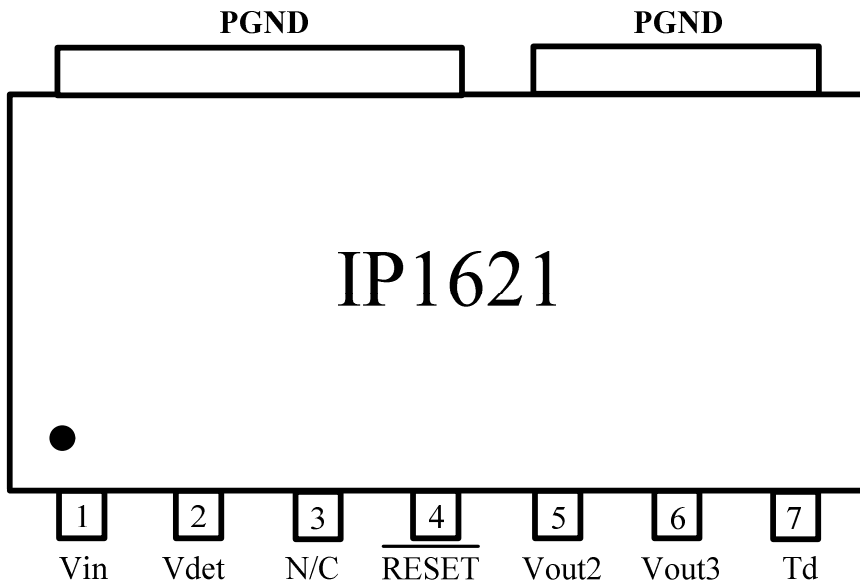
**ORDERING INFORMATION**

Device	Package	Operating Temp
IP1621	14SOPH-8L	-35°C ~ +85°C

**BLOCK DIAGRAM**



**PIN CONNECTIONS**



**PIN DESCRIPTIONS**

NO	SYMBOL	I/O	DESCRIPTION
1	Vin	I	Input Supply Voltage
2	Vdet	I	Detection voltage input
3	N/C	-	NO CONNECTION
4	RESET	O	RESET output pin
5	Vout1	O	Regulator2 3.4V Output
6	Vout2	O	Regulator3 2.67V Output
7	Cd	O	Delay time capacitor pin
8	PGND	-	Power Ground

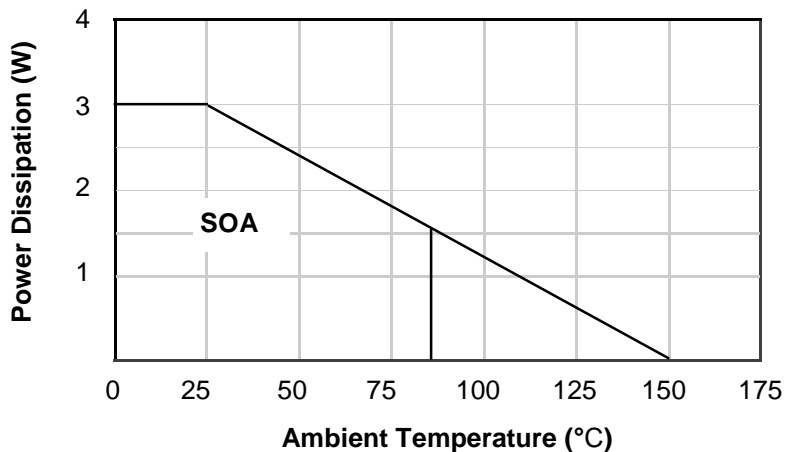
**ABSOLUTE MAXIMUM RATINGS(TA=25°C)**

CHARACTERISTICS	SYMBOL	VALUE	UNIT
Maximum supply voltage	Vccmax	10	V
Input voltage	Vinmax	10	V
Power dissipation	Pd	3.0*	W
Operating temperature	Topr	-35 ~ +85	°C
Storage temperature	Tstr	-55 ~ +150	°C
Maximum output limit current	Io_limit	900	mA

Note>

1. When mounted on 100mm X 100mm X 1mm PCB (Phenolic resin material).
2. Power dissipation reduces 24mW/°C for using above Ta=25°C
3. Do not exceed Pd and SOA.

