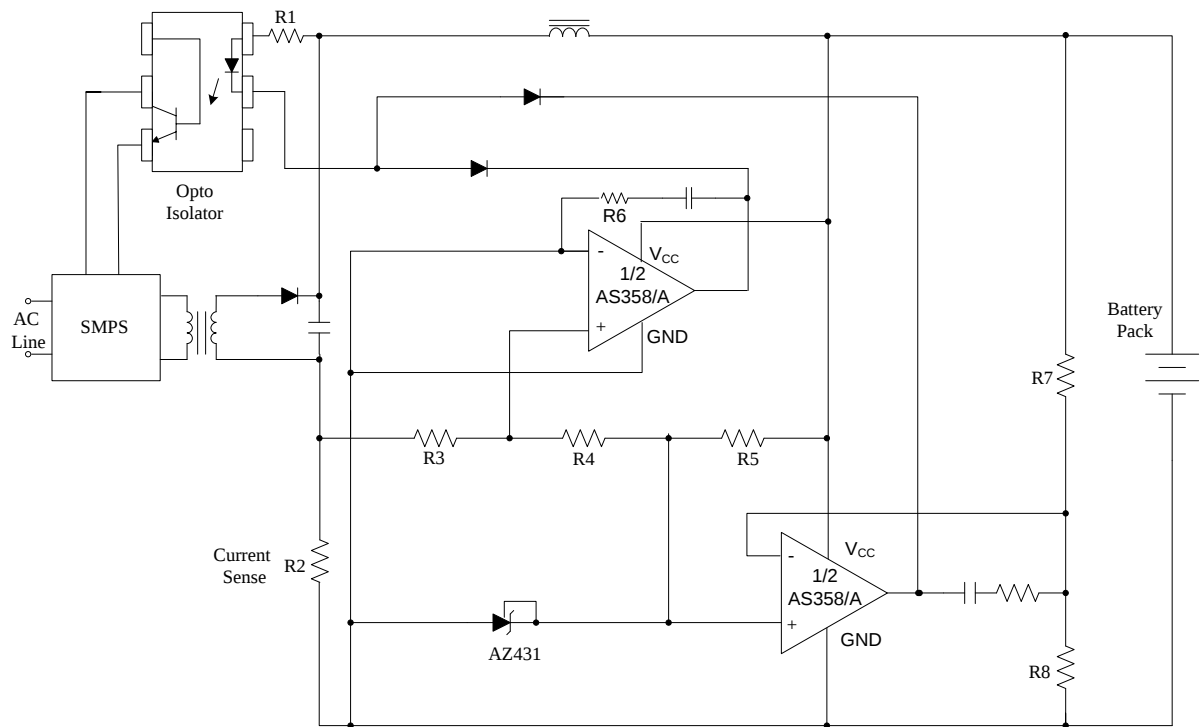
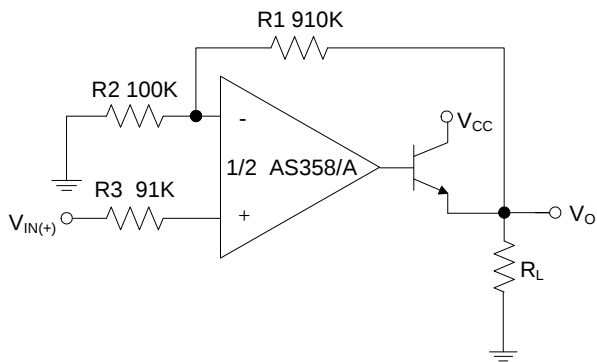


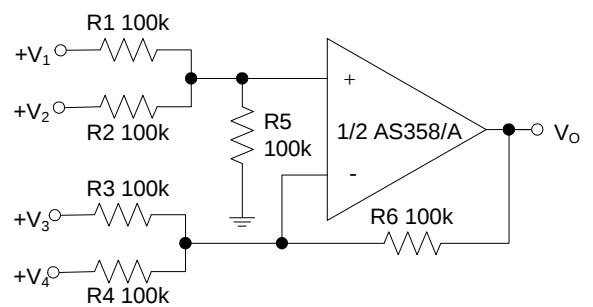
Typical Applications Circuit



Battery Charger

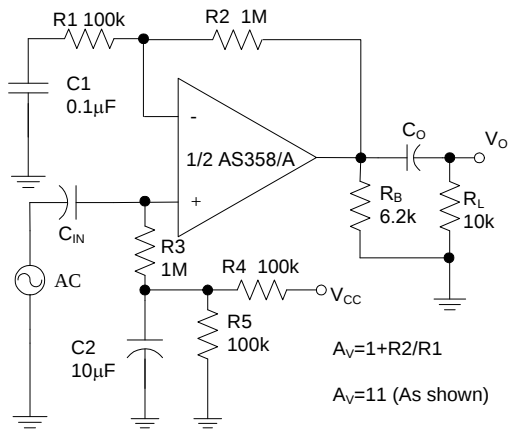


Power Amplifier

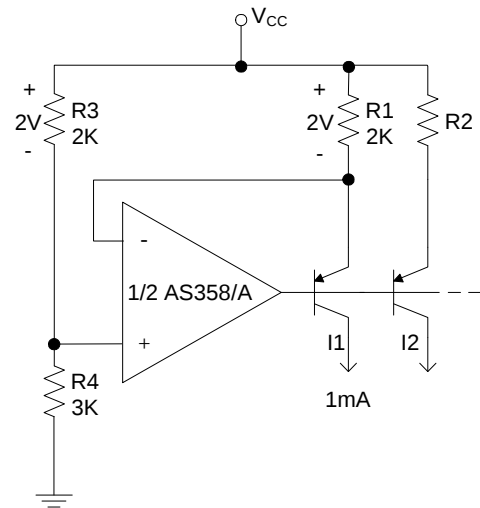


DC Summing Amplifier

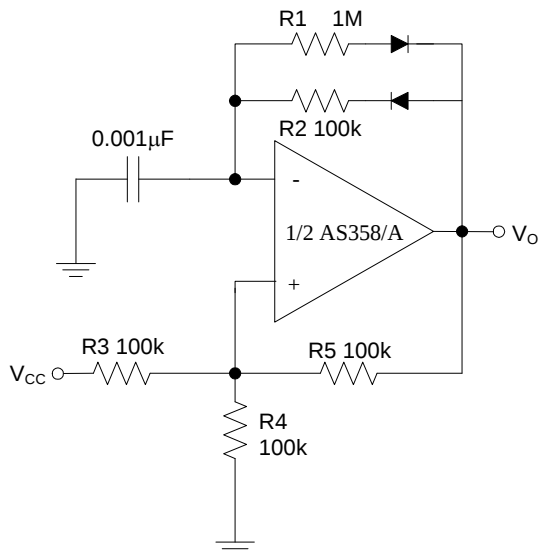
Typical Applications Circuit (Cont.)



