

# Hall Effect Current Sensors S23P\*\*\*D15 Series

## Features:

- Closed Loop type
- Current or voltage output
- Conversion ratio  $K_N = 1:2000$
- Printed circuit board mounting
- Integrated primary
- Insulated plastic case according to UL94V0
- UL Recognition

## Advantage:

- Excellent accuracy and linearity
- Low temperature drift
- Wide frequency bandwidth
- No insertion loss
- High Immunity to external interferences
- Optimised response time
- Current overload capability



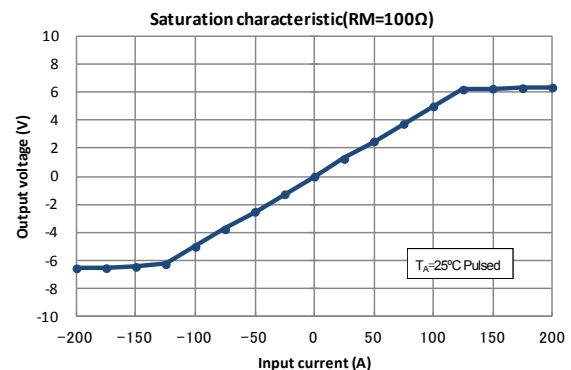
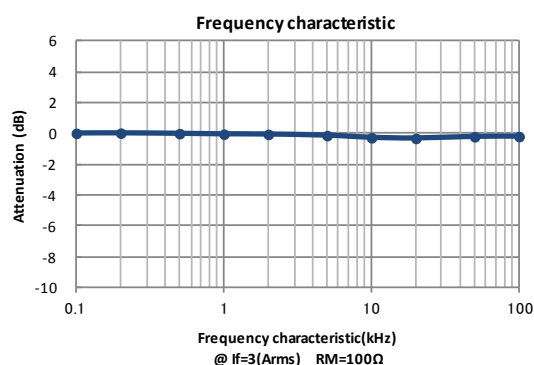
## Specifications

 $T_A=25^{\circ}\text{C}, V_{CC}=\pm 15\text{V}$ 

Parameters	Symbol	S23P50/100D15	
Primary nominal current	$I_f$	50A	100A
Maximum current <sup>1</sup> (at 85°C)	$I_{fmax}$	$\pm 110\text{A}$ (at $R_M \leq 71\Omega$ )	$\pm 160\text{A}$ (at $R_M \leq 25\Omega$ )
Measuring resistance ( $I_f = \pm A_{DC}$ at 85°C)	$R_M$	0Ω~217Ω (at $V_{CC} = \pm 12\text{V}$ ) 0Ω~327Ω (at $V_{CC} = \pm 15\text{V}$ )	0Ω~57Ω (at $V_{CC} = \pm 12\text{V}$ ) 45Ω~114Ω (at $V_{CC} = \pm 15\text{V}$ )
Conversion Ratio	$K_N$	1 : 2000	1 : 2000
Rated output current	$I_o$	25mA	50mA
Output current accuracy <sup>2</sup> (at $I_f$ )	$X$	$I_o \pm 0.25\%$	
Offset current <sup>3</sup> (at $I_f=0\text{A}$ )	$I_{of}$	$\leq \pm 0.15\text{mA}$	
Output linearity <sup>2</sup> (0A~ $I_f$ )	$\epsilon_L$	$\leq \pm 0.15\%$ (at $I_f$ )	
Power supply voltage <sup>1</sup>	$V_{CC}$	$\pm 12\text{V} \dots \pm 15\text{V} \pm 5\%$	
Consumption current	$I_{CC}$	$\leq \pm 16\text{mA}$ (Output current is not included)	
Response time <sup>4</sup>	$t_r$	$\leq 0.5\mu\text{s}$ (at $di/dt = 100\text{A} / \mu\text{s}$ )	
Thermal drift of gain <sup>5</sup>	$T_{clo}$	$\leq \pm 0.01\%/^{\circ}\text{C}$	
Thermal drift of offset current	$T_{clof}$	$\leq \pm 0.5\text{mA max.}$ (at $T_A = -25^{\circ}\text{C} \leftrightarrow +85^{\circ}\text{C}$ )	
Hysteresis error	$I_{OH}$	$\leq 0.3\text{mA}$ (at $I_f=0\text{A} \rightarrow I_f \rightarrow 0\text{A}$ )	
Insulation voltage	$V_d$	AC5000V, for 1minute (sensing current 0.5mA), Primary $\leftrightarrow$ Secondary	
Insulation resistance	$R_{IS}$	$\geq 500\text{M}\Omega$ (at DC500V) Primary $\leftrightarrow$ Secondary	
Secondary coil resistance	$R_S$	115Ω (at $T_A = 70^{\circ}\text{C}$ ) 121Ω (at $T_A = 85^{\circ}\text{C}$ )	
Ambient operation temperature	$T_A$	$-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$	
Ambient storage temperature	$T_S$	$-40^{\circ}\text{C} \sim +90^{\circ}\text{C}$	

