IAM-92516 Absolute Maximum Ratings[1]

Parameter	Units	Absolute Max.
Device Voltage	V	10
CW RF Input Power[2]	dBm	+30
CW LO Input Power[2]	dBm	20
Channel Temperature	°C	150
Storage Temperature	°C	-65 to 150

Thermal Resistance[2,4]

$\theta_{ch-c} = 47.6°C/W$

Notes:
1. Operation of this device above any one of these parameters may cause permanent damage.
2. Assuming DC quiescent conditions and $T_A = 25°C$.
3. Board (package belly) temperature T_B is 25°C. Derate 21 mW/°C for $T_B > 85°C$.
4. Channel-to-board thermal resistance measured using 150°C Liquid Crystal Measurement method.

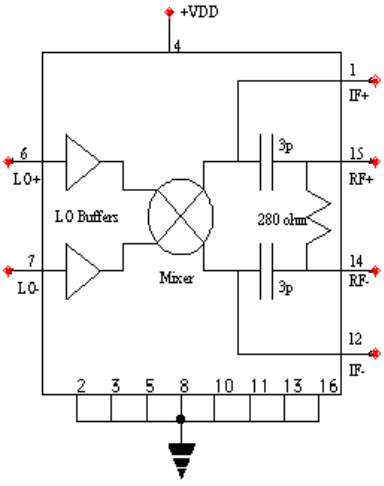
Electrical Specifications

$T_A = 25°C$, DC =5V @ 26 mA, RF =1.91 GHz, $Pin_{RF} = -10$ dBm; LO =1.7 GHz, $Pin_{LO} = -3$ dBm, IF = 210 MHz unless otherwise specified.

Symbol	Parameter and Test Condition	Units	Min.	Typ.	Max.	Std Dev.[1]
F_{RF}	Frequency Range, RF	MHz	400		3500	
F_{LO}	Frequency Range, LO	MHz	400		3500	
F_{IF}	Frequency Range, IF	MHz	DC		300	
Id	Device Current	mA	22	26	30	0.89
G_c[3]	Conversion Loss	dB		6	6.9	0.08
IIP3[2]	Input Third Order Intercept Point	dBm	22	27		0.43
NF[3]	SSB Noise Figure	dB		12.5		
P1dB[3]	Output Power at 1 dB Compression	dBm		9		
RL_{RF}	RF Port Return Loss	dB		19		
RL_{LO}	LO Port Return Loss	dB		24		
RL_{IF}	IF Port Return Loss	dB		21		
$ISOL_{L-R}$	LO-RF Isolation	dB		34		
$ISOL_{L-I}$	LO-IF Isolation	dB		56		
$ISOL_{R-L}$	RF-IF Isolation	dB		33		

Notes:
1. Standard deviation number is based on measurement of at least 500 parts from three non-consecutive wafer lots during the initial characterization of
   this product and is intended to be used as an estimate for distribution of the typical specification.
2. IIP3 test condition: $F_{RF1} = 1.91$ GHz, $F_{RF2} = 1.89$ GHz with input power of -10 dBm per tone and LO power = -3 dBm at LO frequency $F_{LO} = 1.7$ GHz.
3. Conversion loss, P1dB and NF data have de-embedded balun loss = 0.8 dB @ 210 MHz.

Simplified Schematic



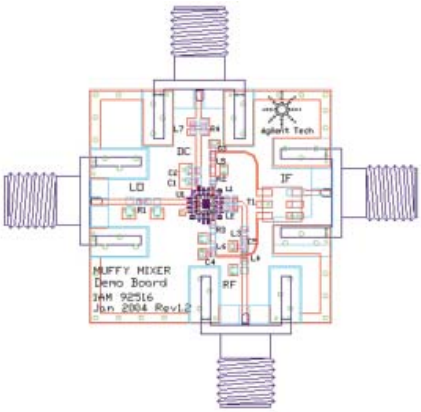


Figure 1. IAM-92516 Test Board.