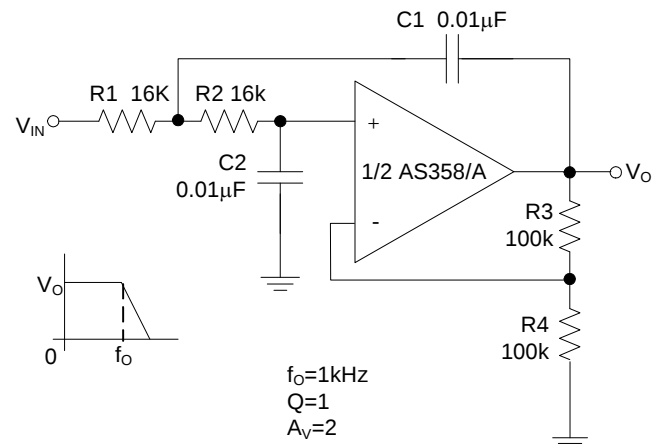
AC Coupled Non-Inverting Amplifier



Fixed Current Sources

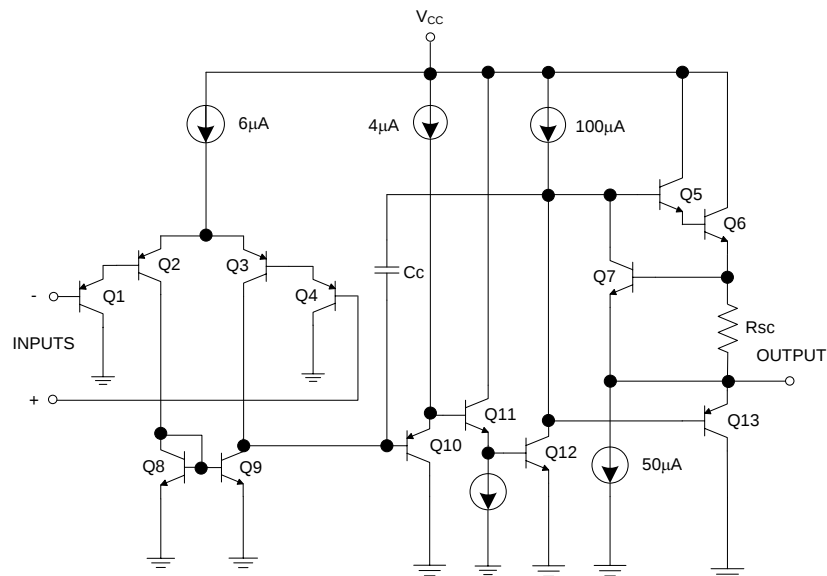


Pulse Generator



DC Coupled Low-Pass Active Filter

Functional Block Diagram



Absolute Maximum Ratings (Notes 4 & 5)

Symbol	Parameter	Rating		Unit
V_{CC}	Power Supply Voltage	40		V
V_{ID}	Differential Input Voltage	40		V
V_{IC}	Input Voltage	-0.3 to 40		V
P_D	Power Dissipation ($T_A = +25^\circ\text{C}$)	PDIP-8	830	mW
		SO-8	550	
		TSSOP-8	500	
		MSOP-8	470	
T_J	Operating Junction Temperature	+150		$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-65 to +150		$^\circ\text{C}$
T_{LEAD}	Lead Temperature (Soldering, 10 Seconds)	+260		$^\circ\text{C}$

Notes: 4. 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.

5. ESD sensitivity.

Recommended Operating Conditions

Symbol	Parameter	Min	Max	Unit
V_{CC}	Supply Voltage	3	36	V
T_A	Ambient Operating Temperature Range	-40	+85	$^\circ\text{C}$

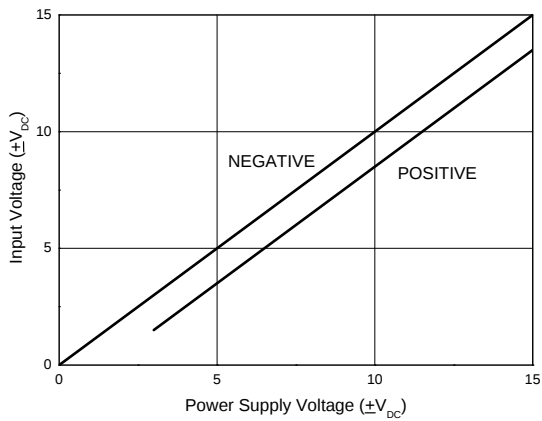
Electrical Characteristics (Limits in standard typeface are for $T_A = +25^\circ\text{C}$, **bold** typeface applies over -40°C to $+85^\circ\text{C}$ (Note 6), $V_{CC} = 5\text{V}$, $\text{GND} = 0\text{V}$, unless otherwise specified.)

Symbol	Parameter		Conditions		Min	Typ	Max	Unit
V _{IO}	Input Offset Voltage		V _O = 1.4V, R _S = 0Ω, V _{CC} = 5V to 30V	AS358	—	2	5	mV
					—	—	7	
				AS358A	—	2	3	
					—	—	5	
				AS358B	—	—	2	
—	—	4						
ΔV _{IO} /ΔT	Average Temperature Coefficient of Input Offset Voltage		T _A = -40°C to +85°C		—	7	—	μV/°C
I _{BIAS}	Input Bias Current		I _{IN+} or I _{IN-} , V _{CM} = 0V		—	20	200	nA
					—	—	200	
I _{IO}	Input Offset Current		I _{IN+} - I _{IN-} , V _{CM} = 0V		—	5	30	nA
					—	—	100	
V _{IR}	Input Common Mode Voltage Range (Note 7)		V _{CC} = 30V		0	—	V _{CC} -1.5	V
I _{CC}	Supply Current		T _A = -40°C to +85°C, R _L = ∞, V _{CC} = 30V		—	0.7	2	mA
			T _A = -40°C to +85°C, R _L = ∞, V _{CC} = 5V		—	0.5	1.2	
G _V	Large Signal Voltage Gain		V _{CC} = 15V, V _O = 1V to 11V, R _L ≥ 2kΩ		85	100	—	dB
					80	—	—	
CMRR	Common Mode Rejection Ratio		DC, V _{CM} = 0V to (V _{CC} -1.5)V		60	70	—	dB
					60	—	—	
PSRR	Power Supply Rejection Ratio		V _{CC} = 5V to 30V		70	100	—	dB
					60	—	—	
CS	Channel Separation		f = 1kHz to 20kHz		—	-120	—	dB
I _{SOURCE}	Output Current	Source	V _{IN+} = 1V, V _{IN-} = 0V, V _{CC} = 15V, V _O = 2V	20	40	—	mA	
20				—	—			
I _{SINK}		Sink		V _{IN+} = 0V, V _{IN-} = 1V, V _{CC} = 15V, V _O = 2V	10	15	—	mA
				5	—	—		
		V _{IN+} = 0V, V _{IN-} = 1V, V _{CC} = 15V, V _O = 0.2V	12	50	—	μA		
I _{SC}	Output Short Circuit Current to Ground		V _{CC} = 15V		—	40	60	mA
V _{OH}	Output Voltage Swing		V _{CC} = 30V, R _L = 2kΩ		26	—	—	V
					26	—	—	
			V _{CC} = 30V, R _L = 10kΩ		27	28	—	
					27	—	—	
V _{OL}			V _{CC} = 5V, R _L = 10kΩ		—	5	20	mV
					—	—	30	
θ _{JC}	Thermal Resistance (Junction to Case)		SO-8	—	17	—	°C/W	
			TSSOP-8					47
			MSOP-8					22
θ _{JA}	Thermal Resistance (Junction to Ambient)		SO-8	—	115	—		
			TSSOP-8		209			
			MSOP-8		160			

