



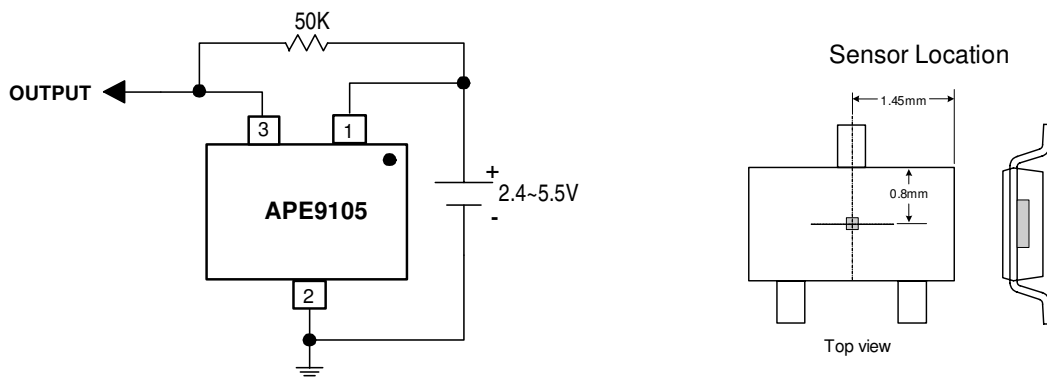
**FEATURES**

- 2.4V to 5.5V Battery Operation
- Chopper Stabilized Technology
- Micro Power Operation for Battery Applications
- Operation with North or South Pole
- High Sensitivity and High Stability of the Magnetic Switching Points
- 3-pin TSOT23 Package

**DESCRIPTION**

APE9105 is a three-terminal Hall Effect sensor device with an output driver, mainly designed for battery-operation, hand-held equipment (such as Cellular and Cordless Phone, PDA). For APE9105, either north or South Pole of sufficient strength will turn the output on. The output will be turned off under no magnetic field. While the magnetic flux density (B) is larger than operate point (Bop), the output will be turned on (low), the output is latched until B is lower than release point (Brp), then turned off.

**TYPICAL APPLICATION**

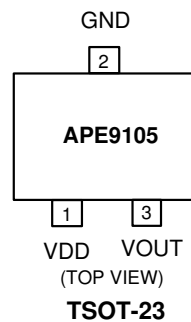


**PACKAGE / ORDERING INFORMATION**

**APE9105X**

Package Type

TN : TSOT-23



**ABSOLUTE MAXIMUM RATINGS** (at  $T_A=25^\circ\text{C}$ )

Supply Voltage ( $V_{DD}$ )	-----	-0.3 to 6V
Output Voltage ( $V_{OUT}$ )	-----	-0.3 to 6V
Output Current ( $I_{OUT}$ )	-----	2mA
Power Dissipation( $P_D$ )	-----	400mW
Storage Temperature Range( $T_{ST}$ )	-----	-65°C To 150°C
Operating Temperature Range( $T_{OP}$ )	-----	-40°C To 85°C
Junction Temperature( $T_J$ )	-----	125°C
Thermal Resistance from Junction to Case( $R_{th_{JC}}$ )		180°C/W
Thermal Resistance from Junction to Ambient( $R_{th_{JA}}$ )		250°C/W

Note.  $R_{th_{JA}}$  is measured with the PCB copper area of approximately 1 in<sup>2</sup>(Multi-layer).

**ELECTRICAL SPECIFICATIONS**

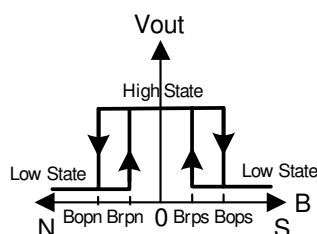
( $V_{DD}=2.75\text{V}$ ,  $T_A=25^\circ\text{C}$ , unless otherwise specified)

