

Features

- 2~3GHz Frequency Range
- 3.3V~5.0V Supply Voltage
- 33dB Gain (Typ.)
- >34dBm P1dB @Supply Voltage=5V@2.4GHz
- 250mA Quiescent Current (ICQ)
- >15dB Input Return Loss(|S11|)
- Integrated Output Power Detector
- ESD protection all ports above 1000V HBM, forward and reverse voltage

Product Description

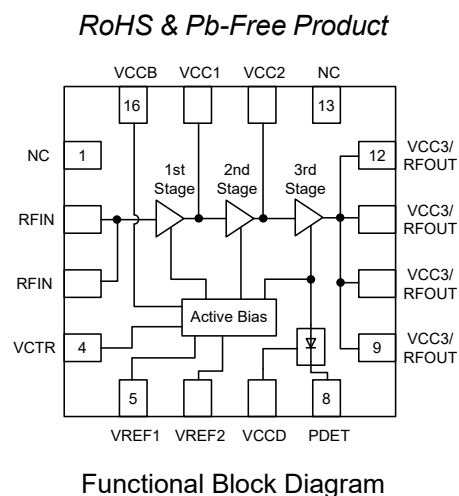
The YP3035W is a three-stage power amplifier optimized for 2~3GHz applications, especially 802.11b/g/n WLAN applications in the 2.4GHz band. The device is manufactured on an advanced InGaP Heterojunction Bipolar Transistor (HBT) process. The amplifier provides a typical gain of 33 dB and P1dB power of 34.5dBm, typical bias condition is 5V at 250 mA. The YP3035W is assembled in a 16-pin, 4x4mm², QFN package. It is internally integrated with ESD protection circuitry on all ports.

Applications

- IEEE 802.11b/g/n WLAN
- 2.4GHz ISM Wireless Equipment
- LTE
- 1980-2010MHz Satellite Communications
- WiBro 2.3 GHz to 2.4 GHz Applications
- WiMAX 2.5 GHz to 2.7 GHz Applications

Ordering Information

- | | | |
|---|------------|--|
| ■ | YP3035W | High Power Amplifier |
| ■ | YP3035WE-1 | 2.1-2.3GHz Evaluation Board and 5PCS Samples |
| ■ | YP3035WE-2 | 2.4-2.6GHz Evaluation Board and 5PCS Samples |
| ■ | YP3035WE-3 | 2.7-2.9GHz Evaluation Board and 5PCS Samples |



Pin Description

Pin No.	Symbol	Description
2,3	RFIN	RF input
4	VCTR	Power on/off control voltage
5	VREF1	Bias current control voltage for stage1&2
6	VREF2	Bias current control voltage for stage3
7	VCCD	Supply voltage for power detector
8	PDET	Output power detect
9,10,11,12	RFOUT/VCC3	RF output/ Supply voltage for stage3
14, 15	VCC2, VCC1	Supply voltage for stage2, stage1
16	VCCB	Supply voltage for bias
1,13	NC/GND	No connection or ground
PKG Base	GND	Ground connection



Caution!

ESD sensitive device

ESD Rating	Class1C
Value	Passes≥1000V min
Test	Human Body Model (HBM)
Standard	JEDEC Standard JESD22-A114

ESD Rating	Class IV
Value	Passes ≥1000V min
Test	Charged Device Model (CDM)
Standard	JEDEC Standard JESD22-C101

MSL Rating	Level3@+260°C convection reflow
Standard	JEDEC Standard J-STD-020

Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Input RF Power	RFIN	+8	dBm
Supply Voltage	VCC1,VCC2,VCC3,VCCB,VCCD	-0.5 to +6.0	V
Reference Voltage	VREF1, VREF2	-0.5 to +3.0	V
Operating Ambient Temperature	T _{OP}	-40 to +85	°C
Storage Temperature	T _{ST}	-40 to +150	°C

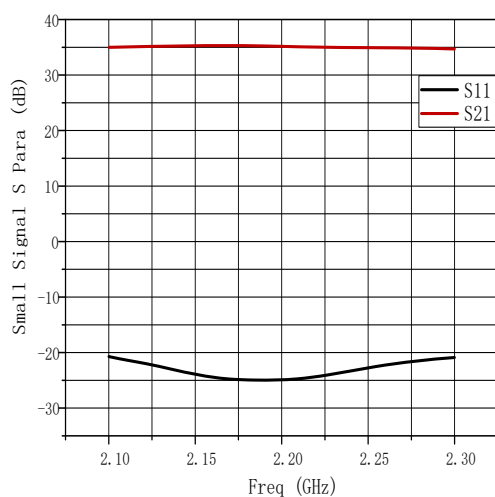
Electrical Specifications(2.1GHz-2.3GHz)

