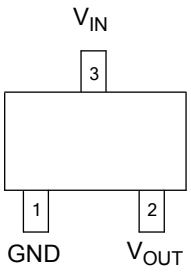
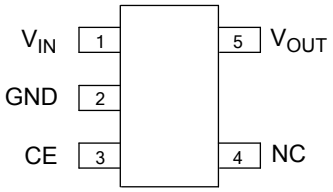
Pin Configuration

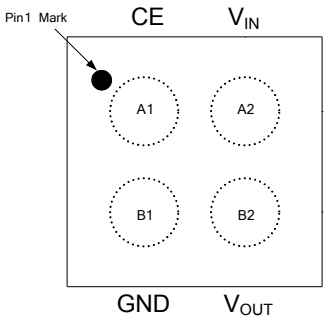
N Package
(SOT-23-3)



K Package
(SOT-23-5)



J4/J4A Package
(CSP-4 (P 0.5)/CSP-4 (P 0.4))



J4C/J4B Package
(CSP-4 (P 0.5)/CSP-4 (P 0.4))

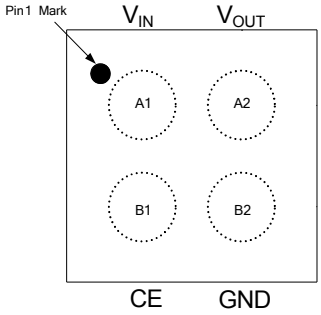


Figure 2. Pin Configuration of AP2121 (Top View)

Pin Description

Pin Number				Pin Name	Function
SOT-23-3	SOT-23-5	CSP-4 (J4/J4A)	CSP-4 (J4C/J4B)		
3	1	A2	A1	V_{IN}	Input voltage
1	2	B1	B2	GND	Ground
	3	A1	B1	CE	Active high enable input pin. Logic high=enable, logic low=shutdown
	4			NC	No connection
2	5	B2	A2	V_{OUT}	Regulated output voltage

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Functional Block Diagram

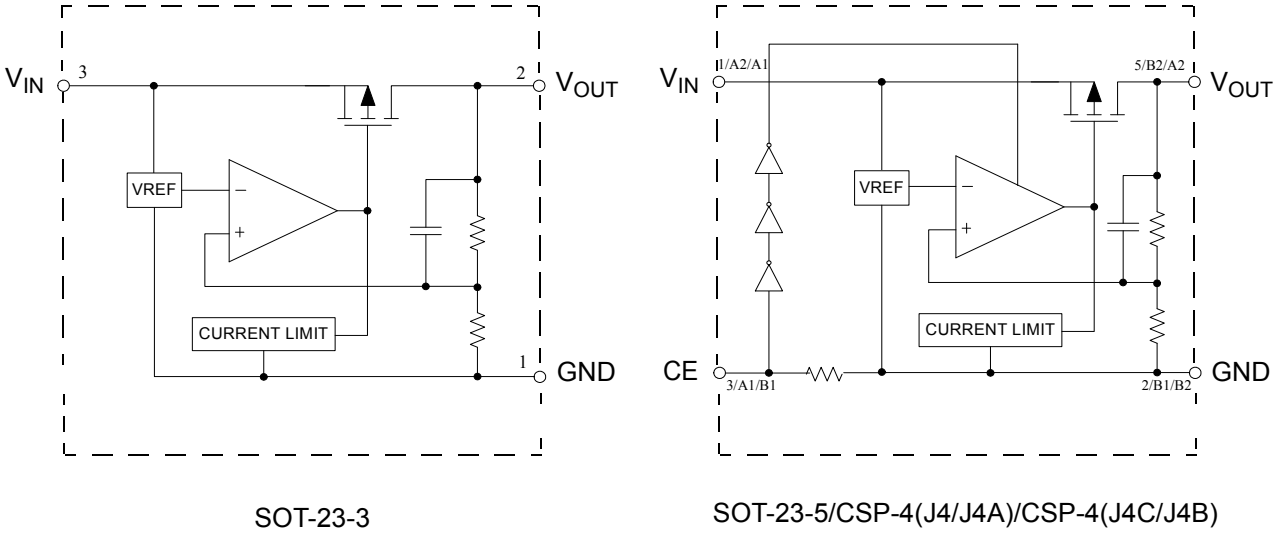

Figure 3. Functional Block Diagram of AP2121

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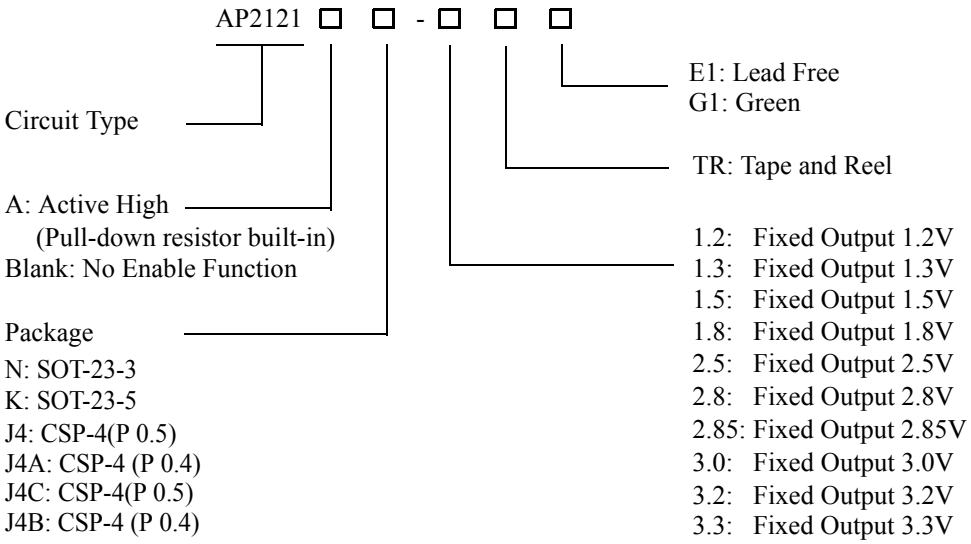
Ordering Information



Package	Temperature Range	Condition	Part Number		Marking ID		Packing Type
			Lead Free	Green	Lead Free	Green	
SOT-23-3	-40 to 85°C		AP2121N-1.2TRE1	AP2121N-1.2TRG1	EF9	GF9	Tape & Reel
			AP2121N-1.3TRE1	AP2121N-1.3TRG1	EG9	GG9	Tape & Reel
			AP2121N-1.5TRE1	AP2121N-1.5TRG1	EF1	GF1	Tape & Reel
			AP2121N-1.8TRE1	AP2121N-1.8TRG1	EF3	GF3	Tape & Reel
			AP2121N-2.5TRE1	AP2121N-2.5TRG1	EF4	GF4	Tape & Reel
			AP2121N-2.8TRE1	AP2121N-2.8TRG1	EF5	GF5	Tape & Reel
			AP2121N-3.0TRE1	AP2121N-3.0TRG1	EF6	GF6	Tape & Reel
			AP2121N-3.2TRE1	AP2121N-3.2TRG1	EF7	GF7	Tape & Reel
			AP2121N-3.3TRE1	AP2121N-3.3TRG1	EF8	GF8	Tape & Reel
SOT-23-5	-40 to 85°C	Active High (Pull-down resistor built-in)	AP2121AK-1.2TRE1	AP2121AK-1.2TRG1	E1T	G1T	Tape & Reel
		Active High (Pull-down resistor built-in)	AP2121AK-1.3TRE1	AP2121AK-1.3TRG1	E1R	G1R	Tape & Reel
		Active High (Pull-down resistor built-in)	AP2121AK-1.5TRE1	AP2121AK-1.5TRG1	E1Z	G1Z	Tape & Reel
		Active High (Pull-down resistor built-in)	AP2121AK-1.8TRE1	AP2121AK-1.8TRG1	E1U	G1U	Tape & Reel
		Active High (Pull-down resistor built-in)	AP2121AK-2.5TRE1	AP2121AK-2.5TRG1	E1V	G1V	Tape & Reel
		Active High (Pull-down resistor built-in)	AP2121AK-2.8TRE1	AP2121AK-2.8TRG1	E1W	G1W	Tape & Reel
		Active High (Pull-down resistor built-in)	AP2121AK-3.0TRE1	AP2121AK-3.0TRG1	E1X	G1X	Tape & Reel
		Active High (Pull-down resistor built-in)	AP2121AK-3.2TRE1	AP2121AK-3.2TRG1	E3Z	G3Z	Tape & Reel
		Active High (Pull-down resistor built-in)	AP2121AK-3.3TRE1	AP2121AK-3.3TRG1	E1Y	G1Y	Tape & Reel

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Ordering Information (Continued)

