Dual 500mA LDO Regulator

Features

- **Wide Input Voltage Range: 4.3V~6.5V**
- **I_O = 500mA, V_{OUT1} and V_{OUT2} Dropout Voltage Typically 1V**
- **Output Current in Excess of 500mA**
- **Output Voltage Accuracy ±2%**
- **Quiescent Current, Typically 200µA**
- **Internal Short Circuit Current Limit**
- **Internal Over Temperature Protection**

Applications

- **CD/DVD-ROM, CD/RW**
- **Wireless LAN Card/Keyboard/Mouse**
- **Battery-Powered Equipment**
- **XDSL Router**

General Description

The G926A is a dual low dropout regulator with VOUT1 2.5V/500mA and VOUT2 3.3V/500mA, G926B is with VOUT1 1.8V/500mA and VOUT2 3.3V/500mA, G926C is with VOUT1 3.3V/500mA and VOUT2 2.5V/ 500mA and G926D is with VOUT1 3.3V/500mA and VOUT2 1.8V/500mA. The dropout voltage is typically 1V with 500mA load. A low quiescent current is typical 200µA.

Familiar regulator features such as over temperature and current limit protection circuits are provided to prevent it from being damaged by abnormal operating conditions.

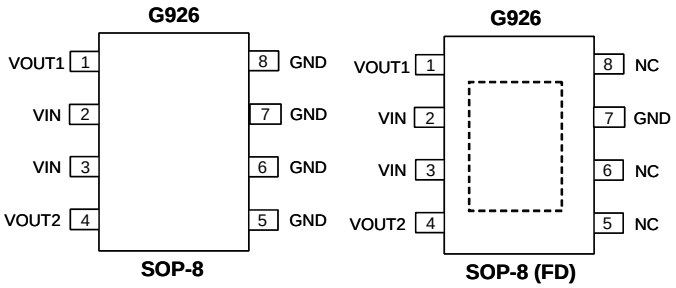
The G926 comes in a SOP-8 and SOP-8 (FD) with power-pad package.

Ordering Information

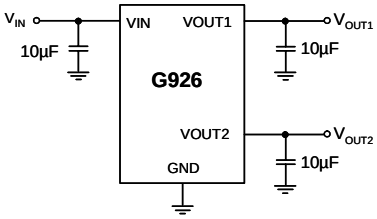
ORDER NUMBER	MARKING	VOUT1	VOUT2	TEMP. RANGE	PACKAGE (Pb free)
G926AP1U	G926A	2.5V	3.3V	-40°C~ +85°C	SOP-8
G926BP1U	G926B	1.8V	3.3V	-40°C~ +85°C	SOP-8
G926CP1U	G926C	3.3V	2.5V	-40°C~ +85°C	SOP-8
G926DP1U	G926D	3.3V	1.8V	-40°C~ +85°C	SOP-8
G926AF1U	G926A	2.5V	3.3V	-40°C~ +85°C	SOP-8 (FD)
G926BF1U	G926B	1.8V	3.3V	-40°C~ +85°C	SOP-8 (FD)
G926CF1U	G926C	3.3V	2.5V	-40°C~ +85°C	SOP-8 (FD)
G926DF1U	G926D	3.3V	1.8V	-40°C~ +85°C	SOP-8 (FD)

Note: P1: SOP-8 F1: SOP-8 (FD)
U: Tape & Reel

Pin Configuration



Typical Application Circuit



Absolute Maximum Ratings (Note 1)

Input Voltage. 7V
Power Dissipation Internally Limited (Note2)
Maximum Junction Temperature . . . . . .150°C
Storage Temperature Range . . . .-65°C ≤ T_J ≤+150°C
Reflow Temperature (soldering, 10sec) . . . . . 260°C
Thermal Resistance Junction to Ambient
SOP-8 . . . . . .162°C/W
SOP-8(FD) . . . . . .75°C/W
Thermal Resistance Junction to Case
SOP-8 . . . . . 31°C/W
SOP-8(FD) . . . . . .5°C/W

