IP1622

DUAL OUTPUT VOLTAGE LDO REGULATOR + RESET IC

DESCRIPTION

The IP1620 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 1.65V and 3.4V, respectively. The reset circuit monitors the status of the regulator input voltage and outputs the $\overline{\text{RESET}}$ signal. $\overline{\text{RESET}}$ 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.



14SOPH-8L

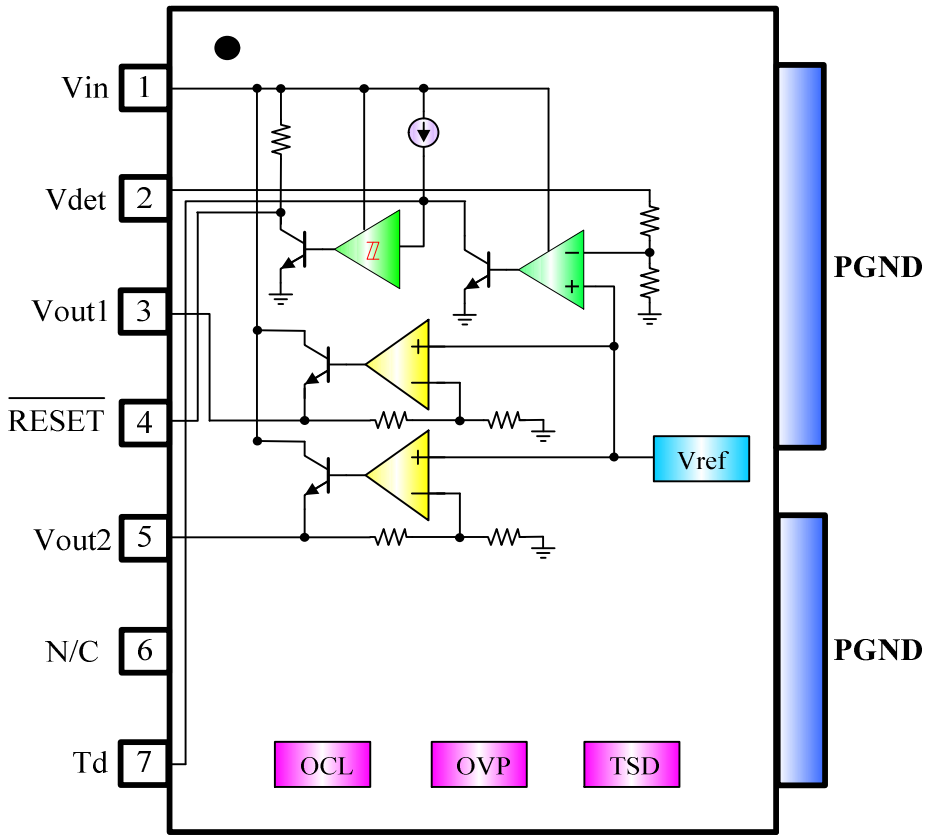
FEATURES

- 1-Fixed 3.4V LDO regulator with internal NPN TR.
- 1-Fixed 1.65V 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 trimmed to +/-3% tolerance.