Package	Temperature Range	Condition	Part Number		Marking ID		Packing Type
			Lead Free	Green	Lead Free	Green	
CSP-4	-40 to 85°C	0.4 Pitch		AP2121AJ4A-1.2TRG1		CB	Tape & Reel
		0.4 Pitch		AP2121AJ4A-1.3TRG1		CC	Tape & Reel
		0.4 Pitch		AP2121AJ4A-1.5TRG1		CD	Tape & Reel
		0.4 Pitch		AP2121AJ4A-1.8TRG1		CE	Tape & Reel
		0.4 Pitch		AP2121AJ4A-2.5TRG1		CF	Tape & Reel
		0.4 Pitch		AP2121AJ4A-2.8TRG1		CG	Tape & Reel
		0.4 Pitch		AP2121AJ4A-2.85TRG1		DD	Tape & Reel
		0.4 Pitch		AP2121AJ4A-3.0TRG1		CH	Tape & Reel
		0.4 Pitch		AP2121AJ4A-3.2TRG1		DA	Tape & Reel
		0.4 Pitch		AP2121AJ4A-3.3TRG1		DB	Tape & Reel
CSP-4	-40 to 85°C	0.5 Pitch		AP2121AJ4-1.2TRG1		BA	Tape & Reel
		0.5 Pitch		AP2121AJ4-1.3TRG1		BB	Tape & Reel
		0.5 Pitch		AP2121AJ4-1.5TRG1		BC	Tape & Reel
		0.5 Pitch		AP2121AJ4-1.8TRG1		BD	Tape & Reel
		0.5 Pitch		AP2121AJ4-2.5TRG1		BE	Tape & Reel
		0.5 Pitch		AP2121AJ4-2.8TRG1		BF	Tape & Reel
		0.5 Pitch		AP2121AJ4-2.85TRG1		DC	Tape & Reel
		0.5 Pitch		AP2121AJ4-3.0TRG1		BG	Tape & Reel
		0.5 Pitch		AP2121AJ4-3.2TRG1		BH	Tape & Reel
		0.5 Pitch		AP2121AJ4-3.3TRG1		CA	Tape & Reel

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Ordering Information (Continued)

Package	Temperature Range	Condition	Part Number		Marking ID		Packing Type
			Lead Free	Green	Lead Free	Green	
CSP-4	-40 to 85°C	0.4 Pitch		AP2121AJ4B-1.2TRG1		DE	Tape & Reel
		0.4 Pitch		AP2121AJ4B-1.3TRG1		DF	Tape & Reel
		0.4 Pitch		AP2121AJ4B-1.5TRG1		DG	Tape & Reel
		0.4 Pitch		AP2121AJ4B-1.8TRG1		DH	Tape & Reel
		0.4 Pitch		AP2121AJ4B-2.5TRG1		EA	Tape & Reel
		0.4 Pitch		AP2121AJ4B-2.8TRG1		EB	Tape & Reel
		0.4 Pitch		AP2121AJ4B-2.85TRG1		EC	Tape & Reel
		0.4 Pitch		AP2121AJ4B-3.0TRG1		ED	Tape & Reel
		0.4 Pitch		AP2121AJ4B-3.2TRG1		EE	Tape & Reel
		0.4 Pitch		AP2121AJ4B-3.3TRG1		EF	Tape & Reel
CSP-4	-40 to 85°C	0.5 Pitch		AP2121AJ4C-1.2TRG1		EG	Tape & Reel
		0.5 Pitch		AP2121AJ4C-1.3TRG1		EH	Tape & Reel
		0.5 Pitch		AP2121AJ4C-1.5TRG1		FA	Tape & Reel
		0.5 Pitch		AP2121AJ4C-1.8TRG1		FB	Tape & Reel
		0.5 Pitch		AP2121AJ4C-2.5TRG1		FC	Tape & Reel
		0.5 Pitch		AP2121AJ4C-2.8TRG1		FD	Tape & Reel
		0.5 Pitch		AP2121AJ4C-2.85TRG1		FE	Tape & Reel
		0.5 Pitch		AP2121AJ4C-3.0TRG1		FF	Tape & Reel
		0.5 Pitch		AP2121AJ4C-3.2TRG1		FG	Tape & Reel
		0.5 Pitch		AP2121AJ4C-3.3TRG1		FH	Tape & Reel

BCD Semiconductor's Pb-free products, as designated with "E1" suffix in the part number, are RoHS compliant. Products with "G1" suffix are available in green packages.

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Absolute Maximum Ratings (Note 1)

Parameter	Symbol	Value		Unit
Input Voltage	V_{IN}	6.5		V
Enable Input Voltage	V_{CE}	-0.3 to V_{IN}+0.3		V
Output Current	I_{OUT}	300		mA
Junction Temperature	T_J	150		°C
Storage Temperature Range	T_{STG}	-65 to 150		°C
Lead Temperature (Soldering, 10sec)	T_{LEAD}	260		°C
Thermal Resistance (Junction to Ambient) (Note 2)	θ_{JA}	SOT-23-3	250	°C/W
		SOT-23-5	250	
		CSP-4	126	
ESD (Human Body Model)	ESD	2000		V
ESD (Machine Model)	ESD	200		V

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.

Note 2: Absolute maximum ratings indicate limits beyond which damage to the component may occur. Electrical specifications do not apply when operating the device outside of its operating ratings. The maximum allowable power dissipation is a function of the maximum junction temperature, $T_{J(max)}$, the junction-to-ambient thermal resistance, θ_{JA}, and the ambient temperature, T_A. The maximum allowable power dissipation at any ambient temperature is calculated using: $P_{D(max)}=(T_{J(max)} - T_A)/\theta_{JA}$. Exceeding the maximum allowable power dissipation will result in excessive die temperature.

Recommended Operating Conditions

Parameter	Symbol	Min	Max	Unit
Input Voltage	V_{IN}	2	6	V
Operating Ambient Temperature Range	T_A	-40	85	°C

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Electrical Characteristics

AP2121-1.2 Electrical Characteristics

(V_{IN}=2.2V, T_J=25°C, C_{IN}=1μF, C_{OUT}=1μF, **Bold** typeface applies over -40°C≤T_J≤85°C, unless otherwise specified.)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	V_{IN}=2.2V 1mA≤I_{OUT}≤30mA	1.176	1.2	1.224	V
Input Voltage	V_{IN}				6	V
Output Current	I_{OUT}	V_{IN}-V_{OUT}=1V	200			mA
Load Regulation	V_{RLOAD}	V_{IN}=2.2V 1mA≤I_{OUT}≤80mA		12	40	mV
Line Regulation	V_{RLINE}	2.2V≤V_{IN}≤6V I_{OUT}=30mA		4	16	mV
Dropout Voltage	V_{DROP}	I_{OUT}=10mA		700	900	mV
		I_{OUT}=100mA		700	900	
		I_{OUT}=150mA		700	900	
		I_{OUT}=200mA		700	900	
Quiescent Current	I_Q	V_{IN}=2.2V, I_{OUT}=0mA		25	50	μA
Standby Current	I_{STD}	V_{IN}=2.2V V_{CE} in OFF mode		0.1	1	μA
Power Supply Rejection Ratio	PSRR	Ripple 0.5Vp-p, f=1kHz V_{IN}=2.2V		70		dB
Output Voltage Temperature Coefficient	$\Delta V_{OUT}/\Delta T$	I_{OUT}=30mA		**±120**		μV/°C
	$(\Delta V_{OUT}/V_{OUT})/\Delta T$			**±100**		ppm/°C
Short Current Limit	I_{LIMIT}	V_{OUT}=0V		50		mA
RMS Output Noise	V_{NOISE}	T_A=25°C 10Hz ≤f≤100kHz		30		μVrms
CE "High" Voltage		CE input voltage "High"	1.5			V
CE "Low" Voltage		CE input voltage "Low"			0.25	V
CE Pull-down Resistance	R_{PD}		2.5	5	10	MΩ
Thermal Resistance (Junction to Case)	θ_{JC}	SOT-23-3		74		°C/W
		SOT-23-5		74		
		CSP-4		5		

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Electrical Characteristics (Continued)

AP2121-1.3 Electrical Characteristics

(V_{IN}=2.3V, T_J=25°C, C_{IN}=1μF, C_{OUT}=1μF, **Bold** typeface applies over -40°C≤T_J≤85°C, unless otherwise specified.)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	V_{IN}=2.3V 1mA≤I_{OUT}≤30mA	1.274	1.3	1.326	V
Input Voltage	V_{IN}				6	V
Output Current	I_{OUT}	V_{IN}-V_{OUT}=1V	200			mA
Load Regulation	V_{RLOAD}	V_{IN}=2.3V 1mA≤I_{OUT}≤80mA		12	40	mV
Line Regulation	V_{RLINE}	2.3V≤V_{IN}≤6V I_{OUT}=30mA		4	16	mV
Dropout Voltage	V_{DROP}	I_{OUT}=10mA		600	800	mV
		I_{OUT}=100mA		600	800	
		I_{OUT}=150mA		600	800	
		I_{OUT}=200mA		600	800	
Quiescent Current	I_Q	V_{IN}=2.3V, I_{OUT}=0mA		25	50	μA
Standby Current	I_{STD}	V_{IN}=2.3V V_{CE} in OFF mode		0.1	1	μA
Power Supply Rejection Ratio	PSRR	Ripple 0.5Vp-p, f=1kHz V_{IN}=2.3V		70		dB
Output Voltage Temperature Coefficient	$\Delta V_{OUT}/\Delta T$	I_{OUT}=30mA		**±130**		μV/°C
	$(\Delta V_{OUT}/V_{OUT})/\Delta T$			**±100**		ppm/°C
Short Current Limit	I_{LIMIT}	V_{OUT}=0V		50		mA
RMS Output Noise	V_{NOISE}	T_A=25°C 10Hz ≤f≤100kHz		30		μVrms
CE "High" Voltage		CE input voltage "High"	1.5			V
CE "Low" Voltage		CE input voltage "Low"			0.25	V
CE Pull-down Resistance	R_{PD}		2.5	5	10	MΩ
Thermal Resistance (Junction to Case)	θ_{JC}	SOT-23-3		74		°C/W
		SOT-23-5		74		
		CSP-4		5		

