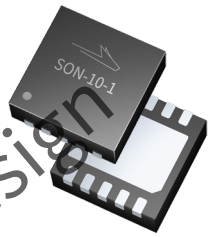
PTFA220121M

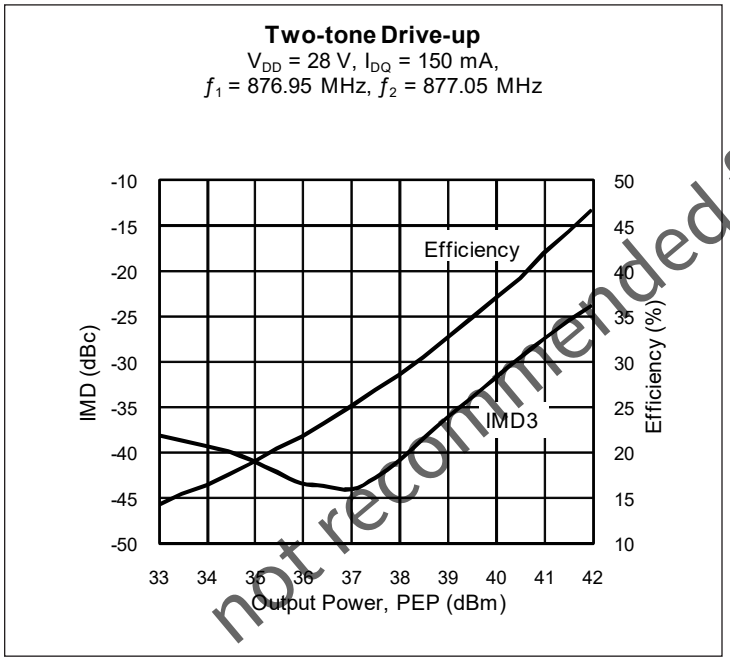
High Power RF LDMOS Field Effect Transistor
12 W, 28 V, 700 – 2200 MHz

Description

The PTFA220121M is an unmatched 12-watt LDMOS FET intended for power amplifier applications in the 700 to 2200 MHz. This LDMOS device offers excellent gain, efficiency and linearity performance in a small overmolded plastic package.

PTFA220121M
Package PG-SON-10





Features

- Typical two-carrier WCDMA performance at 2140 MHz, 8 dB PAR
  - P_{OUT} = 33 dBm Avg
  - ACPR = –45.5 dBc
- Typical two-carrier WCDMA performance at 877 MHz, 8 dB PAR
  - P_{OUT} = 33 dBm Avg
  - ACPR = –44.5 dBc
- Typical CW performance, 2140 MHz, 28 V
  - P_{OUT} = 41.6 dBm
  - Efficiency = 53.5%
  - Gain = 15.5 dB
- Typical CW performance, 877 MHz, 28 V
  - P_{OUT} = 41.8 dBm
  - Efficiency = 60%
  - Gain = 19.9 dB
- Capable of handling 10:1 VSWR @ 28 V, 12 W (CW) output power
- Integrated ESD protection
- Excellent thermal stability
- Pb-free and RoHS compliant

RF Characteristics

Two-tone Measurements (not subject to production test – verified by design / characterization in Wolfspeed test fixture)
V_{DD} = 28 V, I_{DQ} = 150 mA, P_{OUT} = 12 W PEP, f = 877 MHz, tone spacing = 1 MHz

Characteristic	Symbol	Min	Typ	Max	Unit
Gain	G_{ps}	20	20.5	—	dB
Drain Efficiency	ηD	41	42.5	—	%
Intermodulation Distortion	IMD	—	–33	–32	dBc

All published data at T_{CASE} = 25°C unless otherwise indicated

ESD: Electrostatic discharge sensitive device—observe handling precautions!

RF Characteristics (cont.)

Two-tone Measurements (not subject to production test – verified by design / characterization in Wolfspeed test fixture)
V_{DD} = 28 V, I_{DQ} = 150 mA, P_{OUT} = 9.3 W PEP, f = 2140 MHz, tone spacing = 1 MHz

Characteristic	Symbol	Min	Typ	Max	Unit
Gain	G_{ps}	—	16.2	—	dB
Drain Efficiency	ηD	—	37	—	%
Intermodulation Distortion	IMD	—	–29.4	—	dBc

DC Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_{DS} = 10 µA	$V_{(BR)DSS}$	65	—	—	V
Drain Leakage Current	V_{DS} = 28 V, V_{GS} = 0 V	I_{DSS}	—	—	1.0	µA
On-State Resistance	V_{GS} = 10 V, V_{DS} = 0.1 A	$R_{DS(on)}$	—	2.01	—	Ω
Operating Gate Voltage	V_{DS} = 28 V, I_{DQ} = 150 mA	V_{GS}	2.0	2.5	3.0	V
Gate Leakage Current	V_{GS} = 10 V, V_{DS} = 0 V	I_{GSS}	—	—	1.0	µA

Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	65	V
Gate-Source Voltage	V_{GS}	–0.5 to +12	V
Junction Temperature	T_J	175	°C
Storage Temperature Range	T_{STG}	–40 to +150	°C
Thermal Resistance (T_{CASE} = 70°C, 12 W CW)	$R_{\theta JC}$	3.4	°C/W

Moisture Sensitivity Level

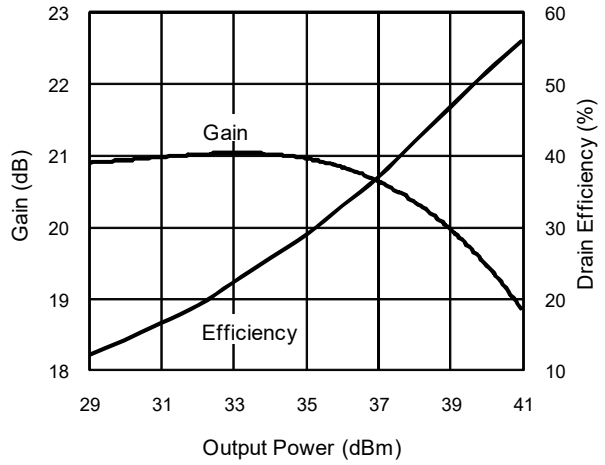
Level	Test Standard	Package Temperature	Unit
3	IPC/JEDEC J-STD-020	260	°C