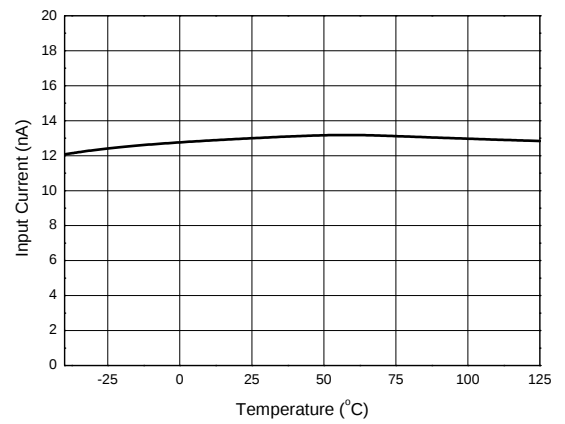
- Notes: 6. Limits over the full temperature are guaranteed by design, but not tested in production.
7. The input common-mode voltage of either input signal voltage should not be allowed to go negatively by more than 0.3V (at $+25^\circ\text{C}$). The upper end of the common-mode voltage range is $V_{CC} - 1.5\text{V}$ (at $+25^\circ\text{C}$), but either or both inputs can go to $+36\text{V}$ without damages, independent of the magnitude of the V_{CC} .

Performance Characteristics

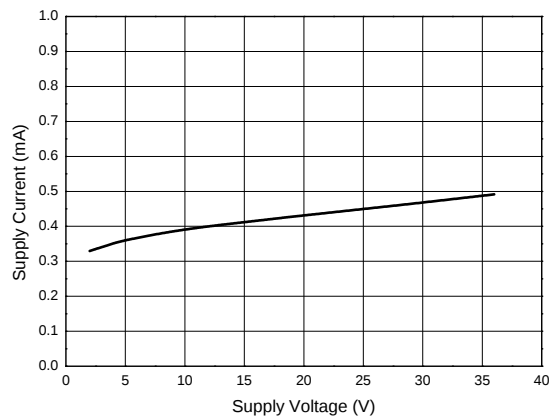
Input Voltage Range



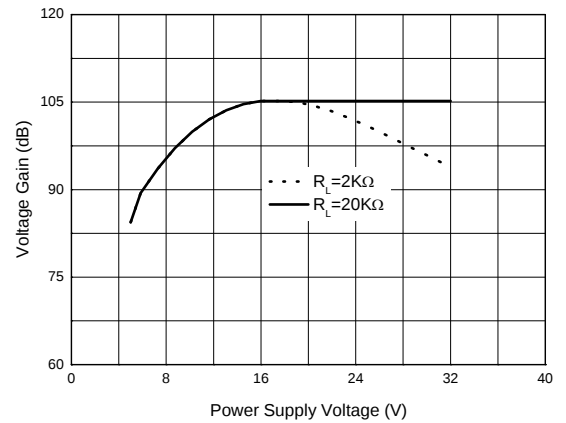
Input Current



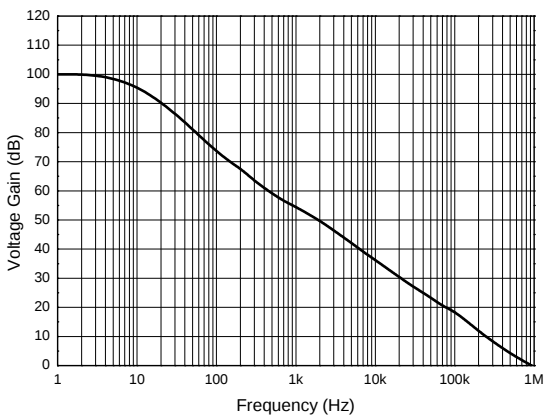
Supply Current



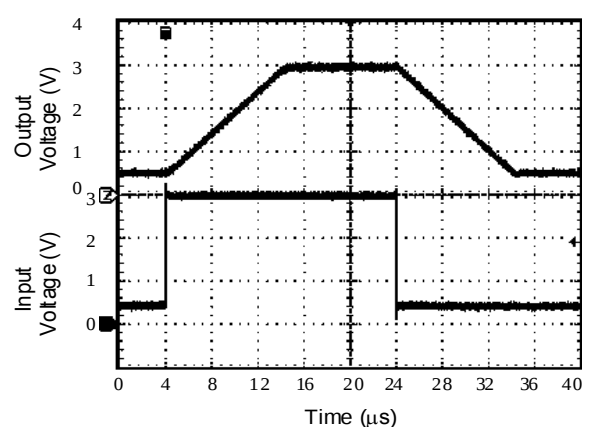
Voltage Gain



Open Loop Frequency Response

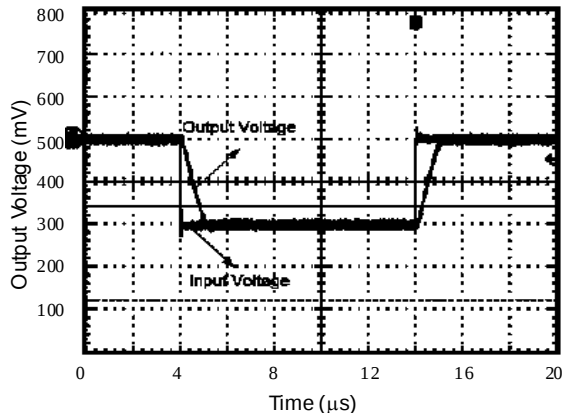


Voltage Follower Pulse Response

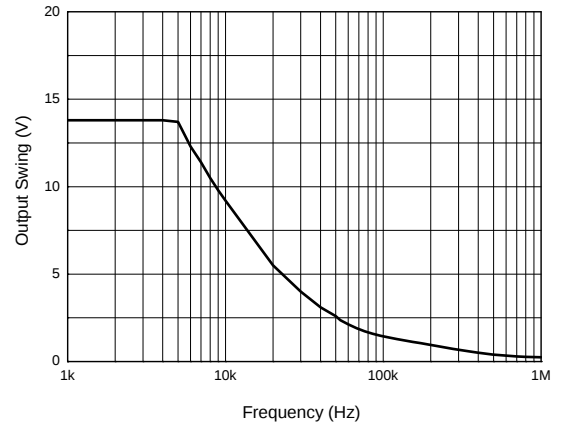


Performance Characteristics (Cont.)

