

Hall Effect Current Sensors S23P***D15M1 Series



Features:

- Closed Loop type
- Current or voltage output
- Conversion ratio $K_N = 1:1000$
- Printed circuit board mounting
- Integrated primary
- Insulated plastic case according to UL94V0
- UL Recognition

Advantages:

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

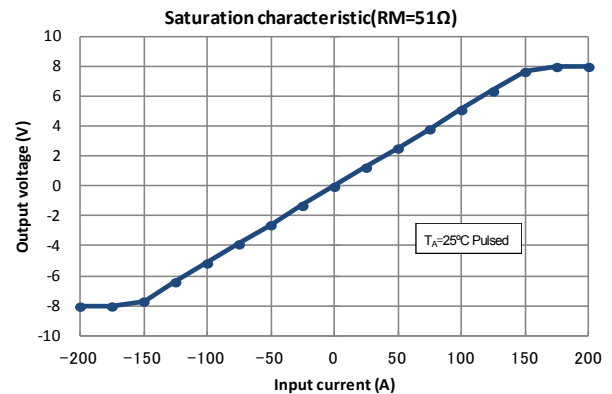
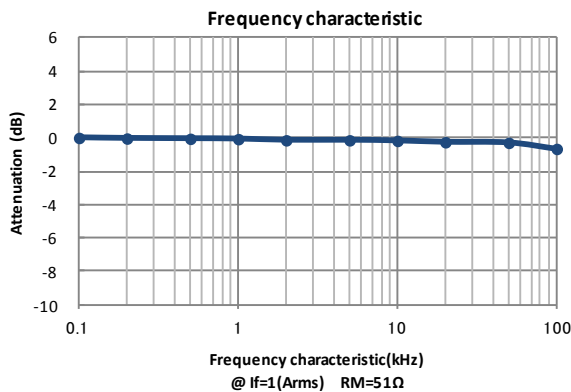
Specifications

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

Parameters	Symbol	S23P50/100D15M1	
Primary nominal current	I_f	50A	100A
Maximum current ¹ (at 85°C)	I_{fmax}	$\pm 226\text{A}$ (at $R_M \leq 7.5\Omega$)	
Measuring resistance ($I_f = \pm A_{DC}$ at 85°C)	R_M	20Ω~145Ω (at $V_{CC} = \pm 12\text{V}$) 48Ω~205Ω (at $V_{CC} = \pm 15\text{V}$)	20Ω~57Ω (at $V_{CC} = \pm 12\text{V}$) 48Ω~85Ω (at $V_{CC} = \pm 15\text{V}$)
Conversion Ratio	K_N	1 : 1000	1 : 1000
Rated output current	I_o	50mA	100mA
Output current accuracy ² (at I_f)	X	$I_o \pm 0.25\%$	
Offset current ³ (at $I_f=0\text{A}$)	I_{of}	$\leq \pm 0.30\text{mA}$	
Output linearity ² (0A~ I_f)	ϵ_L	$\leq \pm 0.15\%$ (at I_f)	
Power supply voltage ¹	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 ⁴	t_r	$\leq 0.5\mu\text{s}$ (at $di/dt = 100\text{A} / \mu\text{s}$)	
Thermal drift of gain ⁵	T_{clo}	$\leq \pm 0.01\%/^\circ\text{C}$	
Thermal drift of offset current	T_{clof}	$\leq \pm 0.5\text{mA typ} \leq \pm 0.8\text{mA max}$ (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	33Ω (at $T_A = 70^\circ\text{C}$) 35Ω (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	$-40^\circ\text{C} \sim +90^\circ\text{C}$	

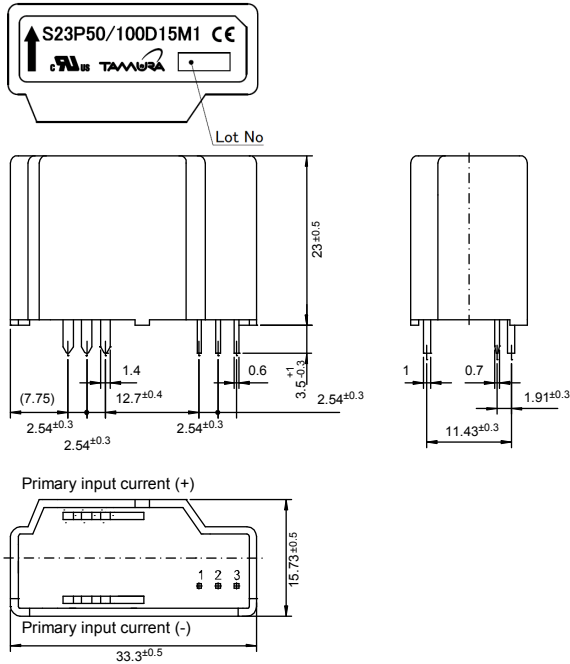
¹ At $V_{CC} = \pm 12\text{V}$, I_{fmax} Operating Time: ≤ 3 Seconds. Maximum current is restricted by V_{CC} — ² Without offset current — ³ After removal of core hysteresis — ⁴ Time between 90% input current full scale and 90% of sensor output full scale — ⁵ Without Thermal drift of offset current

Electrical Performances



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Mechanical dimensions



NOTES

1. Unit is mm
2. Tolerance is 0.5mm

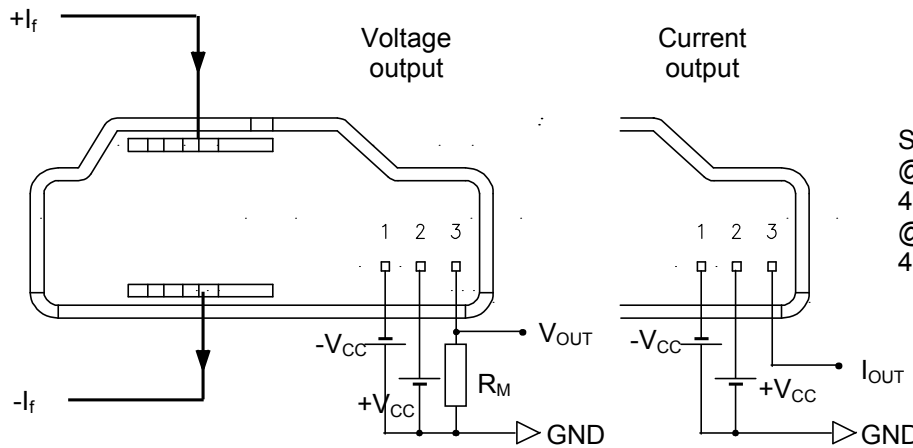
Terminal number:

1. -V_{CC}(-15V)
2. +V_{CC}(+15V)
3. I_{OUT}

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



S23PxxxD15M1
 @ I_f=50A & V_{CC}=±15VDC
 48Ω ≤ R_M ≤ 205Ω
 @ I_f=100A & V_{CC}=±15VDC
 48Ω ≤ R_M ≤ 85Ω

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

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