Parameter	SYM	TEST CONDITION	MIN	TYP	MAX	UNITS
Supply Voltage	$V_{DD}$		2.4	-	5.5	V
Input Current	$I_{DD}$	Awake state	-	2	4	mA
		Sleep state	-	7	12	uA
		Average	-	9	16	uA
Output Saturation Voltage	$V_{OSAT}$	$I_{OUT}=1\text{mA}$	-	0.1	0.3	V
Output Leakage Current	$I_{O-LEAK}$	$V_{OUT}=5.5\text{V}$ , $B<Brp$	-	0.01	1	uA
Output Wake-Up Time	$T_{wake-up}$		-	70	120	us
Period	$T_{Period}$		-	70	120	ms
Duty Cycle			-	0.1	-	%

**MAGNETIC CHARACTERISTICS**

( $V_{DD}=2.75\text{V}$ ,  $T_A=25^\circ\text{C}$ , unless otherwise specified)

Characteristics	Symbol	Conditions	Min	Typ	Max	UNITS
Operating Points	$B_{OPS}$		20	30	40	Gauss
	$B_{OPN}$		-40	-30	-20	
Release Points	$B_{RPS}$		10	20	-	
	$B_{RPN}$		-	-20	-10	
Hysteresis	$B_{Hys}$		-	10	-	

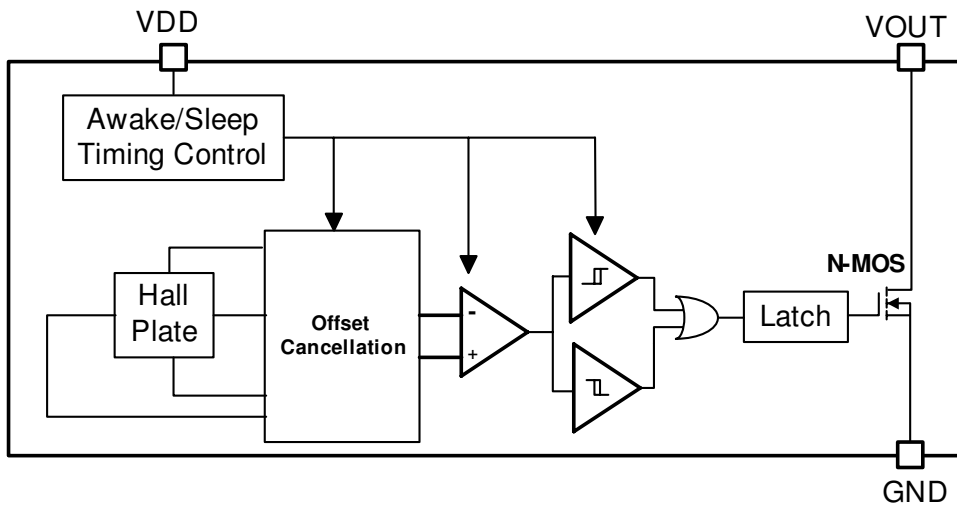




## PIN DESCRIPTIONS

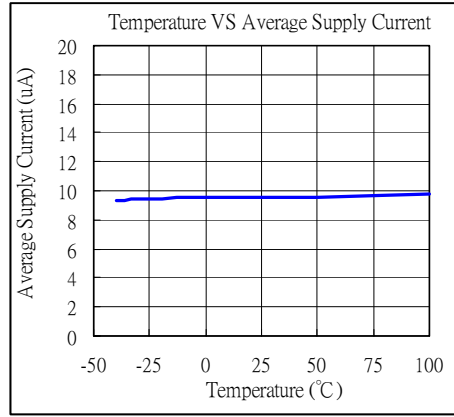
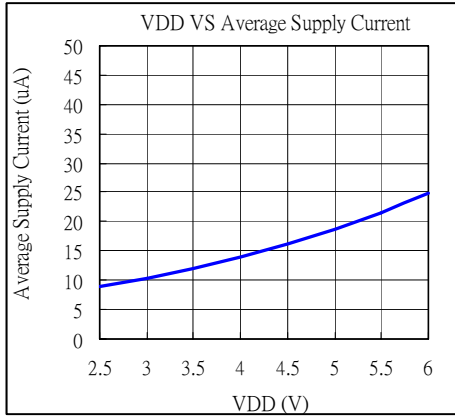
PIN SYMBOL	PIN DESCRIPTION
VDD	Power Input Pin
GND	Ground
OUTPUT	B>Bops or B<Bopn, Output is Low. B<Brps or B> Brpn, Output is High.