Operating Conditions (Note 1)

Input Voltage. . . . . .4.3V ~ 6.5V
Temperature Range. . . . . .-40°C ≤ T_A ≤85°C

Electrical Characteristics

V_{IN} =5V, I_O = 500mA, C_{IN}=1µF, C_{OUT} =1µF. All specifications apply for T_A = T_J = 25°C. [Note 3]

PARAMETER	SYMBOL	CONDITION		MIN	TYP	MAX	UNIT
Input Voltage	V_{IN}			4.3	---	6.5	V
Output Voltage1	V_{OUT1}	G926A	I_O = 50mA	2.450	2.5	2.550	V
		G926B		1.764	1.8	1.836	
		G926C	10mA < I_O < 500mA	3.234	3.3	3.366	
		G926D		3.234	3.3	3.366	
Output Voltage 2	V_{OUT2}	G926A	10mA < I_O < 500mA	3.234	3.3	3.366	V
		G926B		3.234	3.3	3.366	
		G926C	I_O = 50mA	2.450	2.5	2.550	
		G926D		1.764	1.8	1.836	
Line Regulation	V_{line}	4V < V_{IN} < 6.5V, I_O = 10mA		---	0.3	1	%
Load Regulation	V_{load}	10mA < I_O < 500mA		---	0.5	1	%
Quiescent Current	I_Q	V_{IN} = 5V		---	200	500	µA
Ripple Rejection	PSRR	fi=120Hz, V_{P-P} = 1V, V_O = 3.3V		---	53	---	dB
		fi=120Hz, V_{P-P} = 1V, V_O = 2.5V		---	53	---	
		fi=120Hz, V_{P-P} = 1V, V_O = 1.8V		---	53	---	
Dropout Voltage	V_D	I_O=500mA		---	1	1.2	V
Short Circuit Current	I_{short}	VOUT1		---	650	---	mA
		VOUT2		---	650	---	
Current Limit	I_{lim}	VOUT1		550	800	---	mA
		VOUT2		550	800	---	
Over Temperature Threshold	T_{OT}			---	150	---	°C
Over Temperature Hysterisis	T_{hys}			---	25	---	°C

Note 1: Absolute Maximum Ratings are limits beyond which damage to the device may occur. Operating Conditions are conditions under which the device functions but the specifications might not be guaranteed. For guaranteed specifications and test conditions see the Electrical Characteristics.

Note2: The maximum power dissipation is a function of the maximum junction temperature, T_{Jmax}; total thermal resistance, θ_{JA}, and ambient temperature T_A. The maximum allowable power dissipation at any ambient temperature is T_{jmax}-T_A / θ_{JA}. If this dissipation is exceeded, the die temperature will rise above 150°C and IC will go into thermal shutdown. For the G926 in SOP-8 package, θ_{JA} is 162°C/W. For in SOP-8 (FD) with power-pad package, θ_{JA} is 75°C/W.

Note3: Low duty pulse techniques are used during test to maintain junction temperature as close to ambient as possible.

Note4: The type of output capacitor should be tantalum, aluminum or ceramic.

Pin Description

PIN		NAME	I/O	FUNCTION
SOP-8	SOP-8(FD)			
1	1	VOUT1	O	VOUT1 output voltage 2.5V in G926A, 1.8V in G926B or 3.3V in G926C and G926D, and source up to 500mA.
2,3	2,3	VIN	I	Input voltage
4	4	VOUT2	O	VOUT2 output voltage 3.3V in G926A and G926B, 2.5V in G926C or 1.8V in G926D, and source up to 500mA.
	5,6,8	NC	I	No Connection
5,6,7,8	7	GND	I	Ground also function as heat-sink.

Definitions

Dropout Voltage
The input/output Voltage differential at which the regulator output no longer maintains regulation against further reductions in input voltage. Measured when the output drops 100mV below its nominal value, dropout voltage is affected by junction temperature, load current and minimum input supply requirements.

Line Regulation
The change in output voltage for a change in input voltage. The measurement is made under conditions of low dissipation or by using pulse techniques such that average chip temperature is not significantly affected.