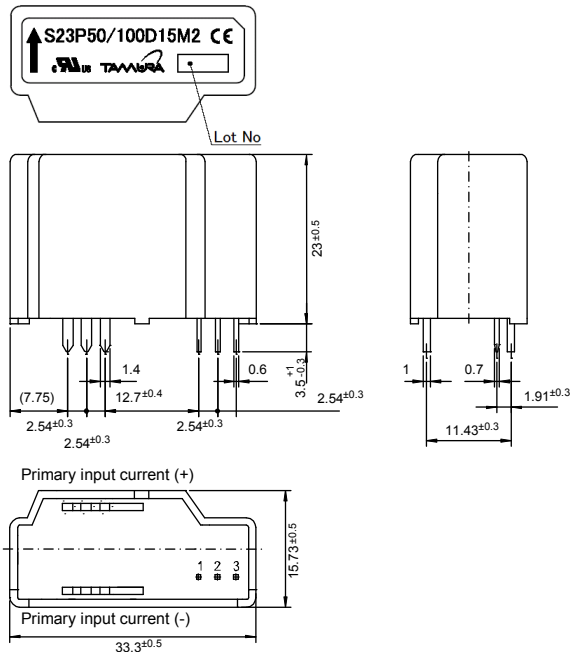
<sup>1</sup> At  $V_{CC}=\pm 15\text{V}$ ,  $I_{fmax}$  Operating Time:  $\leq 10$  Seconds. Maximum current is restricted by  $V_{CC}$  — <sup>2</sup> Without offset current — <sup>3</sup> After removal of core hysteresis — <sup>4</sup> Time between 90% input current full scale and 90% of sensor output full scale — <sup>5</sup> Without Thermal drift of offset current

## Electrical Performances



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## Mechanical dimensions



### NOTES

1. Unit is mm
2. Tolerance is 0.5mm

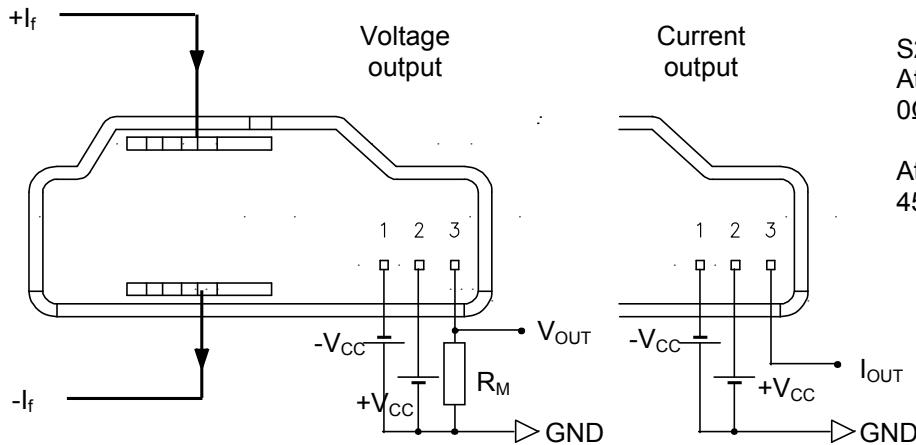
### Terminal number:

1. -V<sub>CC</sub>(-15V)
2. +V<sub>CC</sub>(+15V)
3. I<sub>OUT</sub>

### Connection specific

1. The primary connection  
6Pins 1.4×1mm  
Recommended PCB hole diameter:Φ2mm
2. The secondary connection  
3Pins 0.7×0.6mm  
Recommended PCB hole diameter:Φ1.2mm

## Electrical connection diagram



S23PxxxD15  
At  $I_f = 50A$  &  $V_{CC} = \pm 15V_{DC}$   
 $0\Omega \leq R_M \leq 327\Omega$

At  $I_f = 100A$  &  $V_{CC} = \pm 15V_{DC}$   
 $45\Omega \leq R_M \leq 114\Omega$

## UL Standard

- UL 508 , CSA C22.2 No.14 (UL FILE No.E243511)
- For use in Pollution Degree 2 Environment.
- Maximum Surrounding air temperature rating, 85°C.

## CAUTION

Provide two min. 100 by 85 mm, 0.5 mm thick copper conductor-cum-heat sink as primary conductor of each side for safe usage. The primary conductor temperature and PCB should not exceed 100°C.

## Package & Weight Information

Weight	Pcs/box	Pcs/carton	Pcs/pallet
26g	100	400	9600