Ordering Information

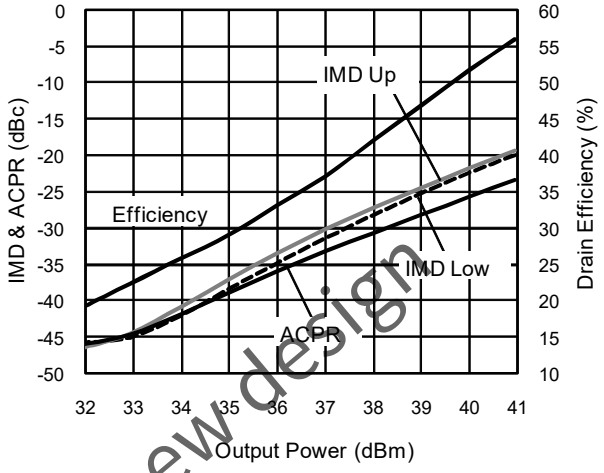
Type and Version	Order Code	Package and Description	Shipping
PTFA220121M V4 R1K	PTFA220121M-V4-R1K	PG-SON-10, Molded plastic, SMD	Tape & Reel, 1,000 pcs

Typical Performance, 877 MHz (data taken in a production test fixture)

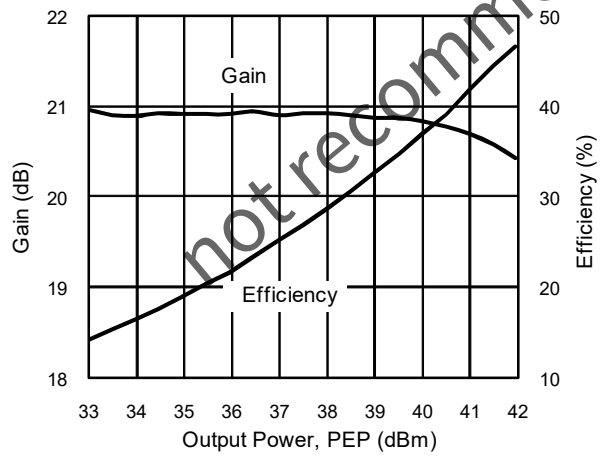
Two-carrier WCDMA 3GPP
V_{DD} = 28 V, I_{DQ} = 150 mA, f = 877 MHz
3GPP WCDMA, P/AR = 8:1, 10 MHz carrier spacing, BW 3.84 MHz



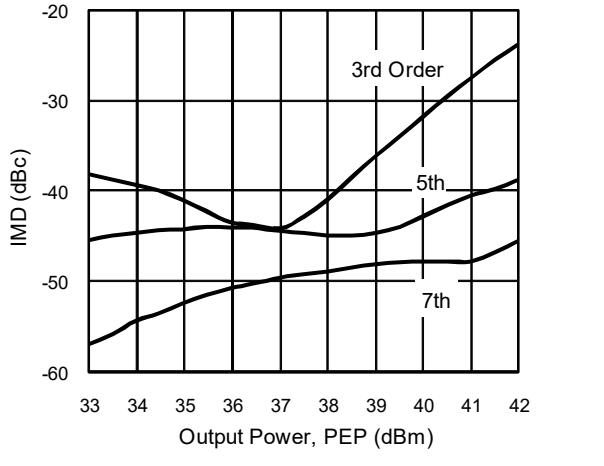
Two-carrier WCDMA 3GPP Drive-up
V_{DD} = 28 V, I_{DQ} = 150 mA, f = 877 MHz
3GPP WCDMA, P/AR = 8:1, 10 MHz carrier spacing, BW 3.84 MHz



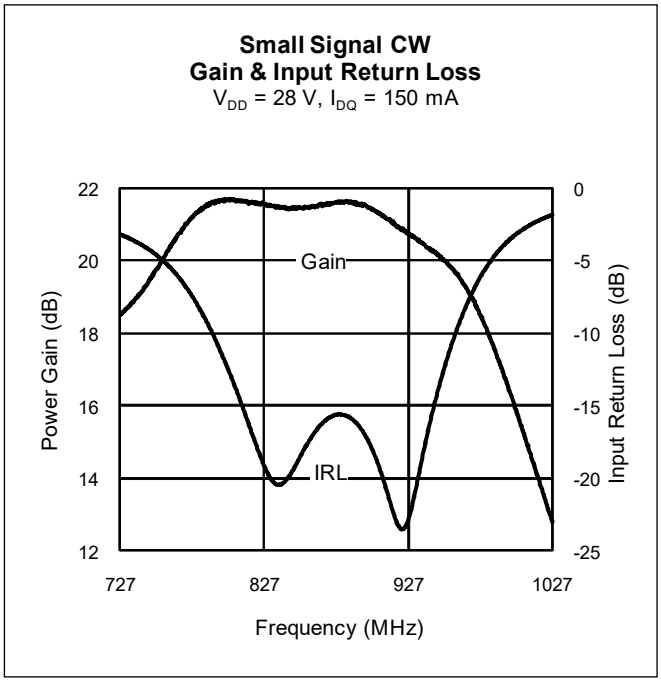
Two-tone Drive-up
V_{DD} = 28 V, I_{DQ} = 150 mA,
f_1 = 876.95 MHz, f_2 = 877.05 MHz



Intermodulation Distortion vs. Output Power
V_{DD} = 28 V, I_{DQ} = 150 mA,
f_1 = 876.95 MHz, f_2 = 877.05 MHz

