



■ **General Description**

The OCH29803 is an integrated Hall sensor with H-Bridged output driver designed for brushless DC motor applications. The device is using HV process includes an on-chip Hall sensor for magnetic sensing, an amplifier that amplifies the Hall voltage, a comparator to provide switching hysteresis for noise rejection, a bi-directional drivers for sinking and driving large current load.

Placing the device in a variable magnetic field, if the magnetic flux density is larger than threshold BOP, the DO is turned to sink and DOB is turned to drive. This output state is held until the magnetic flux density reverses and falls below BRP, then causes DO to be turned to drive and DOB turned to sink.

OCH29803 is available in SIP-4L、FTSOT23-6F package and is rated over the -40°C to 125°C.

■ **Features**

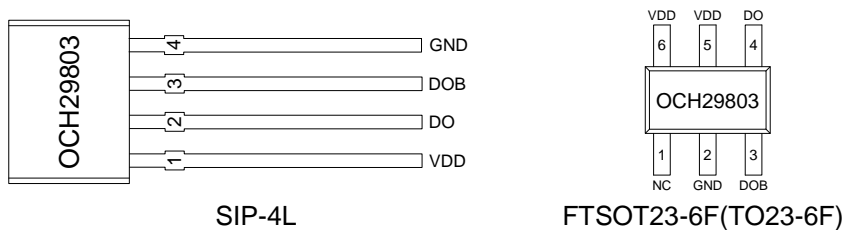
- One-chip Solution (Hall Element + Driver)
- Input Voltage Range : 3V to 28V
- Low Output Switching Current Noise
- Built-in VCC To GND reverse voltage protection
- Rotor Lock Protection (Lock detection, output shutdown and automatic re-start)
- High Sensitivity Hall Sensor BOP(25GS),BRP(-25GS)
- Thermal Shutdown Protection
- -40°C to +125 °C Temperature Range
- RoHS Compliant
- Available in SIP-4L(TO94)、FTSOT23-6F package

■ **Applications**

- Single Coil Design Cooling Fans
- Single Coil DC Brushless Fan
- Single Coil DC Brushless Motor
- Office Automated Equipment
- Brown-Goods
- Home Applications
- Car Audio Cooling Fan

■ **Pin Configuration**

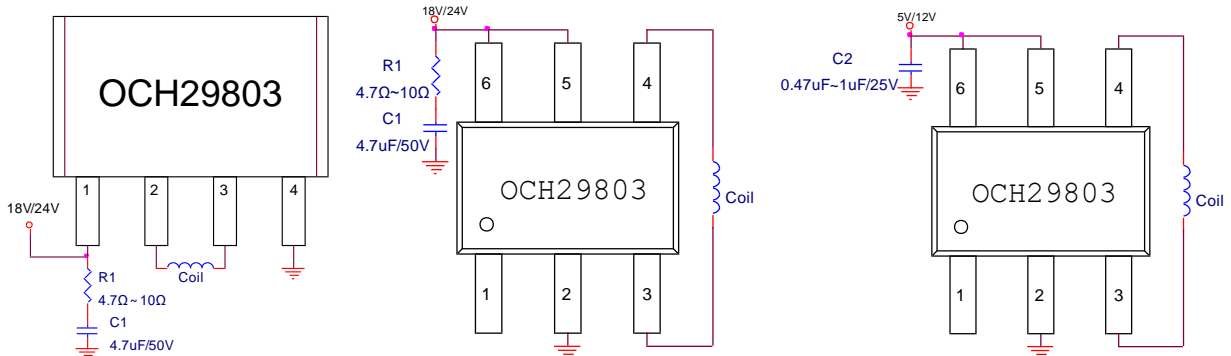
(Top View)



SIP-4L FTSOT23-6F(TO23-6F)
Figure 1, Pin Assignments Of OCH29803

Pin Name	Pin No.		Pin Function
	SIP-4L	FTSOT23-6F	
VDD	1	5、6	Positive Power Supply
DO	2	4	Output 1
DOB	3	3	Output 2
GND	4	2	Ground
NC	-	1	NC Pin

■ **Typical Application Circuit**



Note1: When the power pulse is relatively large (18V or 24V application), Must use least C1=4.7μF(ceramic capacitor) capacitor & R1=4.7Ω~10Ω for the decoupling between VDD and GND and place the capacitor as close to the IC as Possible.