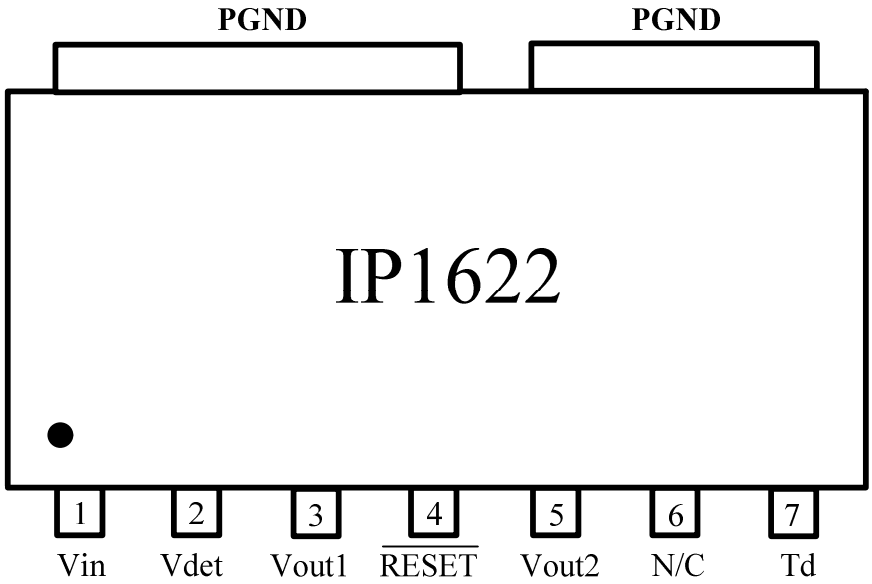
ORDERING INFORMATION

Device	Package	Operating Temp
IP1622	14SOPH-8L	-35°C ~ +85°C

BLOCK DIAGRAM



PIN CONNECTIONS



PIN DESCRIPTIONS

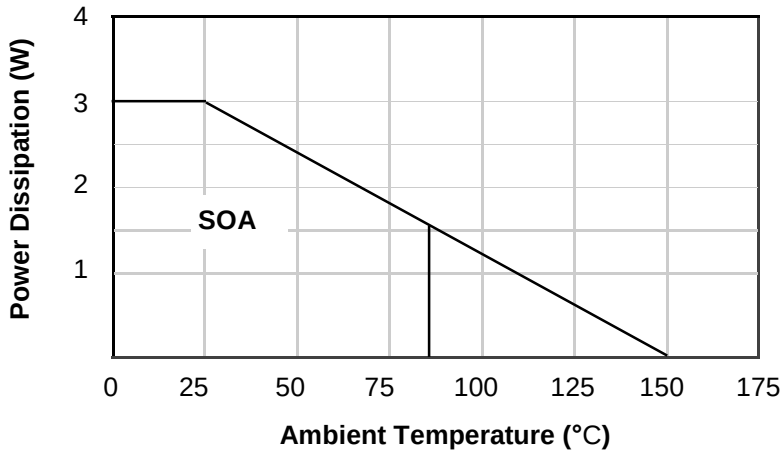
NO	SYMBOL	I/O	DESCRIPTION
1	Vin	I	Input Supply Voltage
2	Vdet	I	Detection voltage input
3	Vout1	O	Regulator1 1.65V Output
4	$\overline{\text{RESET}}$	O	$\overline{\text{RESET}}$ output pin
5	Vout2	O	Regulator2 3.4V Output
6	N/C	-	NO CONNECTION
7	Cd	O	Delay time capacitor pin
8	PGND	-	Power Ground

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

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

Characteristics	Symbol	Condition	Min.	Typ.	Max.	Units
Quiescent current	Icc	Vcc=5V, No-Load	-	9	15	mA
OVP Dectecting Voltage	Vovp	Vcc=Variable	6.5	7.5	-	V
LDO REGULATOR 1 (1.65V FIXED TYPE)						
Output Voltage	Vout1	Io=10mA	1.6	1.65	1.7	V
Line Regulation	dVline1	Vin=4.5~6V, Io=10mA	-	0.035	0.2	%
Load Regulation	dVload 1	Ta=25°C Vin=5V, 10mA < Io < 500mA	-	0.4	1	%
Dropout voltage	Vdrop1	Io=500mA	-	2.5	2.8	V
Ripple rejection*Note1	RR1	F=120Hz, Co=10uF Tantalum Vin-Vout=3V, Io=250mA	60	70	-	dB
Current limit *Note2	Ilimit1	Vin=5V	500	-	-	mA
Temperature stability*Note1	Temp1	-	-	0.5	-	%
Noise Voltage	Vn1	f=10Hz~10kHz Io=250mA	-	100	-	uVrms
LDO REGULATOR 2 (3.4V FIXED TYPE)						
Output Voltage	Vout2	Io=10mA	3.3	3.4	3.5	V
Line Regulation	dVline2	Vin=4.5~6V, Io=10mA	-	0.035	0.2	%
Load Regulation	dVload 2	Ta=25°C Vin=5V, 10mA < Io < 300mA	-	0.4	1	%
Dropout voltage	Vdrop2	Io=300mA	-	0.9	1.2	V
Ripple rejection*Note1	RR2	F=120Hz, Co=10uF Tantalum Vin-Vout=2V, Io=150mA	60	70	-	dB
Current limit *Note2	Ilimit2	Vin=5V	300	-	-	mA
Temperature stability*Note1	Temp2	-	-	0.5	-	%
Noise Voltage	Vn2	f=10Hz~10kHz Io=120mA	-	100	-	uVrms

