

Pin Description

PIN		I/O	Description
No.	Name		
1	V _{OUT1}	O	V _{OUT1} output Voltage 3.3V. sources up to 500 mA.
2	V _{IN}	I	Supply Voltage. Voltage can range from 4.75V to 8V
3	V _{IN}	I	Supply Voltage. Voltage can range from 4.75V to 8V
4	V _{OUT2}	O	V _{OUT2} output Voltage 2.5V. sources up to 300 mA.
5	GND		Ground also functions as a heatsink. Solder to the ground plane to maximize thermal dissipation
6	GND		
7	GND		
8	GND		

Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
V _{IN} , V _{OUT}	Input Voltage or Out Voltage	9	V
R _{TH,JA}	Thermal Resistance – Junction to Ambient	80	°C/W
PD	Power Dissipation	Internally Limited	W
T _J	Operating Junction Temperature		°C
	Control Section	0 to 125	
	Power Transistor	0 to 150	
T _{STG}	Storage Temperature Range	-65 to +150	°C
TL	Lead Temperature (Soldering, 10 second)	260	°C

Electrical Characteristics

Unless otherwise noted these specifications apply over full temperature, T_J=0 to 125°C. Typical values refer to T_J=25°C.

Symbol	Parameter	Test Conditions	APL5521			Unit
			Min.	Typ.	Max.	
V _{IN}	Input Voltage		4.75		8	V
I _Q	Quiescent Current	I _{OUT1} =0mA, I _{OUT2} =0mA		10	16	mA
OTS	Over Temperature Shutdown			150		°C
	Over Temperature Shutdown Hysteresis	Hysteresis		10		°C
TC	Output Voltage Temperature Coefficient			50		ppm/°C

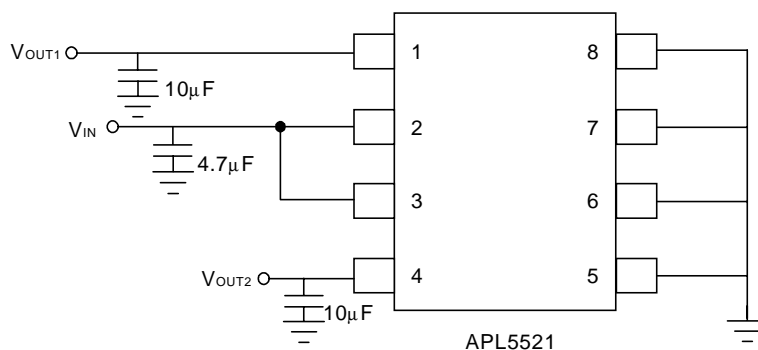
Electrical Characteristics (Cont.)

Unless otherwise noted these specifications apply over full temperature, $T_j=0$ to 125°C . Typical values refer to $T_j=25^\circ\text{C}$.