## BLOCK DIAGRAM





TYPICAL PERFORMANCE CHARACTERISTICS

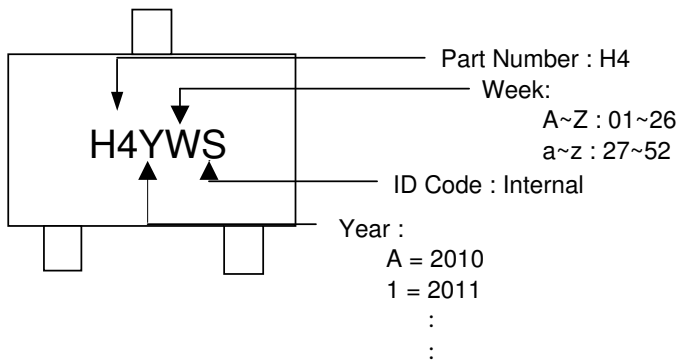




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**MARKING INFORMATION**

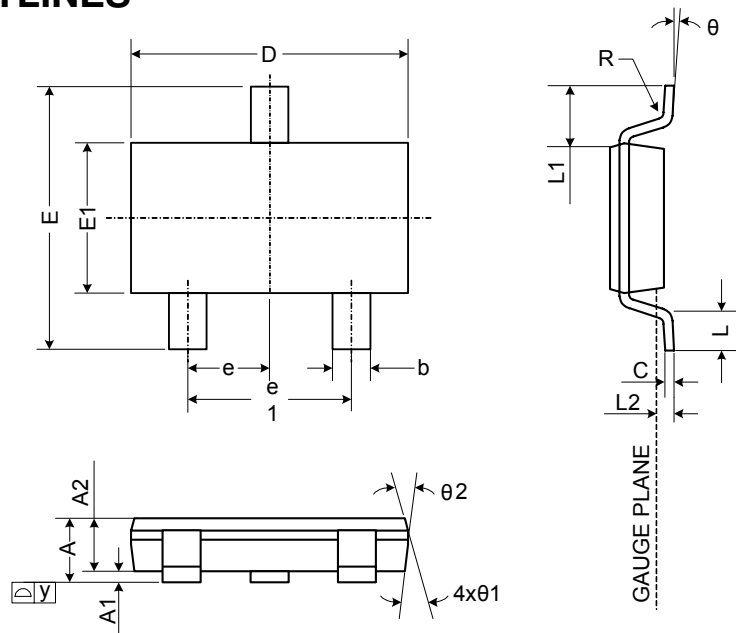
TSOT-23





PACKAGE OUTLINES

TSOT-23



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	Min.	Nom.	Max.	Min.	Nom.	Max.
A	0.75	-	0.90	0.030	-	0.035
A1	0.00	-	0.10	0.000	-	0.004
A2	0.70	0.75	0.80	0.028	0.030	0.031
b	0.35	-	0.51	0.014	-	0.020
C	0.10	-	0.25	0.004	-	0.010
D	2.80	2.90	3.00	0.110	0.114	0.118
E	2.60	2.80	3.00	0.102	0.110	0.118
E1	1.50	1.60	1.70	0.059	0.063	0.067
e	0.95 BSC.			0.037		
e1	1.90 BSC.			0.075		
L	0.37	-	-	0.015	-	-
L1	0.60 REF.			0.024		
L2	0.25 BSC.			0.010		
y	-	-	0.10	-	-	0.004
R	0.10	-	-	0.004	-	-
theta	0°	-	8°	0°	-	8°
theta1	7° NOM.			7° NOM.		
theta2	5° NOM.			5° NOM.		