8A Over Temperature Protection Switch

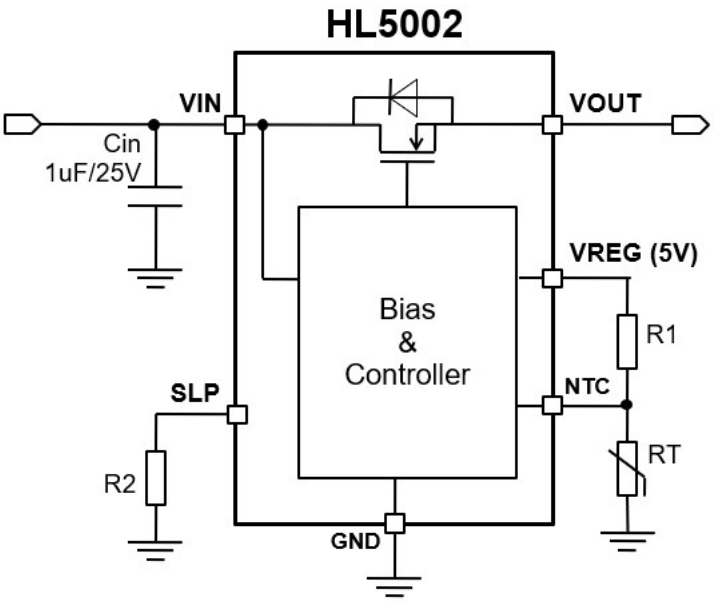
Features

- Input Voltage Operating Range: 3.0V to 15V
- Input Maximum Voltage: 20V
- Typical R_{ON}: 11mΩ at V_{IN}=5 V/10V/15V with 8A loading
- Over-Temperature Response Time: 10ms Typical
- Built-in Programmable Temperature Slope Detection
- 8A Max Continuous Current (with thermal via)
- Output Discharge Function
- ESD Protection on VIN and VOUT: IEC61000-4-2 (Level 4): 8 kV Contact, 15kV Air
- 10-pin 2mm*2mm DFN

Applications

- Smart Phone
- Tablet PC
- Portable device

Typical Application Diagram



Recommended procedure to determine R1

Step 1: Choose the required over-temperature threshold, e.g., 80℃ or 85℃ or else, then find the resistance of RT from the look-up table of its datasheet.

Step 2: Determine R1 with below formula.

$$R_1 = 20 * R_T$$

Note :
Please refer to Figure 2 to determine R2.

Figure 1 Typical Application Diagram

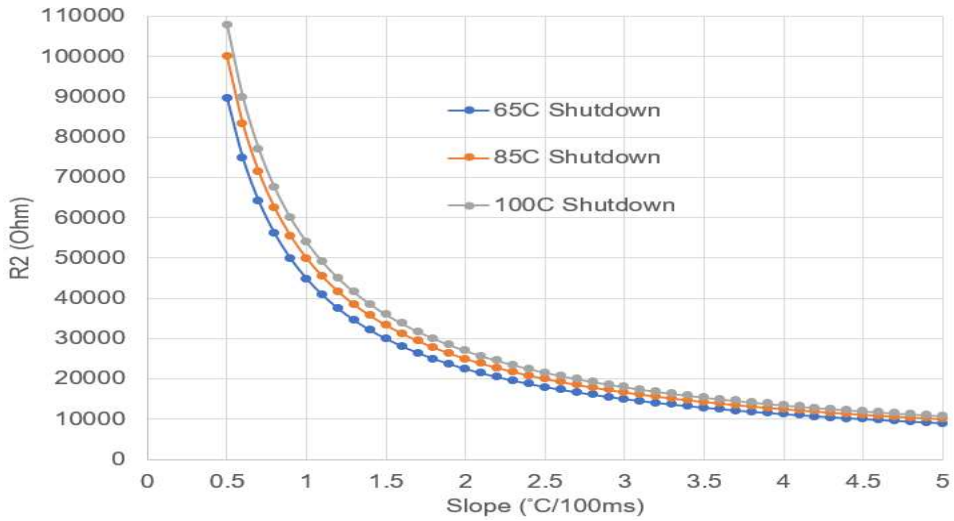


Figure 2 R2 vs Temperature Slope under T_{SD}=65°C/85°C/100°C(NTC Shutdown Threshold)

Component	Part Number	Value	Size	Vendor
Cin		1μF/25V	0402	
R1		29.1KΩ /1%	0402	
R2		10KΩ /1%	0402	
RT	NCP03XH103F05RL	10KΩ@25°C, 1.455KΩ@85°C	0402	Murata

Table 1 Recommended Component List

General Description

HL5002 is an advanced load switch based on ambient temperature detection. It turns on when VIN is powered up and passes internal UVLO threshold. It turns off when detected ambient temperature via external NTC resistor exceeds a pre-programmed threshold. Once turned off, it cannot be turned on until VIN is disconnected and reconnected again.

HL5002 also detects abnormal ambient temperature change by detecting the slope of NTC pin voltage change, and if it drops at a rate exceeding the internally defined threshold, the load switch is turned off too, and can only be turned on until VIN is disconnected and reconnected again.

HL5002 can sustain a maximum of 8A current through the integrated 11mΩ power switch.

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