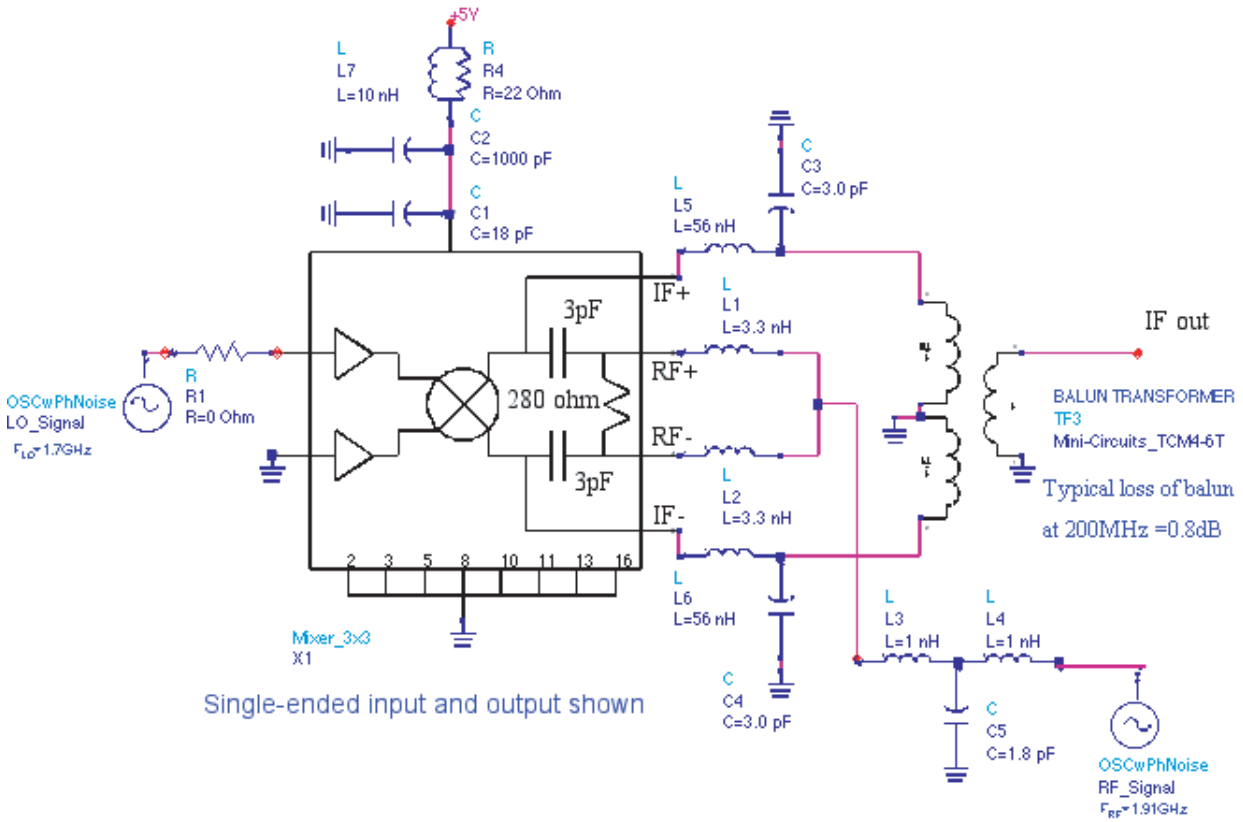


Figure 2. Schematic Diagram of IAM-92516 Test Circuit.

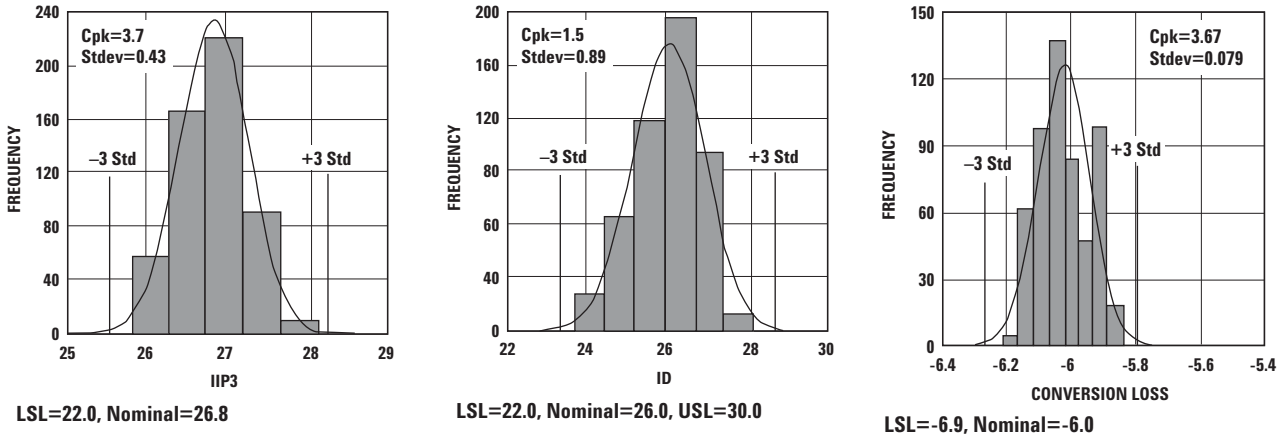


Figure 3. Normal Distribution of IIP3, ID, and Conversion Loss.