**POWER DISSIPATION CURVE**



**RECOMMENDED OPERATING CONDITIONS**

CHARACTERISTICS	SYMBOL	VALUE	UNIT
Supply voltage	VIN	4.5 ~ 6.0	V

**ELECTRICAL CHARACTERISTICS**

( $V_{in}=5V$ ,  $C_o=10\mu F$ ,  $T_a = 25^{\circ}C$ , unless otherwise specified.)

Characteristics	Symbol	Condition	Min.	Typ.	Max.	Units
Quiescent current	I <sub>cc</sub>	V <sub>cc</sub> =5V, No-Load	-	9	15	mA
OVP Detecting Voltage	V <sub>ovp</sub>	V <sub>cc</sub> =Variable	6.5	7.5	-	V
<b>LDO REGULATOR 1 (3.4V FIXED TYPE)</b>						
Output Voltage	V <sub>out1</sub>	I <sub>o</sub> =10mA	3.3	3.4	3.5	V
Line Regulation	dV <sub>line1</sub>	V <sub>in</sub> =4.5~6V, I <sub>o</sub> =10mA	-	0.035	0.2	%
Load Regulation	dV <sub>load 1</sub>	T <sub>a</sub> =25°C V <sub>in</sub> =5V, 10mA < I <sub>o</sub> < 300mA	-	0.4	1	%
Dropout voltage	V <sub>drop1</sub>	I <sub>o</sub> =300mA	-	0.9	1.2	V
Ripple rejection <sup>*Note1</sup>	RR1	F=120Hz, C <sub>o</sub> =10μF Tantalum V <sub>in</sub> -V <sub>out</sub> =2V, I <sub>o</sub> =150mA	60	70	-	dB
Current limit <sup>*Note2</sup>	I <sub>limit1</sub>	V <sub>in</sub> =5V	300	-	-	mA
Temperature stability <sup>*Note1</sup>	Temp1	-	-	0.5	-	%
Noise Voltage	V <sub>n1</sub>	f=10Hz~10kHz I <sub>o</sub> =120mA	-	100	-	μV <sub>rms</sub>
<b>LDO REGULATOR 2 (2.67V FIXED TYPE)</b>						
Output Voltage	V <sub>out2</sub>	I <sub>o</sub> =10mA	2.59	2.67	2.75	V
Line Regulation	dV <sub>line2</sub>	V <sub>in</sub> =4.5~6V, I <sub>o</sub> =10mA	-	0.035	0.2	%
Load Regulation	dV <sub>load 2</sub>	T <sub>a</sub> =25°C V <sub>in</sub> =5V, 10mA < I <sub>o</sub> < 450mA	-	0.4	1	%
Dropout voltage	V <sub>drop2</sub>	I <sub>o</sub> =450mA	-	2.5	2.8	V
Ripple rejection <sup>*Note1</sup>	RR2	F=120Hz, C <sub>o</sub> =10μF Tantalum V <sub>in</sub> -V <sub>out</sub> =3V, I <sub>o</sub> =250mA	60	70	-	dB
Current limit <sup>*Note2</sup>	I <sub>limit2</sub>	V <sub>in</sub> =5V	450	-	-	mA
Temperature stability <sup>*Note1</sup>	Temp2	-	-	0.5	-	%
Noise Voltage	V <sub>n2</sub>	f=10Hz~10kHz I <sub>o</sub> =200mA	-	100	-	μV <sub>rms</sub>

**ELECTRICAL CHARACTERISTICS**

( Vin= 5V, Co=10uF, Ta = 25°C, unless otherwise specified.)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Units
<b>RESET PART</b>						
Detection voltage	Vd	Vin=L/H/L	4.0	4.2	4.4	V
Td threshold voltage	Vtd	RL=4.7K, Vtd=variable	1.5	1.65	1.8	V
Hysteresis voltage	Vhys	RL=4.7K, Vin=L/H/L	0.2	0.6	0.9	V
Detection reference voltage temperature coefficient *Note1	TCVd	Ta= -20°C ~ +85°C	-	± 0.01	-	%/°C
Reset output current	I $\overline{\text{RESET}}$	Vd=0V, V $\overline{\text{RESET}}$ =0.4V	3	-	-	mA
High level output voltage	Voh	RL=4.7K	3.8	4.5	4.8	V
Low level output voltage	Vol	RL=4.7K	-	0.1	0.4	V
“H” transport delay time	tdLH	RL=4.7K, Cd=0.22uF	-	40	-	ms
“L” transport delay time	tdHL	RL=4.7K, Cd=0.22uF	-	50	-	us