Figure 2, Typical Application Circuit of OCH29803

■ **Ordering Information**

Part Number	Output Current	Package Type	Packing Qty	BOP (Gauss)	B _{RP} (Gauss)	Temperature	Eco Plan	Lead
OCH29803MD	300mA	SIP-4L	1000pcs /Bag	25(Typ.)	-25(Typ.)	-40 ~ 125°C	ROHS	Cu
OCH29803TOAE	200mA	FTSOT23-6F / TO23-6F	3000pcs /Reel	25(Typ.)	-25(Typ.)	-40 ~ 125°C	ROHS	Cu

■ **Block Diagram**

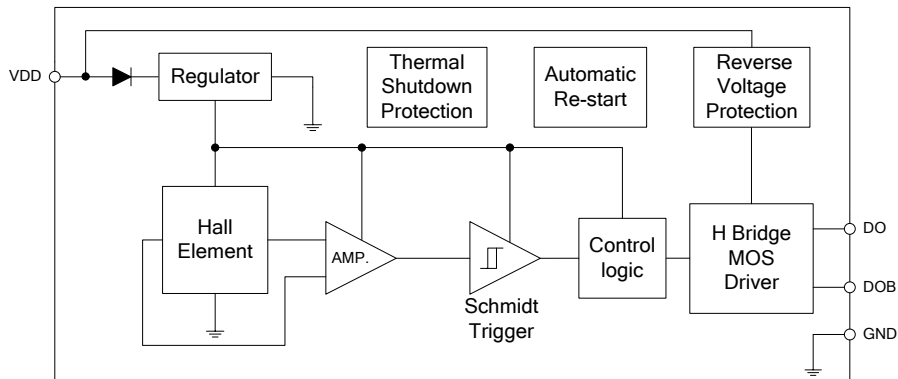


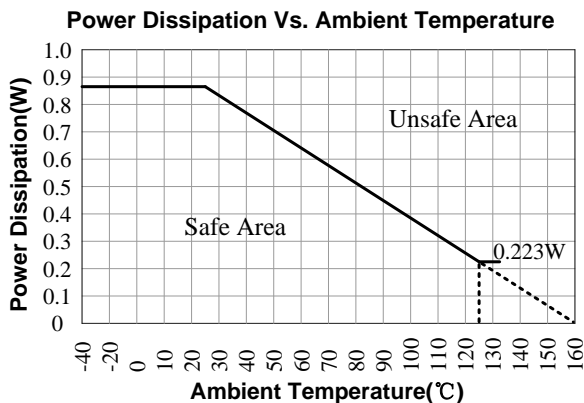
Figure 3, Block Diagram Of OCH29803



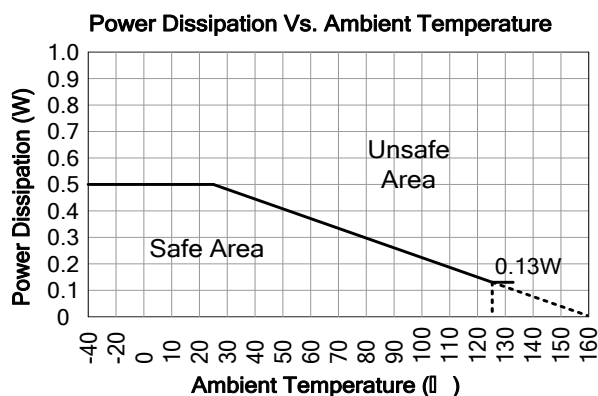
■ **Absolute Maximum Ratings**^{2/3/4} (T_A=25°C, unless otherwise noted)

Parameter	Symbol	Rating	Unit
V _{DD} Pin to GND	V _{DD}	-30 to +30	V
Continuous Output Current (SIP-4L)	I _{O(CONT)}	300	mA
Continuous Output Current (FTSOT23-6F)	I _{O(CONT)1}	200	mA
Hold Output Current	I _{O(HOLD)}	650	mA
Peak Output Current	I _{O(PEAK)}	1000	mA
Power Dissipation (SIP-4L)	P _D	0.86	W
Power Dissipation (FTSOT23-6F)	P _D	0.5	W
Junction temperature	T _J	160	°C
Thermal Resistance	θ _{JA}	157	°C/W
Storage Temperature Range	T _S	-55 to +150	°C
Maximum Soldering Temperature (at leads, 10 sec)	T _{LEAD}	260	°C

Note2: The maximum dissipation power P_D allowed at any ambient temperature point is calculated: P_D (max) = (T_J - T_A) / θ_{JA}, T_J=160°C. When applied, do not exceed the maximum rating to prevent chip damage, and work for a long time at maximum rating may affect chip reliability.