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
WLAN IEEE802.11b/g/n					VCC1= VCC2= VCC3=VCCB=+5.0V, ICQ=250mA, T _{OP} =+25°C, Freq=2.1GHz to 2.3GHz
Frequency Range	2.1	2.2	2.3	GHz	
Output Power, Pout@1dB Compression	33.3	33.3	33.1	dBm	
Small Signal Gain, S21	34.9	35.1	34.6	dB	
Power Supply					
Reference Voltage 1, VREF1		2.73		V	
Reference Voltage 2, VREF2		2.73		V	
Supply Voltage,VCC1,VCC2,VCC3,VCCB,VCCD		5		V	
Quiescent Current, ICQ		250		mA	
Reference Current, IREF		5		mA	Total Current of VREF1+VREF2

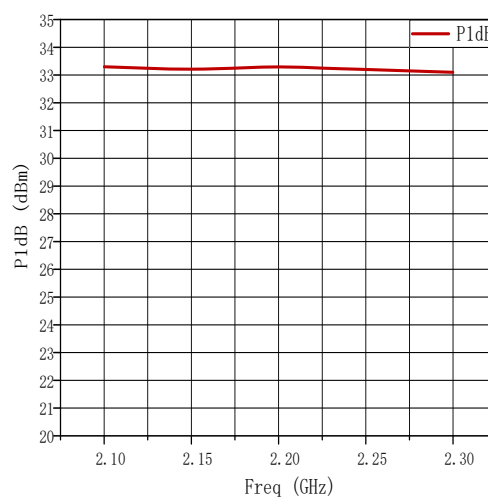
Typical Performance

(VCC1=VCC2=VCC3=VCCB=+5V, VREF1=VREF2=+2.73V, T_{op}=+25°C as measured on the evaluation board, unless otherwise noted)