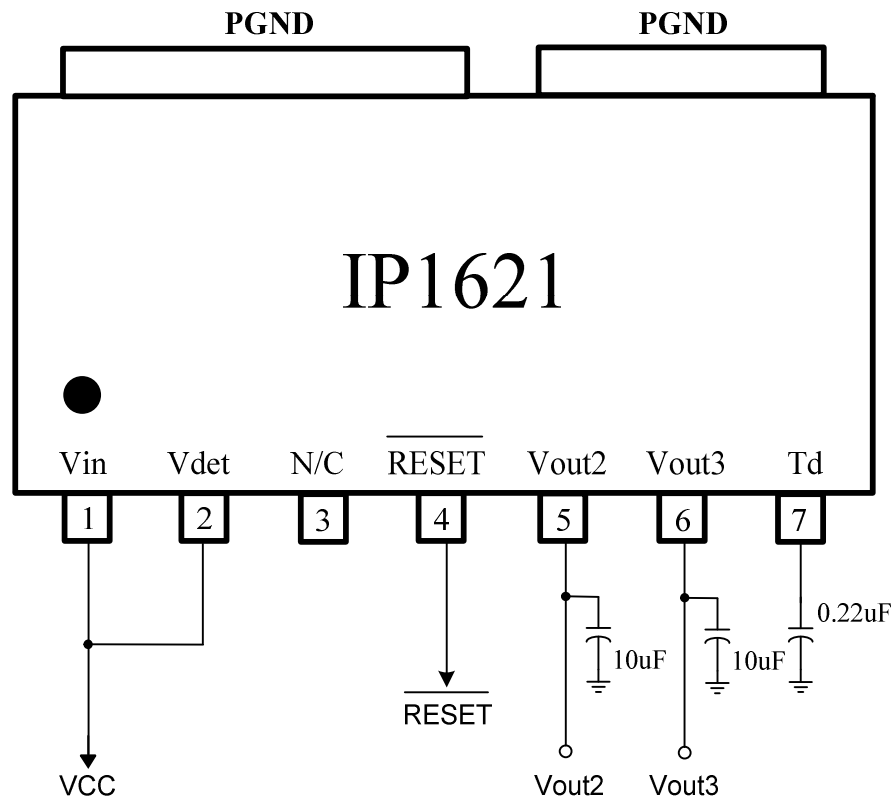
\* Note1

These parameters are guaranteed, but not 100% tested in mass production.

