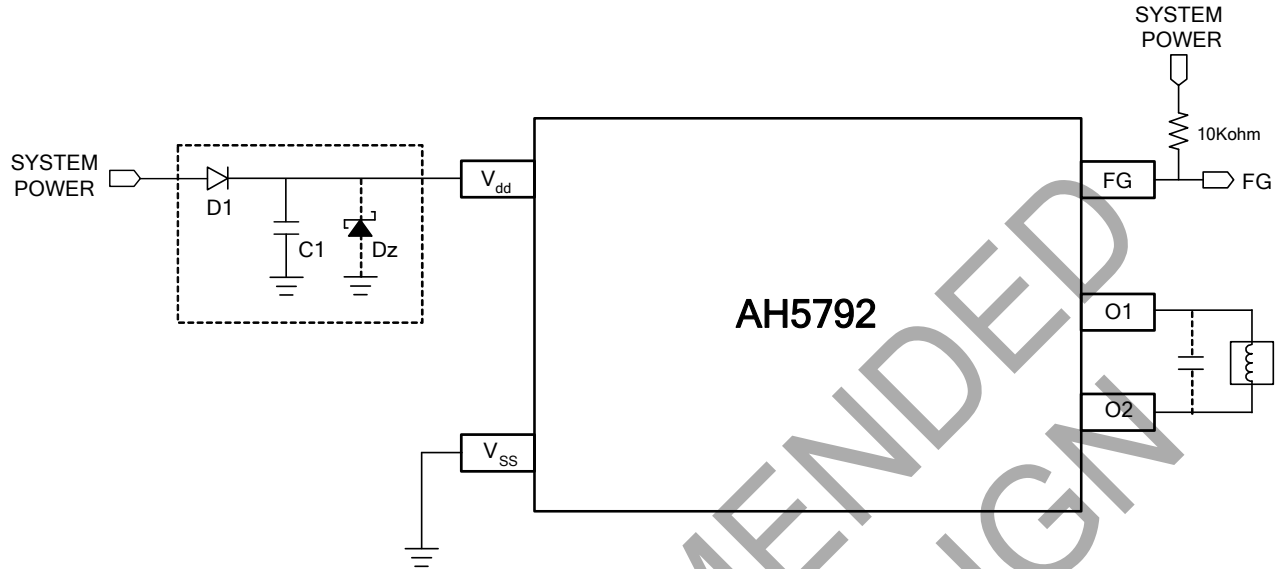## Typical Application Circuit (Note 4)