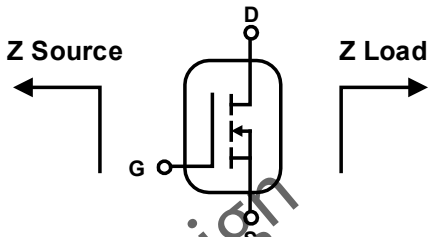


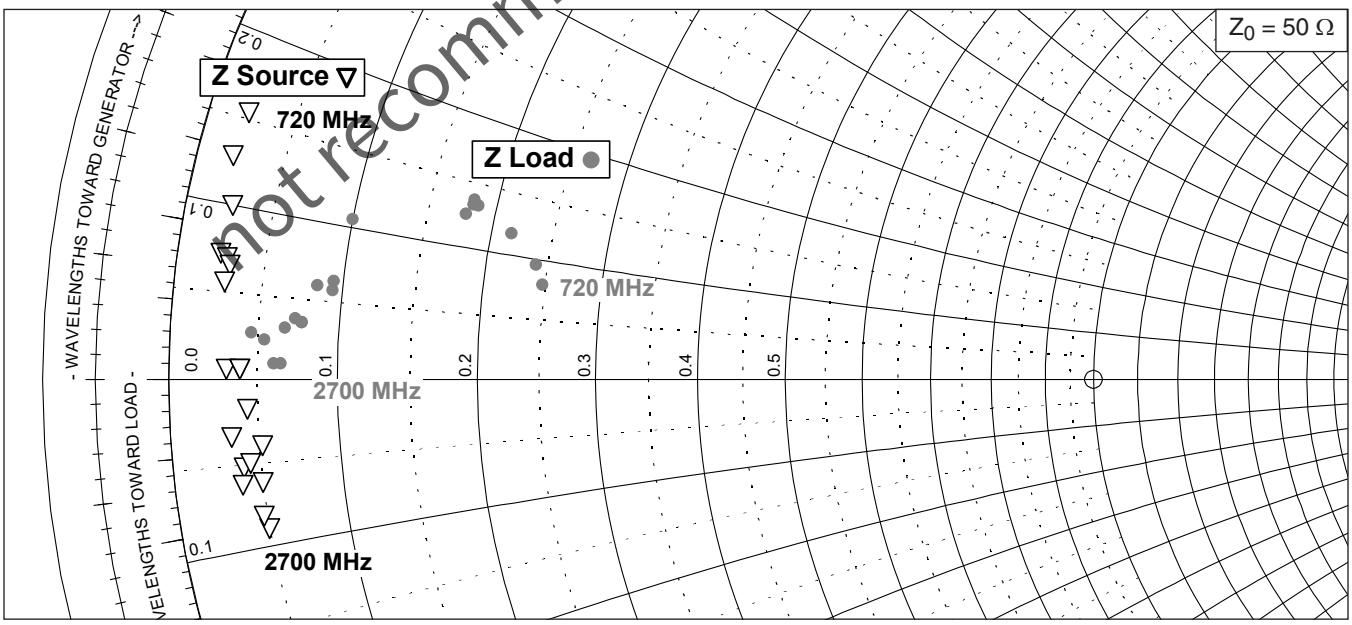
Typical Performance, 877 MHz (cont.)



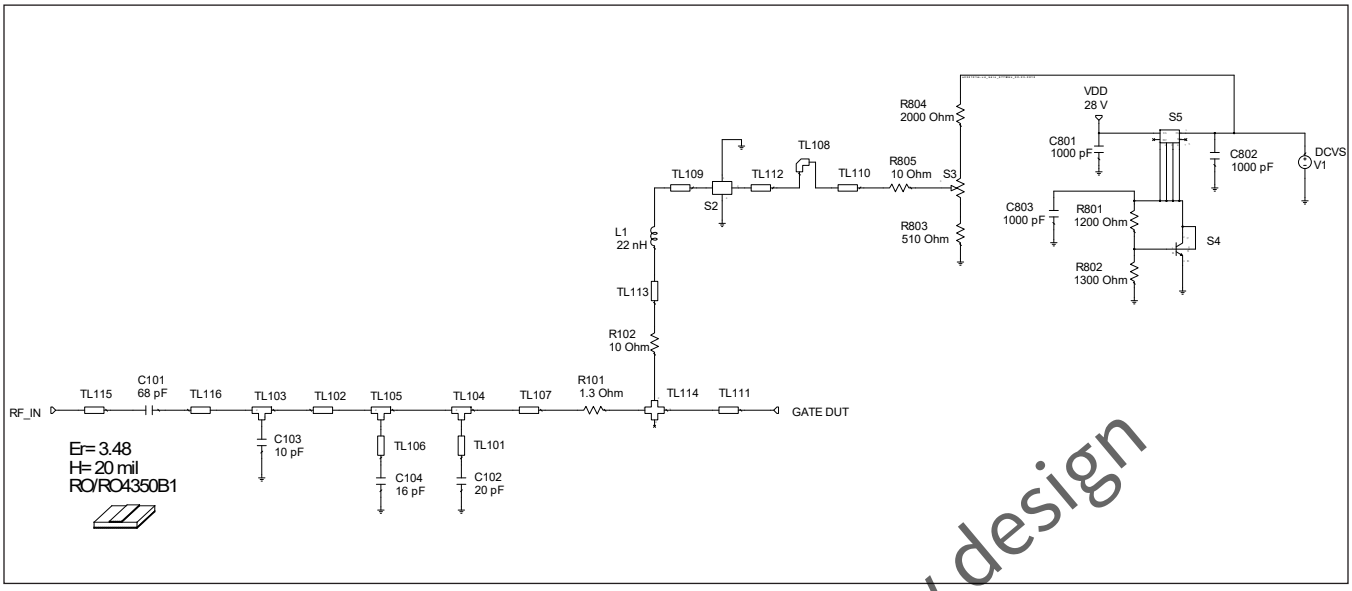
Broadband Circuit Impedance

Frequency	Z Source Ω		Z Load Ω	
MHz	R	jX	R	jX
720	1.1	7.7	12.0	4.8
820	1.0	6.4	12.4	4.0
869	1.3	5.0	10.8	5.9
894	1.2	3.6	9.3	6.7
920	1.4	3.5	9.1	6.7
940	1.5	3.3	9.1	6.9
960	1.4	2.8	8.9	6.3
1675	1.6	0.3	5.0	5.3
1805	2.0	0.3	4.7	3.2
1880	2.0	0.3	4.7	2.9
1930	2.2	–0.9	4.2	3.0
1990	2.6	–2.0	3.8	1.8
2110	2.5	–3.1	3.8	1.8
2170	2.0	–2.6	3.6	1.9
2300	1.7	–1.7	3.3	1.6
2400	2.2	–2.5	3.2	0.5
2500	2.5	–4.5	3.0	0.5
2600	2.4	–4.1	2.7	1.2
2700	1.9	–3.1	2.3	1.4