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Electrical Characteristics (Continued)

AP2121-1.5 Electrical Characteristics

(V_{IN}=2.5V, T_J=25°C, C_{IN}=1μF, C_{OUT}=1μF, **Bold** typeface applies over -40°C≤T_J≤85°C, unless otherwise specified.)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	V_{IN}=2.5V 1mA≤I_{OUT}≤30mA	1.47	1.5	1.53	V
Input Voltage	V_{IN}				6	V
Output Current	I_{OUT}	V_{IN}-V_{OUT}=1V	200			mA
Load Regulation	V_{RLOAD}	V_{IN}=2.5V 1mA≤I_{OUT}≤80mA		12	40	mV
Line Regulation	V_{RLINE}	2.3V≤V_{IN}≤6V I_{OUT}=30mA		4	16	mV
Dropout Voltage	V_{DROP}	I_{OUT}=10mA		400	600	mV
		I_{OUT}=100mA		400	600	
		I_{OUT}=150mA		400	600	
		I_{OUT}=200mA		400	600	
Quiescent Current	I_Q	V_{IN}=2.5V, I_{OUT}=0mA		25	50	μA
Standby Current	I_{STD}	V_{IN}=2.5V V_{CE} in OFF mode		0.1	1	μA
Power Supply Rejection Ratio	PSRR	Ripple 0.5Vp-p, f=1kHz V_{IN}=2.5V		70		dB
Output Voltage Temperature Coefficient	$\Delta V_{OUT}/\Delta T$	I_{OUT}=30mA		**±150**		μV/°C
	$(\Delta V_{OUT}/V_{OUT})/\Delta T$			**±100**		ppm/°C
Short Current Limit	I_{LIMIT}	V_{OUT}=0V		50		mA
RMS Output Noise	V_{NOISE}	T_A=25°C 10Hz ≤f≤100kHz		30		μVrms
CE "High" Voltage		CE input voltage "High"	1.5			V
CE "Low" Voltage		CE input voltage "Low"			0.25	V
CE Pull-down Resistance	R_{PD}		2.5	5	10	MΩ
Thermal Resistance (Junction to Case)	θ_{JC}	SOT-23-3		74		°C/W
		SOT-23-5		74		
		CSP-4		5		

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Electrical Characteristics (Continued)

AP2121-1.8 Electrical Characteristics

(V_{IN}=2.8V, T_J=25°C, C_{IN}=1μF, C_{OUT}=1μF, **Bold** typeface applies over -40°C≤T_J≤85°C, unless otherwise specified.)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	V_{IN}=2.8V 1mA≤I_{OUT}≤30mA	1.764	1.8	1.836	V
Input Voltage	V_{IN}				6	V
Output Current	I_{OUT}	V_{IN}-V_{OUT}=1V	200			mA
Load Regulation	V_{RLOAD}	V_{IN}=2.8V 1mA≤I_{OUT}≤80mA		12	40	mV
Line Regulation	V_{RLINE}	2.3V≤V_{IN}≤6V I_{OUT}=30mA		4	16	mV
Dropout Voltage	V_{DROP}	I_{OUT}=10mA		20	40	mV
		I_{OUT}=100mA		150	300	
		I_{OUT}=150mA		200	400	
		I_{OUT}=200mA		250	500	
Quiescent Current	I_Q	V_{IN}=2.8V, I_{OUT}=0mA		25	50	μA
Standby Current	I_{STD}	V_{IN}=2.8V V_{CE} in OFF mode		0.1	1	μA
Power Supply Rejection Ratio	PSRR	Ripple 0.5Vp-p, f=1kHz V_{IN}=2.8V		70		dB
Output Voltage Temperature Coefficient	$\Delta V_{OUT}/\Delta T$	I_{OUT}=30mA		**±180**		μV/°C
	$(\Delta V_{OUT}/V_{OUT})/\Delta T$			**±100**		ppm/°C
Short Current Limit	I_{LIMIT}	V_{OUT}=0V		50		mA
RMS Output Noise	V_{NOISE}	T_A=25°C 10Hz ≤f≤100kHz		30		μVrms
CE "High" Voltage		CE input voltage "High"	1.5			V
CE "Low" Voltage		CE input voltage "Low"			0.25	V
CE Pull-down Resistance	R_{PD}		2.5	5	10	MΩ
Thermal Resistance (Junction to Case)	θ_{JC}	SOT-23-3		74		°C/W
		SOT-23-5		74		
		CSP-4		5		

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Electrical Characteristics (Continued)

AP2121-2.5 Electrical Characteristics

(V_{IN}=3.5V, T_J=25°C, C_{IN}=1μF, C_{OUT}=1μF, **Bold** typeface applies over -40°C≤T_J≤85°C, unless otherwise specified.)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	V_{IN}=3.5V 1mA≤I_{OUT}≤30mA	2.45	2.5	2.55	V
Input Voltage	V_{IN}				6	V
Output Current	I_{OUT}	V_{IN}-V_{OUT}=1V	200			mA
Load Regulation	V_{RLOAD}	V_{IN}=3.5V 1mA≤I_{OUT}≤80mA		12	40	mV
Line Regulation	V_{RLINE}	3V≤V_{IN}≤6V I_{OUT}=30mA		4	16	mV
Dropout Voltage	V_{DROP}	I_{OUT}=10mA		20	40	mV
		I_{OUT}=100mA		150	300	
		I_{OUT}=150mA		200	400	
		I_{OUT}=200mA		250	500	
Quiescent Current	I_Q	V_{IN}=3.5V, I_{OUT}=0mA		25	50	μA
Standby Current	I_{STD}	V_{IN}=3.5V V_{CE} in OFF mode		0.1	1	μA
Power Supply Rejection Ratio	PSRR	Ripple 0.5Vp-p, f=1kHz V_{IN}=3.5V		70		dB
Output Voltage Temperature Coefficient	$\Delta V_{OUT}/\Delta T$	I_{OUT}=30mA		**±250**		μV/°C
	$(\Delta V_{OUT}/V_{OUT})/\Delta T$			**±100**		ppm/°C
Short Current Limit	I_{LIMIT}	V_{OUT}=0V		50		mA
RMS Output Noise	V_{NOISE}	T_A=25°C 10Hz ≤f≤100kHz		30		μVrms
CE "High" Voltage		CE input voltage "High"	1.5			V
CE "Low" Voltage		CE input voltage "Low"			0.25	V
CE Pull-down Resistance	R_{PD}		2.5	5	10	MΩ
Thermal Resistance (Junction to Case)	θ_{JC}	SOT-23-3		74		°C/W
		SOT-23-5		74		
		CSP-4		5		

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Electrical Characteristics (Continued)

AP2121-2.8 Electrical Characteristics

(V_{IN}=3.8V, T_J=25°C, C_{IN}=1μF, C_{OUT}=1μF, **Bold** typeface applies over -40°C≤T_J≤85°C, unless otherwise specified.)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	V_{IN}=3.8V 1mA≤I_{OUT}≤30mA	2.744	2.8	2.856	V
Input Voltage	V_{IN}				6	V
Output Current	I_{OUT}	V_{IN}-V_{OUT}=1V	200			mA
Load Regulation	V_{RLOAD}	V_{IN}=3.8V 1mA≤I_{OUT}≤80mA		12	40	mV
Line Regulation	V_{RLINE}	3.3V≤V_{IN}≤6V I_{OUT}=30mA		4	16	mV
Dropout Voltage	V_{DROP}	I_{OUT}=10mA		20	40	mV
		I_{OUT}=100mA		150	300	
		I_{OUT}=150mA		200	400	
		I_{OUT}=200mA		250	500	
Quiescent Current	I_Q	V_{IN}=3.8V, I_{OUT}=0mA		25	50	μA
Standby Current	I_{STD}	V_{IN}=3.8V V_{CE} in OFF mode		0.1	1	μA
Power Supply Rejection Ratio	PSRR	Ripple 0.5Vp-p, f=1kHz V_{IN}=3.8V		70		dB
Output Voltage Temperature Coefficient	$\Delta V_{OUT}/\Delta T$	I_{OUT}=30mA		**±280**		μV/°C
	$(\Delta V_{OUT}/V_{OUT})/\Delta T$			**±100**		ppm/°C
Short Current Limit	I_{LIMIT}	V_{OUT}=0V		50		mA
RMS Output Noise	V_{NOISE}	T_A=25°C 10Hz ≤f≤100kHz		30		μVrms
CE "High" Voltage		CE input voltage "High"	1.5			V
CE "Low" Voltage		CE input voltage "Low"			0.25	V
CE Pull-down Resistance	R_{PD}		2.5	5	10	MΩ
Thermal Resistance (Junction to Case)	θ_{JC}	SOT-23-3		74		°C/W
		SOT-23-5		74		
		CSP-4		5		