SIP-4L



FTSOT23-3L

Note3: Stresses above those listed in absolute maximum ratings may cause permanent damage to the device. Functional operation at conditions other than the operating conditions specified is not implied. Only one absolute maximum rating should be applied at any one time.

Note 4: The device is not guaranteed to function outside of its operating conditions.

■ **Recommended Operating Conditions**^{3/4/5}

Parameter	Symbol	Rating	Unit
V _{DD} Pin Voltage to GND	V _{DD}	3 to 28	V
Operating Temperature Range	T _{OP1}	-40 to +125	°C

Note5: In practical application, the effect of fan coil heating on the chip must take into account, with the actual over temperature protection point of actual test of high temperature fan for reference. On the basis of pre leave relatively safe temperature allowance, avoid chip in the critical limit (maximum ratings) for a long time and affects the reliability .



■ **Electrical Characteristics**

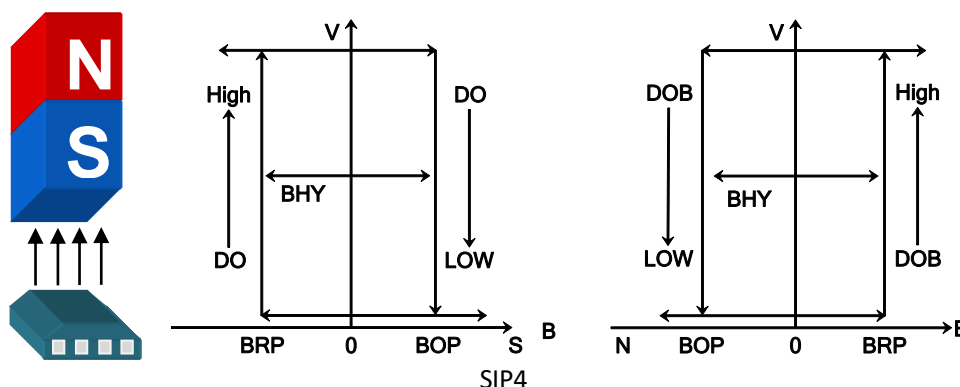
Typical values are at $T_A = +25^{\circ}\text{C}$, $V_{DD} = 12\text{V}$, unless otherwise noted.vf

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Supply						
V_{DD}	Input Voltage		3	-	28	V
I_{DD}	Supply Current	Output Open	-	2.5	5	mA
Output						
$R_{DS(ON)}$	Output On-Resistance	$I_o = 0.3\text{A}$	-	2.8	-	Ω
Protection						
T_{ON}	Locked Protection On Time		-	0.3	-	Sec
T_{OFF}	Locked Protection Off Time		-	3	-	Sec
R_{duty}	Locked Protection Duty Ratio	T_{OFF}/T_{ON}	-	10	-	-
T_{SD}	Thermal Shutdown Temperature		150	160	-	$^{\circ}\text{C}$
T_{SH}	Thermal Shutdown Hysteresis		-	30	-	$^{\circ}\text{C}$
Magnetic Characteristics						
BOP	Operating Point		5	25	45	Gauss
BRP	Release Point		-45	-25	-5	Gauss
BHYS	Hysteresis		-	50	-	Gauss

■ **Driver Output VS Magnetic Pole**

Package	Parameter	Test Conditions	DO	DOB
SIP-4L	South Pole	$B > \text{BOP}$	Low	High
SIP-4L	North Pole	$B < \text{BRP}$	High	Low
FTSOT23-6F	South Pole	$B > \text{BOP}$	High	Low
FTSOT23-6F	North Pole	$B < \text{BRP}$	Low	High