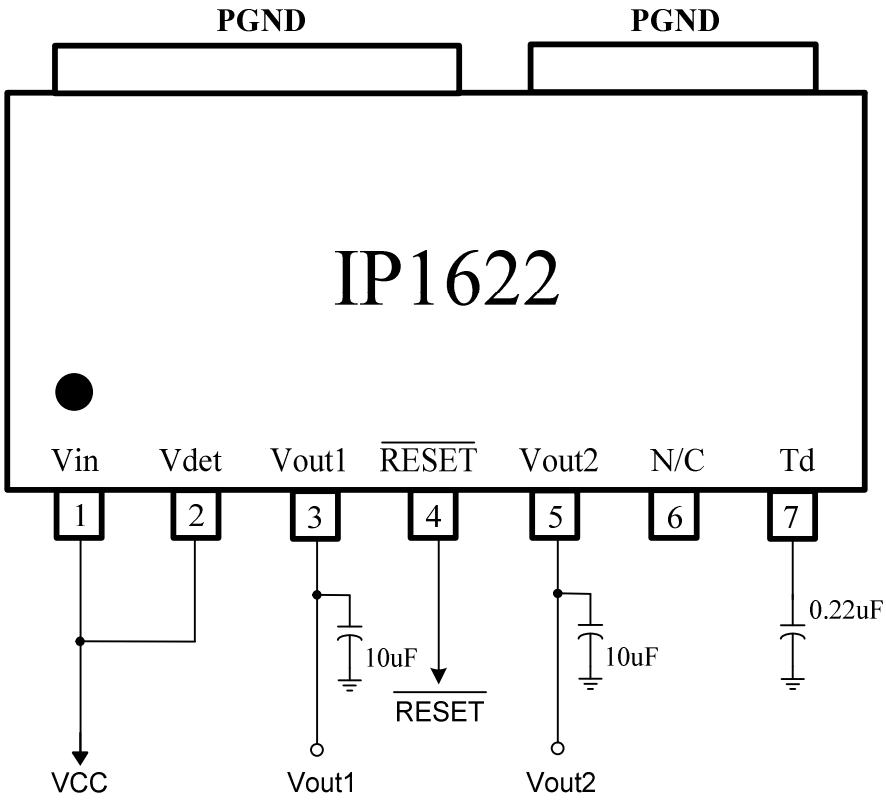
ELECTRICAL CHARACTERISTICS

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

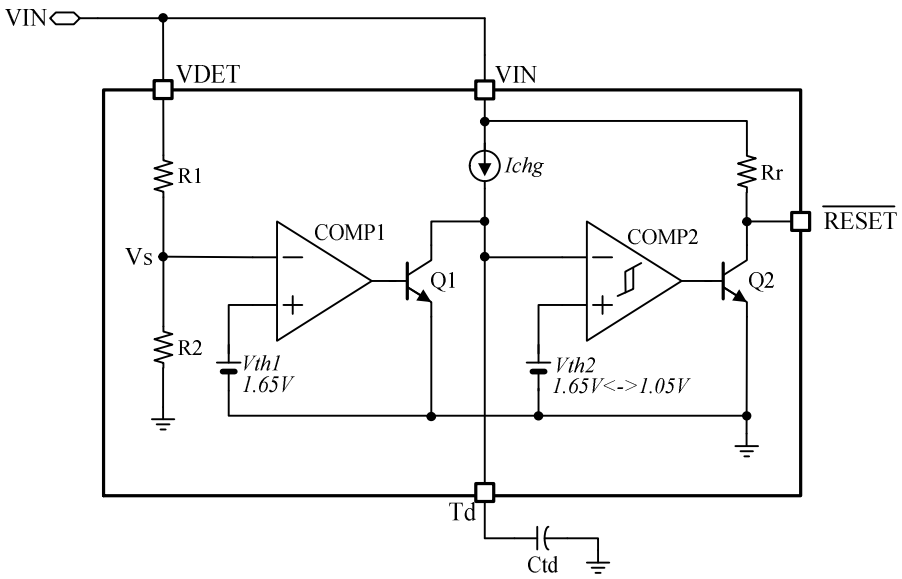
Parameter	Symbol	Condition	Min.	Typ.	Max.	Units
RESET PART						
Detection voltage	Vd	Vin=L/H/L	4.0	4.2	4.4	V
Td threshold voltage	Vtd	RL=4.7K, Vtd=variable	1.5	1.65	1.8	V
Hysteresis voltage	Vhys	RL=4.7K, Vin=L/H/L	0.2	0.6	0.9	V
Detection reference voltage temperature coefficient *Note1	TCVd	Ta= -20°C ~ +85°C	-	± 0.01	-	%/°C
$\overline{\text{Reset}}$ output current	$I_{\overline{RESET}}$	Vd=0V, $V_{\overline{RESET}}$=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