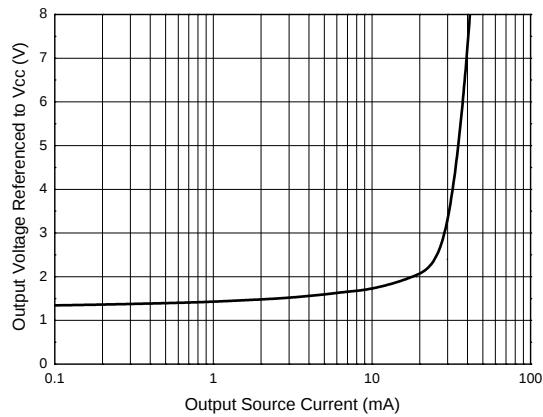
Voltage Follower Pulse Response (Small Signal)



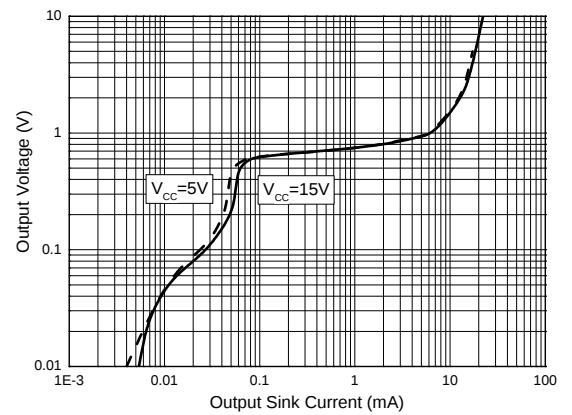
Large Signal Frequency Response



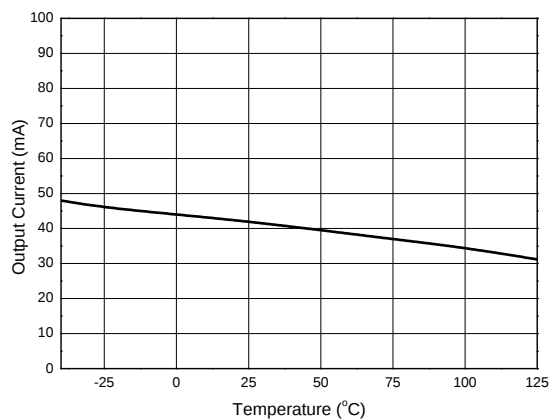
Output Characteristics: Current Sourcing



Output Characteristics: Current Sinking

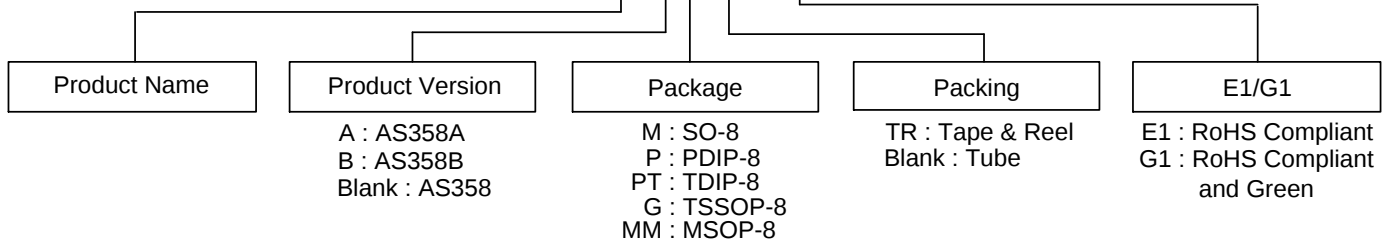


Current Limiting



Ordering Information

AS358X XX XX - XX



	Part Number	Package (Note 9)	Temperature Range	RoHS Compliant Lead Free / Green	Marking ID	Packing	Status (Note 8)	Alternative
	AS358M-E1	SO-8	-40°C to +85°C	Lead Free	AS358M-E1	100/Tube	End of Life	AS358MTR-G1
	AS358M-G1			Green	AS358M-G1			
	AS358MTR-E1			Lead Free	AS358M-E1	4000/Tape & Reel	NRND	AS358MTR-G1
	AS358MTR-G1			Green	AS358M-G1		In Production	—
	AS358AM-E1			Lead Free	AS358AM-E1	100/Tube	End of Life	AS358AMTR-G1
	AS358AM-G1			Green	AS358AM-G1			
	AS358AMTR-E1			Lead Free	AS358AM-E1	4000/Tape & Reel	NRND	AS358AMTR-G1
	AS358AMTR-G1			Green	AS358AM-G1		In Production	—
	AS358P-E1	PDIP-8	-40°C to +85°C	Lead Free	AS358P-E1	50/Tube	In Production	—
	AS358P-G1			Green	AS358P-G1		In Production	—
	AS358AP-E1			Lead Free	AS358AP-E1		In Production	—
	AS358AP-G1			Green	AS358AP-G1		End of Life	—
	AS358PT-G1	TDIP-8	-40°C to +85°C	Green	AS358PT-G1	50/Tube	In Production	—
	AS358GTR-E1	TSSOP-8	-40°C to +85°C	Lead Free	EG3A	4000/Tape & Reel	NRND	AS358GTR-G1
	AS358GTR-G1			Green	GG3A		In Production	—
	AS358BGTR-G1			Green	GG3F		In Production	—
	AS358MMTR-E1	MSOP-8	-40°C to +85°C	Lead Free	AS358MM-E1	3000/Tape & Reel	End of Life	AS358MMTR-G1
	AS358MMTR-G1			Green	AS358MM-G1		In Production	—

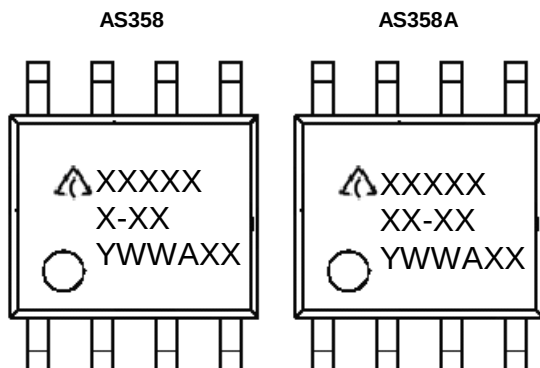
Notes:

