DESCRIPTION

The A6305 is a dual, low-noise, low-dropout regulator delivering at least 300mA of continuous output current. The output voltage for each regulator is set independently by trimming.

Voltages are selectable in 100mV steps within a range of 1.5V to 4.5V. Typical output noise is 47μV_{RMS}, and PSRR is 73dB at 100Hz.

The A6305 includes two independent logic-controlled shutdown inputs and allows the output of each regulator to be turned of independently.

The A6305 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.

The A6305 has excellent load and line transient response and good temperature characteristics, which can assure the stability of chip and power system. And it uses trimming technique to guarantee output voltage accuracy within ±2%.

The A6305 is available in SOT-23-6 and DFN6 (2 x 2) package.

ORDERING INFORMATION

Package Type	Part Number	
SOT-26	E6	A6305E6R-XZ
		A6305E6VR-XZ
DNF6	J6	A6305J6R-X
		A6305J6VR-X
Note	X: Output Portfolio See output voltage portfolio Z: Pin Type V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS free products Suffix "V" means Halogen free package		

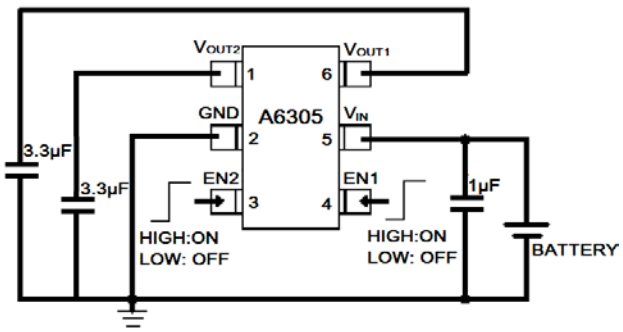
FEATURES

- Two Low Dropout Voltage Regulators
- 300mA Output Current for Each LDO
- 20uA Operating Supply Current Per LDO
- Low 47μV_{RMS} Output Noise
- Standby Mode:0.1μA
- Low 160mV Dropout at 300mA load
- 73dB PSRR at 100Hz
- Excellent Line regulation: 0.05%/V
- Independent Shutdown Controls
- 1.5V to 4.5V Factory-Preset Output
- Output Current Limit
- High Accuracy: ±2% (±1% customized)
- Available in SOT-26 and DFN6(2 x 2) Package

APPLICATION

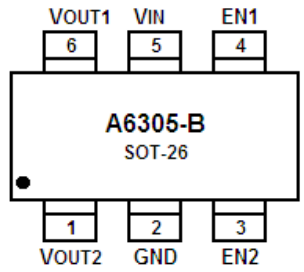
- Cellular phones
- Cordless phones and radio communication equipment
- Battery Powered equipment
- Notebook and hand-hold equipment
- Wireless LAN
- GPS receivers

TYPICAL APPLICATION

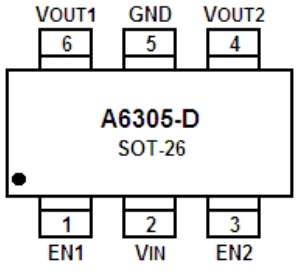


Note: Input capacitor(C_{IN} = 1uF) and Output capacitor (C_{OUT}= 1uF / 3.3uF) are recommended in all application circuit.

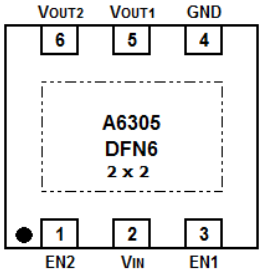
PIN DESCTRIPTION



Top View



Top View



Top View

Pin #			Symbol	Function
SOT-26		DFN6		
A6305-B	A6305-D			
1	4	6	V_{OUT2}	Output2 Pin
2	5	4	GND	Ground Pin
3	3	1	EN2	Chip Enable Pin2
4	1	3	EN1	Chip Enable Pin1
5	2	2	V_{IN}	Input Pin
6	6	5	V_{OUT1}	Output1 Pin