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Electrical Characteristics (Continued)

AP2121-2.85 Electrical Characteristics

(V_{IN}=3.85V, T_J=25°C, C_{IN}=1μF, C_{OUT}=1μF, **Bold** typeface applies over -40°C≤T_J≤85°C, unless otherwise specified.)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	V_{IN}=3.85V 1mA≤I_{OUT}≤30mA	2.793	2.85	2.907	V
Input Voltage	V_{IN}				6	V
Output Current	I_{OUT}	V_{IN}-V_{OUT}=1V	200			mA
Load Regulation	V_{RLOAD}	V_{IN}=3.85V 1mA≤I_{OUT}≤80mA		12	40	mV
Line Regulation	V_{RLINE}	3.3V≤V_{IN}≤6V I_{OUT}=30mA		4	16	mV
Dropout Voltage	V_{DROP}	I_{OUT}=10mA		20	40	mV
		I_{OUT}=100mA		150	300	
		I_{OUT}=150mA		200	400	
		I_{OUT}=200mA		250	500	
Quiescent Current	I_Q	V_{IN}=3.85V, I_{OUT}=0mA		25	50	μA
Standby Current	I_{STD}	V_{IN}=3.85V V_{CE} in OFF mode		0.1	1	μA
Power Supply Rejection Ratio	PSRR	Ripple 0.5Vp-p, f=1kHz V_{IN}=3.85V		70		dB
Output Voltage Temperature Coefficient	$\Delta V_{OUT}/\Delta T$	I_{OUT}=30mA		**±280**		μV/°C
	$(\Delta V_{OUT}/V_{OUT})/\Delta T$			**±100**		ppm/°C
Short Current Limit	I_{LIMIT}	V_{OUT}=0V		50		mA
RMS Output Noise	V_{NOISE}	T_A=25°C 10Hz ≤f≤100kHz		30		μVrms
CE "High" Voltage		CE input voltage "High"	1.5			V
CE "Low" Voltage		CE input voltage "Low"			0.25	V
CE Pull-down Resistance	R_{PD}		2.5	5	10	MΩ
Thermal Resistance (Junction to Case)	θ_{JC}	CSP-4		5		°C/W

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Electrical Characteristics (Continued)

AP2121-3.0 Electrical Characteristics

(V_{IN}=4V, T_J=25°C, C_{IN}=1μF, C_{OUT}=1μF, **Bold** typeface applies over -40°C≤T_J≤85°C, unless otherwise specified.)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	V_{IN}=4V 1mA≤I_{OUT}≤30mA	2.94	3.0	3.06	V
Input Voltage	V_{IN}				6	V
Output Current	I_{OUT}	V_{IN}-V_{OUT}=1V	200			mA
Load Regulation	V_{RLOAD}	V_{IN}=4V 1mA≤I_{OUT}≤80mA		12	40	mV
Line Regulation	V_{RLINE}	3.5V≤V_{IN}≤6V I_{OUT}=30mA		4	16	mV
Dropout Voltage	V_{DROP}	I_{OUT}=10mA		20	40	mV
		I_{OUT}=100mA		150	300	
		I_{OUT}=150mA		200	400	
		I_{OUT}=200mA		250	500	
Quiescent Current	I_Q	V_{IN}=4V, I_{OUT}=0mA		25	50	μA
Standby Current	I_{STD}	V_{IN}=4V V_{CE} in OFF mode		0.1	1	μA
Power Supply Rejection Ratio	PSRR	Ripple 0.5Vp-p, f=1kHz V_{IN}=4V		70		dB
Output Voltage Temperature Coefficient	$\Delta V_{OUT}/\Delta T$	I_{OUT}=30mA		**±300**		μV/°C
	$(\Delta V_{OUT}/V_{OUT})/\Delta T$			**±100**		ppm/°C
Short Current Limit	I_{LIMIT}	V_{OUT}=0V		50		mA
RMS Output Noise	V_{NOISE}	T_A=25°C 10Hz ≤f≤100kHz		30		μVrms
CE "High" Voltage		CE input voltage "High"	1.5			V
CE "Low" Voltage		CE input voltage "Low"			0.25	V
CE Pull-down Resistance	R_{PD}		2.5	5	10	MΩ
Thermal Resistance (Junction to Case)	θ_{JC}	SOT-23-3		74		°C/W
		SOT-23-5		74		
		CSP-4		5		

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Electrical Characteristics (Continued)

AP2121-3.2 Electrical Characteristics

(V_{IN}=4.2V, T_J=25°C, C_{IN}=1μF, C_{OUT}=1μF, **Bold** typeface applies over -40°C≤T_J≤85°C, unless otherwise specified.)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	V_{IN}=4.2V 1mA≤I_{OUT}≤30mA	3.136	3.2	3.264	V
Input Voltage	V_{IN}				6	V
Output Current	I_{OUT}	V_{IN}-V_{OUT}=1V	200			mA
Load Regulation	V_{RLOAD}	V_{IN}=4.2V 1mA≤ I_{OUT}≤ 80mA		12	40	mV
Line Regulation	V_{RLINE}	3.7V≤V_{IN}≤6V I_{OUT}=30mA		4	16	mV
Dropout Voltage	V_{DROP}	I_{OUT}=10mA		20	40	mV
		I_{OUT}=100mA		150	300	
		I_{OUT}=150mA		200	400	
		I_{OUT}=200mA		250	500	
Quiescent Current	I_Q	V_{IN}=4.2V, I_{OUT}=0mA		25	50	μA
Standby Current	I_{STD}	V_{IN}=4.2V V_{CE} in OFF mode		0.1	1	μA
Power Supply Rejection Ratio	PSRR	Ripple 0.5Vp-p, f=1kHz V_{IN}=4.2V		70		dB
Output Voltage Temperature Coefficient	$\Delta V_{OUT}/\Delta T$	I_{OUT}=30mA		**±320**		μV/°C
	$(\Delta V_{OUT}/V_{OUT})/\Delta T$			**±100**		ppm/°C
Short Current Limit	I_{LIMIT}	V_{OUT}=0V		50		mA
RMS Output Noise	V_{NOISE}	T_A=25°C 10Hz ≤f≤100kHz		30		μVrms
CE "High" Voltage		CE input voltage "High"	1.5			V
CE "Low" Voltage		CE input voltage "Low"			0.25	V
CE Pull-down Resistance	R_{PD}		2.5	5	10	MΩ
Thermal Resistance (Junction to Case)	θ_{JC}	SOT-23-3		74		°C/W
		SOT-23-5		74		
		CSP-4		5		

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Electrical Characteristics (Continued)

AP2121-3.3 Electrical Characteristics

(V_{IN}=4.3V, T_J=25°C, C_{IN}=1μF, C_{OUT}=1μF, **Bold** typeface applies over -40°C≤T_J≤85°C, unless otherwise specified.)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Output Voltage	V_{OUT}	V_{IN}=4.3V 1mA≤I_{OUT}≤30mA	3.234	3.3	3.366	V
Input Voltage	V_{IN}				6	V
Output Current	I_{OUT}	V_{IN}-V_{OUT}=1V	200			mA
Load Regulation	V_{RLOAD}	V_{IN}=4.3V 1mA≤ I_{OUT}≤ 80mA		12	40	mV
Line Regulation	V_{RLINE}	3.8V≤V_{IN}≤6V I_{OUT}=30mA		4	16	mV
Dropout Voltage	V_{DROP}	I_{OUT}=10mA		20	40	mV
		I_{OUT}=100mA		150	300	
		I_{OUT}=150mA		200	400	
		I_{OUT}=200mA		250	500	
Quiescent Current	I_Q	V_{IN}=4.3V, I_{OUT}=0mA		25	50	μA
Standby Current	I_{STD}	V_{IN}=4.3V V_{CE} in OFF mode		0.1	1	μA
Power Supply Rejection Ratio	PSRR	Ripple 0.5Vp-p, f=1kHz V_{IN}=4.3V		70		dB
Output Voltage Temperature Coefficient	$\Delta V_{OUT}/\Delta T$	I_{OUT}=30mA		**±330**		μV/°C
	$(\Delta V_{OUT}/V_{OUT})/\Delta T$			**±100**		ppm/°C
Short Current Limit	I_{LIMIT}	V_{OUT}=0V		50		mA
RMS Output Noise	V_{NOISE}	T_A=25°C 10Hz ≤f≤100kHz		30		μVrms
CE "High" Voltage		CE input voltage "High"	1.5			V
CE "Low" Voltage		CE input voltage "Low"			0.25	V
CE Pull-down Resistance	R_{PD}		2.5	5	10	MΩ
Thermal Resistance (Junction to Case)	θ_{JC}	SOT-23-3		74		°C/W
		SOT-23-5		74		
		CSP-4		5		