■ **Operating Characteristics**



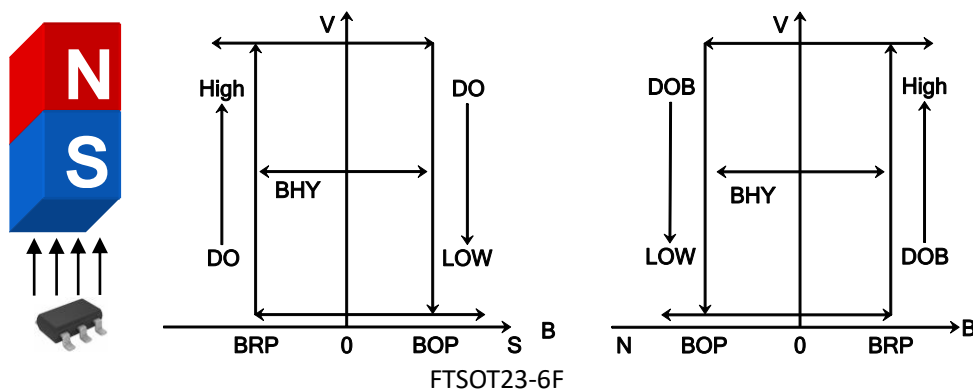


Figure 4, Magnetic Hysteresis Characteristics Of OCH29803

■ **Output Switch Principle**

(1) SIP-4L

The OCH29803 built in a Hall-effect sensor plane to sense the vertical magnetic flux density (B). There are two output drivers in OCH29803 to drive Single-phase DC brushless fan or motor. When the South pole magnetic field is close to the IC marking surface and the magnetic flux density higher than operate point (Bop), the DO pin output will turned to Low and the DOB pin output will turned to High. When the South pole magnetic field far away the IC marking surface and North pole magnetic field close to the IC marking surface until the magnetic flux density higher than release point (Brp), the DO pin output will turned to High and the DOB pin output will turned to low.

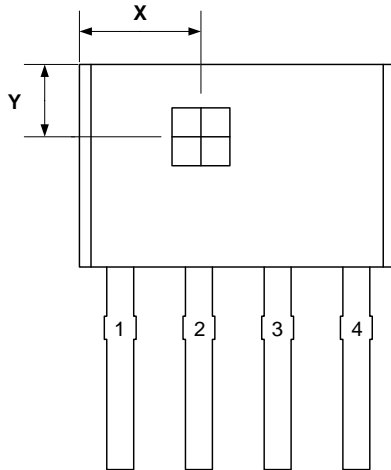
(2) FTSOT23-6F

The OCH29803 built in a Hall-effect sensor plane to sense the vertical magnetic flux density (B). There are two output drivers in OCH29803 to drive Single-phase DC brushless fan or motor. When the South pole magnetic field is close to the IC marking surface and the magnetic flux density higher than operate point (Bop), the DO pin output will turned to High and the DOB pin output will turned to low. When the South pole magnetic field far away the IC marking surface and North pole magnetic field close to the IC marking surface until the magnetic flux density higher than release point (Brp), the DO pin output will turned to low and the DOB pin output will turned to high.



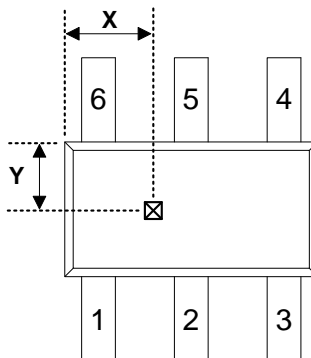
■ Hall Sensor Location

(1) SIP-4L



Orientation	Value	Unit
X	1.9	mm
Y	1.2	mm

(2) FTSOT23-6F



Orientation	Value	Unit
X	1.1	mm
Y	0.8	mm

Figure 5, hall sensor location, where marks the IC number.



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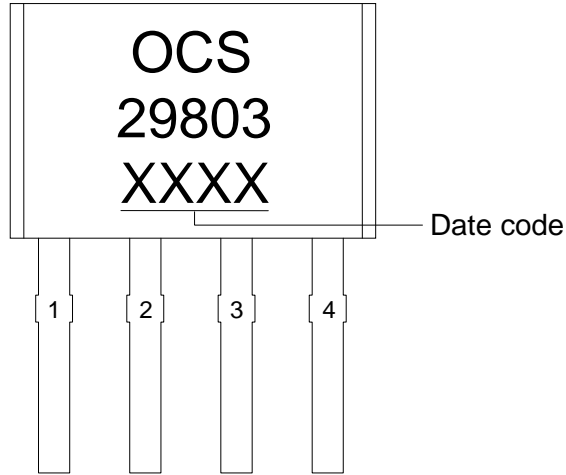
OCH29803