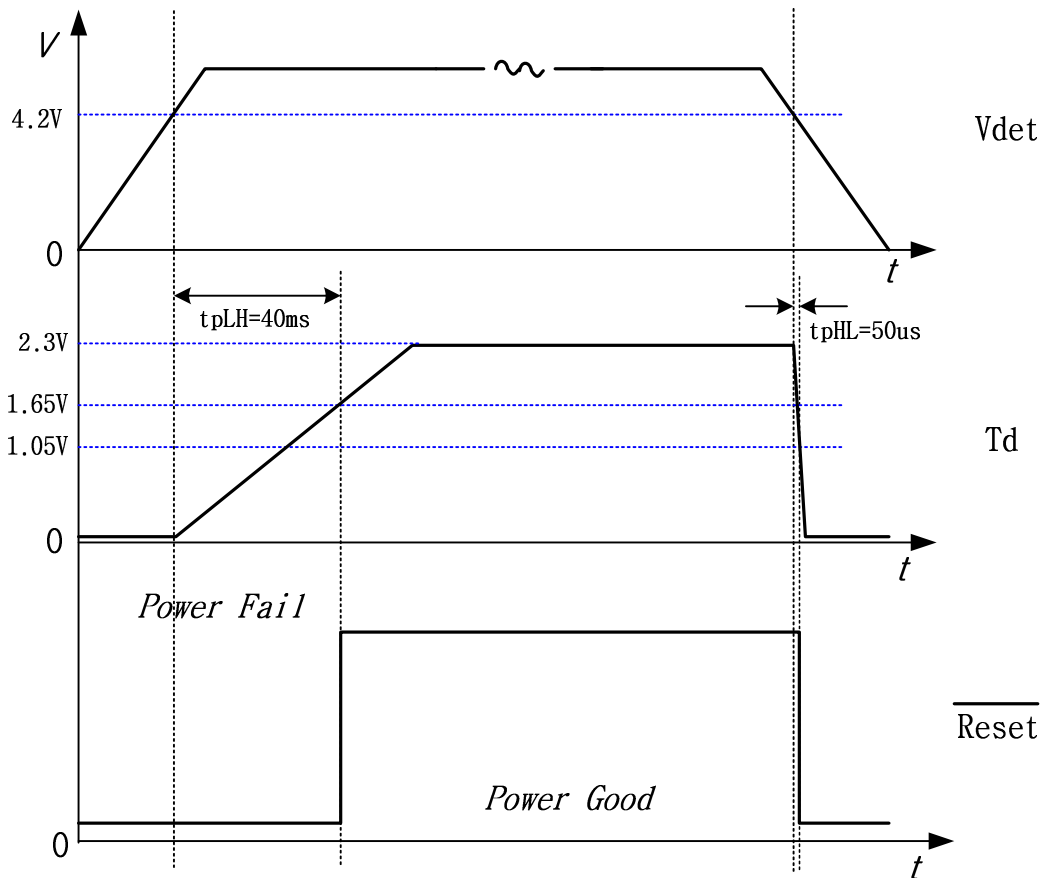
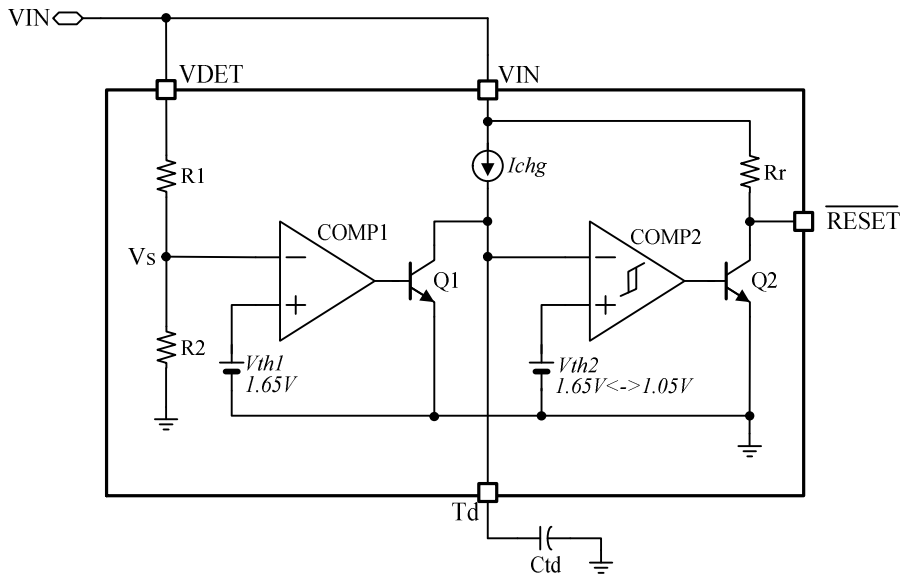
\* Note2

Don't exceed the specified current limit in each output voltage.