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Typical Performance Characteristics

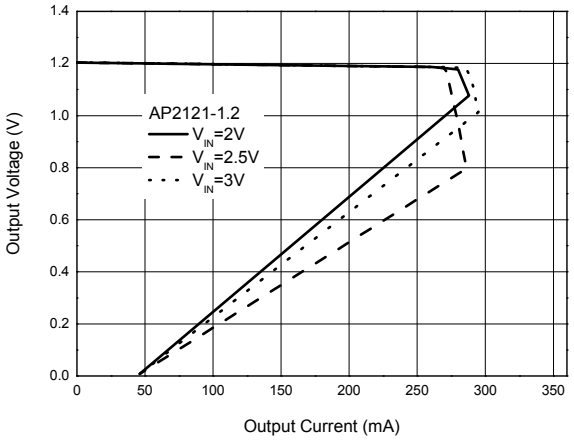

Figure 4. Output Voltage vs. Output Current

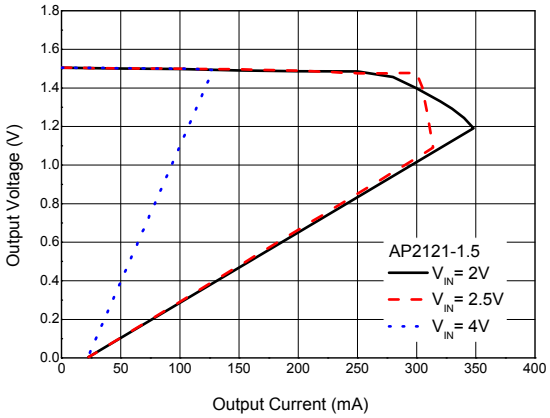

Figure 5. Output Voltage vs. Output Current

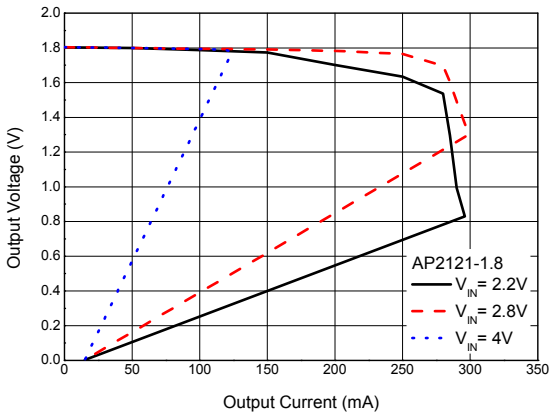

Figure 6. Output Voltage vs. Output Current

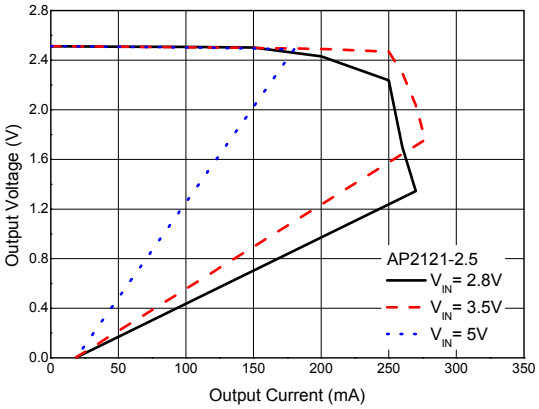

Figure 7. Output Voltage vs. Output Current

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Typical Performance Characteristics (Continued)

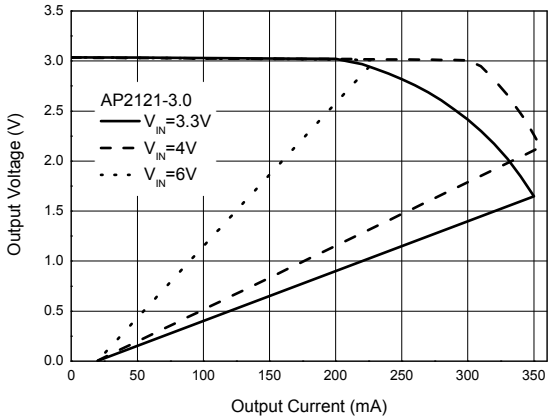

Figure 8. Output Voltage vs. Output Current

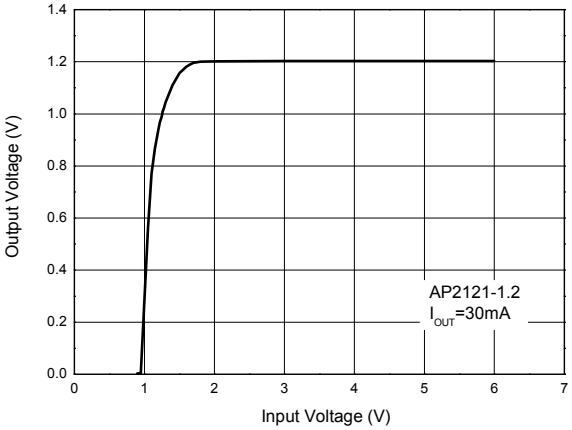

Figure 9. Output Voltage vs. Input Voltage

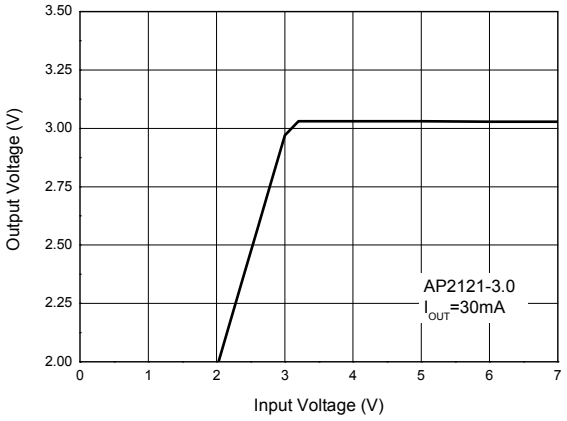

Figure 10. Output Voltage vs. Input Voltage

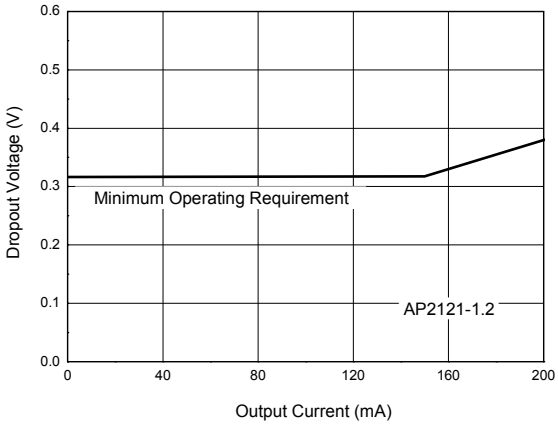

Figure 11. Dropout Voltage vs. Output Current

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Typical Performance Characteristics (Continued)