OUTPUT VOLTAGE PORTFOLIO

Code	Output Voltage		Part Number		Code	Output Voltage		Part Number	
	V1	V2	Type B	Type D		V1	V2	Type B	Type D
A	1.5	2.5	A6305E6R-AB	A6305E6VR-AD	N	2.8	2.5	A6305E6R-NB	A6305E6VR-ND
B	1.5	2.8	A6305E6R-BB	A6305E6VR-BD	O	2.8	2.8	A6305E6R-OB	A6305E6VR-OD
C	1.5	3.0	A6305E6R-CB	A6305E6VR-CD	P	2.8	3.0	A6305E6R-PB	A6305E6VR-PD
D	1.5	3.3	A6305E6R-DB	A6305E6VR-DD	Q	3.0	2.5	A6305E6R-QB	A6305E6VR-QD
E	1.5	4.0	A6305E6R-EB	A6305E6VR-ED	R	3.0	3.0	A6305E6R-RB	A6305E6VR-RD
F	1.8	1.8	A6305E6R-FB	A6305E6VR-FD	S	3.0	3.3	A6305E6R-SB	A6305E6VR-SD
G	1.8	2.5	A6305E6R-GB	A6305E6VR-GD	T	3.3	1.8	A6305E6R-TB	A6305E6VR-TD
H	1.8	2.8	A6305E6R-HB	A6305E6VR-HD	U	3.3	2.5	A6305E6R-UB	A6305E6VR-UD
I	1.8	3.0	A6305E6R-IB	A6305E6VR-ID	V	3.3	2.8	A6305E6R-VB	A6305E6VR-VD
J	1.8	3.3	A6305E6R-JB	A6305E6VR-JD	W	3.3	3.3	A6305E6R-WB	A6305E6VR-WD
K	2.5	1.8	A6305E6R-KB	A6305E6VR-KD	X	2.8	1.5	A6305E6R-XB	A6305E6VR-XD
L	2.5	2.5	A6305E6R-LB	A6305E6VR-LD	Y	2.8	3.3	A6305E6R-YB	A6305E6VR-YD
M	2.8	1.8	A6305E6R-MB	A6305E6VR-MD					

ABSOLUTE MAXIMUM RATING

Max Input Voltage		8V
T_J, Operating Junction Temperature		125°C
T_A, Ambient Temperature		-40°C~85°C
P_D, Power Dissipation	SOT-26	250mW
	DFN6	100mW
Ts, Storage Temperature		-40°C~150°C
Lead Temperature & Time		260°C, 10S

Stresses beyond 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 in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

RECOMMENDED OPERATING CONDITIONS

Parameter	MIN	MAX	Units
Input Voltage Range		6	V
Ambient Temperature	-40	85	°C

ELECTRICAL CHARACTERISTICS

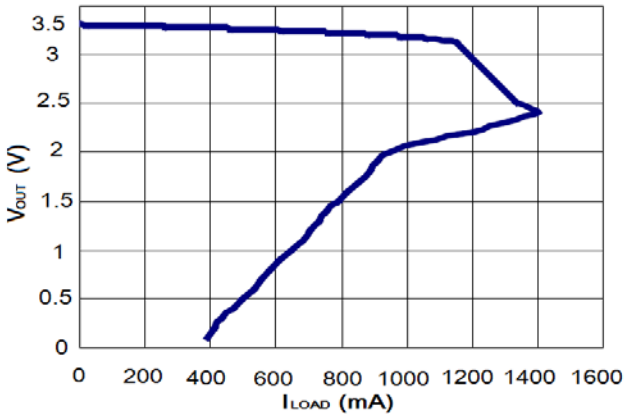
C_{IN}=1uF,C_{OUT}=3.3uF,T_A=25°C, unless otherwise specified

