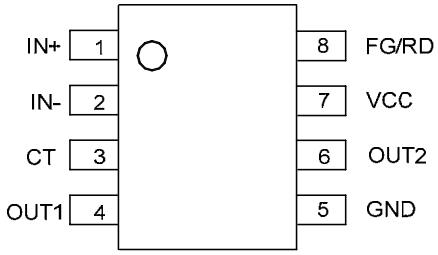
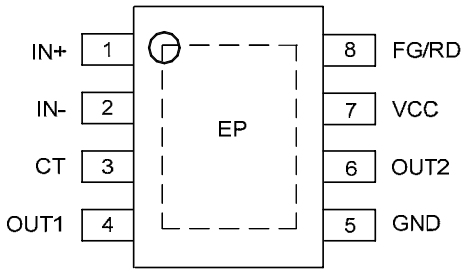
Pin Configuration

MM Package
(MSOP-8)



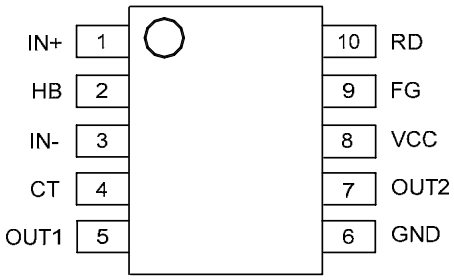
For AM4951/R 12V Application

MP Package
(PSOP-8)



For AM4951/R 24V Application

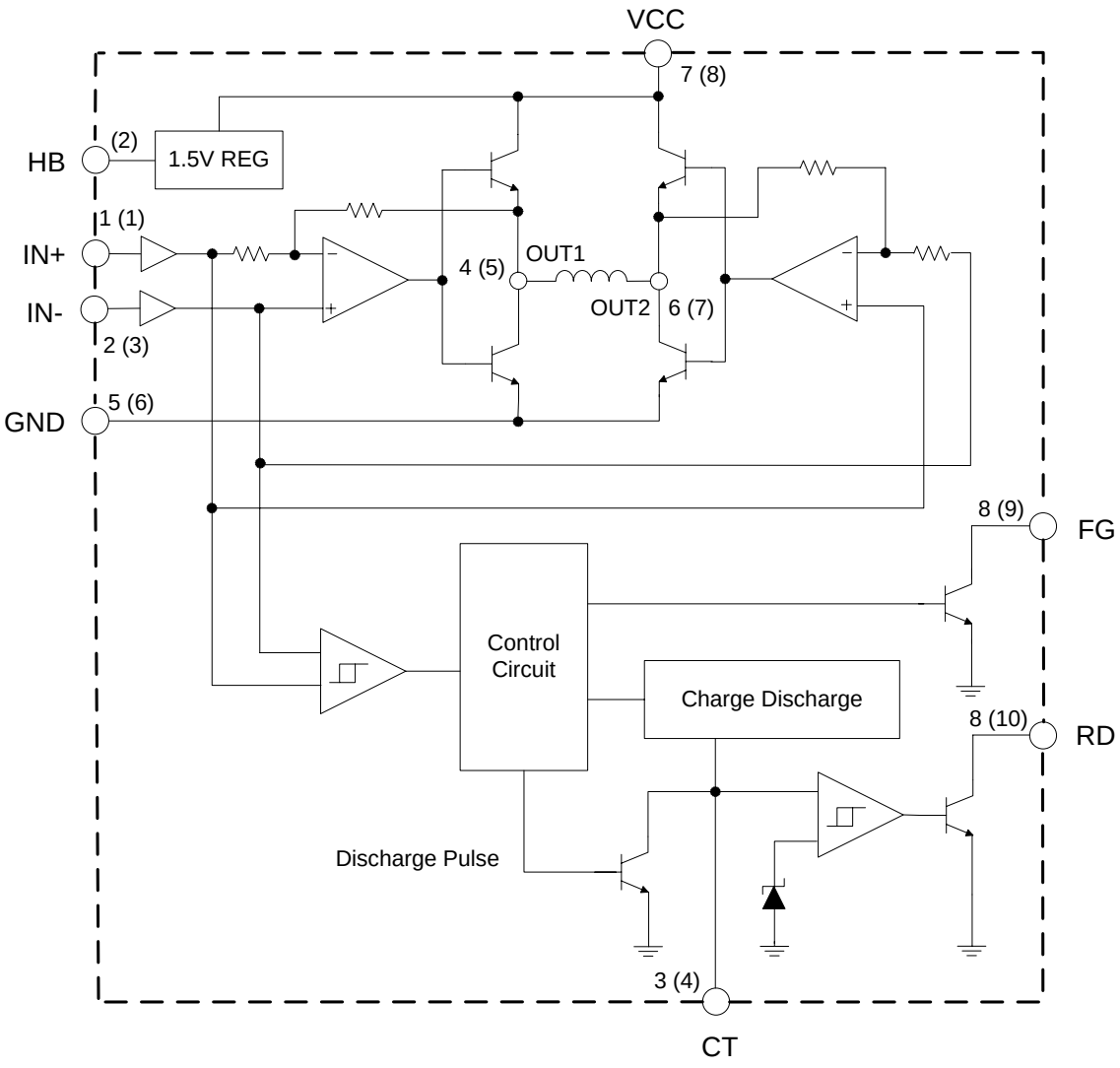
MM Package
(MSOP-10)