Load Regulation
The change in output voltage for a change in load current at constant chip temperature. The measurement is made under conditions of low dissipation or by using pulse techniques such that average chip temperature is not significantly affected.

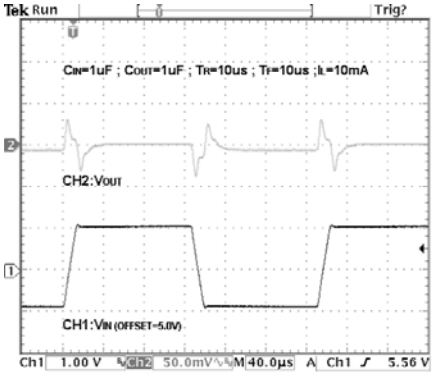
Maximum Power Dissipation
The maximum total device dissipation for which the regulator will operate within specifications.

Quiescent Bias Current
Current which is used to operate the regulator chip and is not delivered to the load.

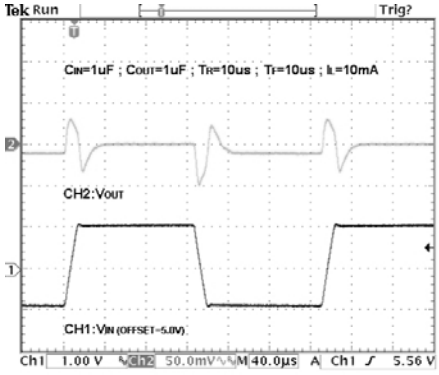
Typical Performance Characteristics

(V_{IN}=5V, C_{IN}=1µF, C_{OUT} =1µF, T_A=25°C, unless otherwise noted.)