Symbol	Parameter	Test Conditions	APL5521			Unit
			Min.	Typ.	Max.	
Output1 (500mA)						
V_{OUT1}	Output 1 Voltage	$4.75 < V_{IN} < 8.0\text{V}$, $0\text{mA} < I_{OUT1} < 500\text{mA}$	3.234	3.3	3.366	V
I_{OUT1}	Output 1 Current Capability	$V_{IN}=5\text{V}$	500			mA
REG_{LINE}	Line Regulation	$4.75 < V_{IN1} < 8.0\text{V}$, $I_{OUT1}=0\text{mA}$		1	10	mV
REG_{LOAD}	Load Regulation	$V_{IN}=5\text{V}$, $0\text{mA} < I_{OUT1} < 500\text{mA}$		14	24	mV
	Load Transient	$V_{IN}=5\text{V}$, $I_{OUT1}=1\text{mA}\sim 500\text{mA}$ in $30\mu\text{s}$		70	150	mV
V_{DROP}	Dropout Voltage ^(Note)	$I_{OUT1}=500\text{mA}$		1.25	1.4	V
PSRR	Ripple Rejection	$F \leq 1\text{kHz}$, 1Vpp at $V_{IN}=5\text{V}$	55	65		dB
C_{OUT}	Output Capacitor	C_{OUT1}		10		μF
Output2 (300mA)						
V_{OUT2}	Output 2 Voltage	$4.75 < V_{IN} < 8.0\text{V}$, $0\text{mA} < I_{OUT2} < 300\text{mA}$	2.450	2.5	2.550	V
I_{OUT2}	Output 2 Current Capability	$V_{IN}=5\text{V}$	300			mA
REG_{LINE}	Line Regulation	$4.75 < V_{IN} < 8.0\text{V}$, $I_{OUT2}=0\text{mA}$		1	10	mV
REG_{LOAD}	Load Regulation	$V_{IN}=5\text{V}$, $0\text{mA} < I_{OUT2} < 300\text{mA}$		8	18	mV
	Load Transient	$V_{IN}=5\text{V}$, $I_{OUT2}=1\text{mA}\sim 300\text{mA}$ in $20\mu\text{s}$		70	150	mV
V_{DROP}	Dropout Voltage ^(Note)	$I_{OUT1}=300\text{mA}$		1.2	1.35	V
PSRR	Ripple Rejection	$F \leq 1\text{kHz}$, 1Vpp at $V_{IN}=5\text{V}$	55	65		dB
C_{OUT}	Output Capacitor	C_{OUT2}		10		μF

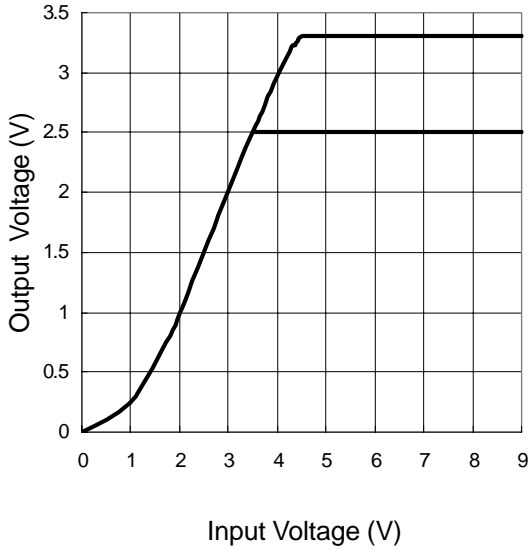
Note: Dropout voltage definition : $V_{IN}-V_{OUT}$ when V_{OUT} is 2% below the value of V_{OUT} for $V_{IN} = V_{OUT} + 1.4\text{V}$