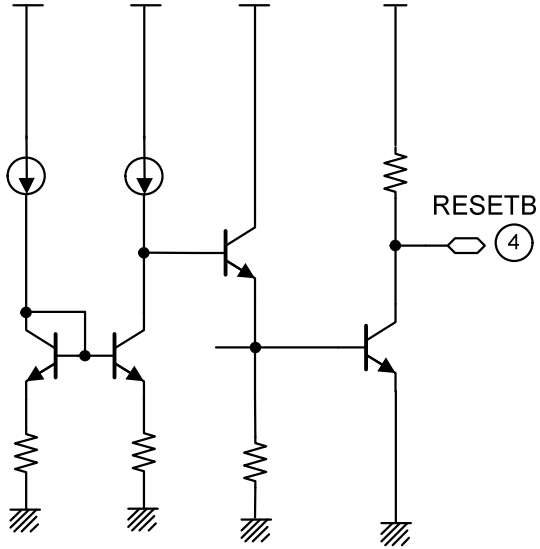
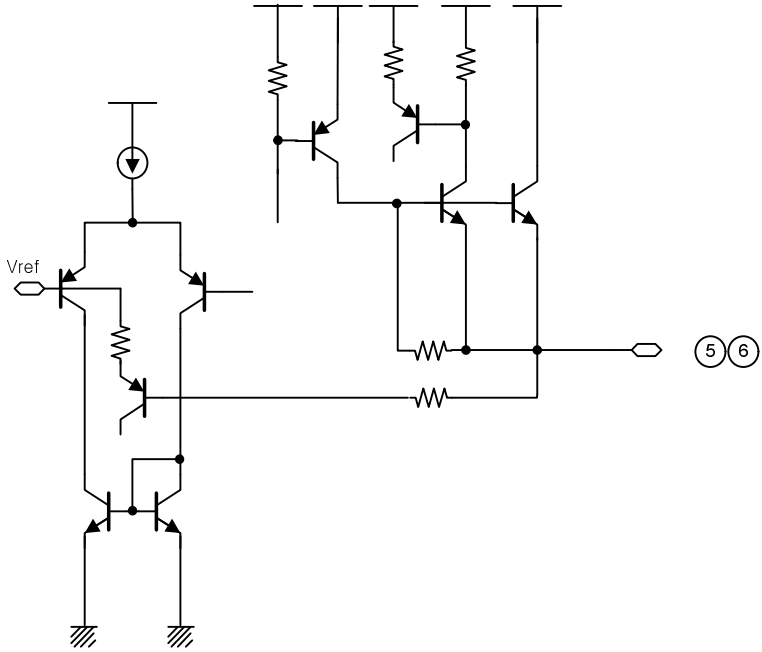
### TYPICAL APPLICATION CIRCUIT