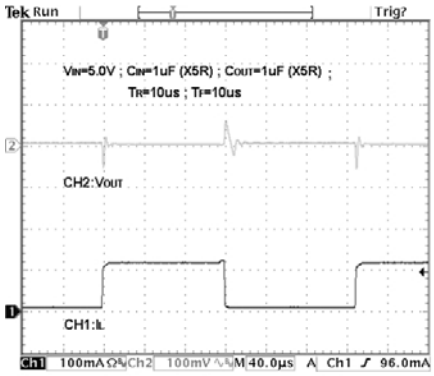
Line Transient Response



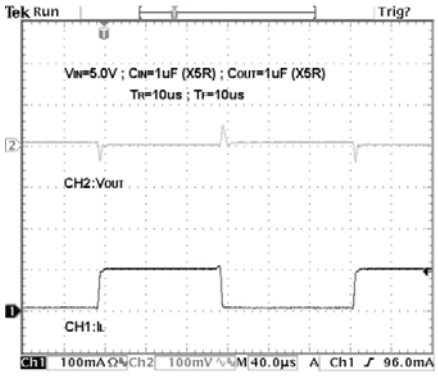
Line Transient Response



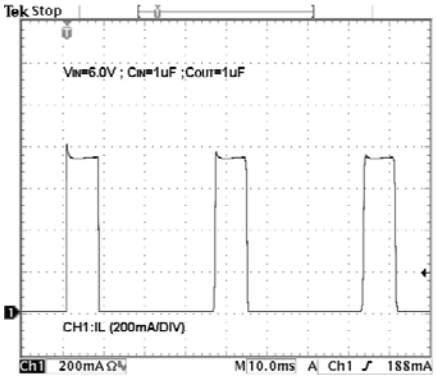
Load Transient Response



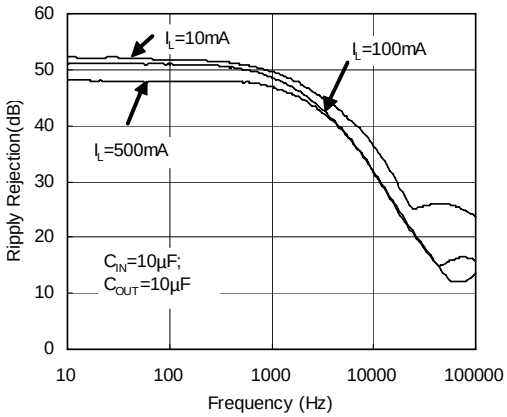
Load Transient Response



Short Circuit Current

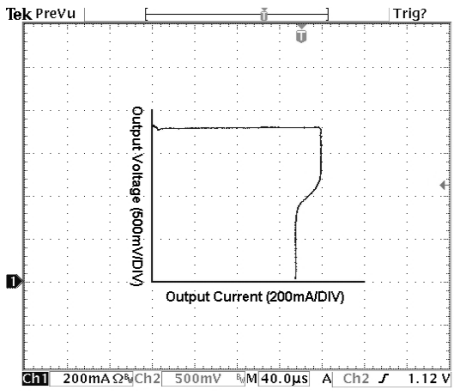


Ripple Rejection

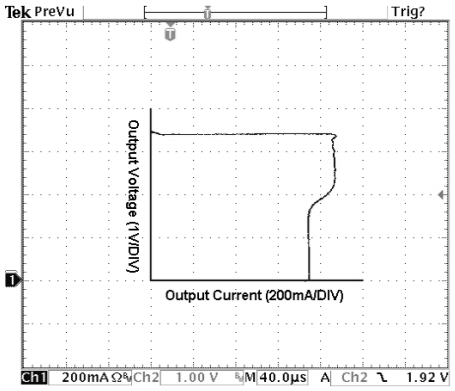


Typical Performance Characteristics (continued)