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Input Voltage	V_{IN}				6	V
Output Voltage	V_{OUT}	V_{IN}=Set V_{OUT}+1V 1mA≤ I_{OUT}≤ 30mA	V_{OUT} x0.98	V_{OUT1}	V_{OUT} x1.02	V
Maximum Output Current	I_{OUT} (Max)	V_{IN}-V_{OUT}=1V	300			mA
Dropout Voltage V_{OUT}≥2.8V	V_{DROP}	I_{OUT}=100mA		50	80	mV
		I_{OUT}=300mA		160	220	
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} \times V_{OUT}}$	I_{OUT}=40mA 2.8V≤V_{IN}≤6V		0.05	0.2	%/V
Load Regulation	$\frac{\Delta V_{OUT}}{\Delta I_{OUT}}$	V_{IN}=Set V_{OUT}+1V 1mA≤I_{OUT}≤300mA		30	50	mV
Supply Current	Iss	V_{IN}=Set V_{OUT}+1V		20	30	μA
Supply Current (Standby)	$I_{STANDBY}$	V_{IN}=Set V_{OUT}+1V, V_{CE}=GND		0.1	1.0	μA
Output Voltage Temperature Coefficient	$\frac{\Delta V_{OUT}}{\Delta T \times V_{OUT}}$	I_{OUT} =30mA		±100		ppm/°C
Ripple Rejection	PSRR	F=100Hz, Ripple=0.5Vp-p V_{IN}=Set V_{OUT}+1V		73		dB
Short Current Limit	I_{LIM}	V_{OUT} =0V		500		mA
CE Pull down Resistance	R_{PD}		2.0	5.0	10.0	mΩ
CE Input Voltage “H”	V_{CEH}		1.5		V_{IN}	V
CE Input Voltage “L”	V_{CEL}		0		0.25	V
Output Noise	EN	BW=10Hz~100KHz		47		μV_{RMS}

TYPICAL PERFORMANCE CHARACTERISTICS

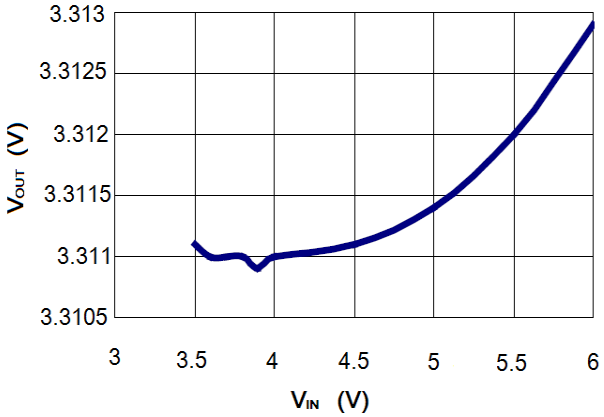
1. Output Voltage vs. Output Current
with output short protection

Current limit Vs. V_{OUT}



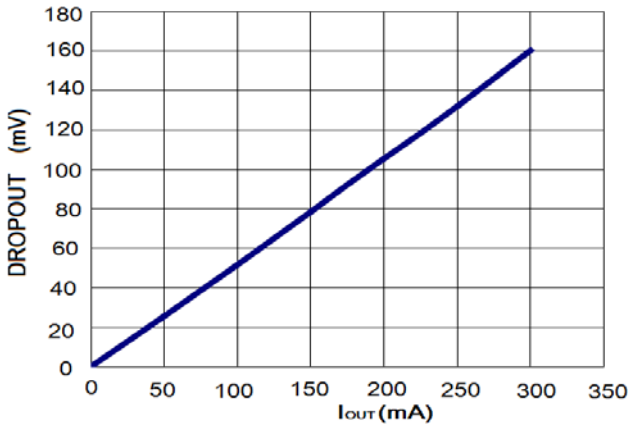
2. Output Voltage vs. Input Voltage
I_{OUT} = 14mA

Line Regulation



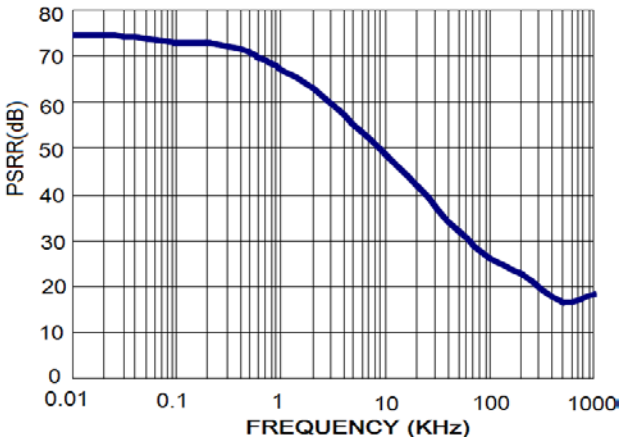
3. Dropout Voltage vs. Output Current
V_{OUT}=3.3V