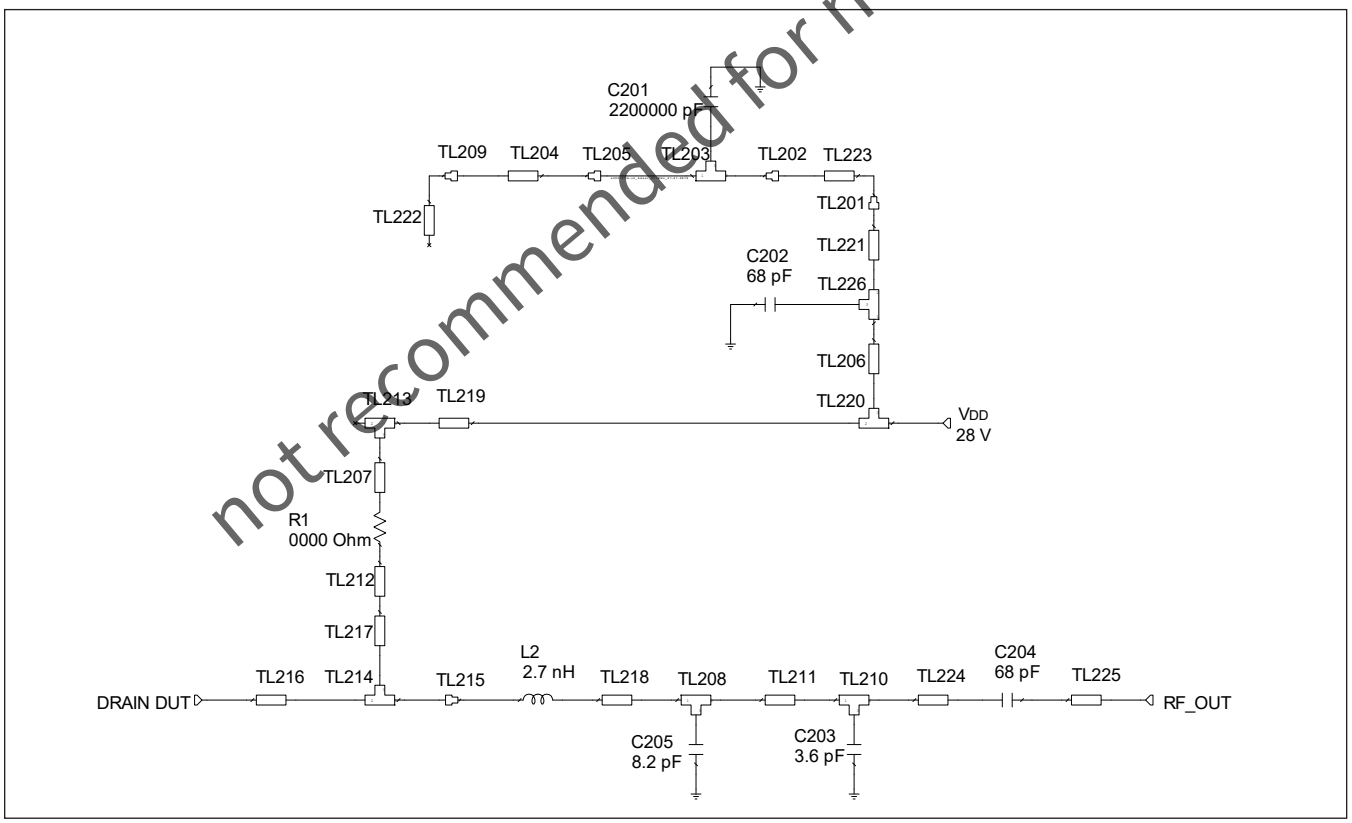




Reference Circuit, 877 MHz



Reference circuit input schematic for ƒ = 877 MHz



Reference circuit output schematic for ƒ = 877 MHz

Reference Circuit, 877 MHz (cont.)

Description	
DUT	PTFA220121M
PCB	0.508 mm [.020"] thick, εr = 3.48, Rogers 4350, 1 oz. copper

Electrical Characteristics at 877 MHz

Transmission Line	Electrical Characteristics	Dimensions: mm	Dimensions: mils
Input			
TL101, TL106		W = 0.000, L = 0.000	W = 0, L = 0
TL102	0.050 λ, 51.98 Ω	W = 1.087, L = 10.262	W = 43, L = 404
TL103, TL104, TL105	0.004 λ, 51.98 Ω	W1 = 1.087, W2 = 1.087, W3 = 0.813	W1 = 43, W2 = 43, W3 = 32
TL107	0.004 λ, 51.98 Ω	W = 1.087, L = 0.813	W = 43, L = 32
TL108		W = 1.524	W = 60
TL109	0.007 λ, 54.17 Ω	W = 1.016, L = 1.524	W = 40, L = 60
TL110	0.025 λ, 41.75 Ω	W = 1.524, L = 5.080	W = 60, L = 200
TL111	0.009 λ, 25.04 Ω	W = 3.048, L = 1.778	W = 120, L = 70
TL112	0.002 λ, 41.75 Ω	W = 1.524, L = 0.508	W = 60, L = 20
TL113	0.006 λ, 41.75 Ω	W = 1.524, L = 1.270	W = 60, L = 50
TL114		1W1 = 3.048, W2 = 0.762, W3 = 3.048, W4 = 0.762	W1 = 120, W2 = 30, W3 = 120, W4 = 30
TL115	0.016 λ, 51.98 Ω	W = 1.087, L = 3.264	W = 43, L = 129
TL116	0.044 λ, 51.98 Ω	W = 1.087, L = 9.093	W = 43, L = 358

table continued on page 8

Reference Circuit, 877 MHz (cont.)