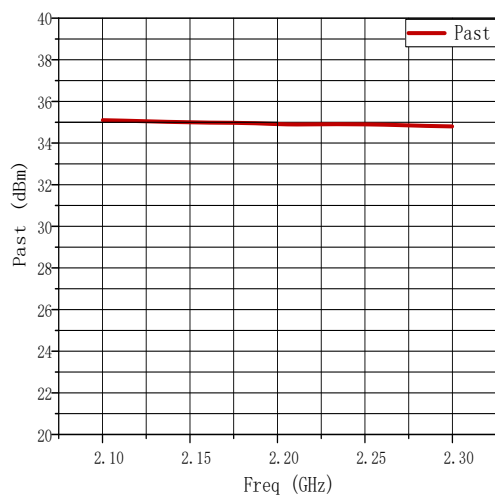
Narrowband Gain & Return Loss



P1dB vs. Frequency

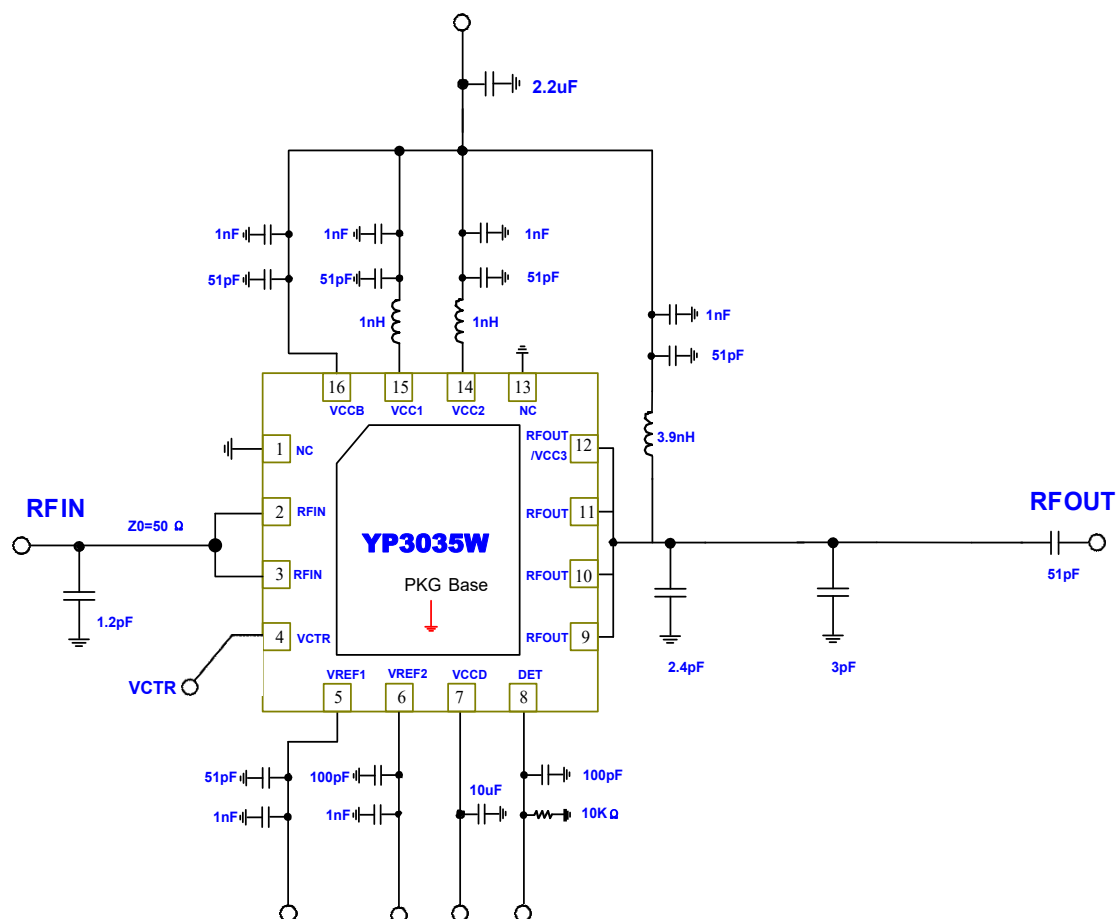


Past vs. Frequency



Evaluation Board Schematic for WLAN(2.1GHz-2.3GHz)

(VCC1=VCC2=VCC3=VCCB=+5V, VREF1=VREF2=+2.73V, T_{op}=+25°C as measured on the evaluation board, unless otherwise noted)



Notes:

1. Pin4 (VCTR) is power down pin. Apply >2.5 VDC to power down the three power amplifier stages. Apply 0VDC to power up. If function is not desired, pin4 may be connected to GND.
2. Pin7, 8 are active power detection circuit ports, if function is not desired, pin7, 8 may be connected to GND.

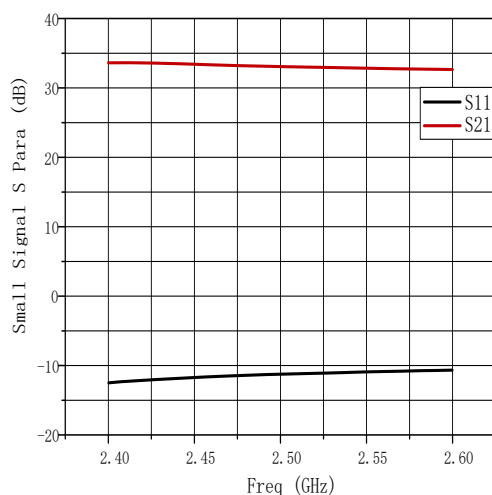
Electrical Specifications(2.4GHz-2.6GHz)

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
WLAN IEEE802.11b/g/n					VCC1= VCC2= VCC3=VCCB=+5.0V, ICQ=250mA, T _{OP} =+25°C, Freq=2.4GHz to 2.6GHz
Frequency Range	2.4	2.5	2.6	GHz	
Output Power, P _{out} @1dB Compression	34.2	34	33.8	dBm	
Small Signal Gain, S ₂₁	33.6	33.0	32.6	dB	
Power Supply					
Reference Voltage 1, VREF1		2.73		V	
Reference Voltage 2, VREF2		2.73		V	
Supply Voltage VCC1,VCC2,VCC3,VCCB,VCCD		5		V	
Quiescent Current, ICQ		250		mA	
Reference Current, IREF		5		mA	Total Current of VREF1+VREF2