Notes:

5. Distribution data sample size is 500 samples taken from 5 different wafers. Future wafers allocated to this product may have nominal values anywhere between the upper and lower limits.
6. Conversion Loss data has de-embed balun loss 0.8 dB @ 210 MHz.

IAM-92516 Typical Performance

DC =5V @ 26 mA, RF =1.91 GHz, Pin_{RF} = -10 dBm; LO = 1.7 GHz, Pin_{LO} = -3 dBm, IF = 210 MHz unless otherwise specified

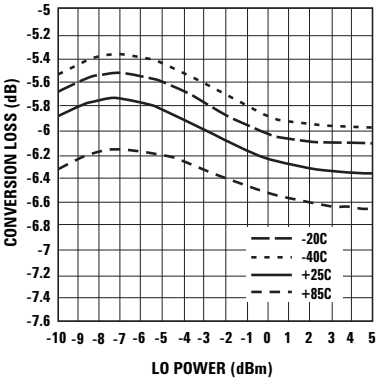


Figure 4. Conversion Loss vs LO Power Over Temperature.

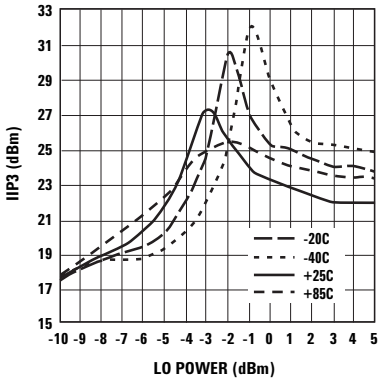


Figure 5. IIP3 vs LO Power Over Temperature.

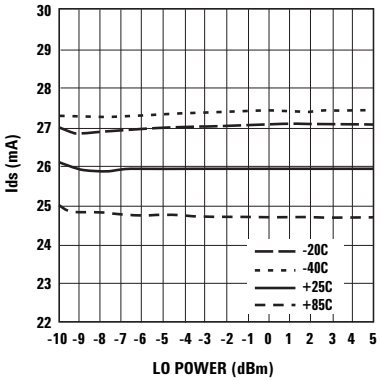


Figure 6. Ids vs LO Power Over Temperature.

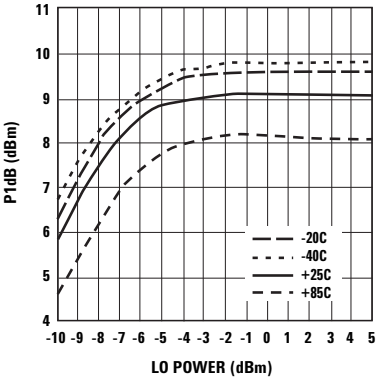


Figure 7. P1dB vs LO Power Over Temperature.

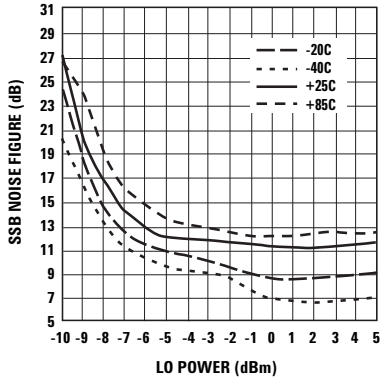


Figure 8. SSB NF vs LO Power Over Temperature.

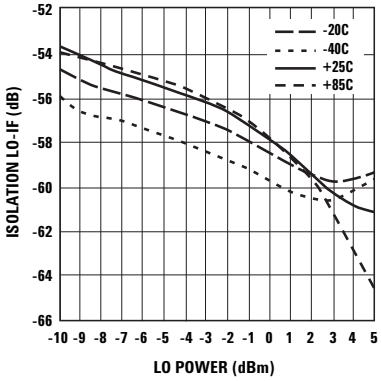


Figure 9. LO-IF Isolation vs LO Power Over Temperature.