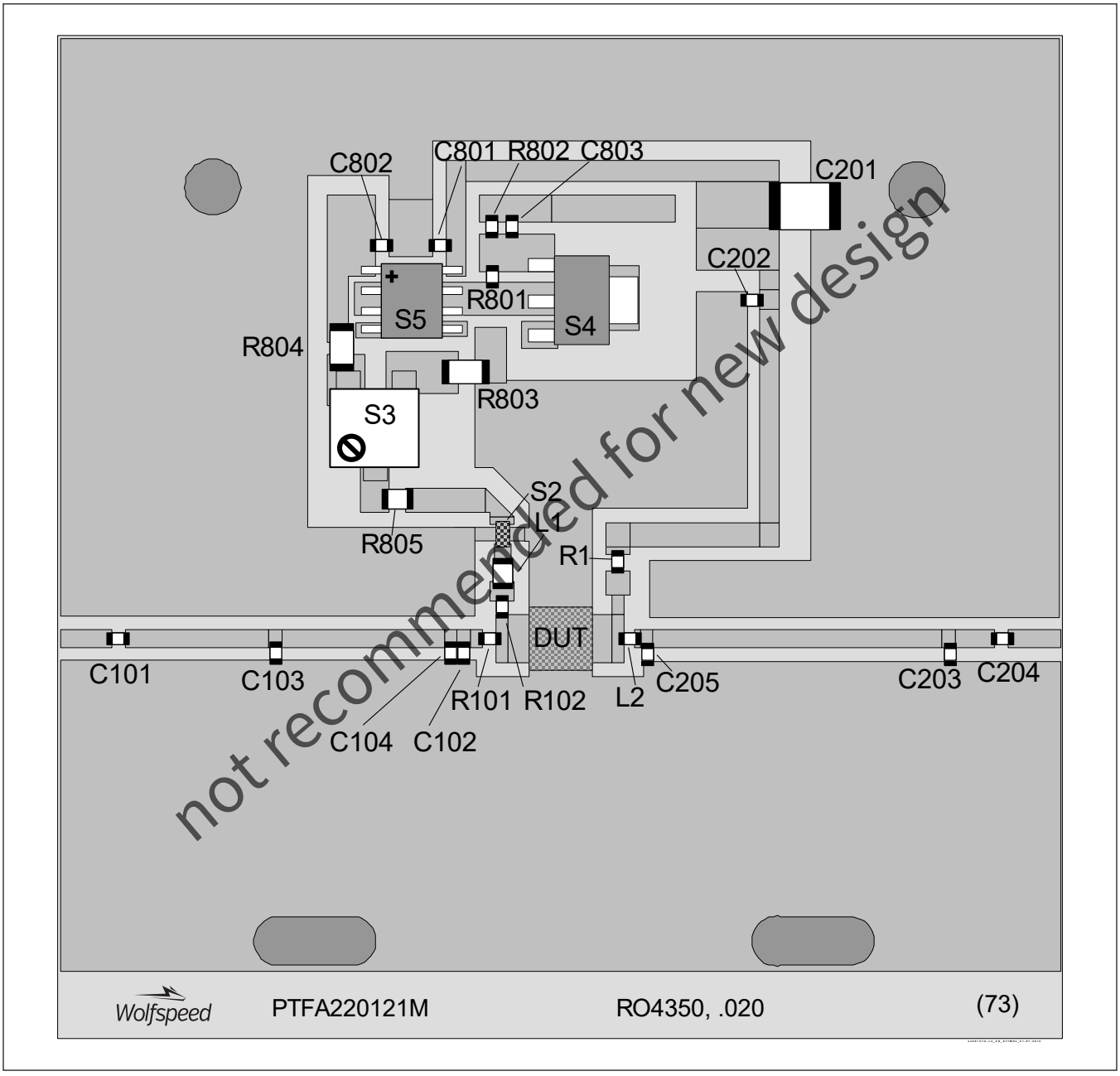
Electrical Characteristics at 877 MHz

Transmission Line	Electrical Characteristics	Dimensions: mm	Dimensions: mils
Output			
TL201		W1 = 1.270, W2 = 5.283, Offset = –2.007	W1 = 50, W2 = 208, Offset = –79
TL202		W1 = 5.283, W2 = 5.283, Offset = 0.000	W1 = 208, W2 = 208, Offset = 0
TL203	0.016 λ, 15.92 Ω	W1 = 5.283, W2 = 5.283, W3 = 3.023	W1 = 208, W2 = 208, W3 = 119
TL204	0.007 λ, 4.80 Ω	W = 19.850, L = 1.270	W = 782, L = 50
TL205		W1 = 19.812, W2 = 19.812, Offset = 7.264	W1 = 780, W2 = 780, Offset = 286
TL206	0.066 λ, 47.12 W	W = 1.270, L = 13.467	W = 50, L = 530
TL207	0.002 λ, 41.75 Ω	W = 1.524, L = 0.508	W = 60, L = 20
TL208, TL210	0.004 λ, 51.98 Ω	W1 = 1.087, W2 = 1.087, W3 = 0.813	W1 = 43, W2 = 43, W3 = 32
TL209		W1 = 1.270, W2 = 1.270, Offset = 10.566	W1 = 50, W2 = 50, Offset = 416
TL211	0.089 λ, 51.98 Ω	W = 1.087, L = 18.313	W = 43, L = 721
TL212	0.007 λ, 41.75 Ω	W = 1.524, L = 1.524	W = 60, L = 60
TL213	0.007 λ, 41.75 Ω	W1 = 1.524, W2 = 1.524, W3 = 1.524	W1 = 60, W2 = 60, W3 = 60
TL214	0.004 λ, 25.04 Ω	W1 = 3.048, W2 = 3.048, W3 = 0.762	W1 = 120, W2 = 120, W3 = 30
TL215		W1 = 1.087, W2 = 3.048	W1 = 43, W2 = 120
TL216	0.009 λ, 25.04 Ω	W = 3.048, L = 1.778	W = 120, L = 70
TL217	0.006 λ, 63.89 Ω	W = 0.762, L = 1.270	W = 30, L = 50
TL218	0.002 λ, 51.98 Ω	W = 1.087, L = 0.356	W = 43, L = 14
TL219	0.040 λ, 41.75 Ω	W = 1.524, L = 8.204	W = 60, L = 323
TL220	0.006 λ, 41.75 Ω	W1 = 1.524, W2 = 1.524, W3 = 1.270	W1 = 60, W2 = 60, W3 = 50
TL221	0.006 λ, 47.12 Ω	W = 1.270, L = 1.191	W = 50, L = 47
TL222	0.035 λ, 47.12 Ω	W = 1.270, L = 7.290	W = 50, L = 287
TL223	0.014 λ, 15.92 Ω	W = 5.283, L = 2.667	W = 208, L = 105
TL224	0.012 λ, 51.98 Ω	W = 1.087, L = 2.502	W = 43, L = 99
TL225	0.016 λ, 51.98 Ω	W = 1.087, L = 3.264	W = 43, L = 129
TL226	0.006 λ, 47.12 Ω	W1 = 1.270, W2 = 1.270, W3 = 1.270	W1 = 50, W2 = 50, W3 = 50

Reference Circuit, 877 MHz (cont.)