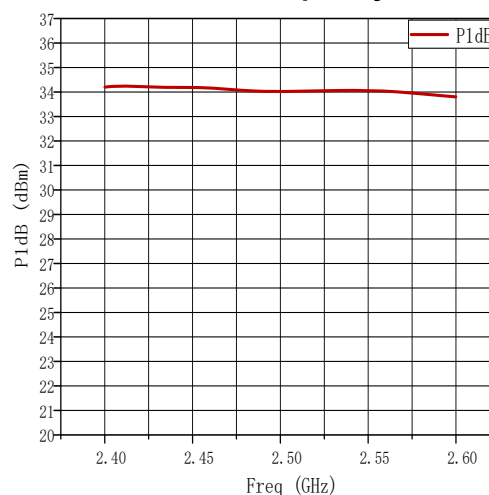
Typical Performance

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Narrowband Gain & Return Loss

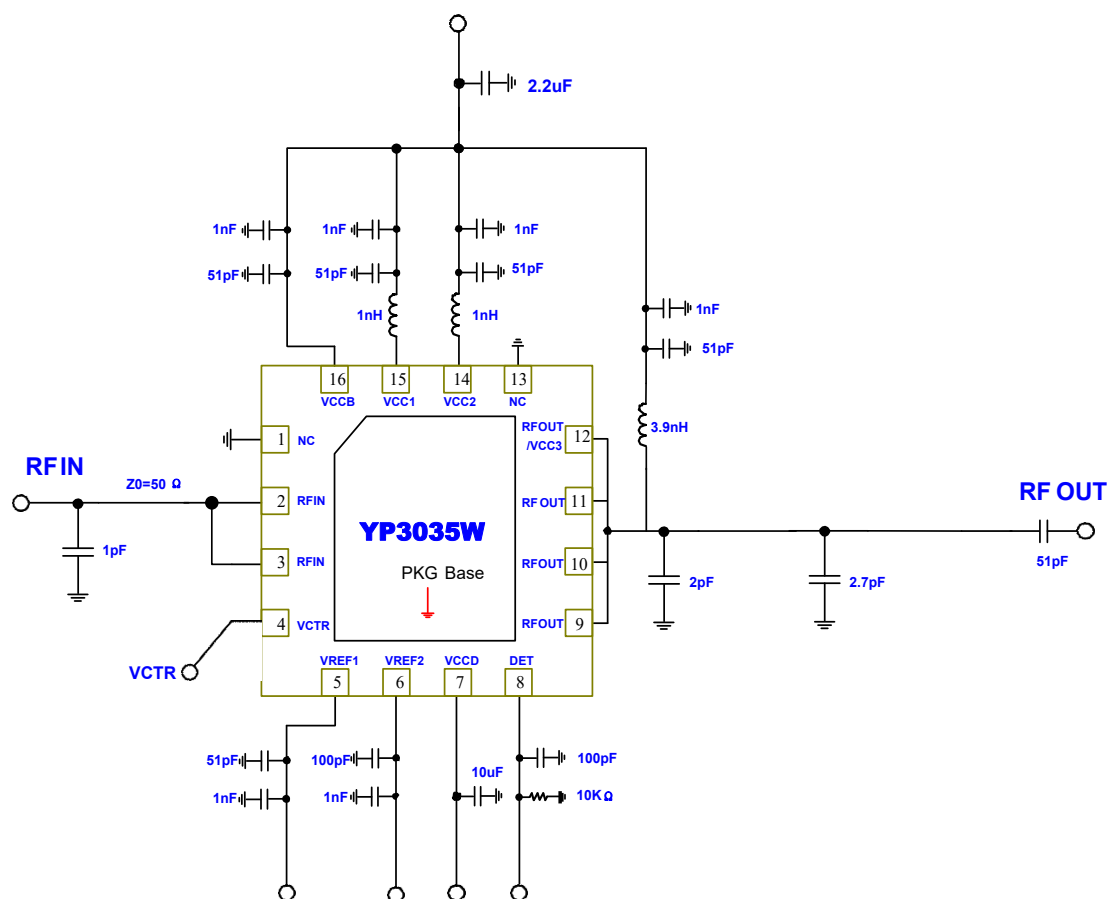


P1dB vs. Frequency



Evaluation Board Schematic for WLAN(2.4GHz-2.6GHz)

(VCC1=VCC2=VCC3=VCCB=+5V, VREF1=VREF2=+2.73V, T_{op}=+25°C as measured on the evaluation board, unless otherwise noted)