Notes:

7. Typical performance plots are based on test board shown at Figure 1 with matching circuit stated at Figure 2.
8. Operating temperature range of Mini-circuit RF transformer (model: TCM4-6T) is - 20°C to 85°C.
9. Conversion loss, P1dB and NF plots have de-embedded balun loss 0.8 dB @ 210 MHz.

IAM-92516 Typical Performance, continued

DC = 5V @ 26 mA, RF =1.91 GHz, Pin_{RF} = -10 dBm; LO = 1.7 GHz, Pin_{LO} = -3 dBm, IF = 210 MHz unless otherwise specified

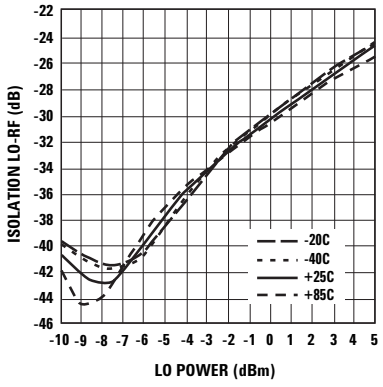


Figure 10. LO-RF Isolation vs LO Power Over Temperature.

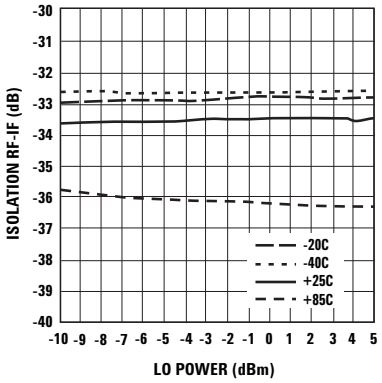


Figure 11. RF-IF Isolation vs LO Power Over Temperature.

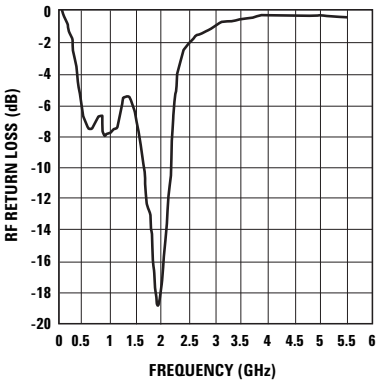


Figure 12. RF Return Loss vs Frequency.

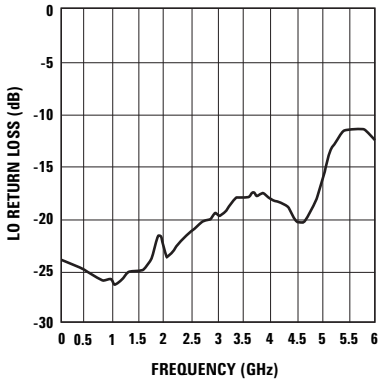


Figure 13. LO Return Loss vs Frequency.

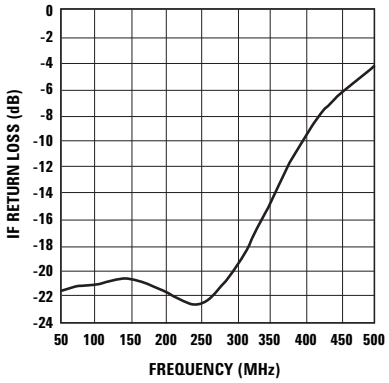


Figure 14. IF Return Loss vs Frequency.

RF Harmonics (mRF)	LO Harmonics (nLO)					
	0	1	2	3	4	5
0	—	0	18.5	12.9	11.6	5.8
1	19.5	0	51.3	60.6	42.8	55.2
2	39.9	67.3	56.6	78.3	64.7	87.2
3	51.2	>90	>90	>90	>90	>90
4	68.9	>90	>90	>90	>90	>90
5	>90	>90	>90	>90	>90	>90

Harmonic Intermodulation Suppression[10]

Note:

10. Test Conditions of Harmonic Intermodulation Suppression:
    a) RF =1.91 GHz @-10 dBm and LO =1.7 GHz @-3 dBm.
    b) RF harmonics and intermodulation products are referenced to a desired signal produced by frequency IF = 210 MHz.
    c) LO Harmonics are referenced to the -3 dBm LO drive signal.