Dropout & I_{OUT}

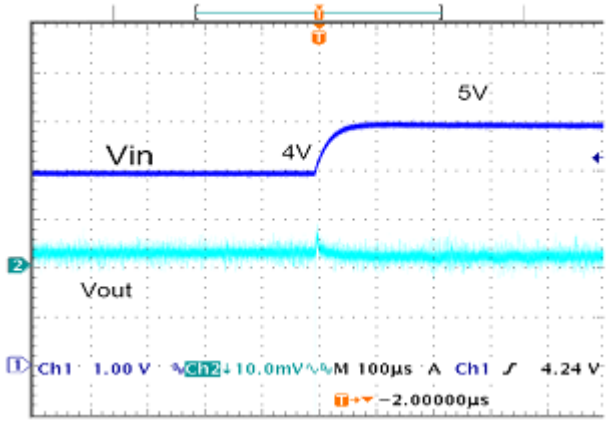


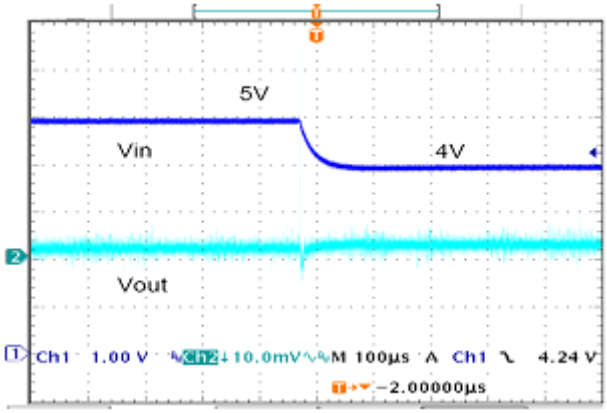
4. Ripple Rejection vs. Frequency
V_{OUT}=3.3V

PSRR

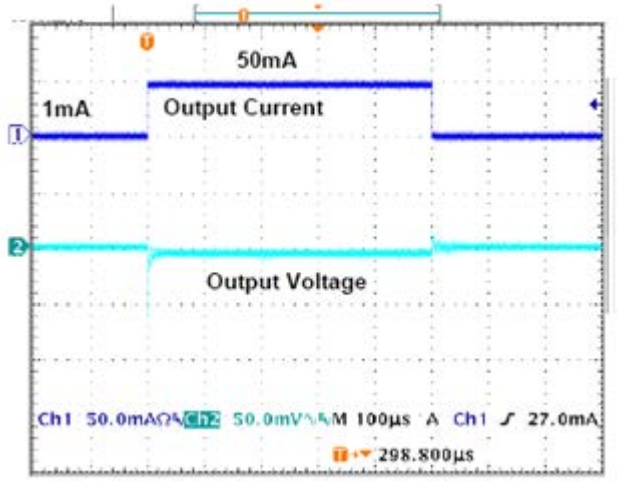


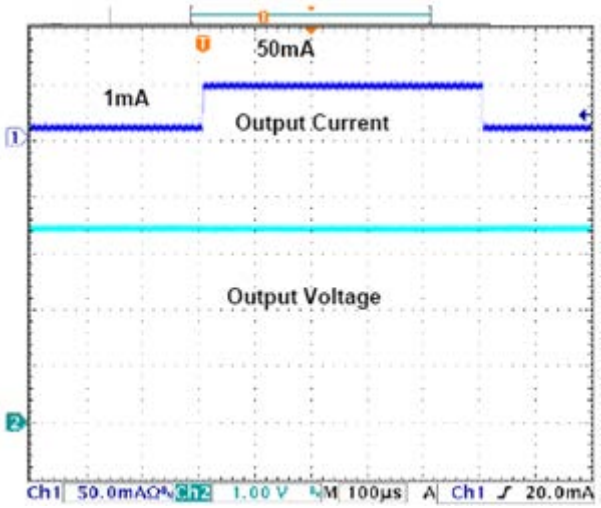
5. Line Transient Response C_{IN}=C_{OUT}=1μF, I_{OUT}=25mA , V_{OUT}=3.3V