8. NRND: Not Recommended for New Design

9. For packaging details, go to our website at: <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

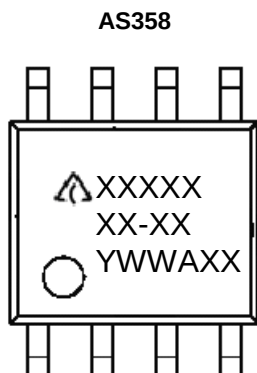
Marking Information

(1) SO-8



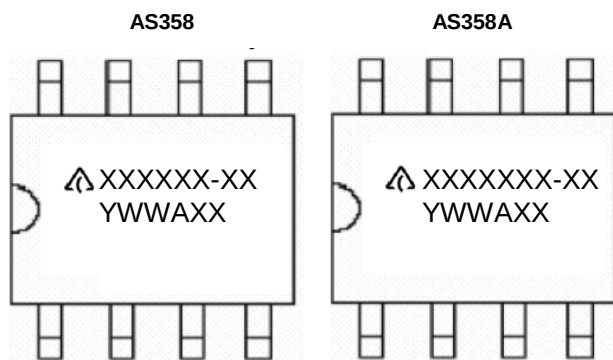
First and Second Lines: Logo and Marking ID
Third Line: Date Code
Y: Year
WW: Work Week of Molding
A: Assembly House Code
XX: Internal Code

(2) MSOP-8



First and Second Lines: Logo and Marking ID
Third Line: Date Code
Y: Year
WW: Work Week of Molding
A: Assembly House Code
XX: Internal Code

(3) PDIP-8

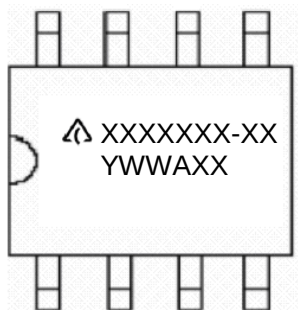


First Line: Logo and Marking ID
Second Line: Date Code
Y: Year
WW: Work Week of Molding
A: Assembly House Code
XX: Internal Code

Marking Information (Cont.)

(4) TDIP-8

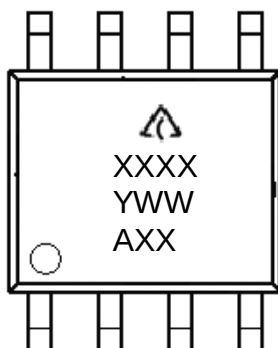
AS358



First Line: Logo and Marking ID
Second Line: Date Code
Y: Year
WW: Work Week of Molding
A: Assembly House Code
XX: Internal Code

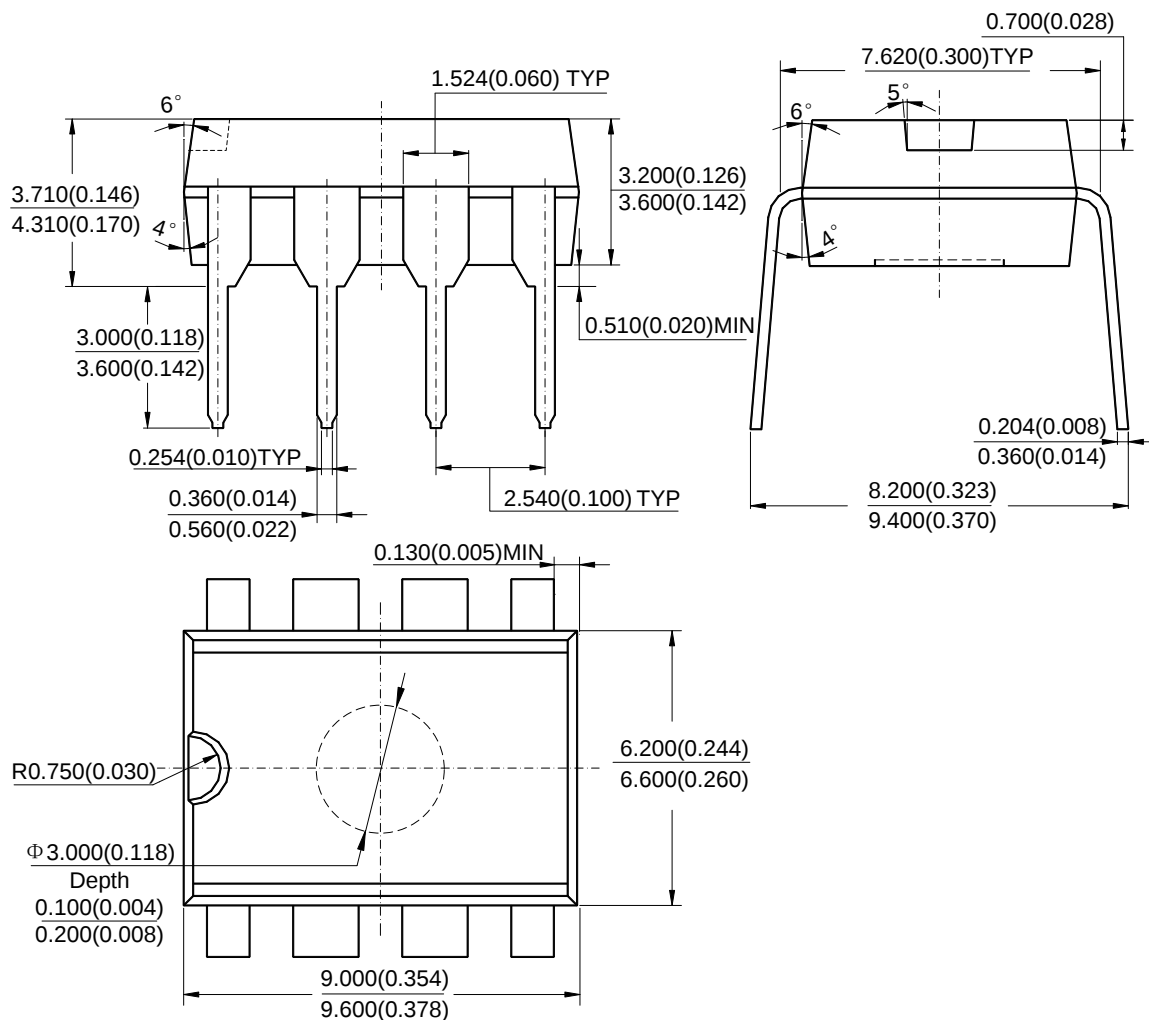
(5) TSSOP-8

AS358/358B



First Line: Logo
Second Line: Marking ID
Third and Fourth Lines: Date Code
Y: Year
WW: Work Week of Molding
A: Assembly House Code
XX: Internal Code