300mA Single Phase Hall-Effect DC Fan Driver

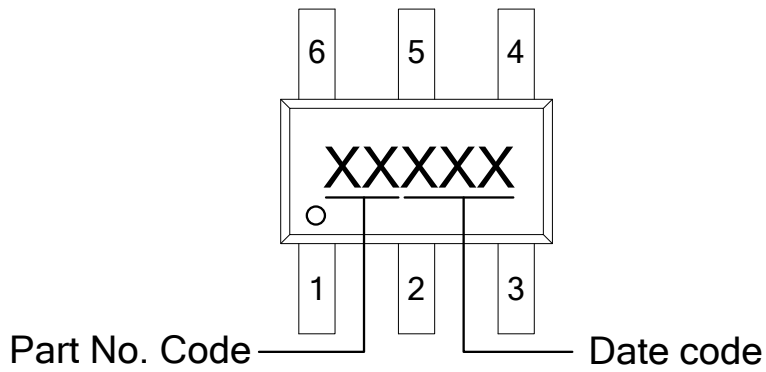
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■ **Marking Information**

(1) SIP-4L



(2) FTSOT23-6F



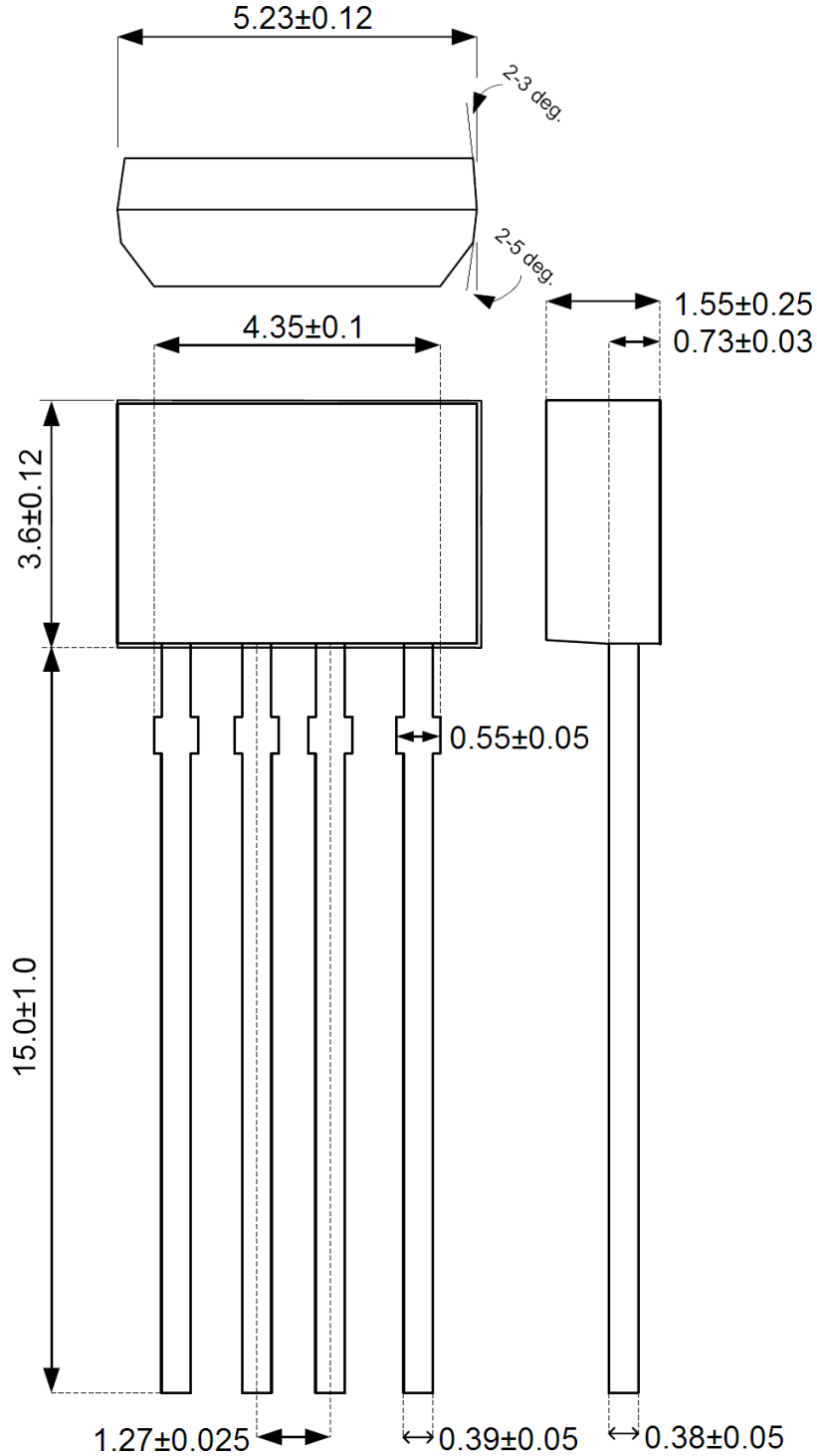


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■ Package Information

(1) SIP-4L (Unit: mm)