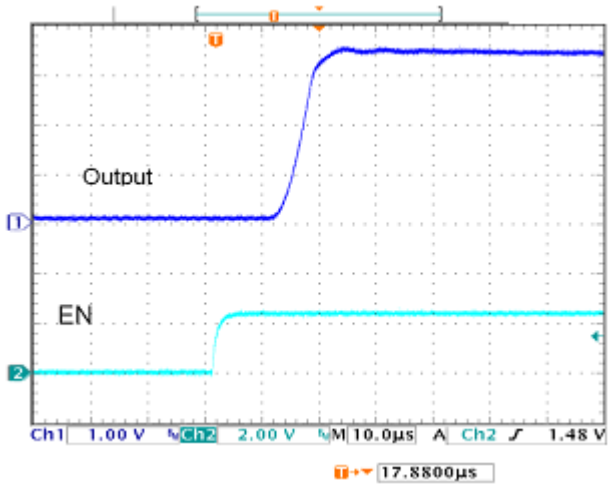


6. Load Transient Response C_{IN}=C_{OUT}=1μF, V_{IN}=4.5V , V_{OUT}=3.3V

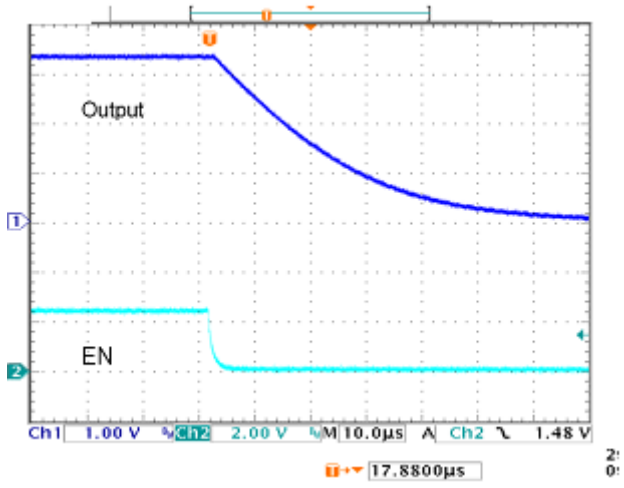




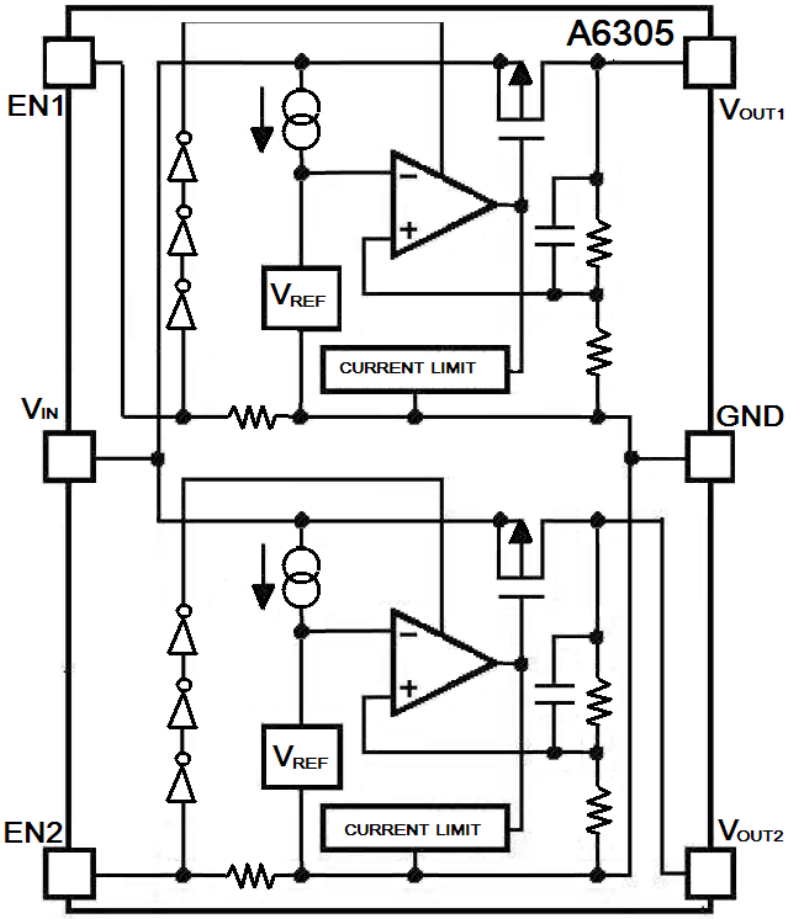
7. Start up from EN



8. Shut down from EN



BLOCK DIAGRAM



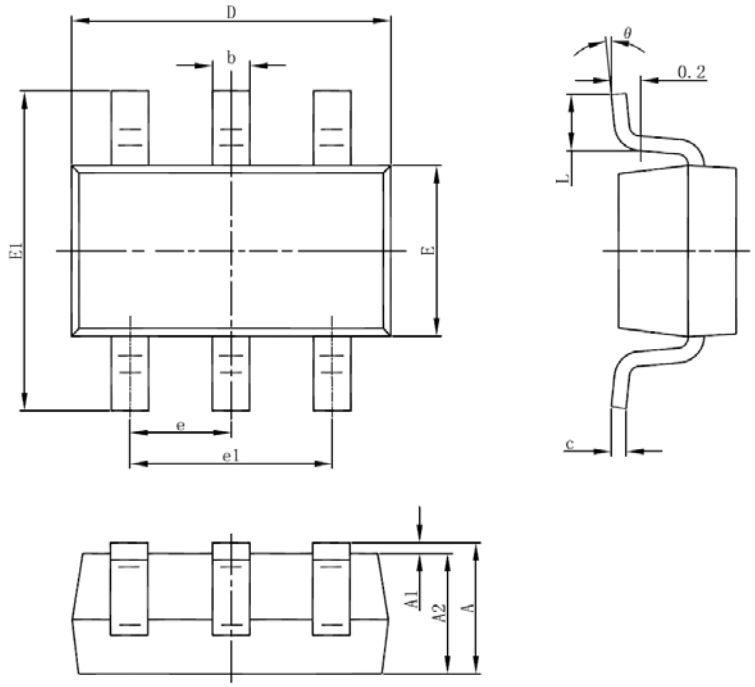
Explanation

A6305 series are highly accurate, dual, low noise, CMOS low dropout voltage regulators.
The output voltage for each regulator is set independently by trimming. Voltages are selectable in 100mV steps within a range of 1.5V to 4.5V. It also can be customized on command.

A6305 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module. A6305 has excellent load and line transient response and good temperature characteristics, which can