For AM4952

Figure 2. Pin Configuration of AM4951/R/2 (Top View)

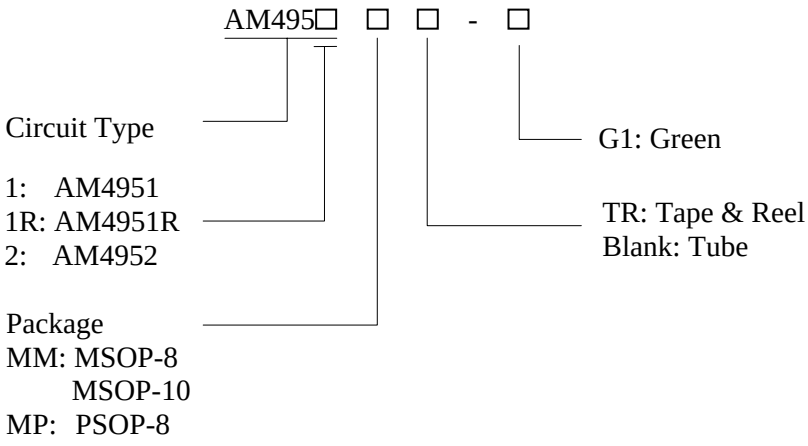
Functional Block Diagram



A (B)
A for AM4951/R
B for AM4952

Figure 3. Functional Block Diagram of AM4951/R/2

Ordering Information



Package	Temperature Range	Output Signal	Part Number	Marking ID	Packing Type
MSOP-8	-40 to 105°C	FG	AM4951MM-G1	4951MM-G1	Tube
			AM4951MMTR-G1	4951MM-G1	Tape & Reel
		RD	AM4951RMM-G1	4951RMM-G1	Tube
			AM4951RMMTR-G1	4951RMM-G1	Tape & Reel
PSOP-8		FG	AM4951MP-G1	4951MP-G1	Tube
			AM4951MPTR-G1	4951MP-G1	Tape & Reel
		RD	AM4951RMP-G1	4951RMP-G1	Tube
			AM4951RMPTR-G1	4951RMP-G1	Tape & Reel
MSOP-10		FG & RD	AM4952MM-G1	4952MM-G1	Tube
			AM4952MMTR-G1	4952MM-G1	Tape & Reel

BCD Semiconductor's Pb-free products, as designated with "G1" suffix in the part number, are RoHS compliant and green.