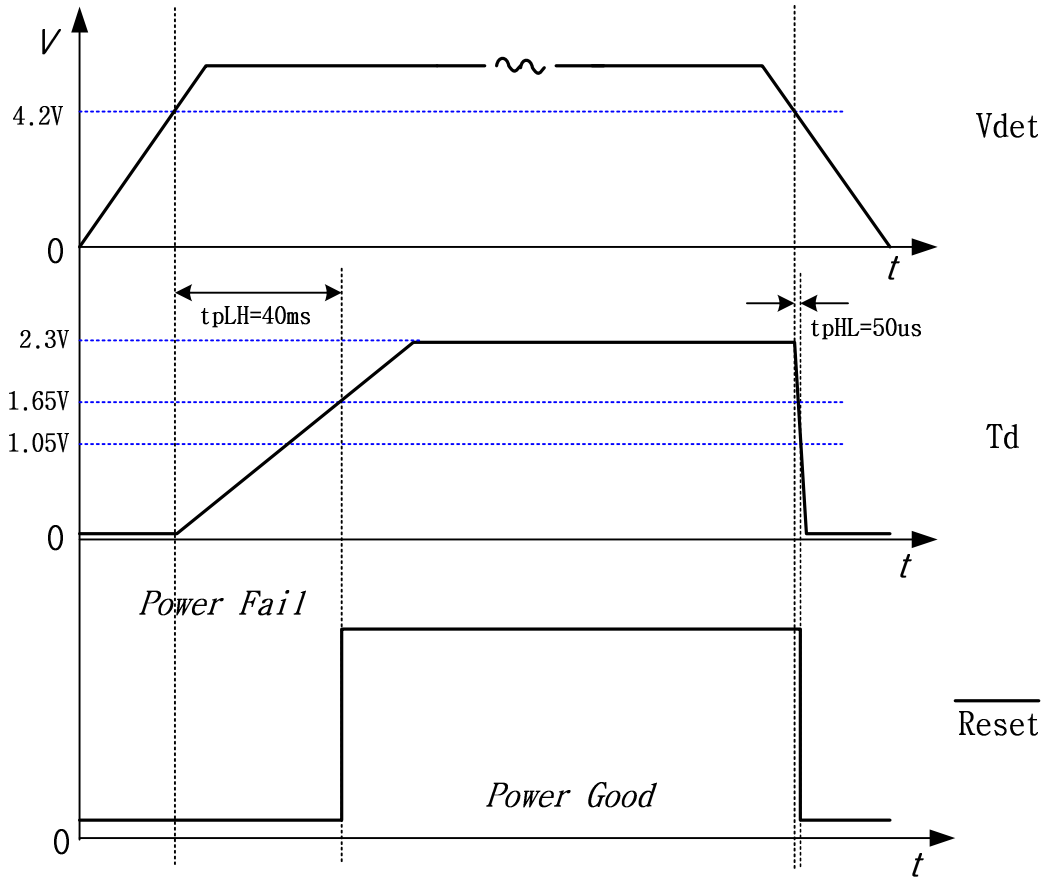
* Note1
These parameters are guaranteed, but not 100% tested in mass production.
* Note2
Don't exceed the specified current limit in each output voltage.