Circuit Assembly Information	
Test Fixture Part No.	LTN/ PTFA220121M–8

Find Gerber files for this test fixture on the Wolfspeed Web site at **http://www.wolfspeed.com/RF**



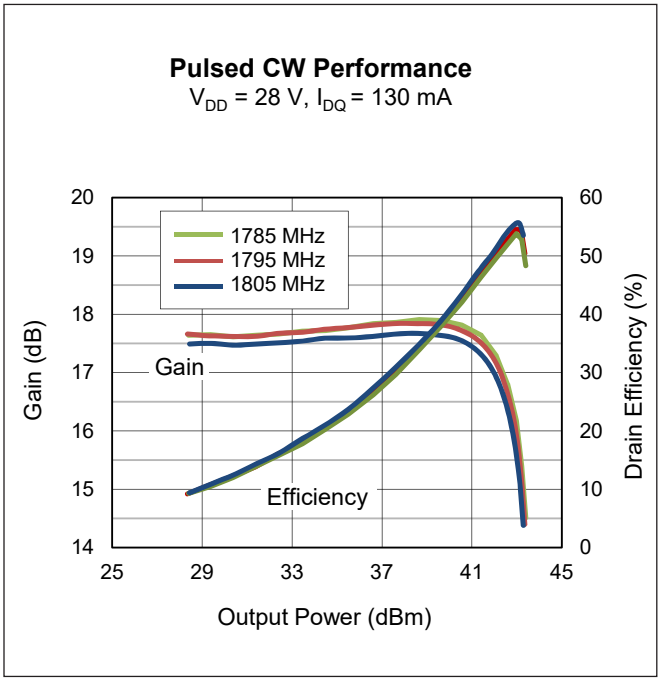
Reference circuit assembly diagram (not to scale)

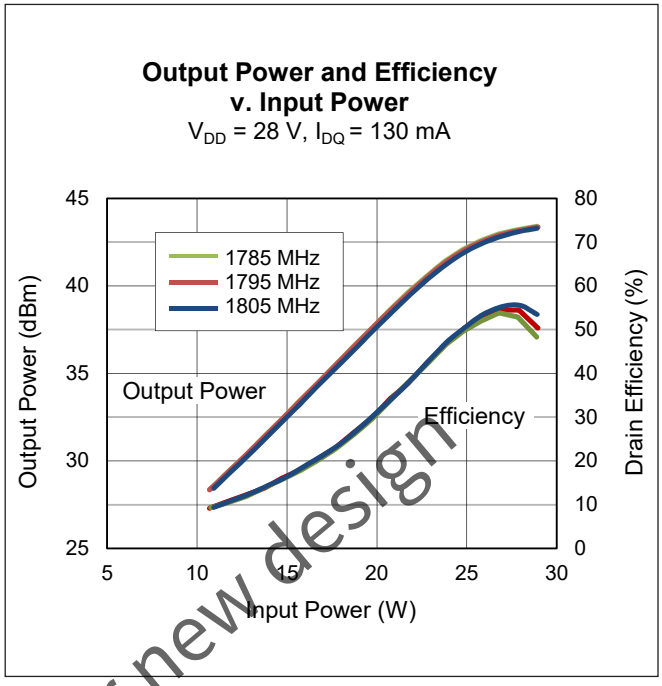
Reference Circuit, 877 MHz (cont.)

Components Information

Component	Description	Manufacturer	P/N
Input			
C101	Chip capacitor, 68 pF	ATC	ATC100A680JW150X
C102	Chip capacitor, 20 pF	ATC	ATC100A200JW150X
C103	Chip capacitor, 10 pF	ATC	ATC100A100JW150X
C104	Chip capacitor, 16 pF	ATC	ATC100A160JW150X
C801, C802, C803	Chip capacitor, 1000 pF	Panasonic Electronic Components	ECJ-1VB1H102K
L1	Inductor, 22 nH	Coilcraft	0805HT-22NX_BG
R101	Resistor, 1.3 Ω	Panasonic Electronic Components	ERJ-8GEYJ1R3V
R102, R805	Resistor, 10 Ω	Panasonic Electronic Components	ERJ-8GEYJ100V
R801	Resistor, 1200 Ω	Panasonic Electronic Components	ERJ-8GEYJ122V
R802	Resistor, 1300 Ω	Panasonic Electronic Components	ERJ-8GEYJ132V
R803	Resistor, 510 Ω	Panasonic Electronic Components	ERJ-8GEYJ511V
R804	Resistor, 2000 Ω	Panasonic Electronic Components	ERJ-8GEYJ202V
S2	EMI Suppression Capacitor	Murata	NFM18PS105R0J3D
S3	Potentiometer, 2k Ω	Bourns Inc.	3224W-1-202E
S4	Transistor	Fairchild Semiconductor	BCP56
S5	Voltage regulator	Fairchildl Semiconductor	LM7805
Output			
C201	Chip capacitor, 2.2 µF	TDK Corporation	C4532X7R1H225M160KA
C202, C204	Chip capacitor, 68 pF	ATC	ATC100A680JW150X
C203	Chip capacitor, 3.6 pF	ATC	ATC100A3R6CW150X
C205	Chip capacitor, 8.2 pF	ATC	ATC100A8R2CW150X
L2	Inductor, 2.7 nH	Coilcraft	0402CS-2N7X_BG
R201	Resistor, 0.0 Ω	Panasonic Electronic Components	ERJ-8GEY0R00V