Absolute Maximum Ratings (Note 1, T_A=25ºC)

Parameter	Symbol	Value		Unit
Supply Voltage	V_{CC}	28		V
Peak Output Current	I_{OUT}	500		mA
FG/RD Pull-up Voltage	V_{FG}/V_{RD}	28		V
FG/RD Output Current	I_{FG}/I_{RD}	10		mA
Thermal Resistance (Junction to Ambient)	θ_{JA}	MSOP-8	205	°C/W
		PSOP-8	110	
		MSOP-10	195	
Thermal Resistance (Junction to Case)	θ_{JC}	MSOP-8	48	°C/W
		PSOP-8	36	
		MSOP-10	46	
Power Dissipation	P_D	MSOP-8	585	mW
		PSOP-8	960	mW
		MSOP-10	585	mW
Operating Temperature	T_{OP}	-40 to 125		ºC
Storage Temperature	T_{STG}	-55 to 150		ºC

Note 1: Stresses greater than those listed under “Absolute Maximum Ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “Recommended Operating Conditions” is not implied. Exposure to “Absolute Maximum Ratings” for extended periods may affect device reliability.

Recommended Operating Conditions

Parameter	Symbol	Min	Max	Unit
Supply Voltage	V_{CC}	2.2	24	V
Hall Input Voltage	V_{ICM}	0	V_{CC}-1.5	V
Operating Ambient Temperature	T_A	-40	105	ºC

Electrical Characteristics

V_{CC}=12V, T_A=25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Supply Current	I_{CC1}	V_{CT}=L	3	6	9	mA
	I_{CC2}	V_{CT}=H	2.5	5	7.5	mA
CT Charge Current	I_{CHG}		0.9	1.3	1.5	μA
CT Discharge Current	I_{DHG}		0.1	0.15	0.25	μA
CT Charge/Discharge Current Ratio	R_{CT}	I_{CHG} / I_{DHG}	6	8	10	
CT Clamp Voltage	V_{CL}		1.3	1.5	1.7	V
CT Comparator Voltage	V_{CP}		0.3	0.5	0.7	V
OUT Low Saturation Voltage	V_{SAT_L}	I_{OUT}=200mA		0.25	0.45	V
OUT High Saturation Voltage	V_{SAT_H}	I_{OUT}=200mA		0.95	1.2	V
Hall Input Sensitivity	V_{HN}			7	15	mV
FG Low Level Voltage (For AM4951/2)	V_{FG}	I_{FG}=5mA		0.15	0.3	V
FG Leakage Current (For AM4951/2)	I_{FGL}	V_{FG}=15V		1	30	μA
RD Low Level Voltage (For AM4951R/2)	V_{RD}	I_{RD}=5mA		0.15	0.3	V
RD Leakage Current (For AM4951R/2)	I_{RDL}	V_{RD}=15V		1	30	μA
HB Voltage (For AM4952)	V_{HB}	I_{HB}=1mA	1.35	1.5	1.65	V