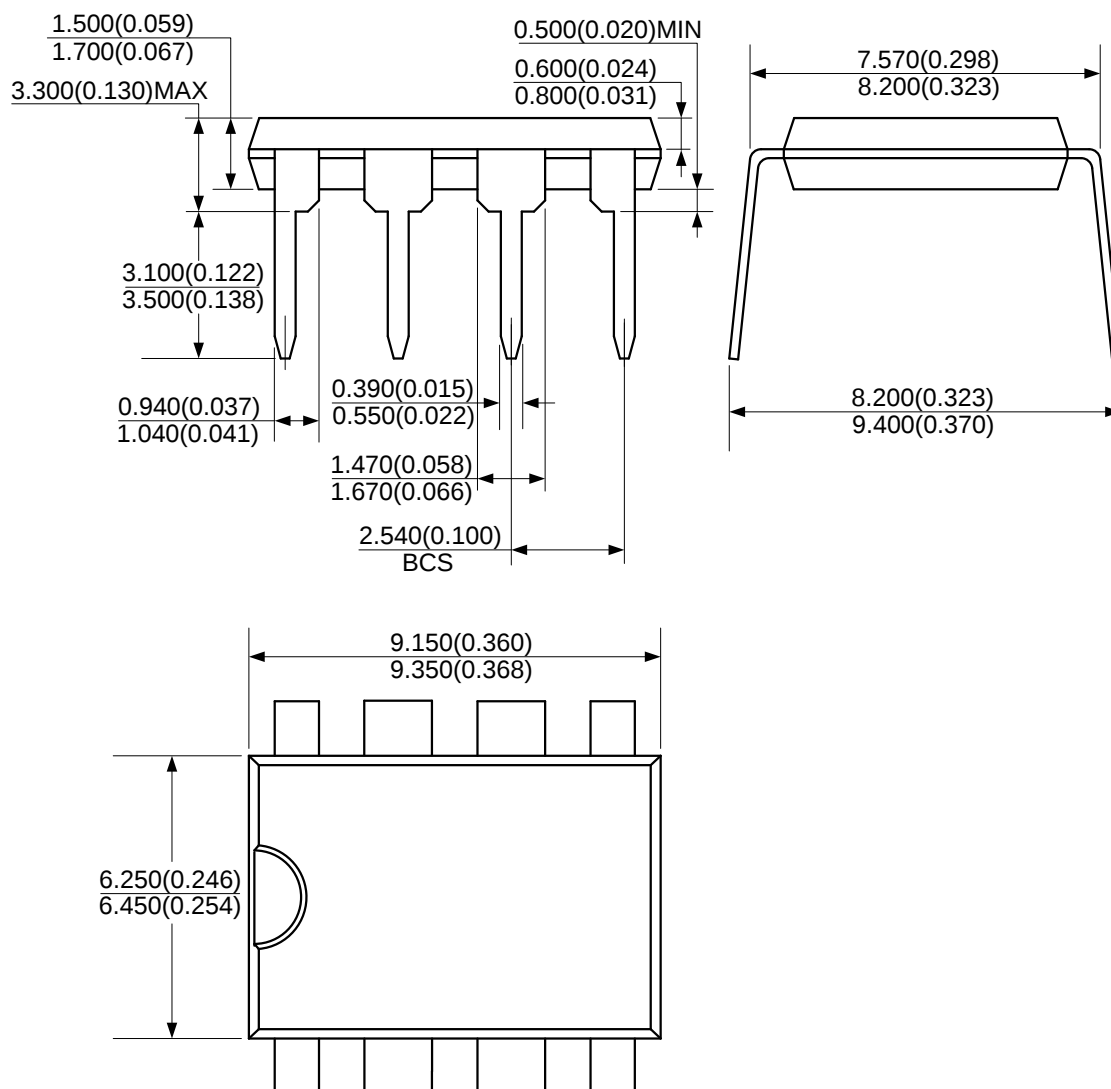
Package Outline Dimensions (All dimensions in mm(inch).)

(1) Package Type: PDIP-8


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

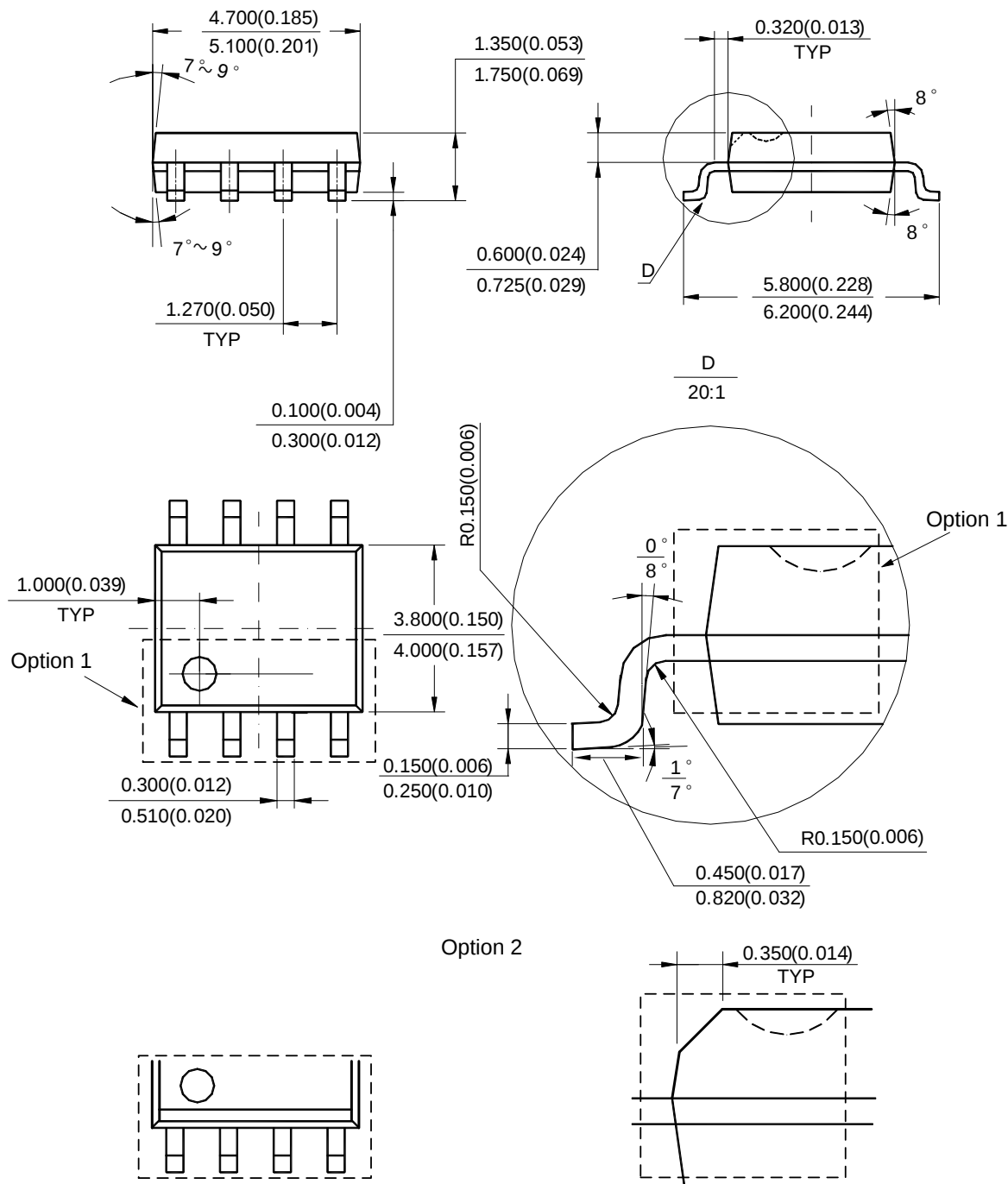
Package Outline Dimensions (Cont. All dimensions in mm(inch).)