Application Circuit

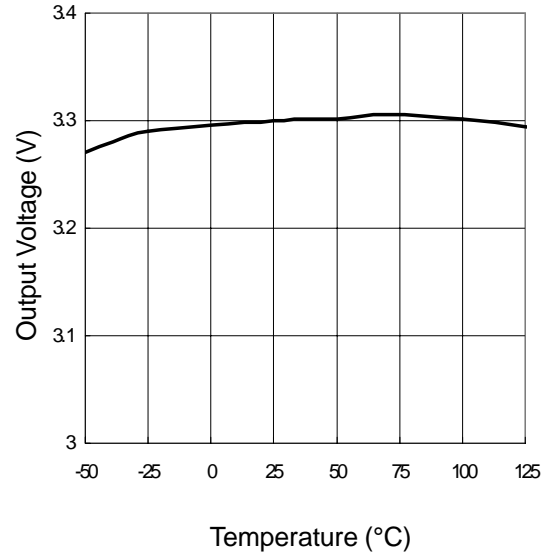


Typical Characteristics

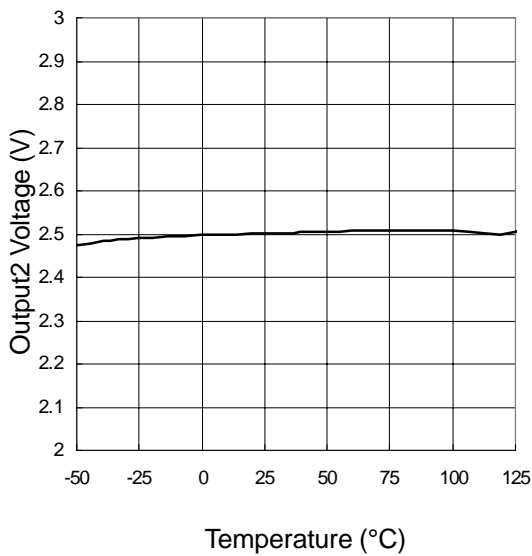
Output Voltage vs. Input Voltage



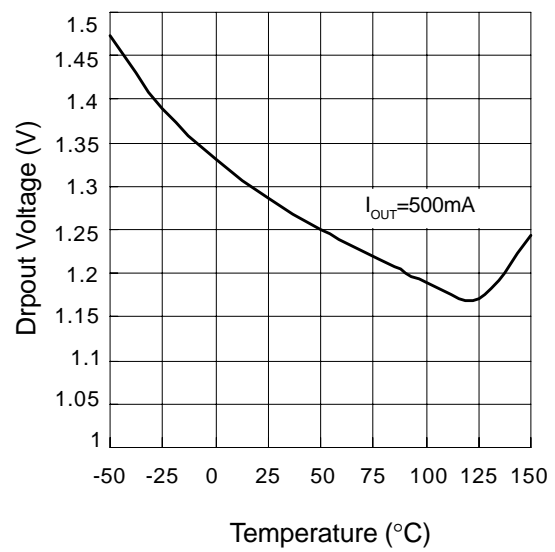
Output 1 Voltage vs. Temperature



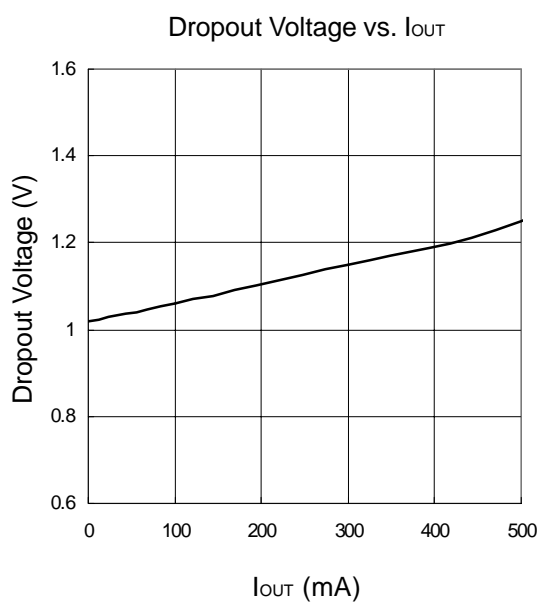
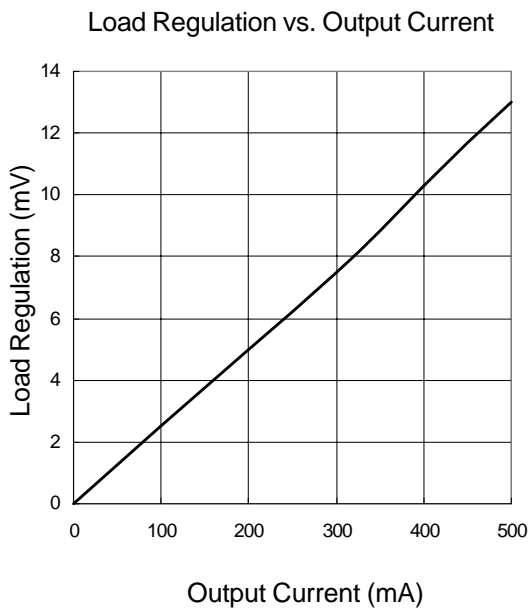
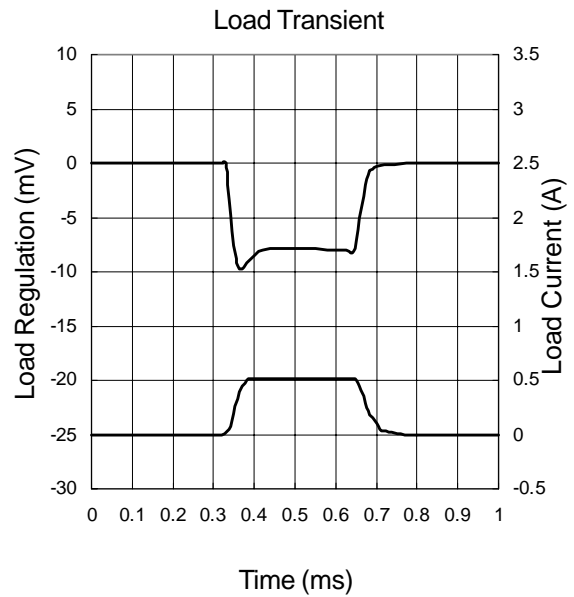
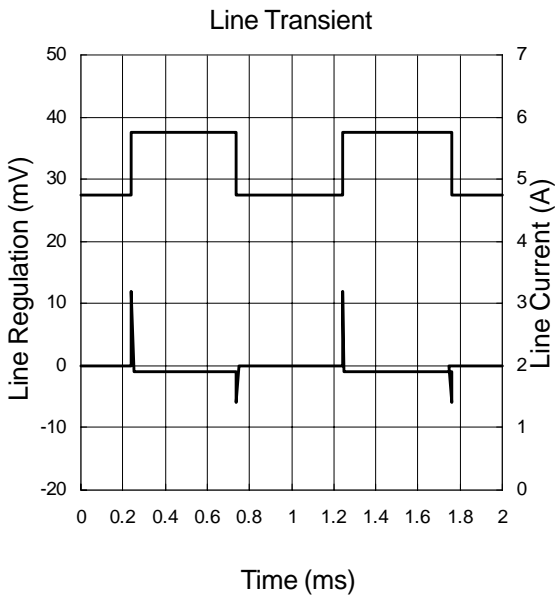
Output2 Voltage vs. Temperature