Typical Performance Characteristics

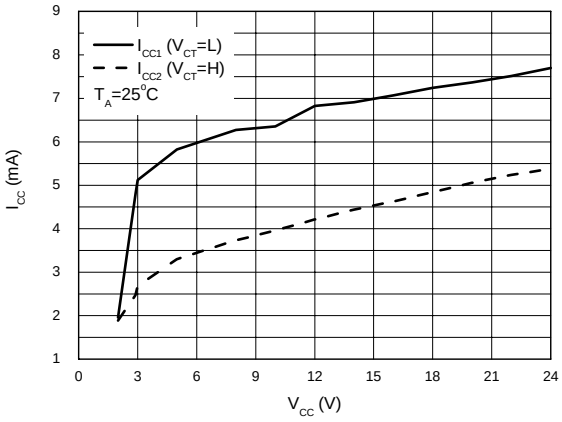


Figure 4. Supply Current vs. Supply Voltage

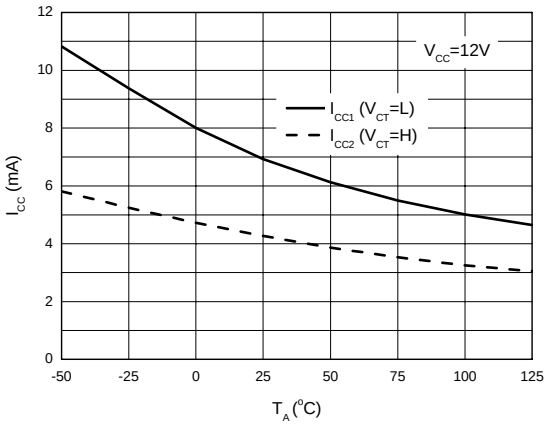


Figure 5. Supply Current vs. Ambient Temperature

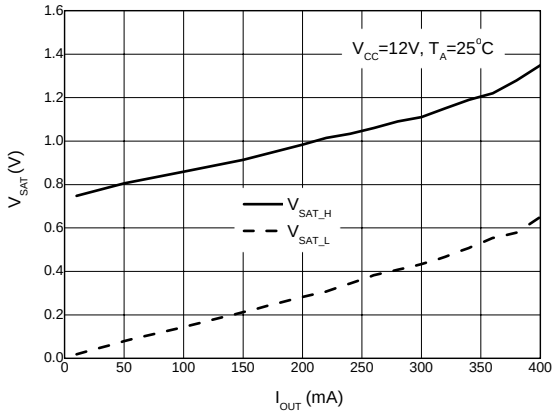


Figure 6. Saturation Voltage vs. Output Current

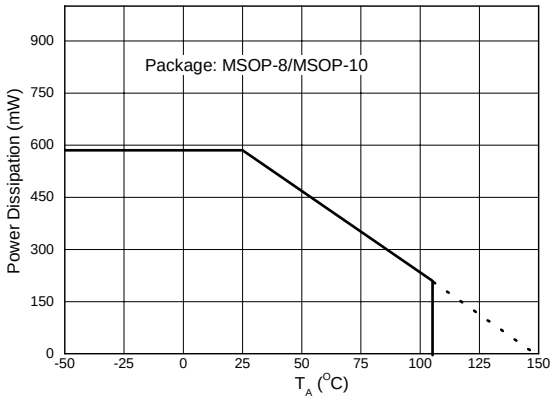


Figure 7. Power Dissipation vs. Ambient Temperature

Typical Performance Characteristics (Continued)