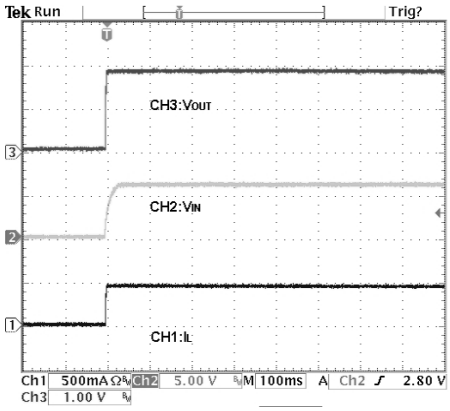
Overcurrent Protection Characteristics



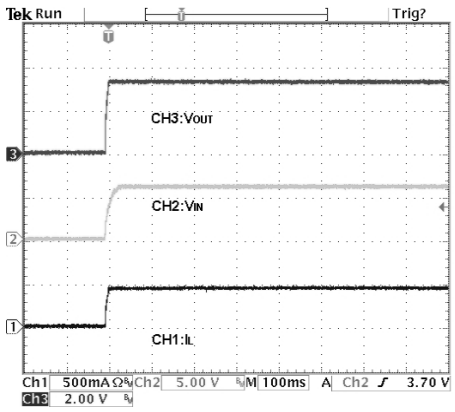
Overcurrent Protection Characteristics



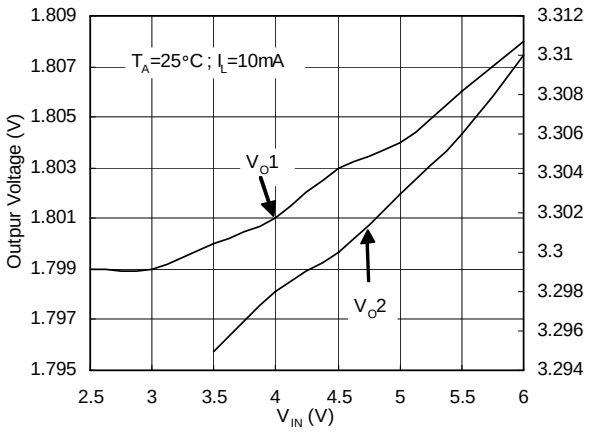
Start-up



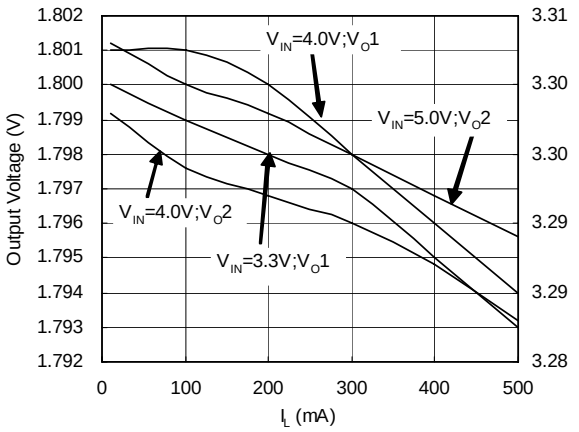
Start-up



Output Voltage vs. V_{IN}

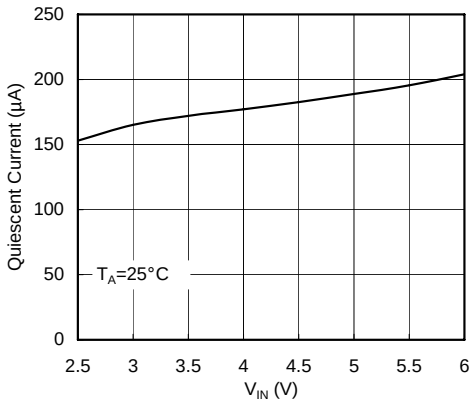


Output Voltage vs. I_L

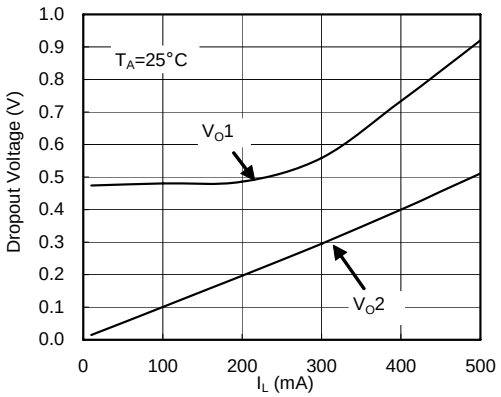


Typical Performance Characteristics (continued)