Note: 4. Reverse connection of power supply may break the device. A countermeasure is needed such as using reverse power protection
diode D1 between power supply and Vdd terminal. In such case of using reverse power protection diode D1 because of there is no way to return current to
power supply, please take necessary measures like below.
- Connect Dz (Zener diode) between Vdd and Vss terminal, not to exceed the absolute maximum rating voltage.
- Connect a capacitor C1 between Vdd and Vss terminal, to make the path of return current to power supply.
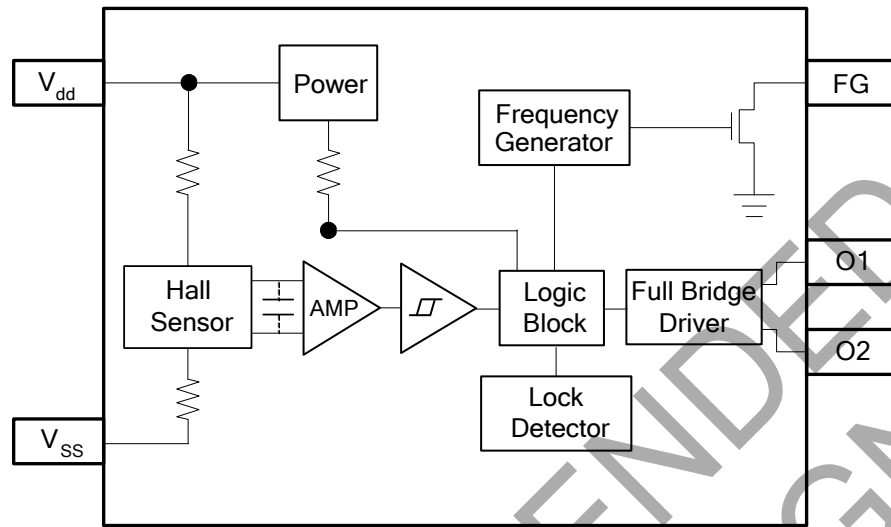The AH5792 has an open-drain tachometer FG output that follows the half (1/2) the magnetic change frequency. A pull-up resistor
(10kΩ, typically for System Power = 5V) connected to a supply voltage.
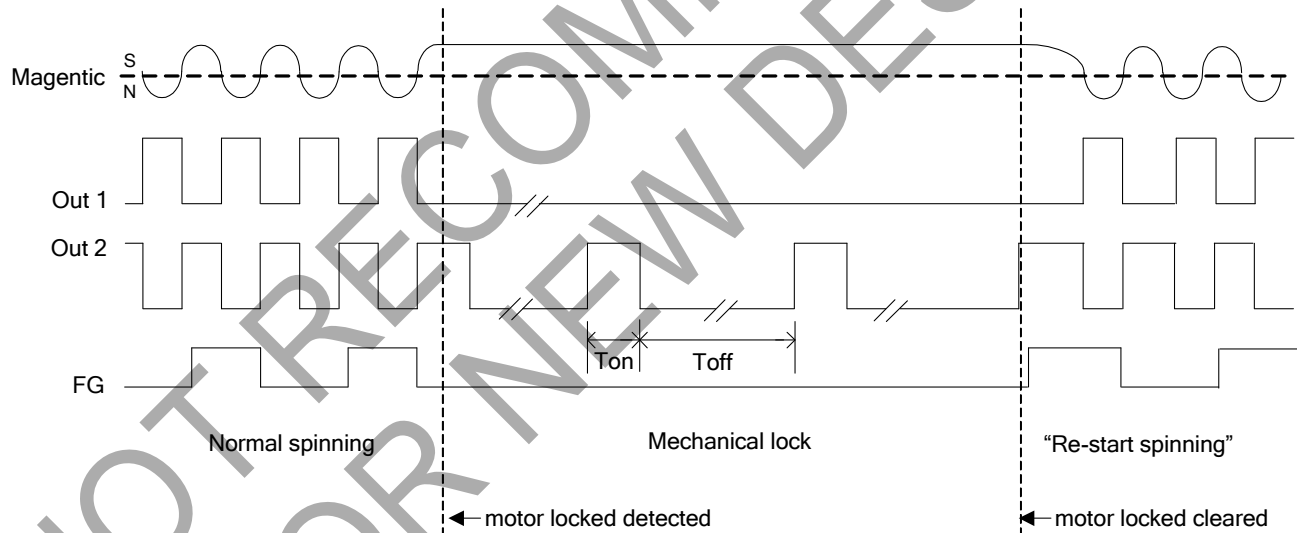
Pin Descriptions (Note 5)

Pin Name	Description
O1	Output Driving & Sinking Pin 1
Vdd	Power Supply Pin
Vss	Ground Pin
FG	Frequency Generator (Note 5)
O2	Output Driving & Sinking Pin 2
NC	No Connection

Note: 5. The FG is half (1/2) the magnetic change frequency.

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Functional Block Diagram

Operating (Notes 6, 7, 8)

Notes: 6. In "Normal spinning, the FG shall change its state at each rising edge of OUT2. In "Mechanical lock", the FG state is kept as the same as the moment of motor locked detected.
7. When magnetic is locked as "S" pole, then out1 is kept on "L", out2 is a clock with Ton/Toff ratio. When magnetic is locked at "N" pole, then out 2 is kept on "L", out 1 is a clock with Ton/Toff ratio.
8. When "Re-start spinning" occurs, the motor shall ramp up to the "Normal Spinning" speed from zero. It depends on the motor characteristics.

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Absolute Maximum Ratings (T$_A$ = +25°C, unless otherwise noted.)

Symbol	Characteristics		Values	Unit
Vdd	Supply Voltage		6	V
I$_{O(PEAK)}$	Maximum Output Current (Peak)	SOT553	400	mA
		SOT89-5L	500	mA
P$_D$	Power Dissipation	SOT553	230	mW
		SOT89-5L	800	mW
T$_{STG}$	Storage Temperature Range		-65 to +150	°C

Recommended Operating Conditions (T$_A$ = +25°C)

Symbol	Parameter	Conditions	Rating	Unit
Vdd	Supply Voltage	Operating	1.8 to 5.0	V
T$_A$	Operating Temperature Range	Operating	-40 to +100	°C

Electrical Characteristics (T$_A$ = +25°C, Vdd = 5.0V)