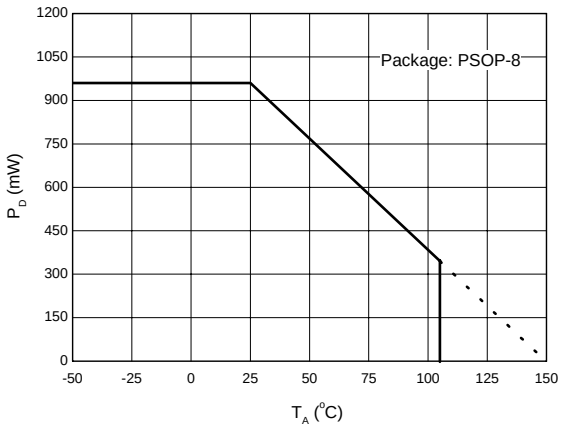
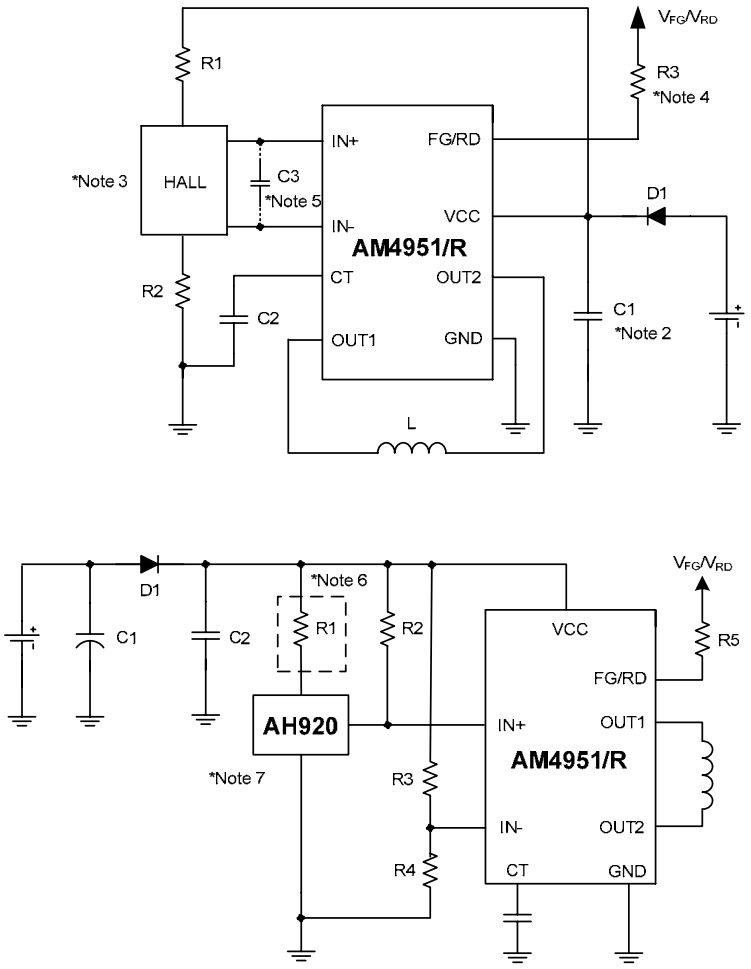


Figure 8. Power Dissipation vs. Ambient Temperature

Typical Application



Note 2: Adding D1 can protect the IC from destruction by reverse connection. If D1 is used, it is necessary to insert a capacitor C1 to provide a regenerative current route. Similarly, if there is no nearby capacitor on the fan power supply line, C1 will also be necessary to improve reliability. Its capacity should be larger than 2.2μF.

Note 3: If the Hall sensor bias is taken from V_{CC}, A 1/2 V_{CC} bias, as shown in the figure must be used. Adjusting the value of R1 and R2 may achieve better startup characteristics and efficiency, even quiet operation.

Note 4: This pin must be left open if unused.

Note 5: If the line between Hall sensor output and Hall sensor input of IC is long, the noise may occur in this line. But it can be eliminated by adding a capacitor C3.

Note 6: Each of R2, R3, R4 and R5 (AM4951/R only) is recommended to be 51kΩ typical. R1 is recommended to be 2k and must be added when V_{CC} is larger than 20V.

Note 7: The package of AH920 is SOT-23-3. If it is packaged in TO-92S-3，please exchange IN- with IN+.

Figure 9. Typical Application of AM4951/R

Typical Application (Continued)