TYPICAL APPLICATION CIRCUIT

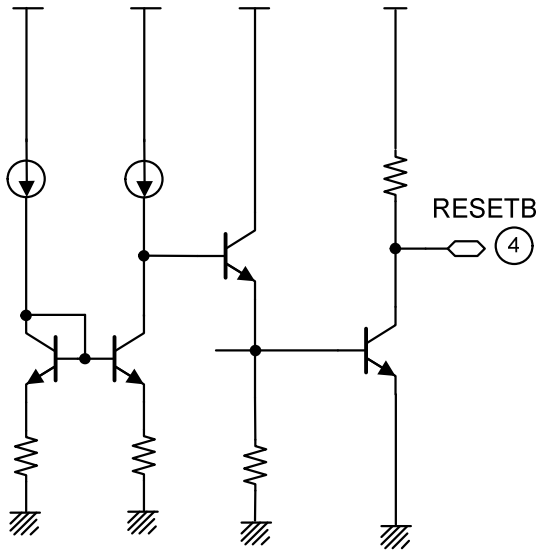
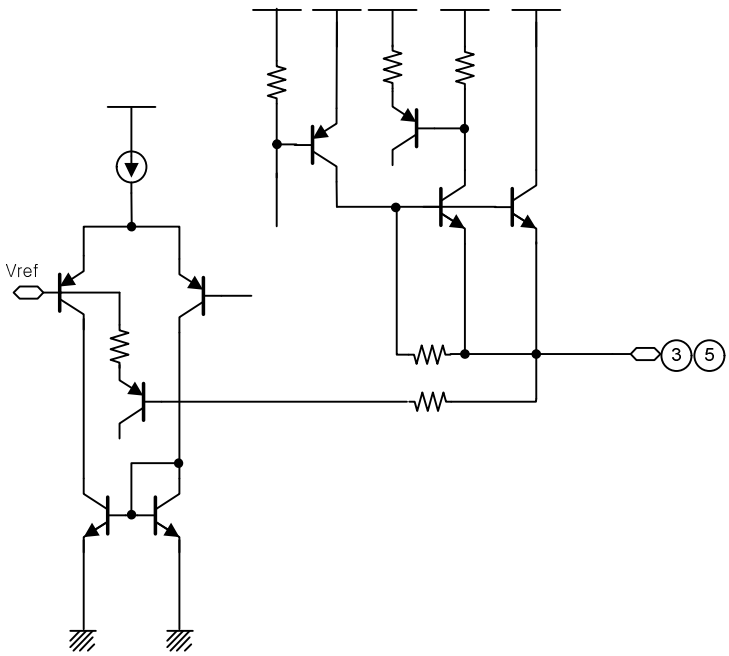