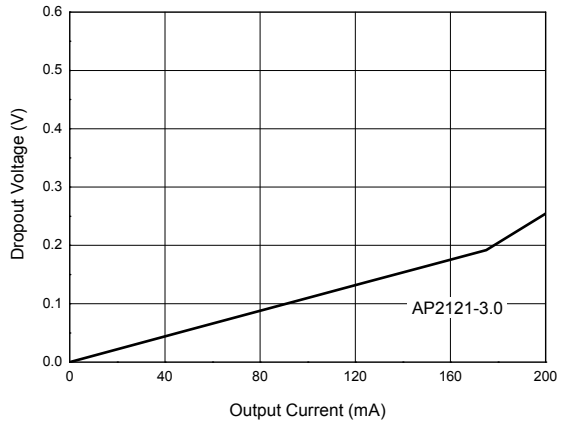

Figure 12. Dropout Voltage vs. Output Current

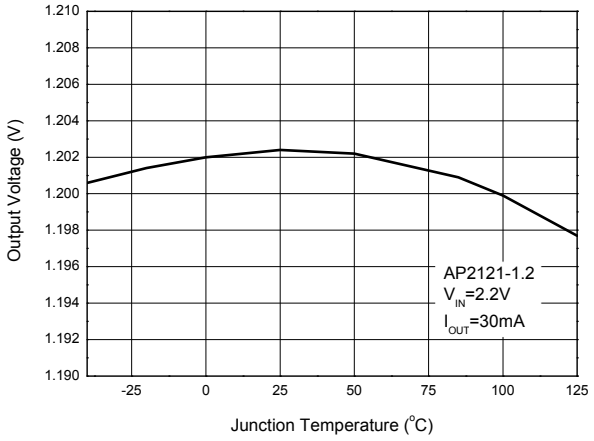

Figure 13. Output Voltage vs. Junction Temperature

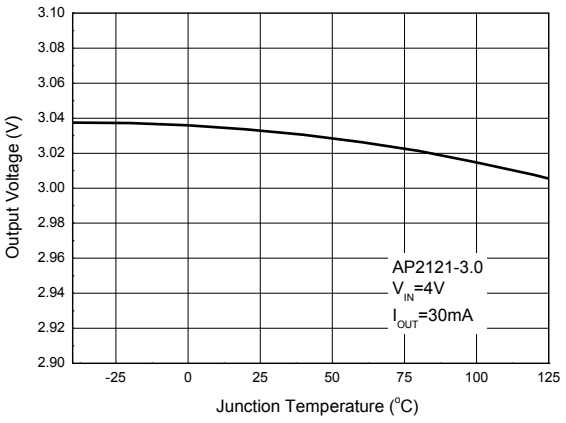

Figure 14. Output Voltage vs. Junction Temperature

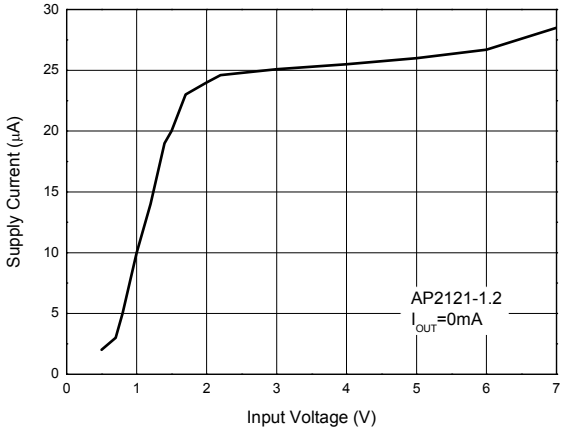

Figure 15. Supply Current vs. Input Voltage

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Typical Performance Characteristics (Continued)

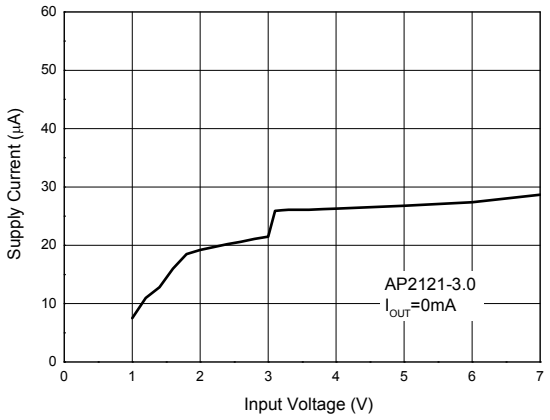

Figure 16. Supply Current vs. Input Voltage

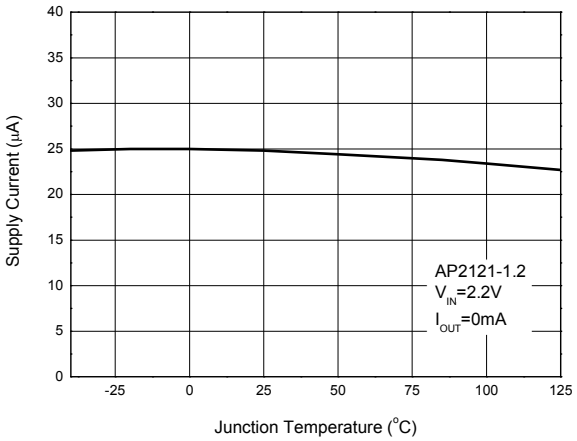

Figure 17. Supply Current vs. Junction Temperature

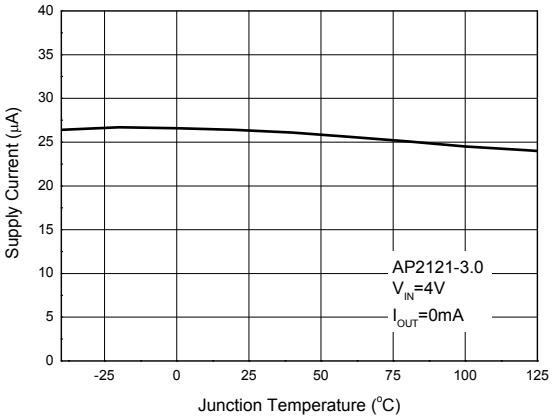

Figure 18. Supply Current vs. Junction Temperature

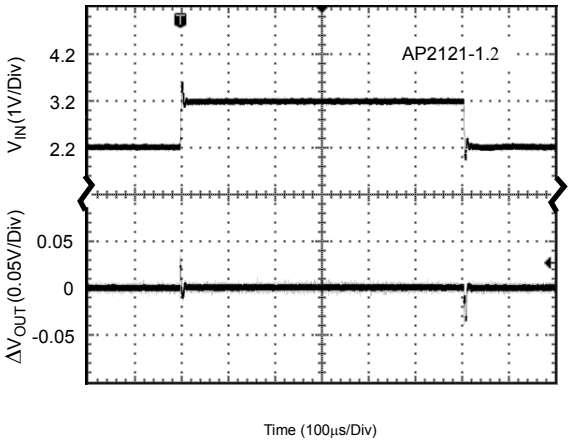

Figure 19. Line Transient
(Conditions: I_{OUT}=30mA, C_{IN}=1μF, C_{OUT}=1μF)

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Typical Performance Characteristics (Continued)

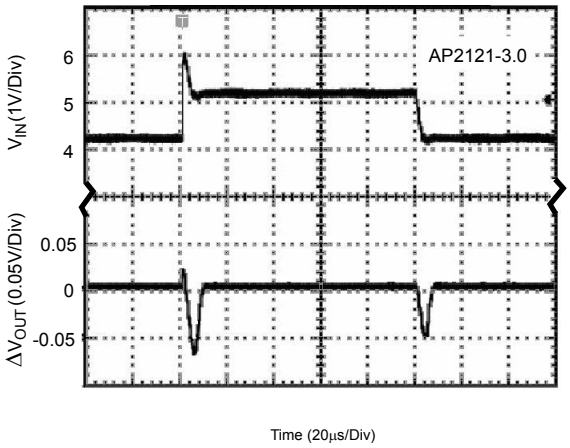

Figure 20. Line Transient
(Conditions: I_{OUT}=30mA, C_{IN}=1μF, C_{OUT}=1μF)

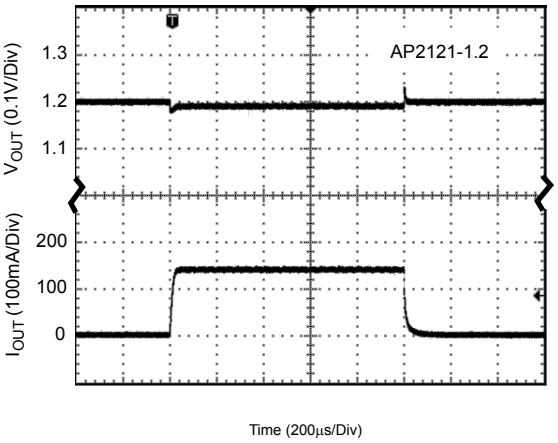

Figure 21. Load Transient
(Conditions: V_{IN}=2.2V, C_{IN}=1μF, C_{OUT}=1μF)

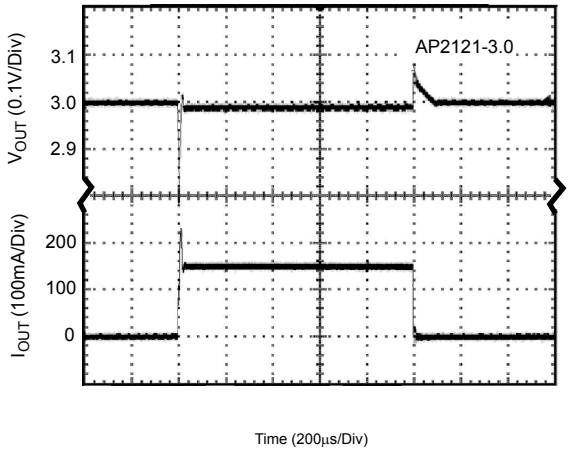

Figure 22. Load Transient
(Conditions: V_{IN}=4V, C_{IN}=1μF, C_{OUT}=1μF)

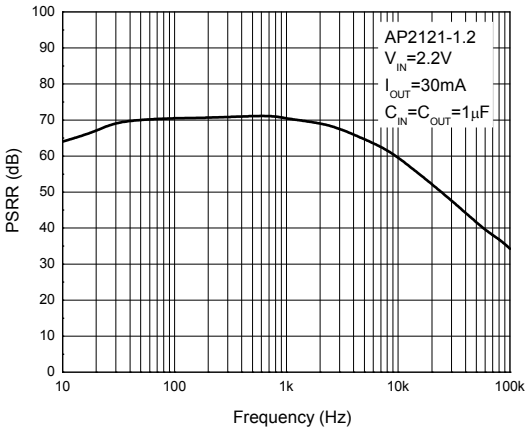

Figure 23. PSRR vs. Frequency

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Typical Performance Characteristics (Continued)