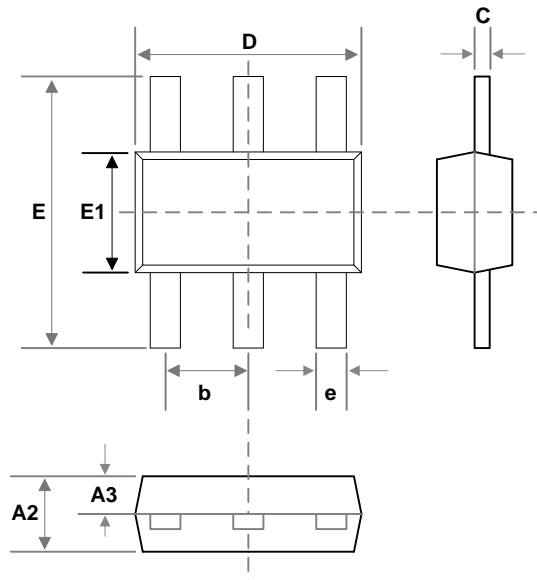
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OCH29803

300mA Single Phase Hall-Effect DC Fan Driver

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(2) FTSOT23-6F



Symbol	Dimensions In Millimeters (mm)			Dimensions In Inches (Inch)		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A2	0.70	0.75	0.80	0.03	0.03	0.03
A3	0.35	0.40	0.45	0.01	0.02	0.02
b	0.30	0.40	0.50	0.01	0.02	0.02
C	0.09	0.16	0.26	0.00	0.01	0.01
D	2.70	2.90	3.10	0.11	0.11	0.12
E	3.40	3.60	3.80	0.13	0.14	0.15
E1	1.50	1.60	1.70	0.06	0.06	0.07
e	-	0.95	-	-	0.04	-





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300mA Single Phase Hall-Effect DC Fan Driver

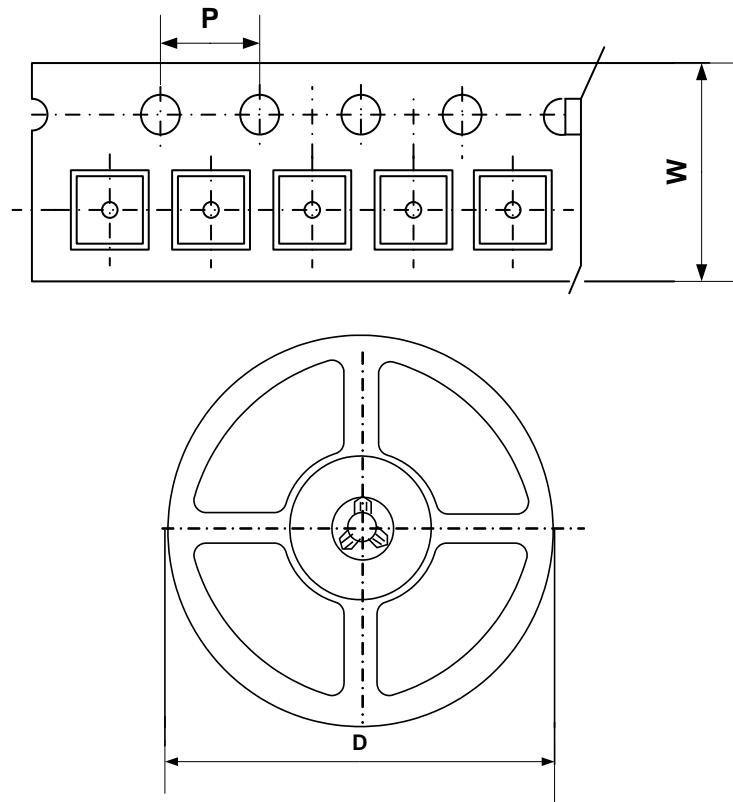
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■ **Packing Information**

(1) SIP-4L

1. Packing type: Bag
2. Packing minimum: 1000pcs/Bag

(2) FTSOT23-6F



Package Type	Carrier Width (W)	Pitch (P)	Reel Size(D)	Packing Minimum
FTSOT23-6F	8.0±0.1 mm	4.0±0.1 mm	180±1 mm	3000pcs

Note: Carrier Tape Dimension, Reel Size and Packing Minimum





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300mA Single Phase Hall-Effect DC Fan Driver

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