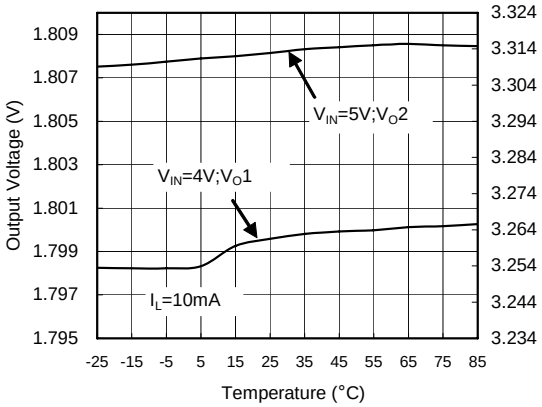
Quiescent Current vs. V_{IN}



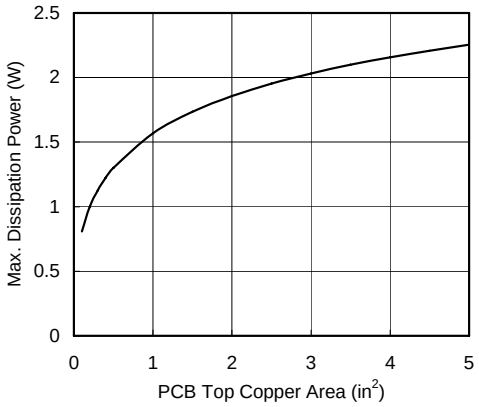
Dropout Voltage vs. I_L



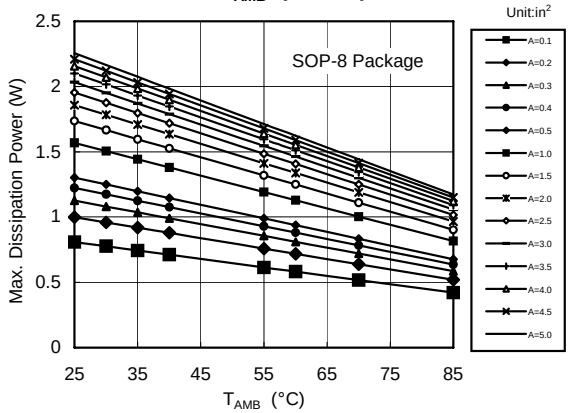
Output Voltage vs. Temperature



G926 Max. Power Dissipation vs. PCB Top Copper Area

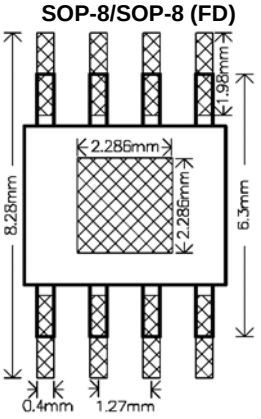


G926 Max. Power Dissipation vs. T_{AMB} (still air)

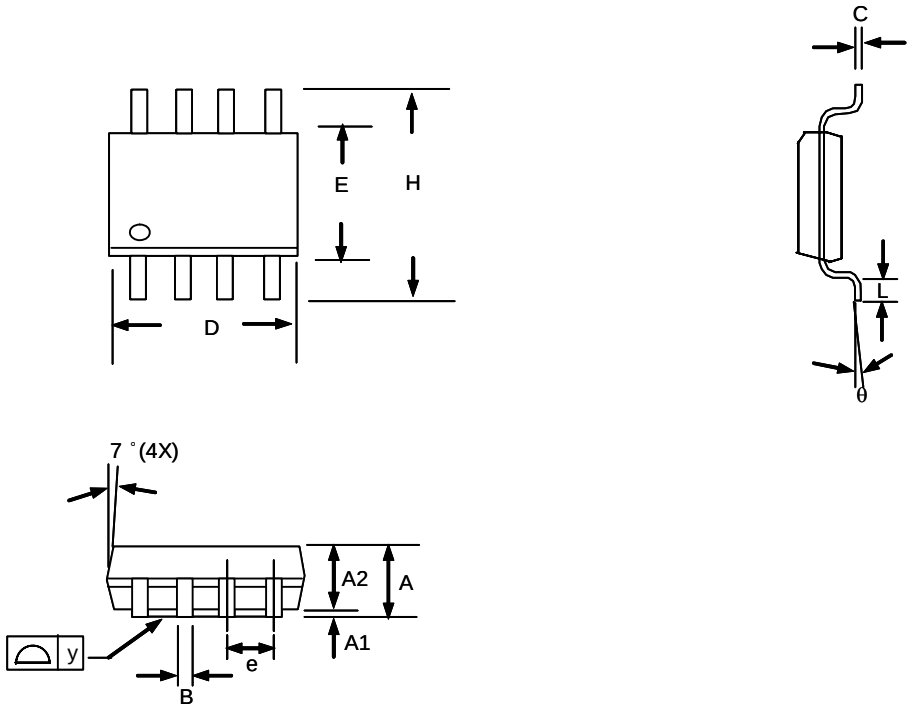


Recommended Minimum Footprint

SOP-8/SOP-8 (FD)