TIMING CHART FOR RESET CIRCUIT

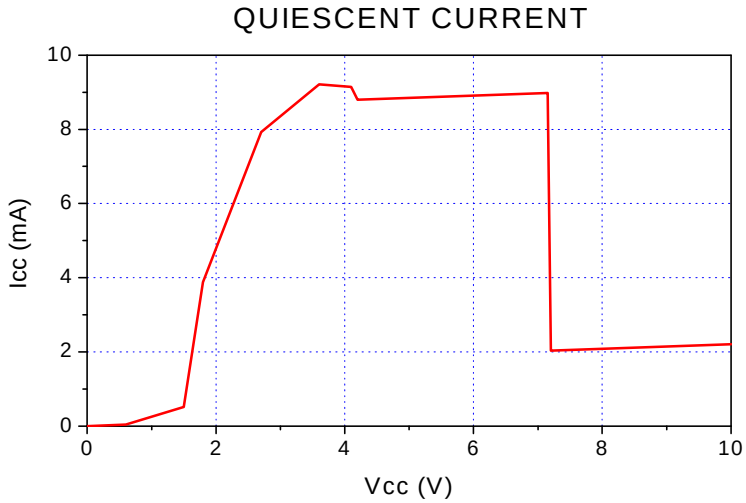


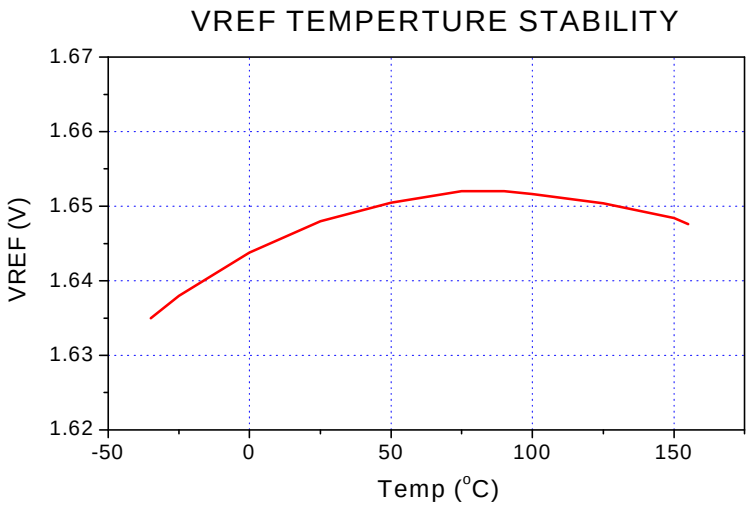


INTERNAL CIRCUIT

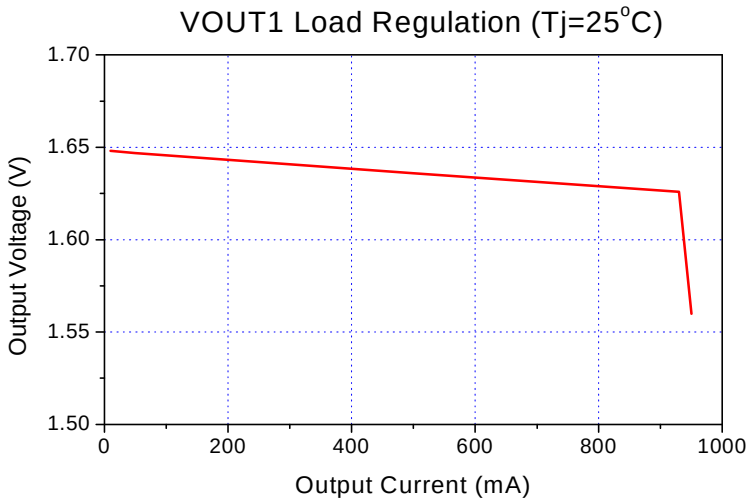
Pin no	Pin name	Internal circuit
4	RESET	
3,5	Regulator Output1,2	