Typical Performance, 1805 MHz





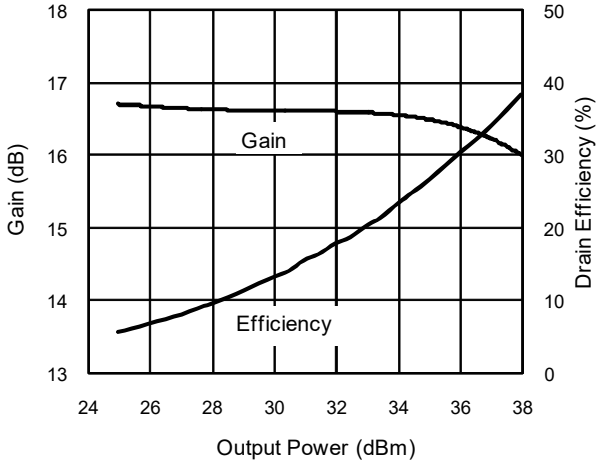
RF Characteristics

Pulsed CW Performance (not subject to production test – verified by design / characterization in Wolfspeed test fixture)
V_{DD} = 28 V, I_{DQ} = 130 mA, P_{OUT} = 42 W P_{1dB}, f = 1805 MHz
16 µs pulse width, 10% duty cycle, class AB test

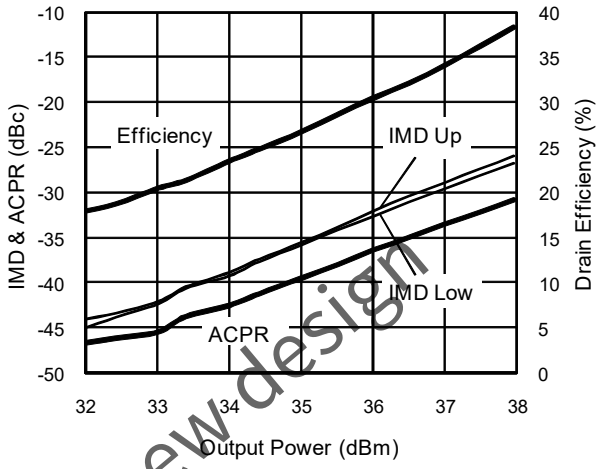
Characteristic	Symbol	Min	Typ	Max	Unit
Gain	G_{ps}	—	17	—	dB
Drain Efficiency	ηD	—	52	—	%

Typical Performance, 2140 MHz

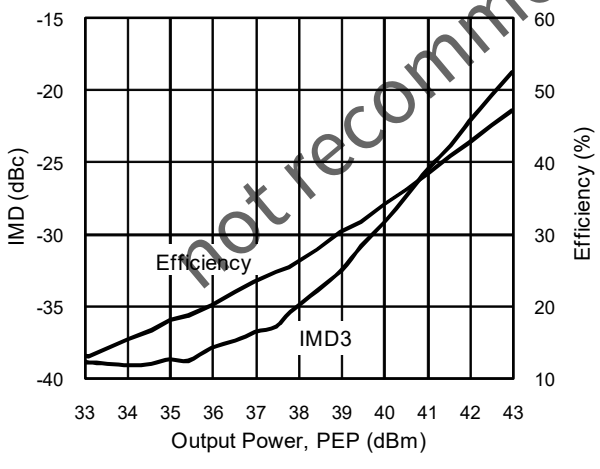
Two-carrier WCDMA 3GPP
V_{DD} = 28 V, I_{DQ} = 150 mA, f = 2140 MHz
3GPP WCDMA, P/AR = 8:1, 10 MHz carrier spacing, BW 3.84 MHz



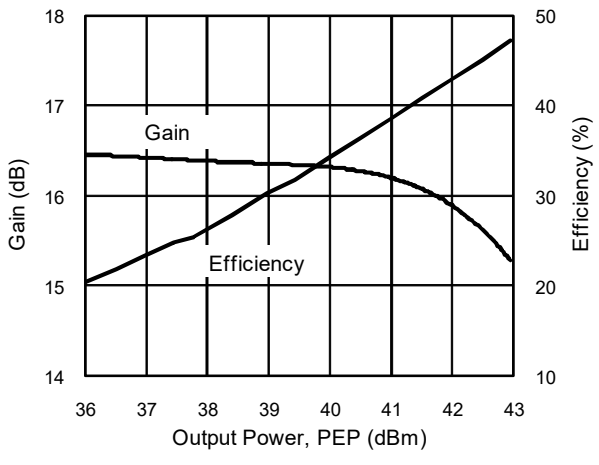
Two-carrier WCDMA 3GPP Drive-up
V_{DD} = 28 V, I_{DQ} = 150 mA, f = 2140 MHz
3GPP WCDMA, P/AR = 8:1, 10 MHz carrier spacing, BW 3.84 MHz



Two-tone Drive-up
V_{DD} = 28 V, I_{DQ} = 150 mA,
f_1 = 2139.05 MHz, f_2 = 2140.05 MHz

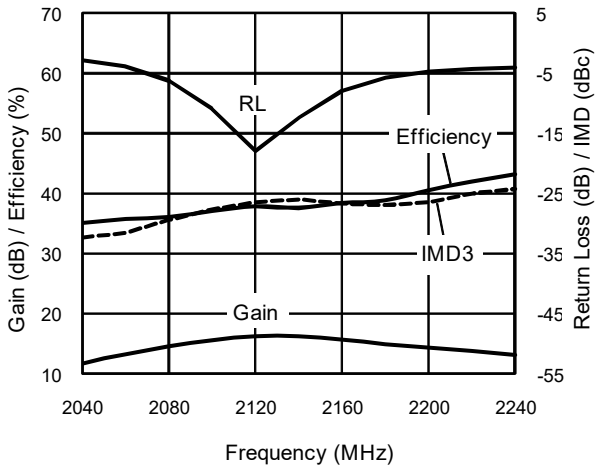


Two-tone Drive-up
V_{DD} = 28 V, I_{DQ} = 150 mA,
f_1 = 2139.05 MHz, f_2 = 2140.05 MHz

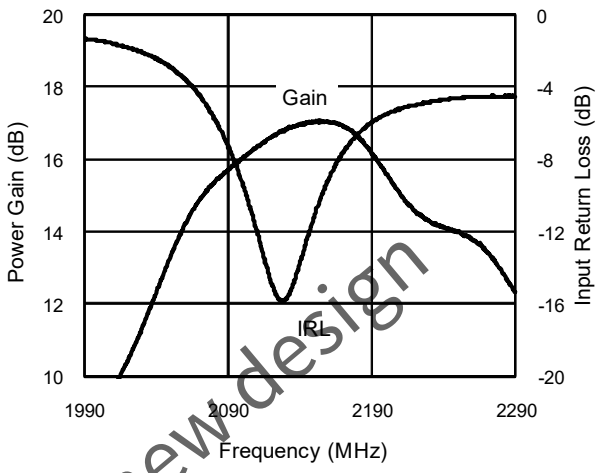


Typical Performance, 2140 MHz (cont.)