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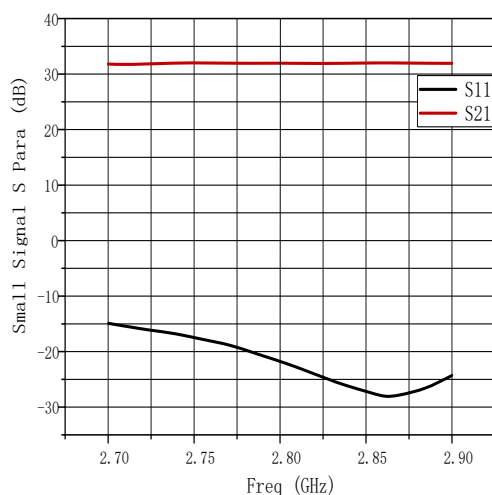
Electrical Specifications(2.7GHz-2.9GHz)

Parameter	Specification			Unit	Condition
	Min.	Typ.	Max.		
WLAN IEEE802.11b/g/n					VCC1= VCC2= VCC3=VCCB=+5.0V, ICQ=250mA, TOP=+25°C, Freq=2.7GHz to 2.9GHz
Frequency Range	2.7	2.8	2.9	GHz	
Output Power, Pout@1dB Compression	33.4	33.4	33.2	dBm	
Small Signal Gain, S21	31.8	31.9	31.9	dB	
Power Supply					
Reference Voltage 1, VREF1		2.73		V	
Reference Voltage 2, VREF2		2.73		V	
Supply Voltage VCC1,VCC2,VCC3,VCCB,VCCD		5		V	
Quiescent Current, ICQ		250		mA	
Reference Current, IREF		5		mA	Total Current of VREF1+VREF2

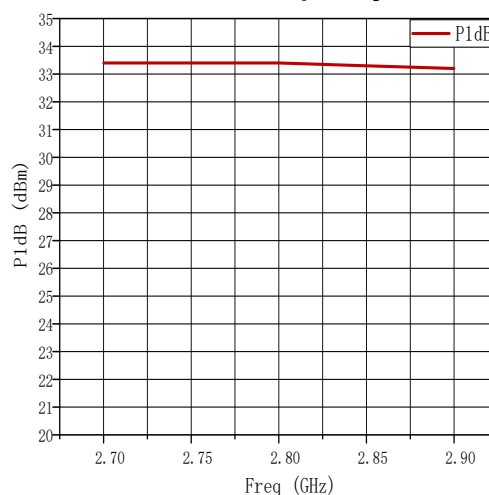
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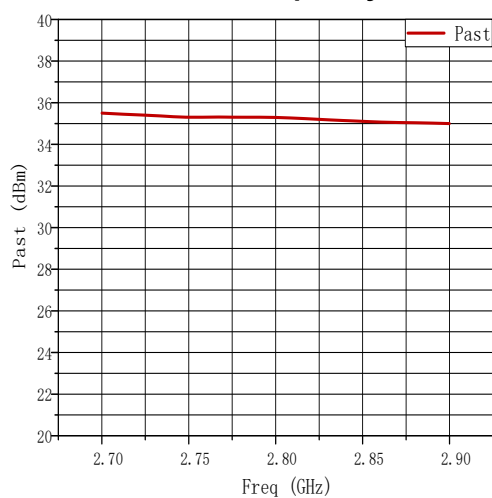
Narrowband Gain & Return Loss