**TIMING CHART FOR RESET CIRCUIT**



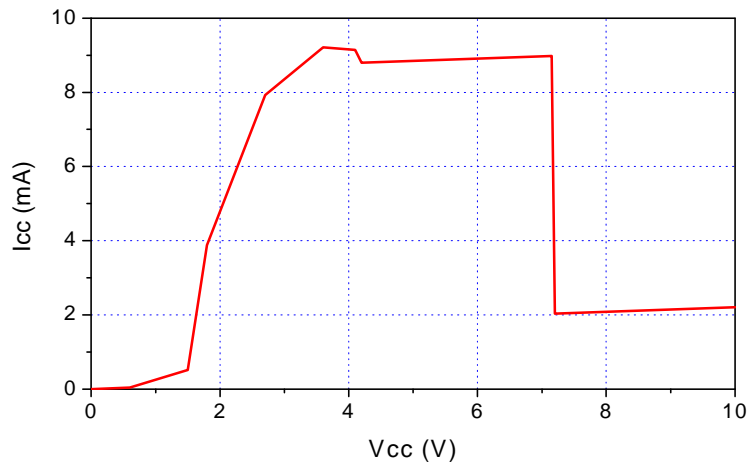
**INTERNAL CIRCUIT**

Pin no	Pin name	Internal circuit
4	RESET	
5,6	Regulator Output1,2	

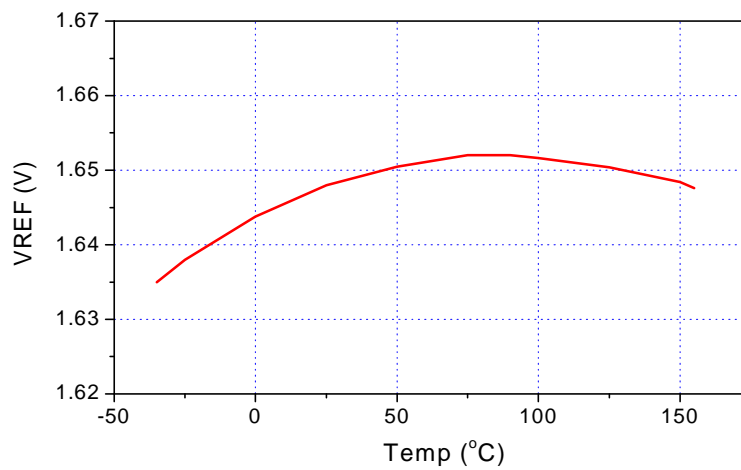


ELECTRICAL CHARACTERISTICS CURVES

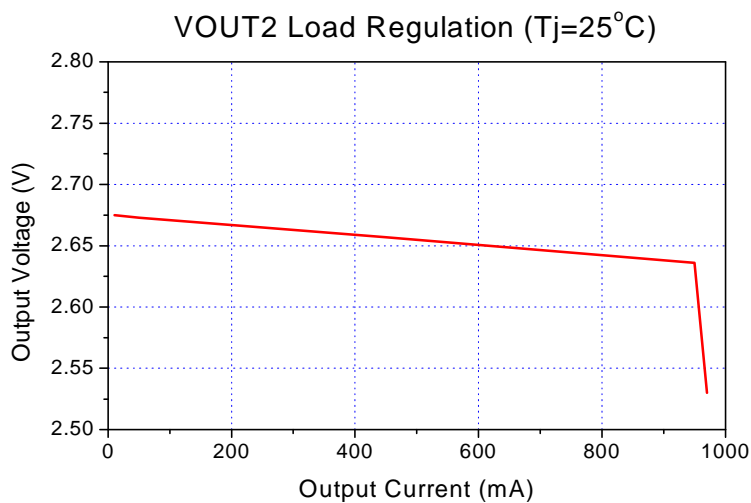
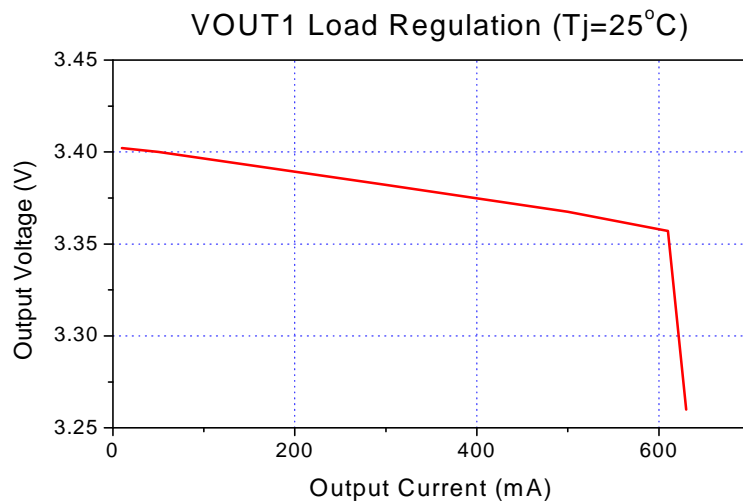
QUIESCENT CURRENT



VREF TEMPERATURE STABILITY

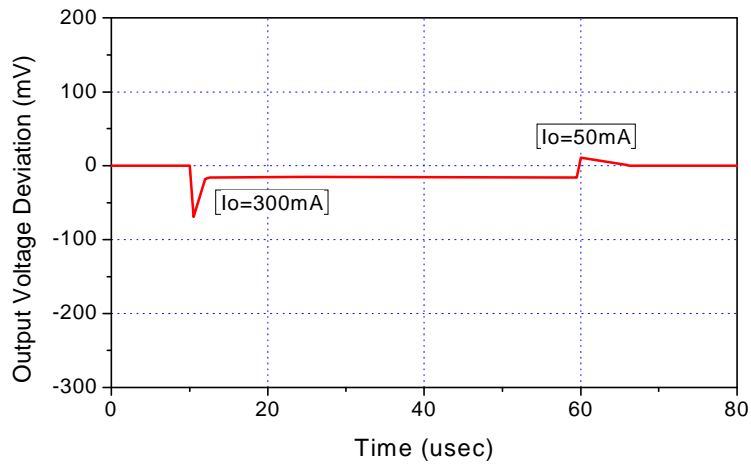


ELECTRICAL CHARACTERISTICS CURVES (Continued)