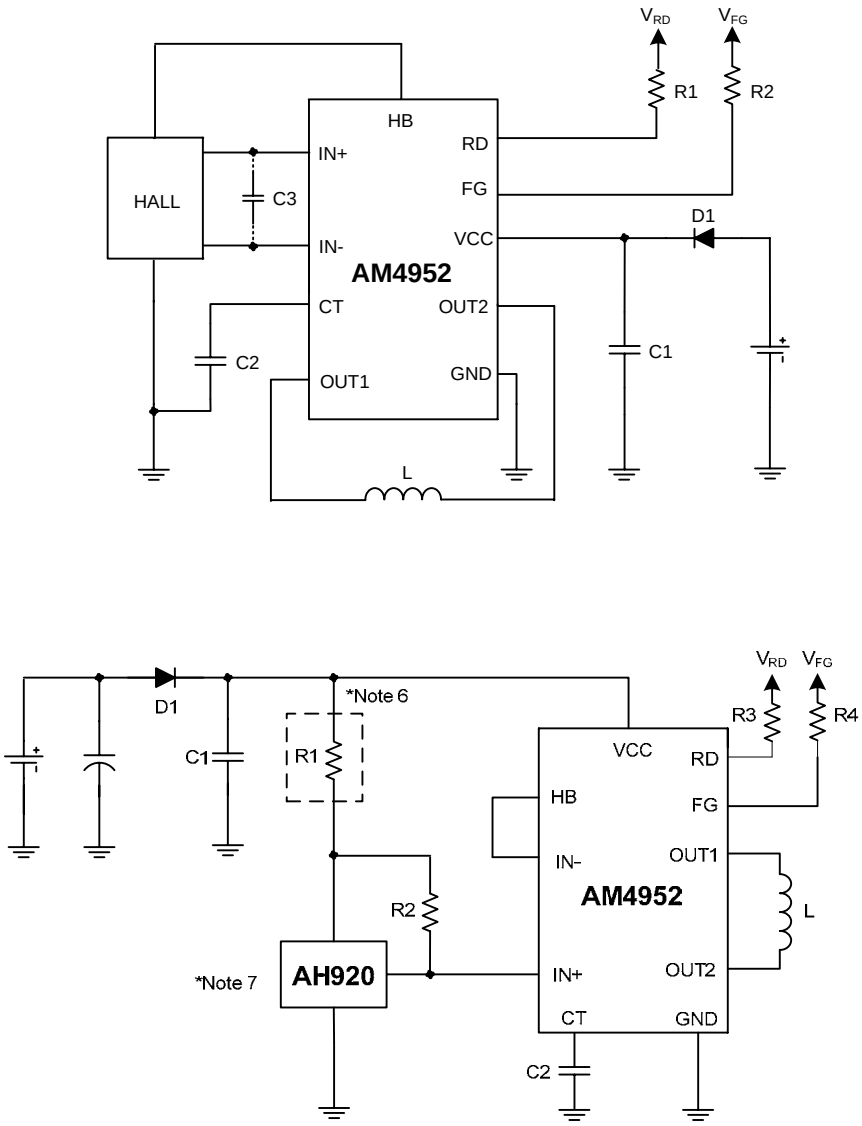