Symbol	Characteristic	Conditions	Min	Typ.	Max	Unit
Idd	Supply Current	No Load	—	3.5	5	mA
V$_{OH}$	Output Voltage High	I$_{OUT}$ = 200mA (For SOT553) I$_{OUT}$ = 300mA (For SOT89-5L)	4.4	—	—	V
V$_{OL}$	Output Voltage Low	I$_{OUT}$ = 200mA (For SOT553) I$_{OUT}$ = 300mA (For SOT89-5L)	—	—	0.6	V
I$_{OUT}$	Output Current	R$_L$ = 30Ω	—	148	—	mA
I$_{Leak}$	FG Output Leakage Current	—	—	—	5	μA
I$_{FG}$	FG Output Current	V$_{FGOL}$ = 0.4V	5	—	—	mA
V$_{FGOL}$	FG Output Voltage Low	I$_{FG}$ = 5mA	—	—	0.4	V
T$_{ON}$	On Time	—	—	215	—	ms
R$_{DR}$	Duty Ratio	T$_{OFF}$ / T$_{ON}$	—	10	—	—

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Magnetic Characteristics (T_A = +25°C, Vdd = 1.8V to 5.0V, Note 9)

(1mT = 10 G)

Symbol	Parameter	Min	Typ.	Max	Unit
B_{op}	Operate Point	10	30	50	G
B_{rp}	Release Point	-50	-30	-10	G
B_{hy}	Hysteresis	—	60	—	G

Note: 9. The magnetic characteristics may vary with supply voltage, operating temperature and after soldering.
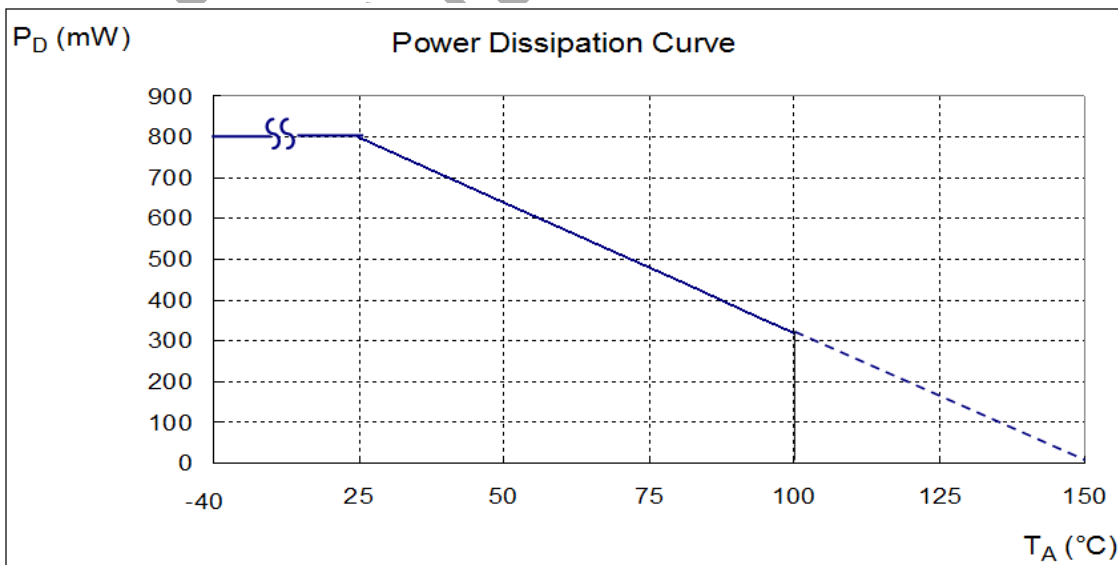
Operating Characteristics

(SOT553)

(SOT89-5L)