(2) Package Type: TDIP-8



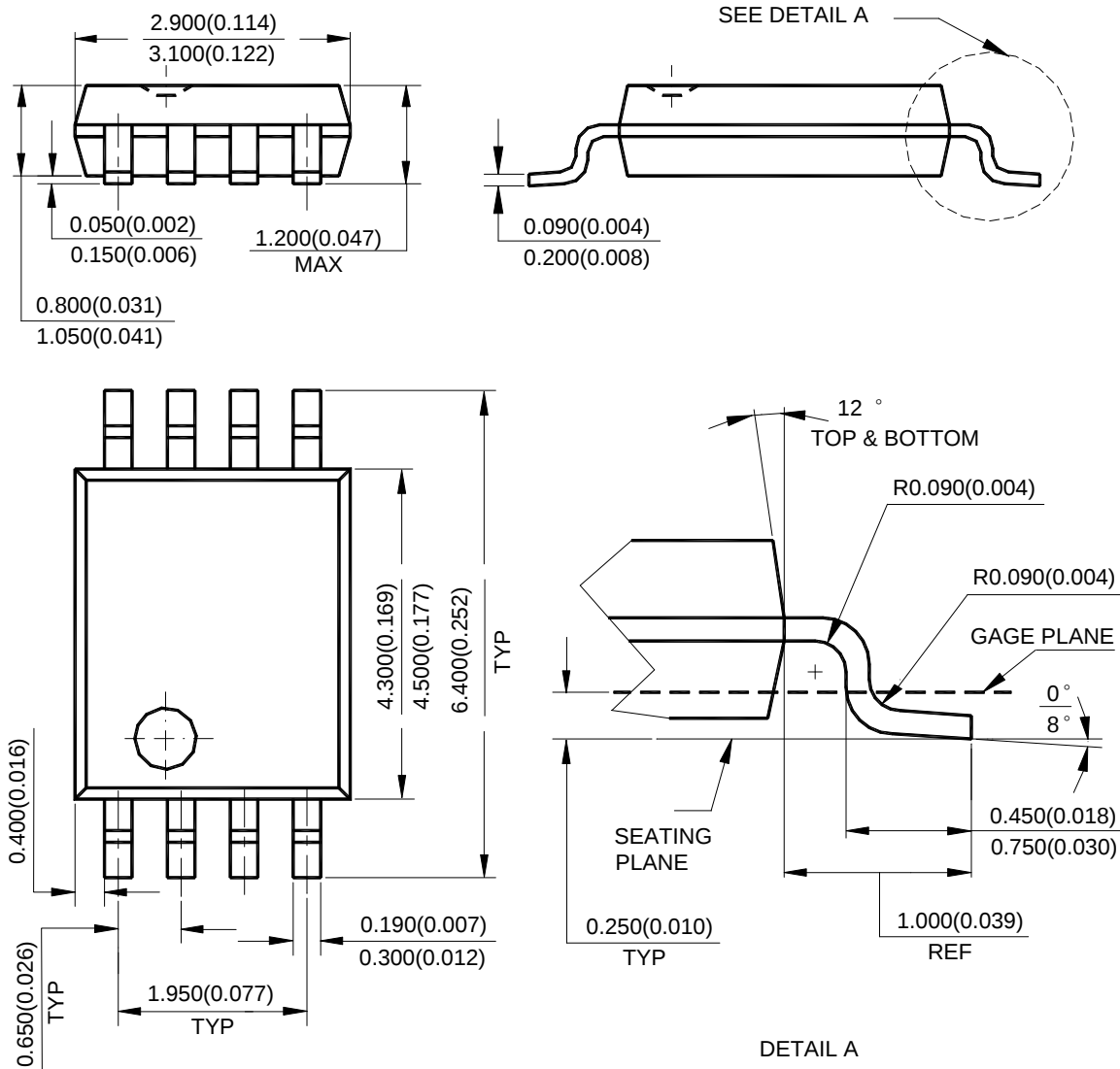
Note: Eject hole, oriented hole and mold mark is optional.

Package Outline Dimensions (Cont. All dimensions in mm(inch).)

(3) Package Type: SO-8


Package Outline Dimensions (Cont. All dimensions in mm(inch).)