Package Information

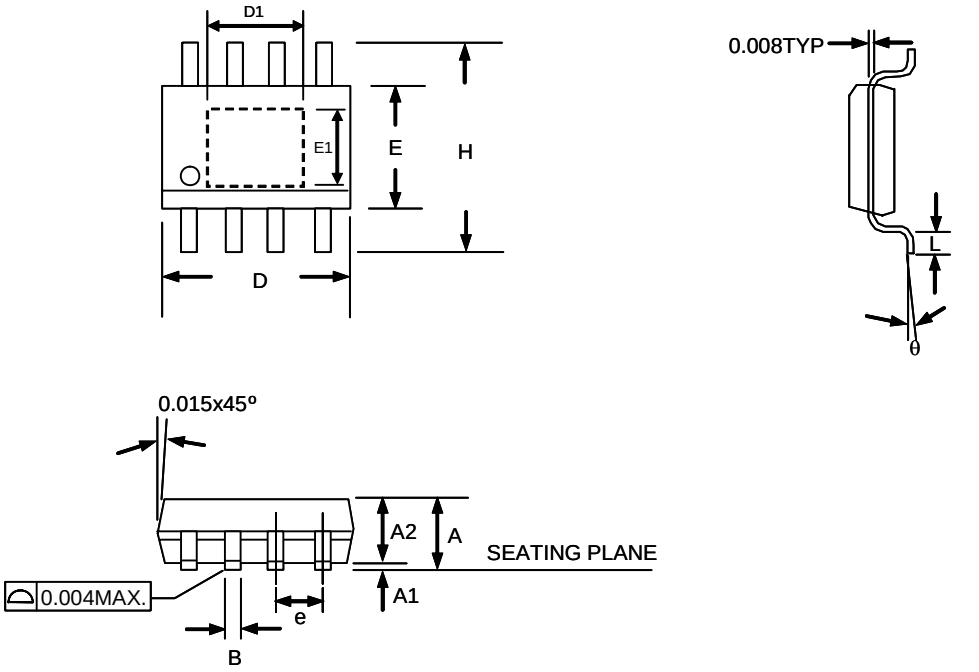


SOP-8 Package

Note:

1. Package body sizes exclude mold flash and gate burrs
2. Dimension L is measured in gage plane
3. Tolerance 0.10mm unless otherwise specified
4. Controlling dimension is millimeter converted inch dimensions are not necessarily exact.
5. Followed from JEDEC MS-012

SYMBOL	DIMENSION IN MM			DIMENSION IN INCH		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	1.35	1.60	1.75	0.053	0.063	0.069
A1	0.10	-----	0.25	0.004	-----	0.010
A2	-----	1.45	-----	-----	0.057	-----
B	0.33	-----	0.51	0.013	-----	0.020
C	0.19	-----	0.25	0.007	-----	0.010
D	4.80	-----	5.00	0.189	-----	0.197
E	3.80	-----	4.00	0.150	-----	0.157
e	-----	1.27	-----	-----	0.050	-----
H	5.80	-----	6.20	0.228	-----	0.244
L	0.40	-----	1.27	0.016	-----	0.050
y	-----	-----	0.10	-----	-----	0.004
θ	0°	-----	8°	0°	-----	8°



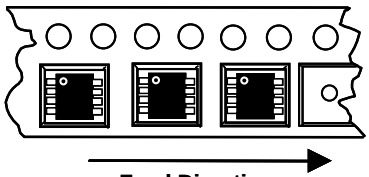
SOP-8 (FD) Package

Note:

1. JEDEC Outline: MS-012 AA/E.P. Version: N/A
2. Dimension "D" does not include mold flash, protrusions or gate burrs. Mold flash, protrusions and gate burrs shall not exceed .15mm (.006in) per side.
3. Dimensions "E" does not include inter-lead flash, or protrusions inter-lead flash and protrusions shall not exceed .25mm (.010in) per side.

SYMBOL	DIMENSION IN MM		DIMENSION IN INCH	
	MIN	MAX	MIN	MAX
A	1.35	1.75	0.053	0.069
A1	0.00	0.13	0.000	0.005
A2	-----	1.50	-----	0.059
B	0.41TYP		0.016TYP	
D	4.80	4.98	0.189	0.196
E	3.81	3.99	0.150	0.157
e	1.27TYP		0.05TYP	
H	5.80	6.20	0.228	0.244
L	0.41	1.27	0.016	0.050
θ	0°	8°	0°	8°
D1	-----	2.29	-----	0.090
E1	-----	2.29	-----	0.090

Taping Specification



Feed Direction

Typical SOP Package Orientation

PACKAGE	Q'TY/REEL
SOP-8	2,500 ea
SOP-8 (FD)	2,500 ea

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