P1dB vs. Frequency

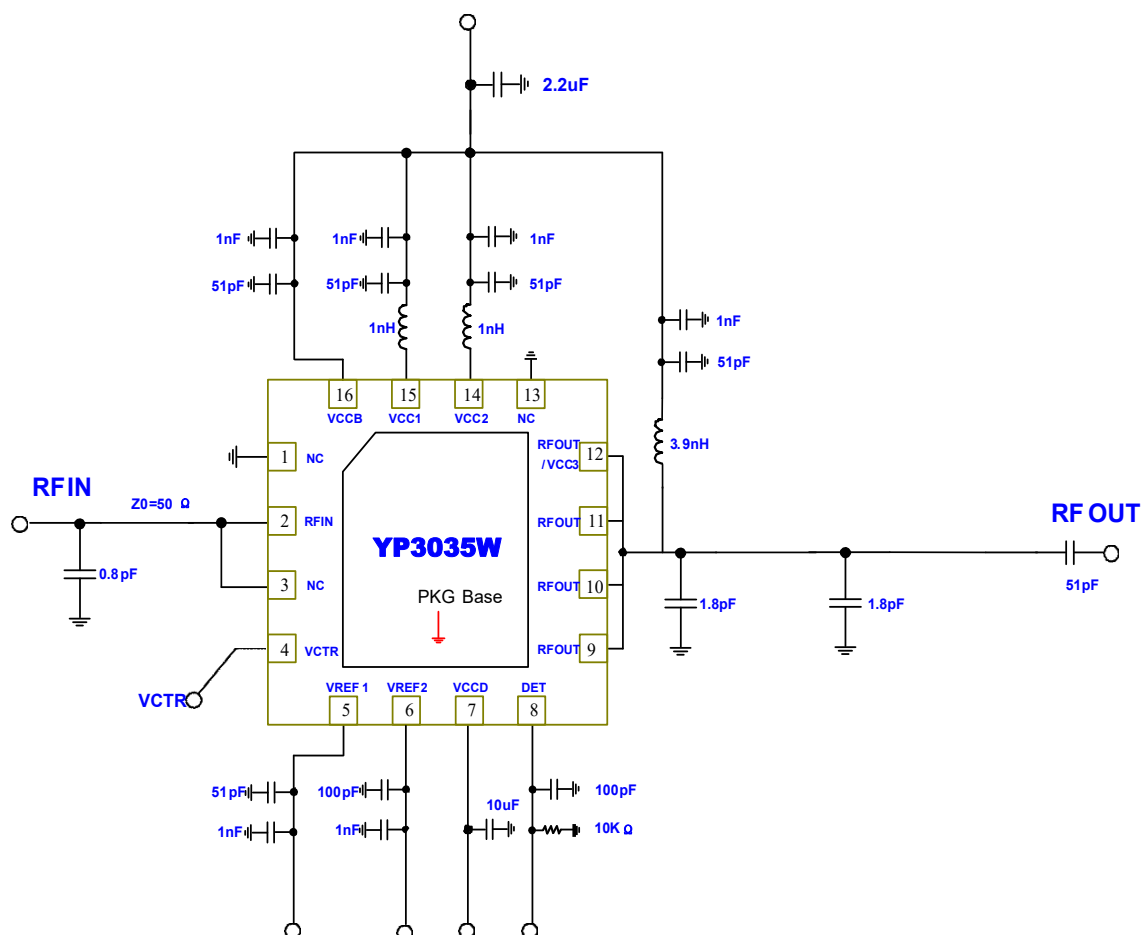


Past vs. Frequency



Evaluation Board Schematic for WLAN(2.7GHz-2.9GHz)

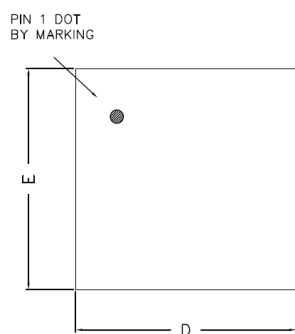
(VCC1=VCC2=VCC3=VCCB=+5V, VREF1=VREF2=+2.73V, T_{op}=+25°C as measured on the evaluation board, unless otherwise noted)



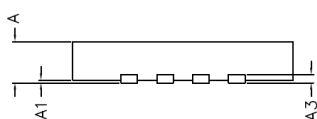
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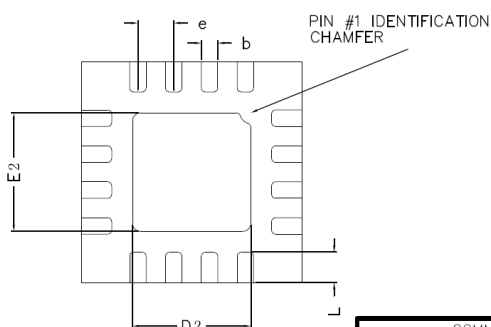
Packaging Diagram



TOP VIEW



SIDE VIEW



BOTTOM VIEW

COMMON DIMENSIONS(MM)			
PKG.	W: VERY VERY THIN		
REF.	MIN.	NOM.	MAX.
A	0.70	0.75	0.80
A1	0.00	—	0.05
A3	0.2 REF.		
D	3.95	4.00	4.05
E	3.95	4.00	4.05
b	0.25	0.30	0.35
L	0.45	0.55	0.65
D2	2.00	2.15	2.25
E2	2.00	2.15	2.25
e	0.65 BSC		