Dropout Voltage vs. Temperature

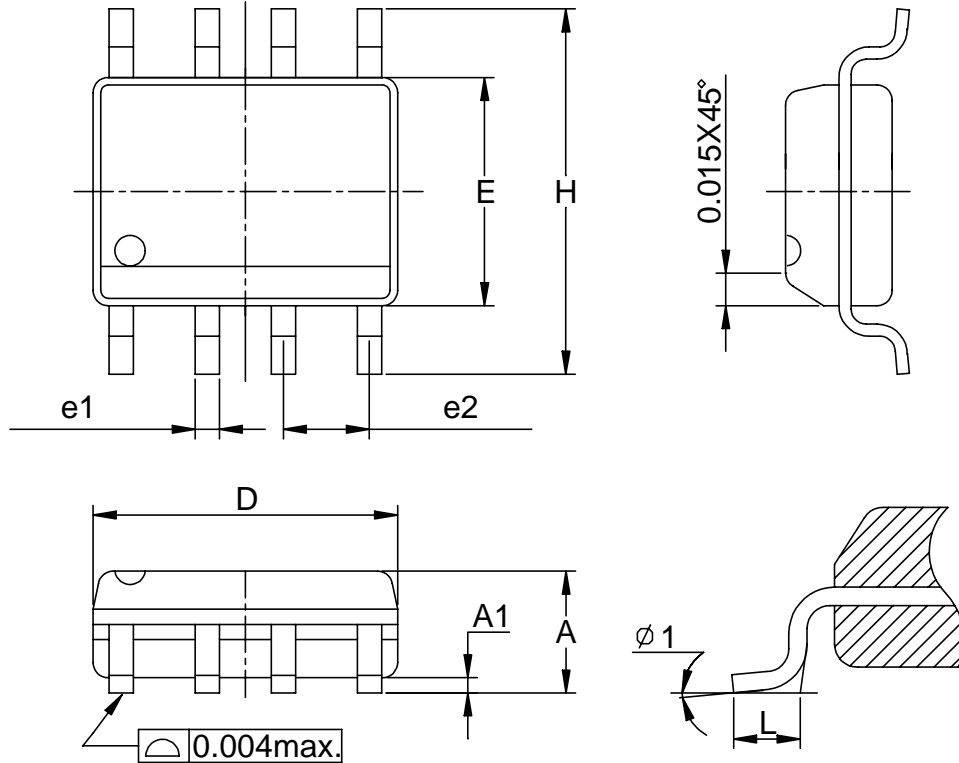


Typical Characteristics (Cont.)