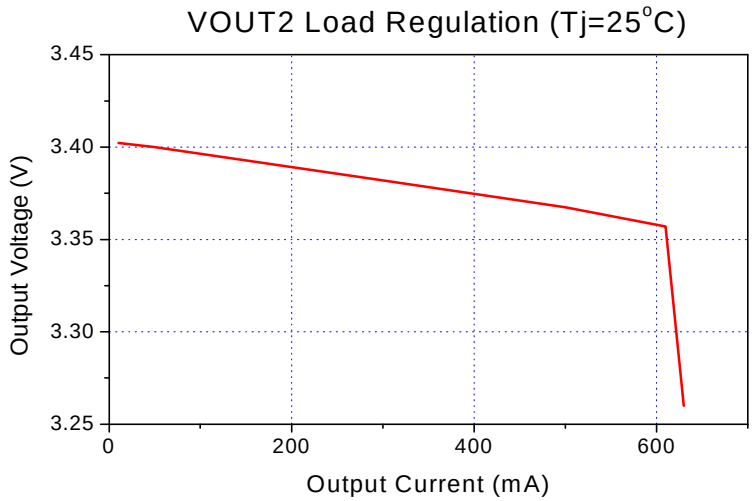
ELECTRICAL CHARACTERISTICS CURVES



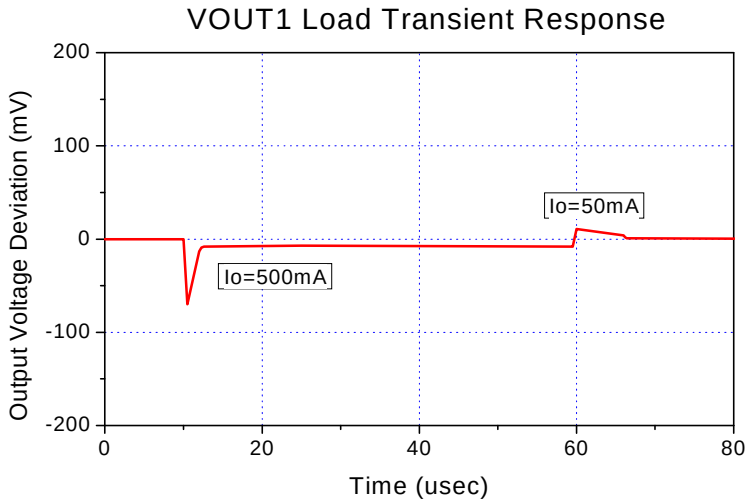


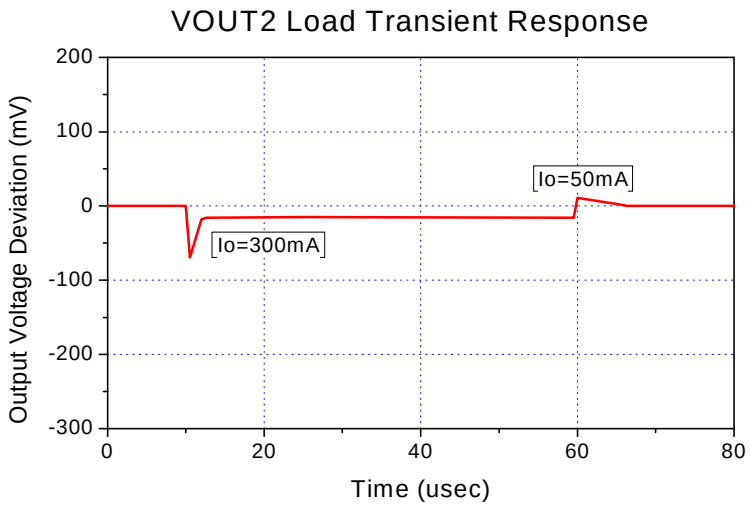
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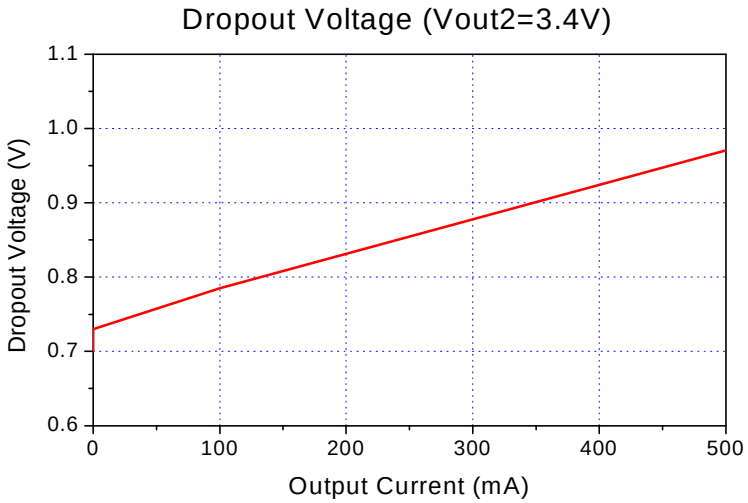


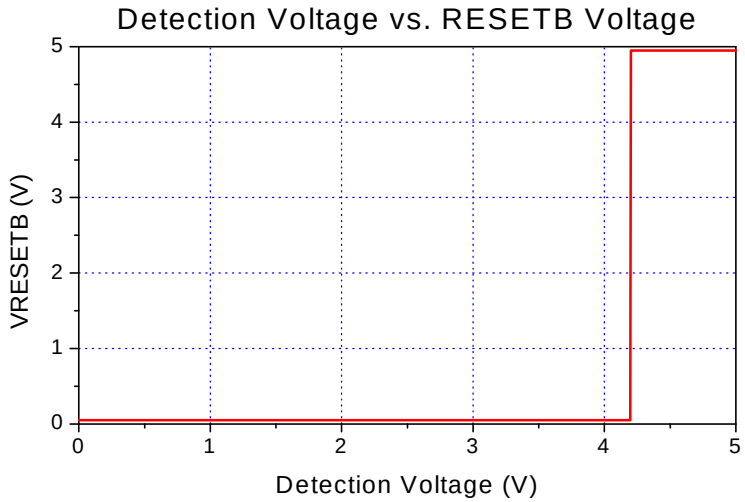
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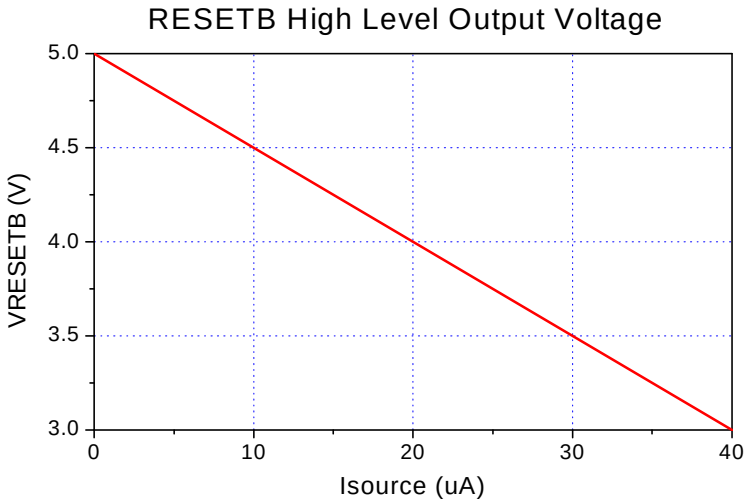