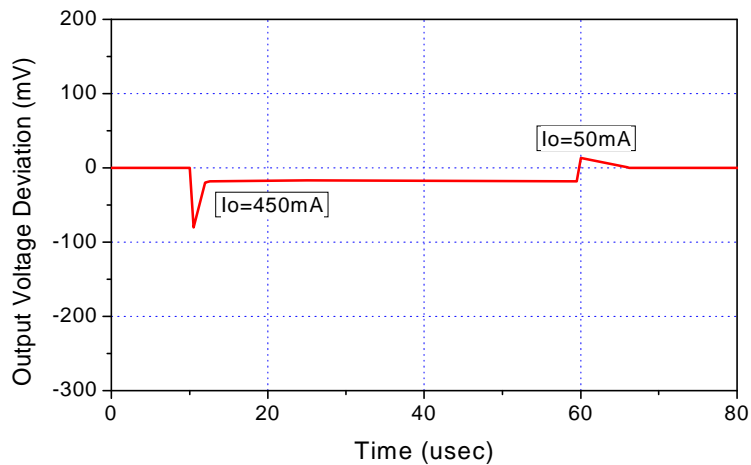


### ELECTRICAL CHARACTERISTICS CURVES (Continued)

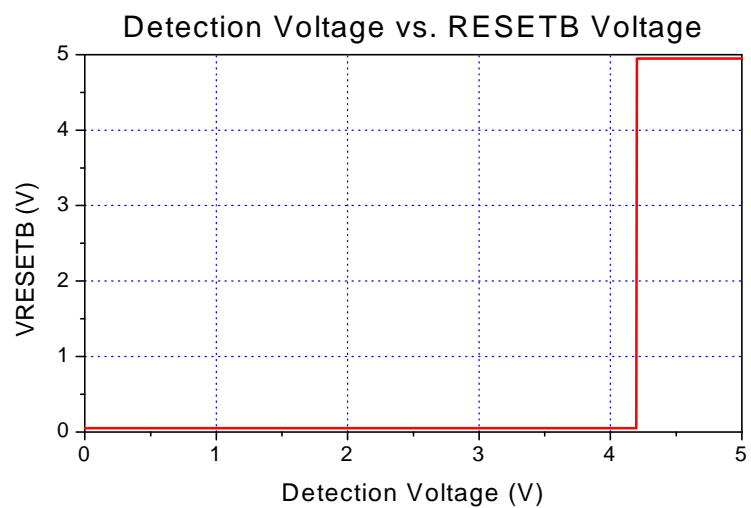
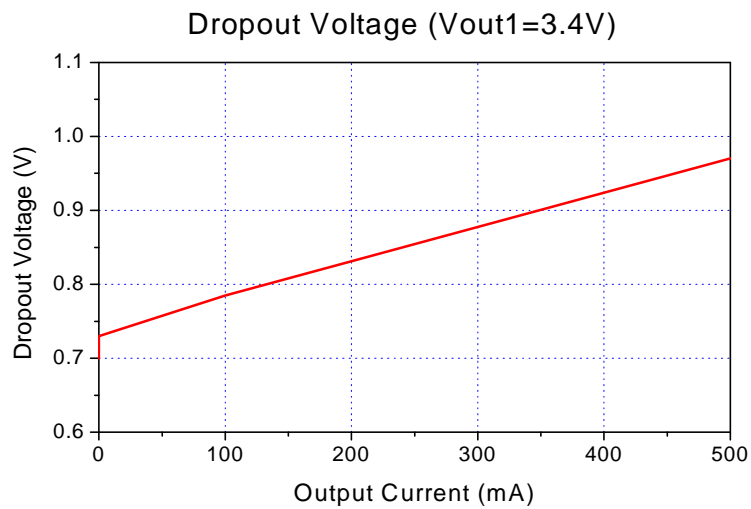
#### VOUT1 Load Transient Response