Packaging Information

SOP-8 pin (Reference JEDEC Registration MS-012)



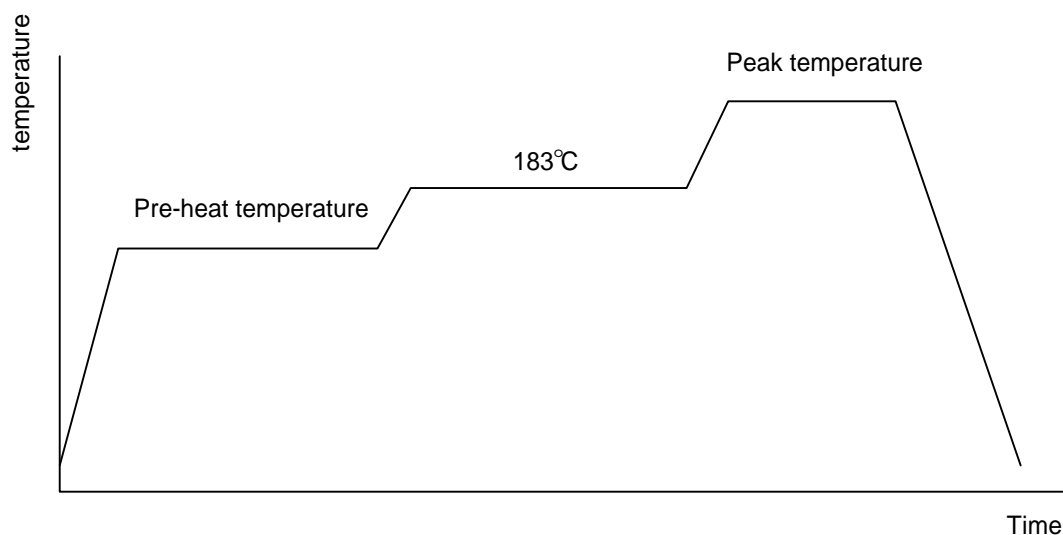
Dim	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.35	1.75	0.053	0.069
A1	0.10	0.25	0.004	0.010
D	4.80	5.00	0.189	0.197
E	3.80	4.00	0.150	0.157
H	5.80	6.20	0.228	0.244
L	0.40	1.27	0.016	0.050
e1	0.33	0.51	0.013	0.020
e2	1.27BSC		0.50BSC	
φ 1	8°		8°	

Physical Specifications

Terminal Material	Solder-Plated Copper (Solder Material : 90/10 or 63/37 SnPb)
Lead Solderability	Meets EIA Specification RSI86-91, ANSI/J-STD-002 Category 3.

Reflow Condition (IR/Convection or VPR Reflow)

Reference JEDEC Standard J-STD-020A APRIL 1999



Classification Reflow Profiles

	Convection or IR/ Convection	VPR
Average ramp-up rate(183°C to Peak)	3°C/second max.	10 °C /second max.
Preheat temperature 125 ± 25°C)	120 seconds max	
Temperature maintained above 183°C	60 – 150 seconds	
Time within 5°C of actual peak temperature	10 –20 seconds	60 seconds
Peak temperature range	220 +5/-0°C or 235 +5/-0°C	215-219°C or 235 +5/-0°C
Ramp-down rate	6 °C /second max.	10 °C /second max.
Time 25°C to peak temperature	6 minutes max.	