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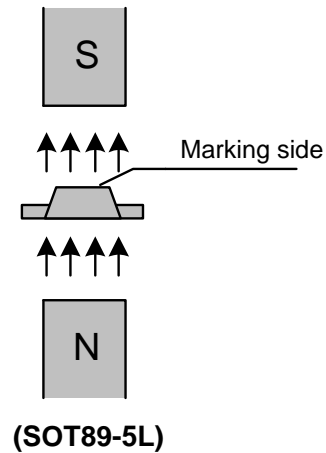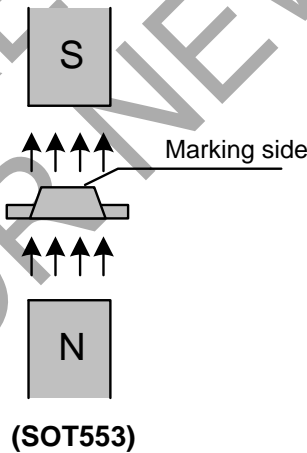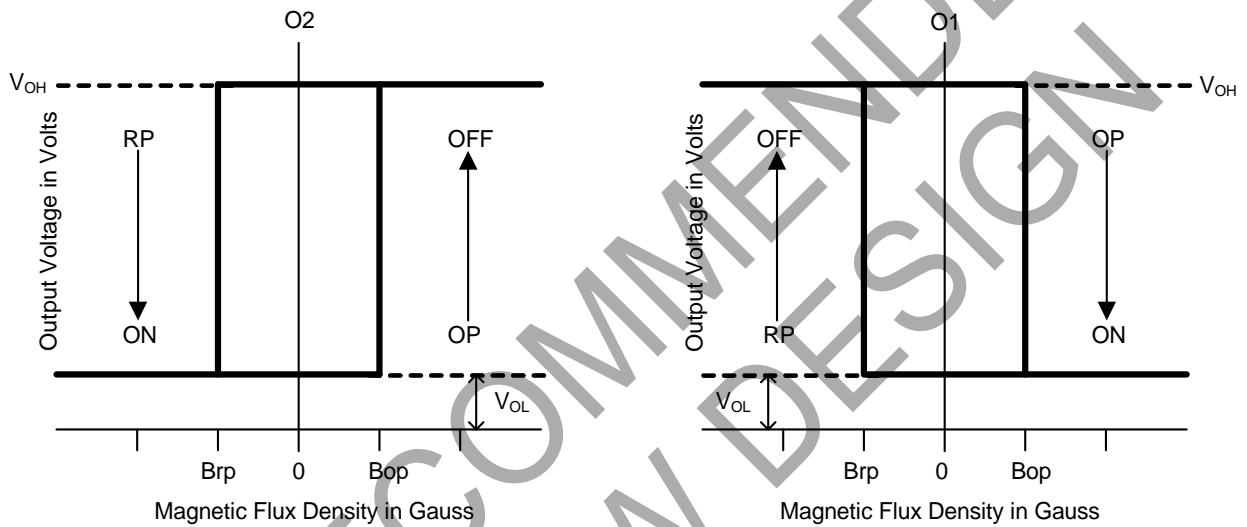
Performance Characteristics

(1) SOT553

TA (°C)	25	50	60	70	80	85	90	100	110	120	130	140	150
PD (mW)	230	184	166	147	129	120	110	92	74	55	37	18	0
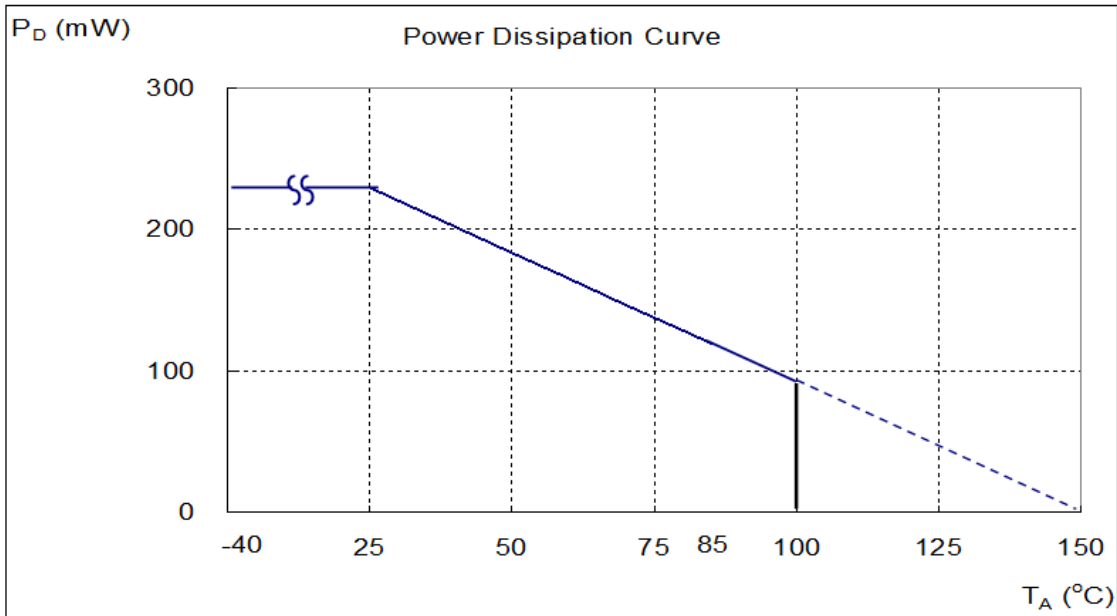
(2) SOT89-5L