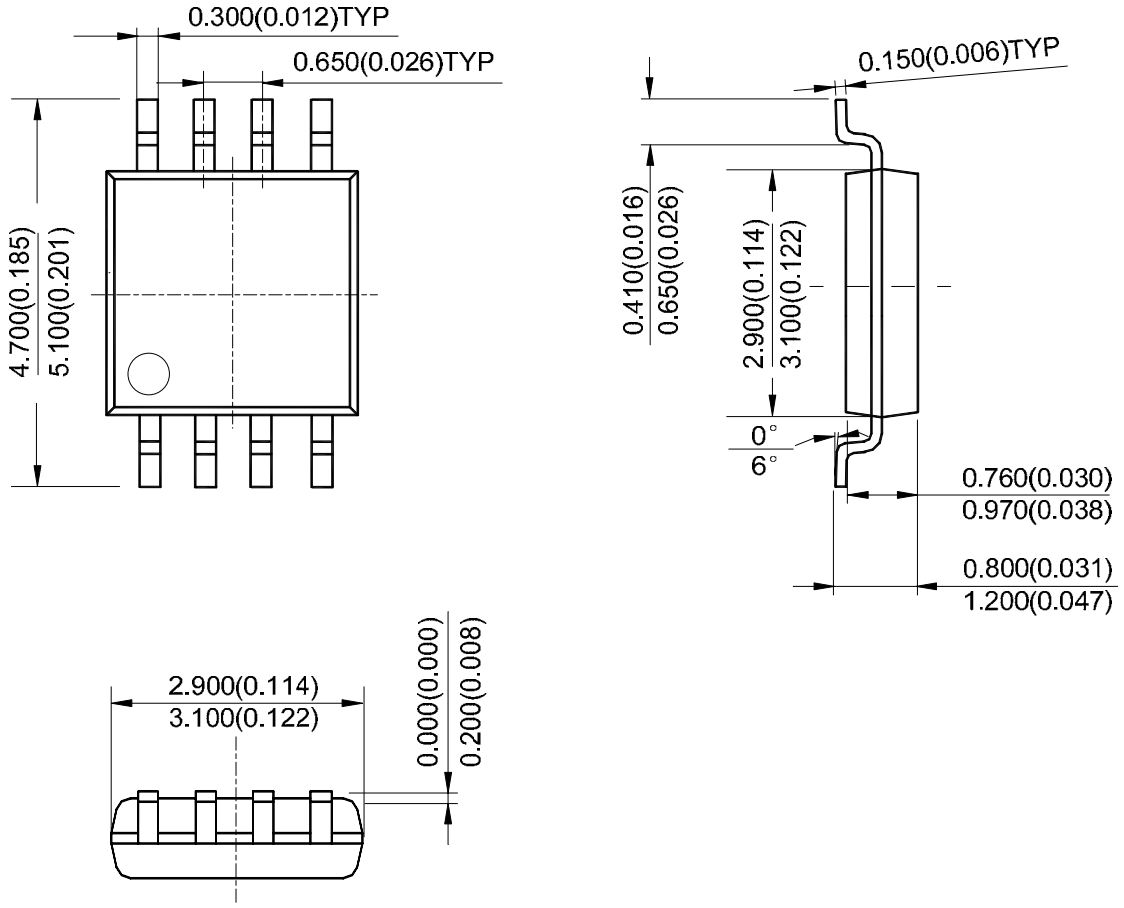