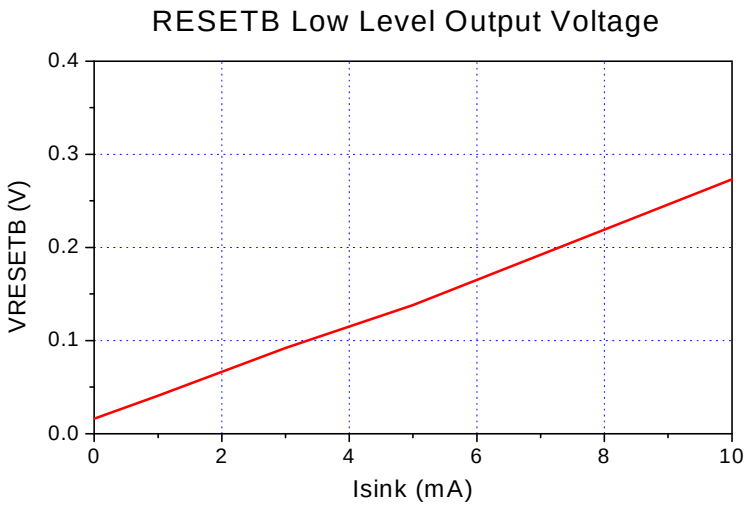
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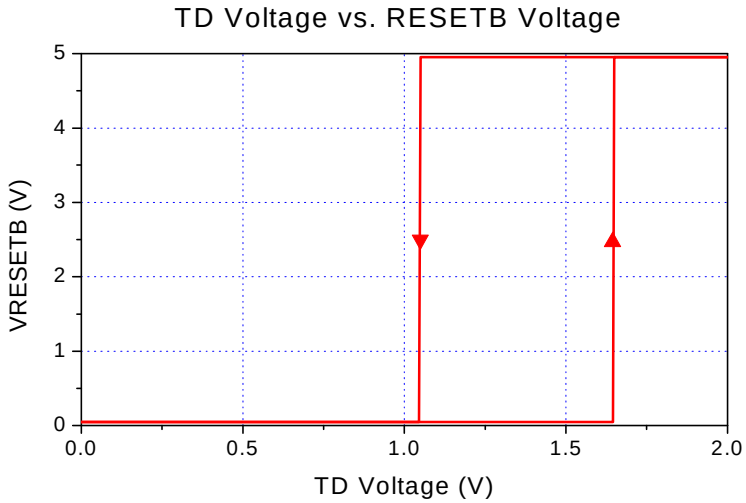


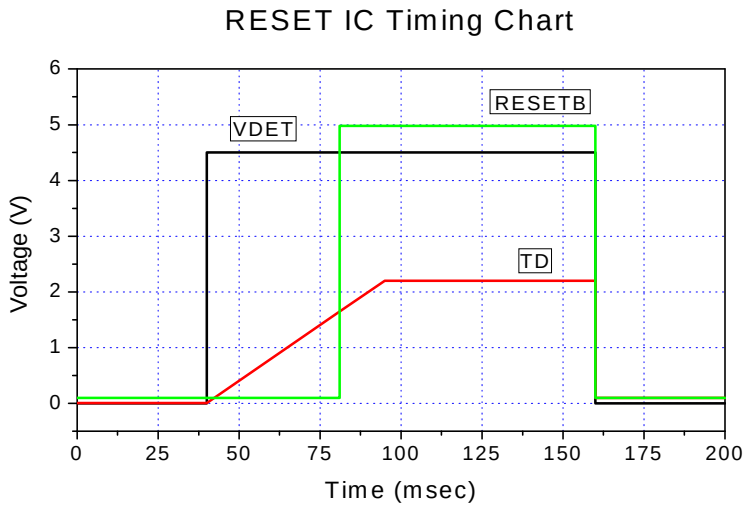
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ELECTRICAL CHARACTERISTICS CURVES (Continued)





PACKAGE DIMENSION

14SOPH-8L