#### VOUT2 Load Transient Response

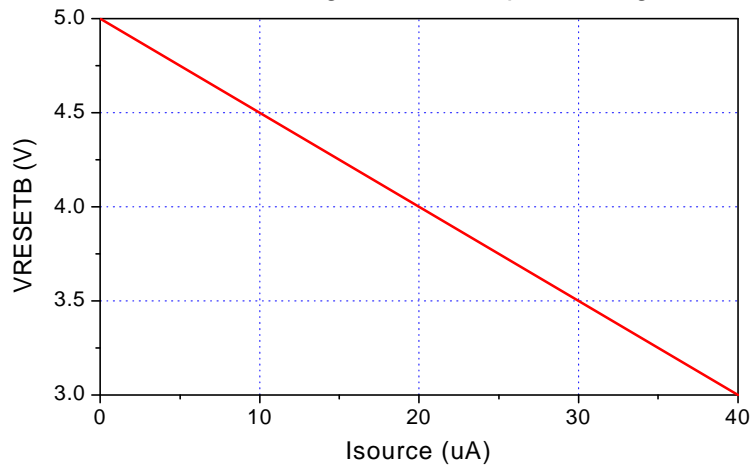


### ELECTRICAL CHARACTERISTICS CURVES (Continued)

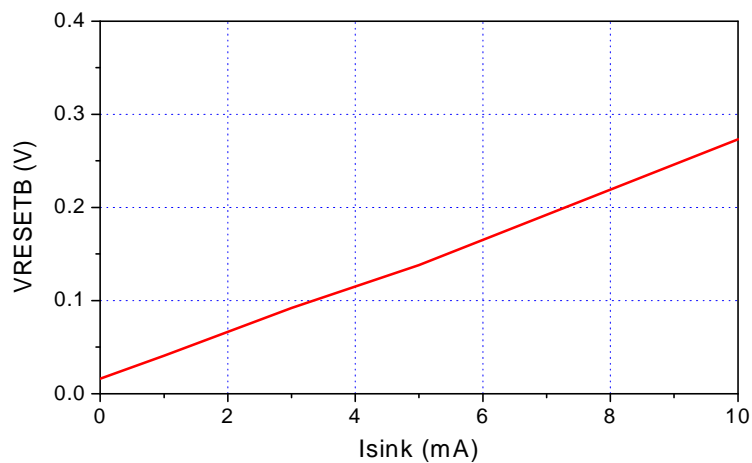


**ELECTRICAL CHARACTERISTICS CURVES (Continued)**

**RESETB High Level Output Voltage**

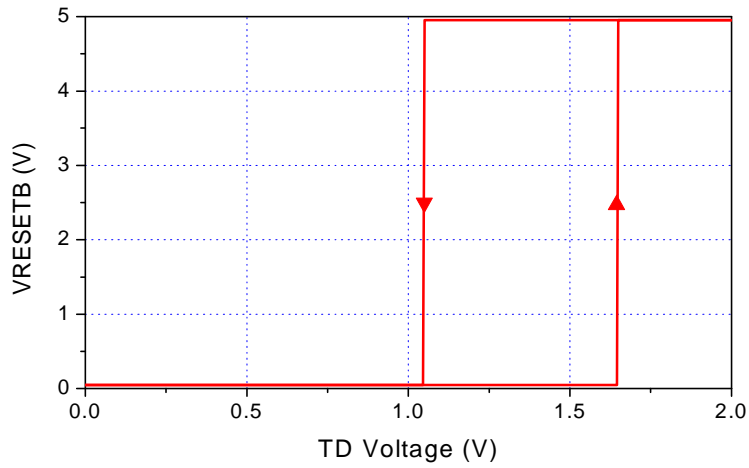


**RESETB Low Level Output Voltage**

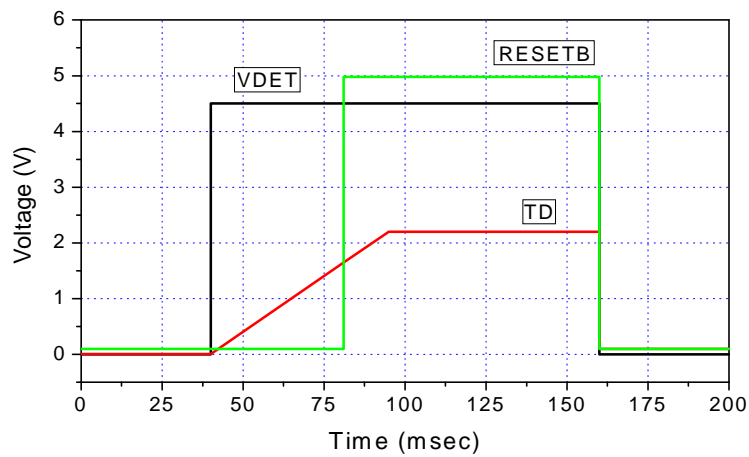


**ELECTRICAL CHARACTERISTICS CURVES (Continued)**

**TD Voltage vs. RESETB Voltage**



**RESET IC Timing Chart**



**PACKAGE DIMENSION**

**14SOPH-8L**