TA (°C)	25	50	60	70	75	80	85	90	95	100
PD (mW)	800	640	576	512	480	448	416	384	352	320
TA (°C)	105	110	115	120	125	130	135	140	145	150
PD (mW)	288	256	224	192	160	128	96	64	32	0

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Ordering Information

AH 5792 - <u>X</u> <u>G</u> - <u>X</u>

Package	Green	Packing
Z : SOT553 Y : SOT89-5L	G : Green	7/13 : Tape & Reel
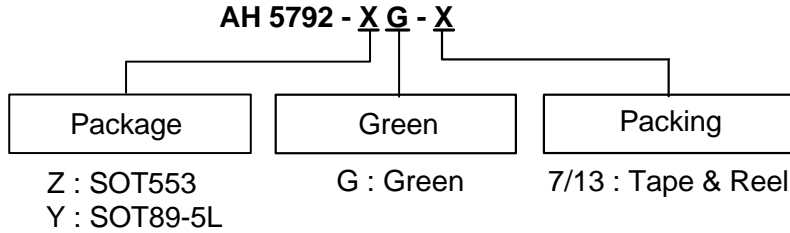
Device	Package Code	Packaging (Note 10)	7"/13" Tape and Reel	
			Quantity	Part Number Suffix
AH5792-ZG-7	Z	SOT553	3000/Tape & Reel	-7
AH5792-YG-13	Y	SOT89-5L	2500/Tape & Reel	-13

Note: 10. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information

(1) SOT553

(Top View)

XX Y W X
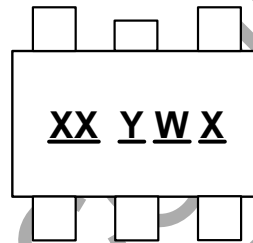
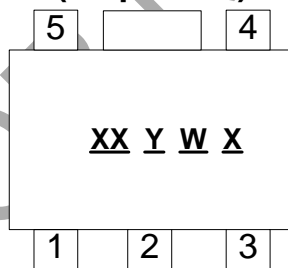<u>XX</u> : Identification Code
<u>Y</u> : Year : 0~9
<u>W</u> : Week : A~Z : 1~26 week;
    a~z : 27~52 week;
    z represents 52 and 53 week
<u>X</u> : A~Z : Green

Part Number	Package	Identification Code
AH5792	SOT553	KE

(2) SOT89-5L

(Top View)

5   4

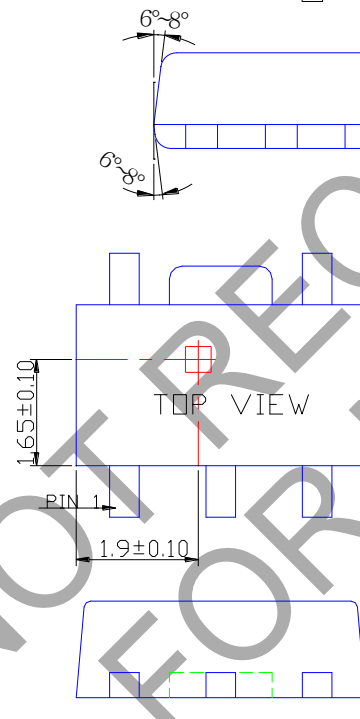XX Y W X
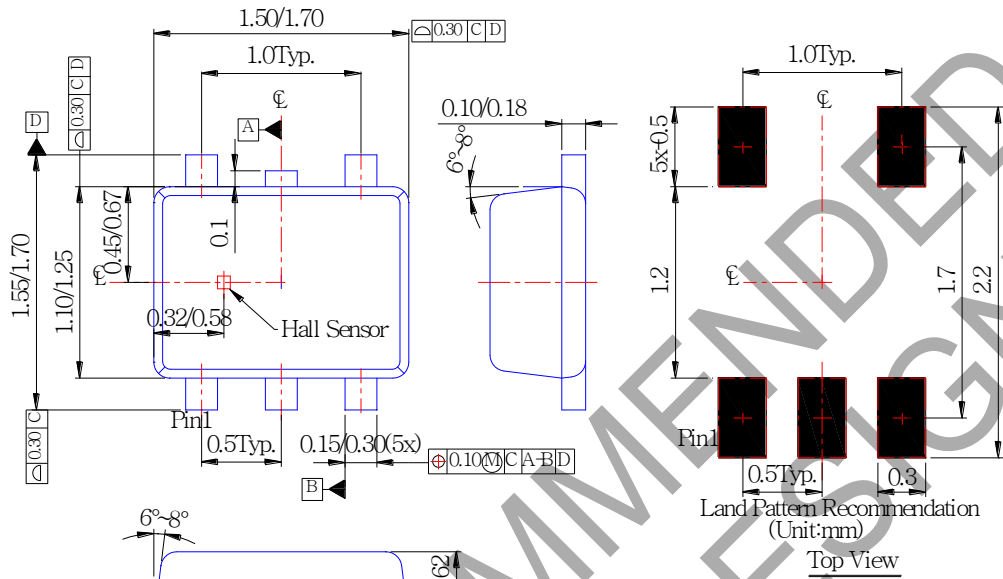
1   2   3