assure the stability of chip and power system. And it uses trimming technique to guarantee output voltage accuracy within±2%.

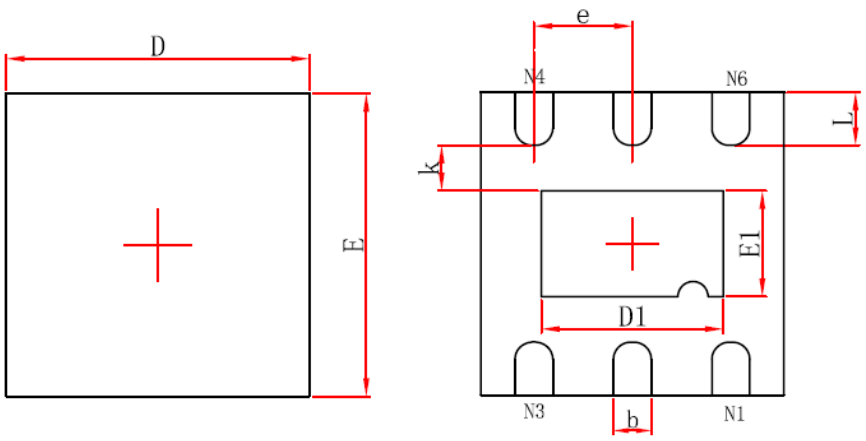
PACKAGE INFORMATION

Dimension in SOT-26 (Unit: mm)

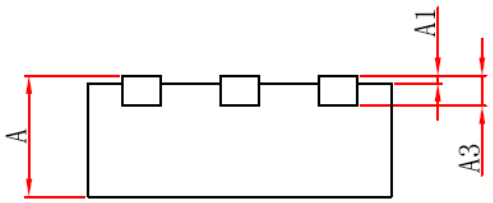


SYMBOL	MIN	MAX
A	1.000	1.300
A1	0.000	0.100
A2	0.700	0.900
b	0.200	0.500
c	0.100	0.250
D	2.700	3.100
E	1.500	1.800
E1	2.500	3.100
e	0.950(BSC)	
e1	1.700	2.100
L	0.300	0.600
θ	0°	8°

Dimension in DFN6 (2x2mm) (Unit: mm)



Top View **Bottom View**



Side View

Symbol	Min	Max
A	0.700/0.800	0.800/0.900
A1	0.000	0.050
A3	0.203REF.	
D	1.900	2.100
E	1.900	2.100
D1	1.100	1.300
E1	0.600	0.800
k	0.200MIN.	
b	0.180	0.300
e	0.650TYP.	
L	0.250	0.450

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