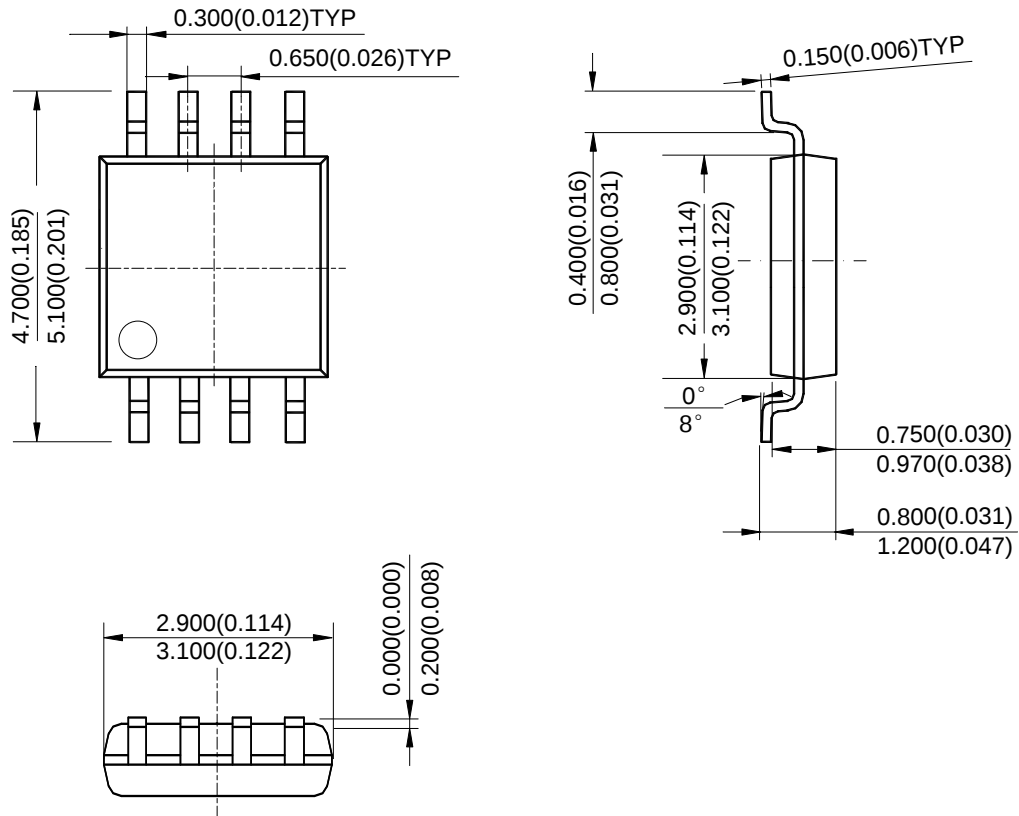
(4) Package Type: TSSOP-8



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

Package Outline Dimensions (Cont. All dimensions in mm(inch).)

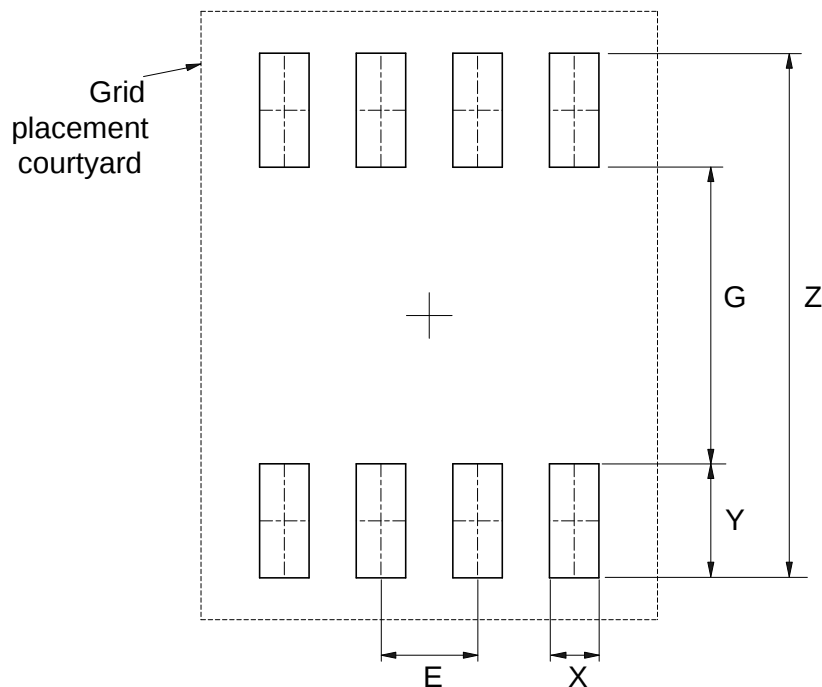
(5) Package Type: MSOP-8



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

Suggested Pad Layout

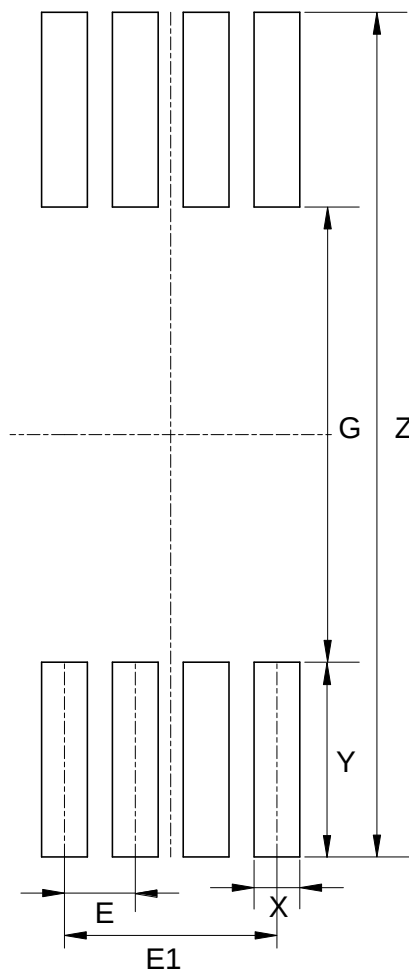
(1) Package Type: SO-8



Dimensions	Z (mm)/(inch)	G (mm)/(inch)	X (mm)/(inch)	Y (mm)/(inch)	E (mm)/(inch)
Value	6.900/0.272	3.900/0.154	0.650/0.026	1.500/0.059	1.270/0.050

Suggested Pad Layout (Cont.)

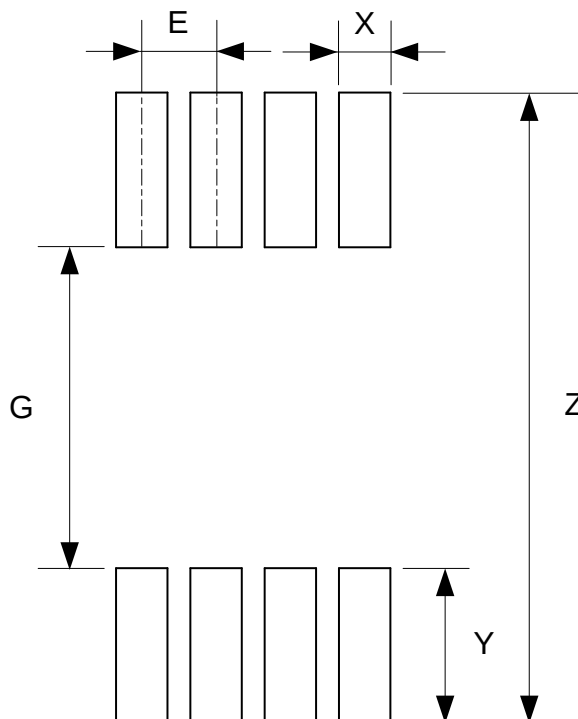
(2) Package Type: TSSOP-8



Dimensions	Z (mm)/(inch)	G (mm)/(inch)	X (mm)/(inch)	Y (mm)/(inch)	E (mm)/(inch)	E1 (mm)/(inch)
Value	7.720/0.304	4.160/0.164	0.420/0.017	1.780/0.070	0.650/0.026	1.950/0.077

Suggested Pad Layout (Cont.)

(3) Package Type: MSOP-8



Dimensions	Z (mm)/(inch)	G (mm)/(inch)	X (mm)/(inch)	Y (mm)/(inch)	E (mm)/(inch)
Value	5.500/0.217	2.800/0.110	0.450/0.018	1.350/0.053	0.650/0.026

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