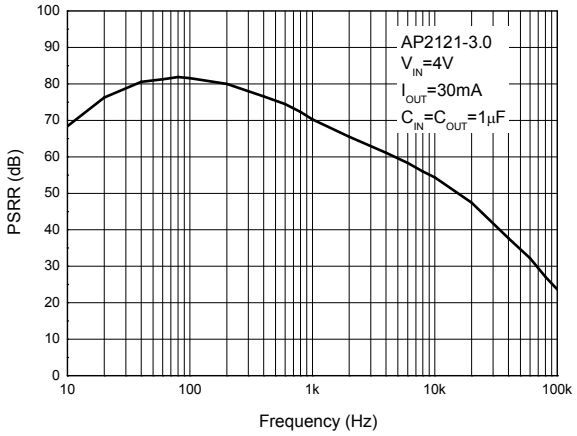

Figure 24. PSRR vs. Frequency

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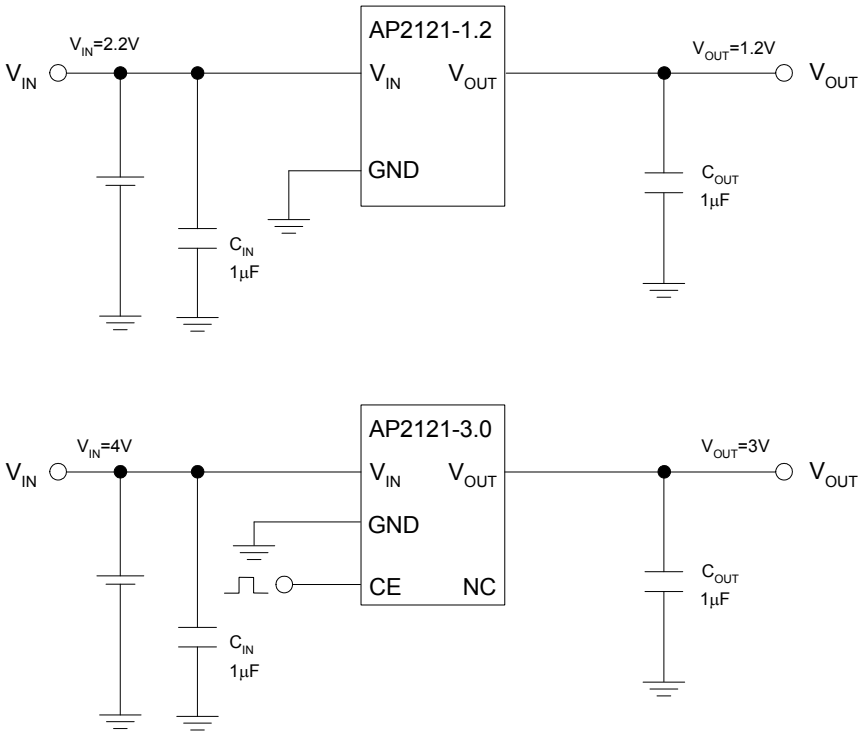
Typical Application



Note: Filter capacitors are required at the AP2121's input and output. 1μF capacitor is required at the input. The minimum output capacitance required for stability should be more than 1μF with ESR from 0.01Ω to 100Ω. Ceramic capacitors are recommended.

Figure 25. Typical Application of AP2121

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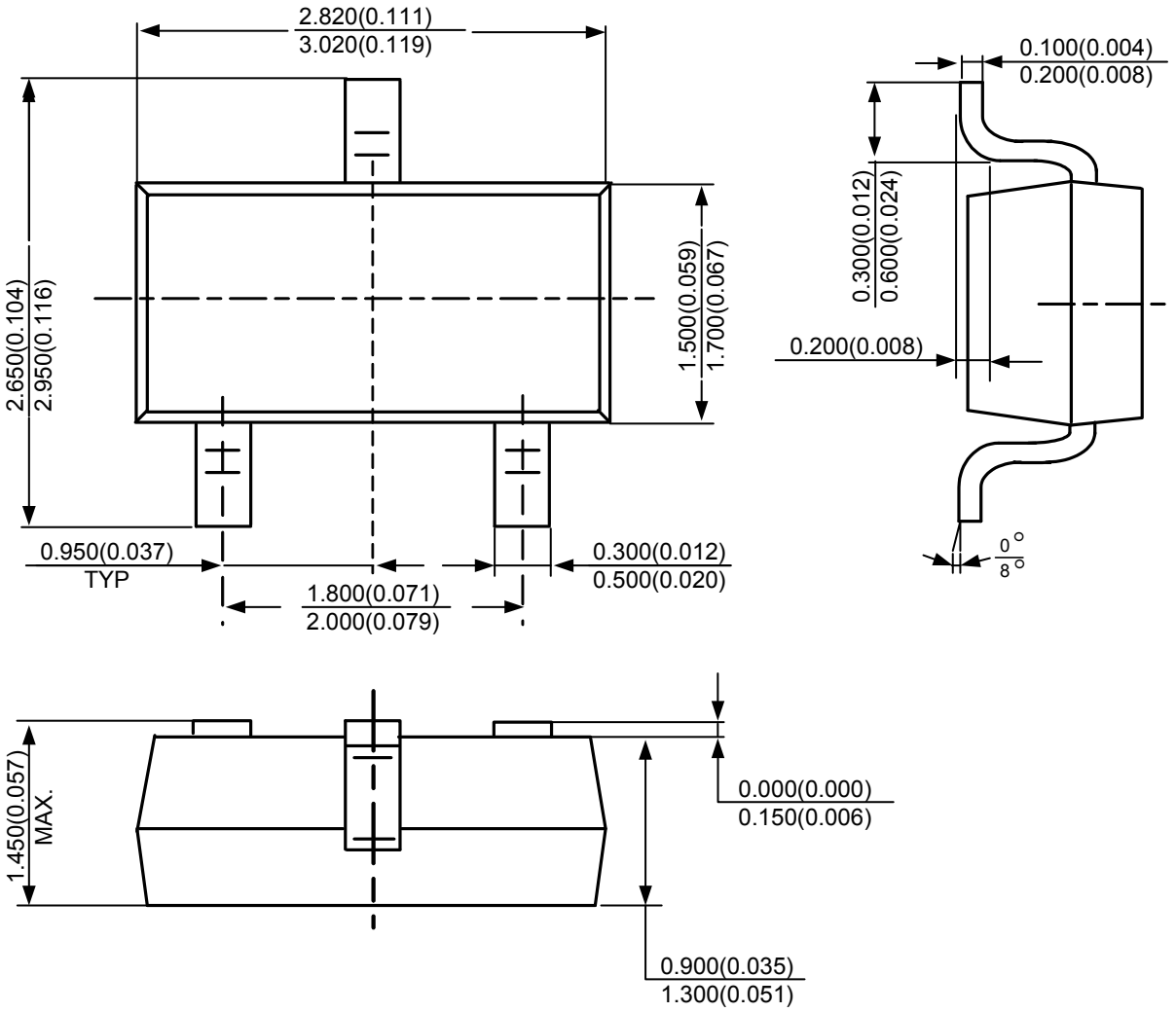
Mechanical Dimensions

SOT-23-3 **Unit: mm(inch)**



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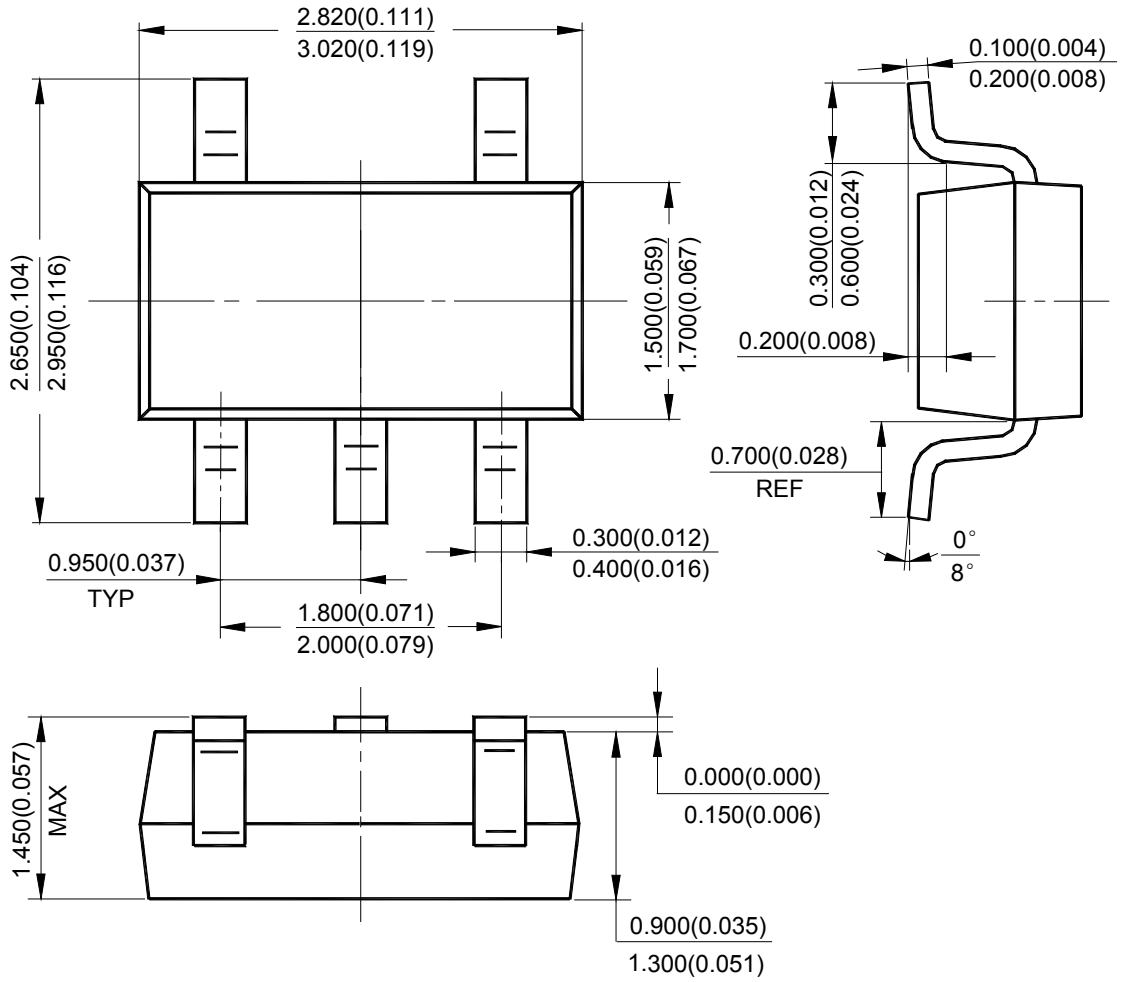
Mechanical Dimensions (Continued)