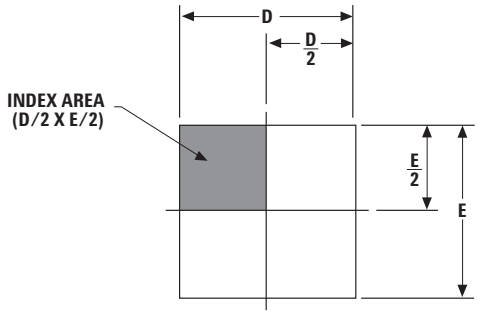
PCB Layout and Stencil Design

Refer to Avago's web site
www.avagotech.com/view/rf

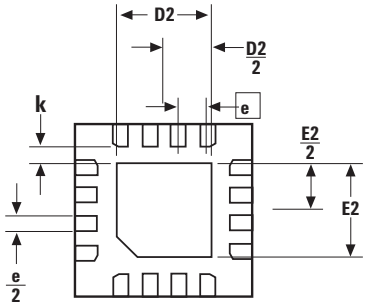
Ordering Information

Part Number	Devices per Container	Container
IAM-92516-TR1	1000	7" reel
IAM-92516-TR2	5000	13" reel
IAM-92516-BLK	100	antistatic bag

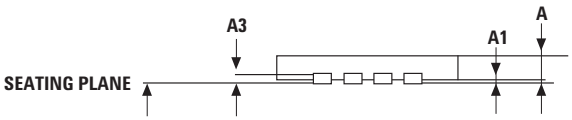
LPCC 3x3 Package Dimensions



Top View



Bottom View

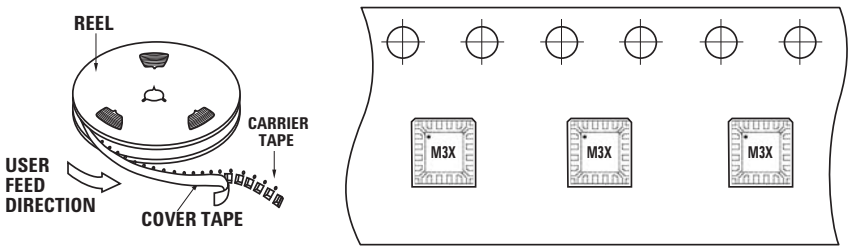


Side View

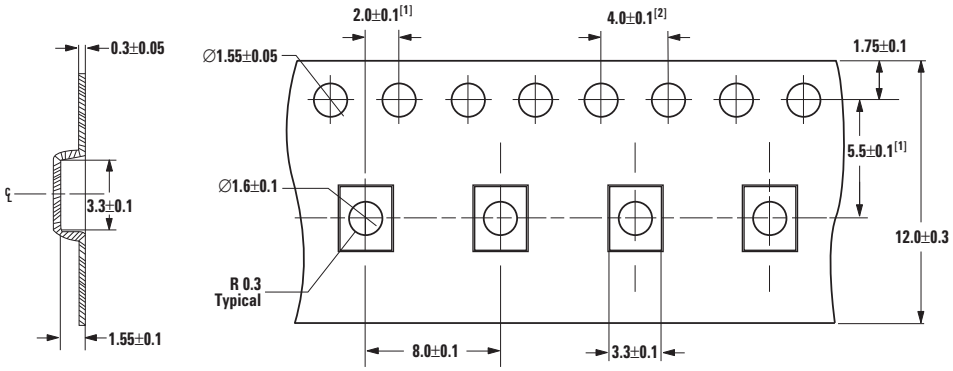
PACKAGE	1GL 3X3-0.50		
REF.	MIN.	NOM.	MAX.
A	0.80	0.90	1.00
D	2.90	3.00	3.10
D2	1.70	1.80	1.90
E	2.90	3.00	3.10
E2	1.70	1.80	1.90
e		0.50 BSC.	
A1	0	0.02	0.05
A3		0.20 REF.	
k	0.20		

DIMENSIONS ARE IN MILLIMETERS

Device Orientation



Tape Dimensions



Notes:
1. Measured from centerline of sprocket hole to centerline of pocket
2. Cumulative tolerance of 10 sprocket holes is ±0.20
3. Other material available
4. All dimensions in millimeter unless otherwise stated

For product information and a complete list of distributors, please go to our web site: **www.avagotech.com**

AV02-3622EN - June 14, 2012

Mouser Electronics

Authorized Distributor

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