Figure 10. Typical Application of AM4952

Mechanical Dimensions

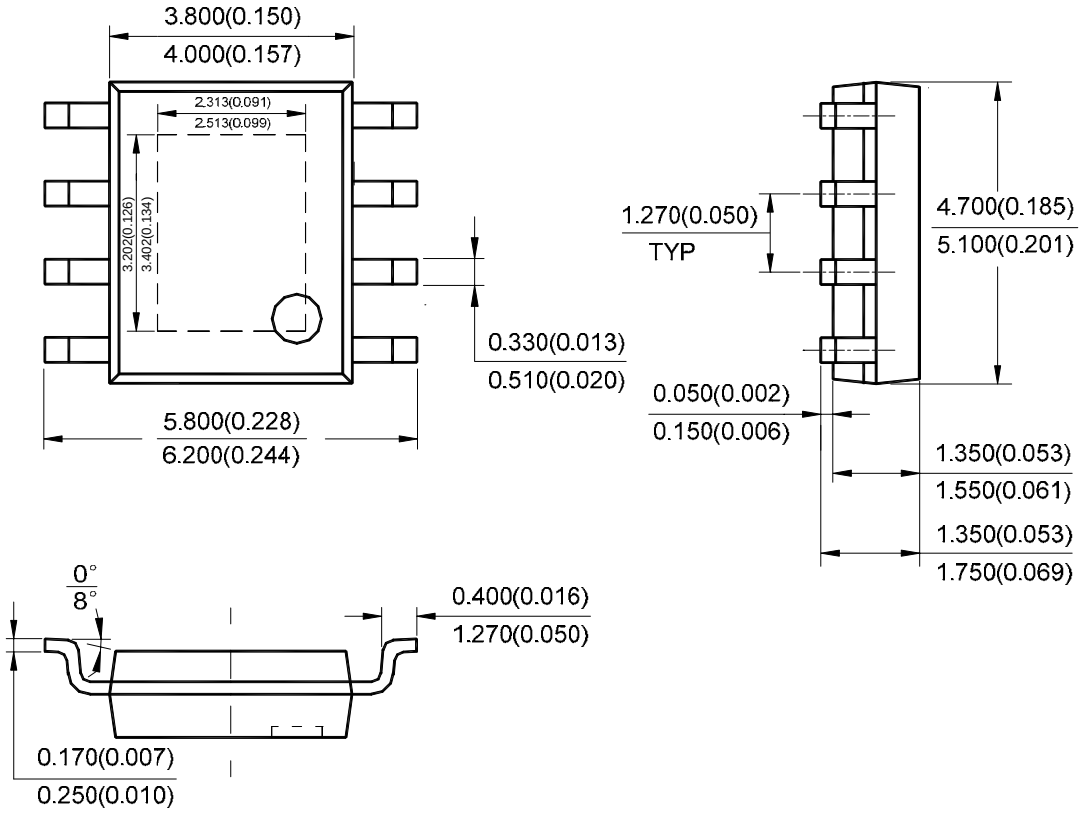
MSOP-8 **Unit: mm(inch)**



Note: Eject hole, oriented hole and mold mark is optional.

Mechanical Dimensions (Continued)

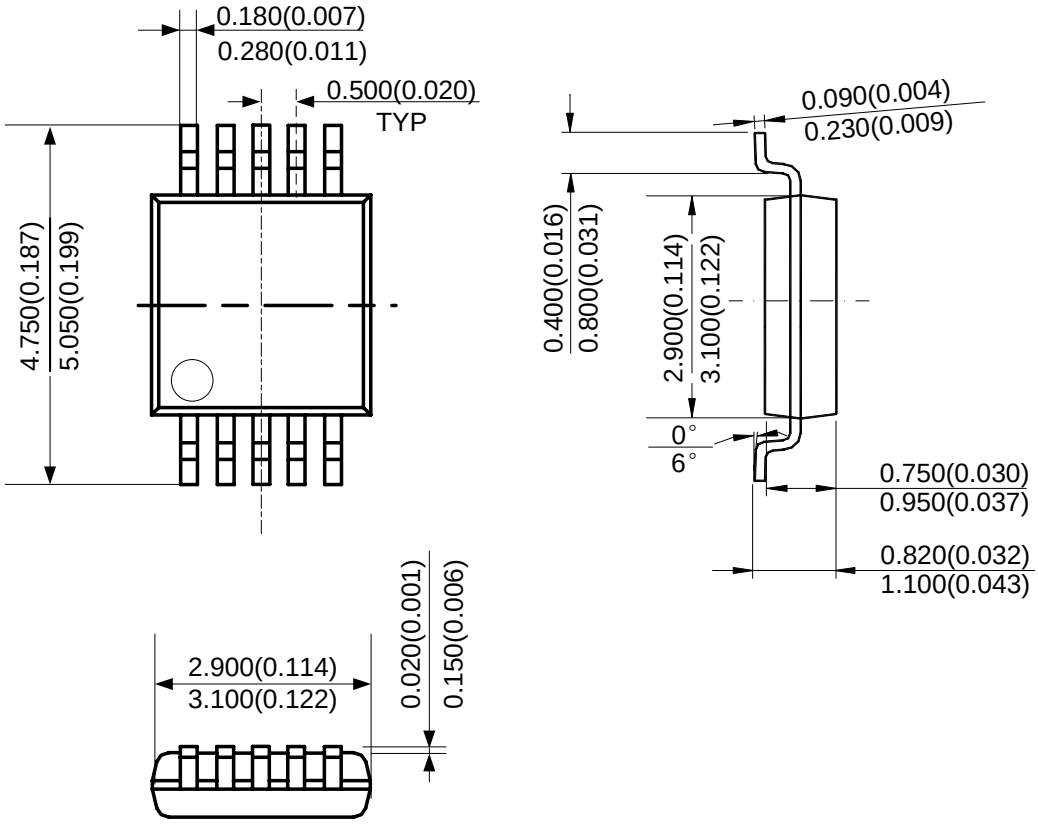
PSOP-8 **Unit: mm(inch)**



Note: Eject hole, oriented hole and mold mark is optional.

Mechanical Dimensions (Continued)

MSOP-10 **Unit: mm(inch)**



Note: Eject hole, oriented hole and mold mark is optional.

BCD Semiconductor Manufacturing Limited

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