SOT-23-5 **Unit: mm(inch)**



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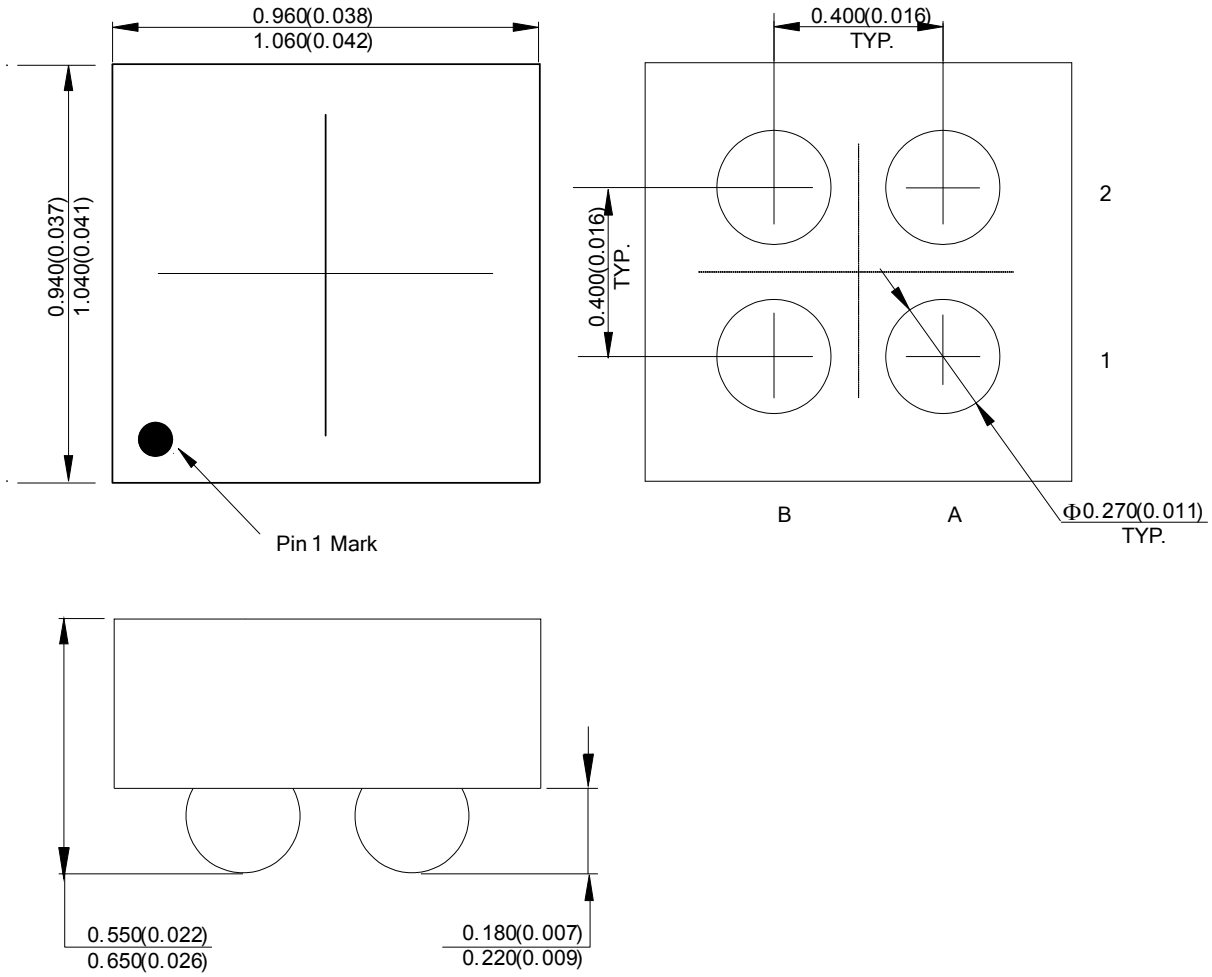
Mechanical Dimensions (Continued)

CSP-4 (P 0.4) **Unit: mm(inch)**



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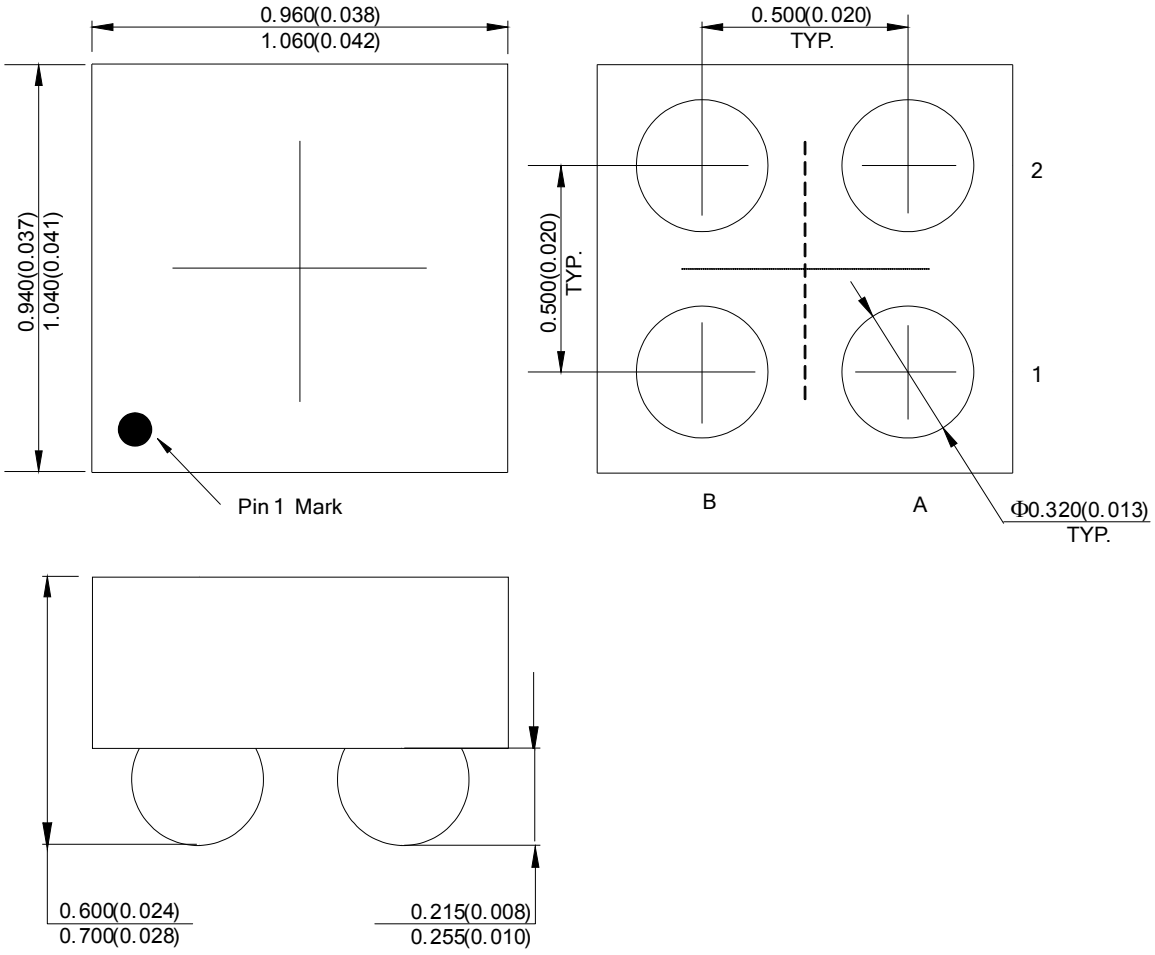
Mechanical Dimensions (Continued)

CSP-4 (P 0.5) **Unit: mm(inch)**



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