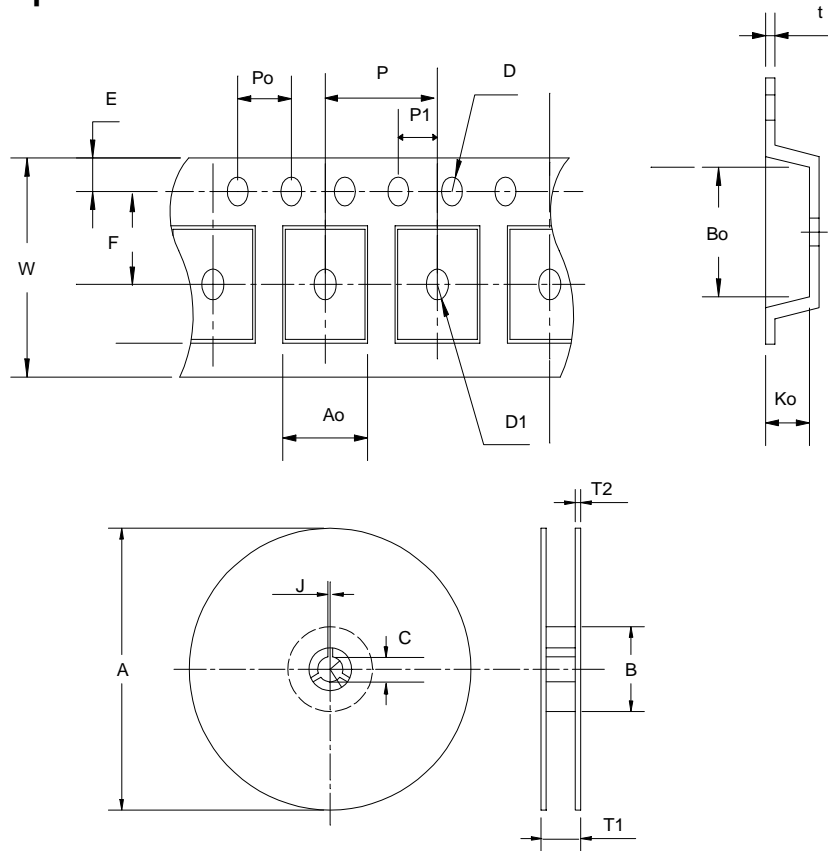
Package Reflow Conditions

pkg. thickness ≥ 2.5mm and all bgas	pkg. thickness < 2.5mm and pkg. volume ≥ 350 mm ³	pkg. thickness < 2.5mm and pkg. volume < 350mm ³
Convection 220 +5/-0 °C		Convection 235 +5/-0 °C
VPR 215-219 °C		VPR 235 +5/-0 °C
IR/Convection 220 +5/-0 °C		IR/Convection 235 +5/-0 °C

Reliability test program

Test item	Method	Description
SOLDERABILITY	MIL-STD-883D-2003	245°C , 5 SEC
HOLT	MIL-STD-883D-1005.7	1000 Hrs Bias @ 125 °C
PCT	JESD-22-B, A102	168 Hrs, 100 % RH , 121°C
TST	MIL-STD-883D-1011.9	-65°C ~ 150°C, 200 Cycles
ESD	MIL-STD-883D-3015.7	VHBM > 2KV, VMM > 200V
Latch-Up	JESD 78	10ms , I _{tr} > 100mA

Carrier Tape



Application	A	B	C	J	T1	T2	W	P	E
SOP-8	330±1	62 ± 1.5	12.75 + 0.15	2 + 0.5	12.4 +0.2	2± 0.2	12 + 0.3 - 0.1	8± 0.1	1.75± 0.1
Application	F	D	D1	Po	P1	Ao	Bo	Ko	t
SOP-8	5.5 ± 0.1	1.55±0.1	1.55+ 0.25	4.0 ± 0.1	2.0 ± 0.1	6.4 ± 0.1	5.2± 0.1	2.1± 0.1	0.3±0.013

(mm)

Cover Tape Dimensions

Application	Carrier Width	Cover Tape Width	Devices Per Reel
SOP- 8	12	9.3	2500

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