<u>XX</u> : Identification code
<u>Y</u> : Year : 0~9
<u>W</u> : Week : A~Z : 1~26 week;
    a~z : 27~52 week;
    z represents 52 and 53 week
<u>X</u> : Internal code
    A~Z : Green

Part Number	Package	Identification Code
AH5792	SOT89-5L	KF

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Package Outline Dimensions (All Dimensions in mm)

Please see http://www.diodes.com/package-outlines.html for the latest version.

(1) Package Type: SOT553

Hall Sensor

Pin1

Land Pattern Recommendation
(Unit:mm)
Top View

TOP VIEW

PIN 1

1.9±0.10

1.65±0.10

0.845±0.07

1.4 / 1.6

CHIP

Unit: mm

Sensor Location

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Package Outline Dimensions (Continued)

Please see http://www.diodes.com/package-outlines.html for the latest version.

(2) Package Type: SOT89-5L

8°(4x)

0.35/0.43
1.40/1.60
0.35

0.65/0.95
1.40/1.60

3.0Typ.
0.5/0.62

2.40/2.60
3.95/4.25

4×-0.44/0.54
1.5Typ.
1.62/1.83
4.40/4.60

Bottom View

1.5Typ.
1.8
0.55
1.2
4.6
0.4
0.65

Land Pattern Recommendation
(Unit: mm)
Top View

165±0.10

TOP VIEW

PIN 1

1.9±0.10

0.845±0.07

1.4/1.6

CHIP

Unit: mm

Sensor Location

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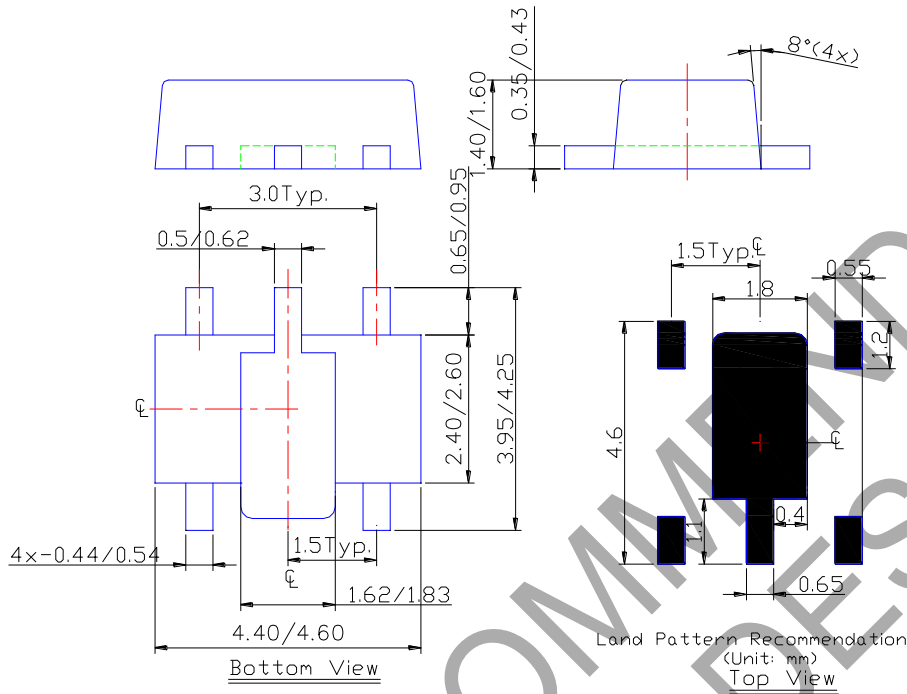
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