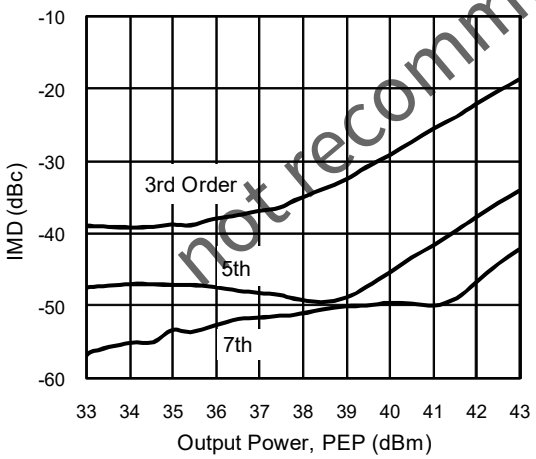
Two-tone Broadband Gain, Efficiency & RL vs. Frequency
V_{DD} = 28V, I_{DQ} = 150 mA, Avg. PEP = 12 W, tone pacing = 100 kHz



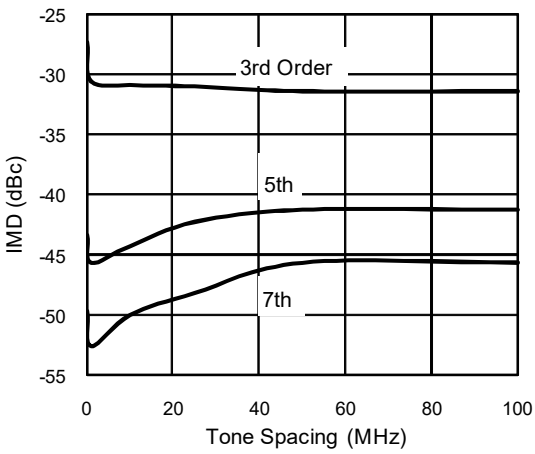
Small Signal CW Gain & Input Return Loss
V_{DD} = 28 V, I_{DQ} = 150 mA



Intermodulation Distortion vs. Output Power
V_{DD} = 28 V, I_{DQ} = 150 mA, f_1 = 2139.05 MHz, f_2 = 2140.05 MHz

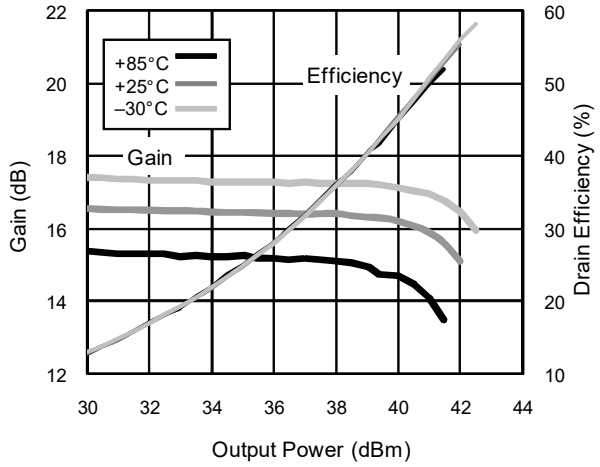


Intermodulation Distortion vs. Tone Spacing
V_{DD} = 28 V, I_{DQ} = 150 mA, f = 2140 MHz, PEP = 11.22 W

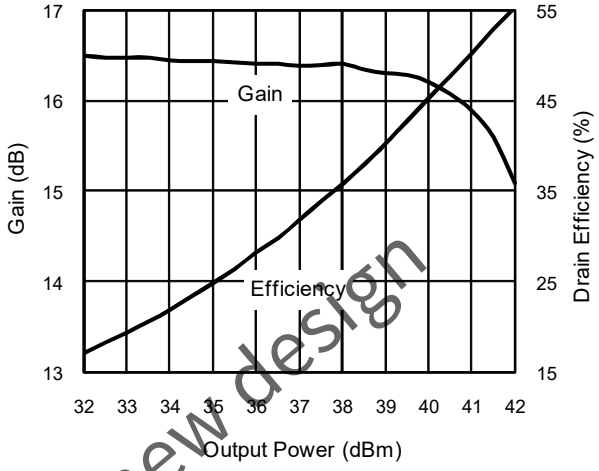


Typical Performance, 2140 MHz (cont.)

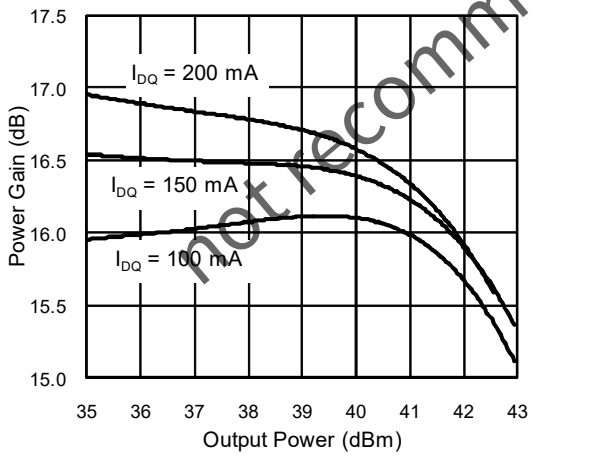
CW Performance
Gain & Efficiency vs. Output Power
V_{DD} = 28 V, I_{DQ} = 150 mA, f = 2140 MHz



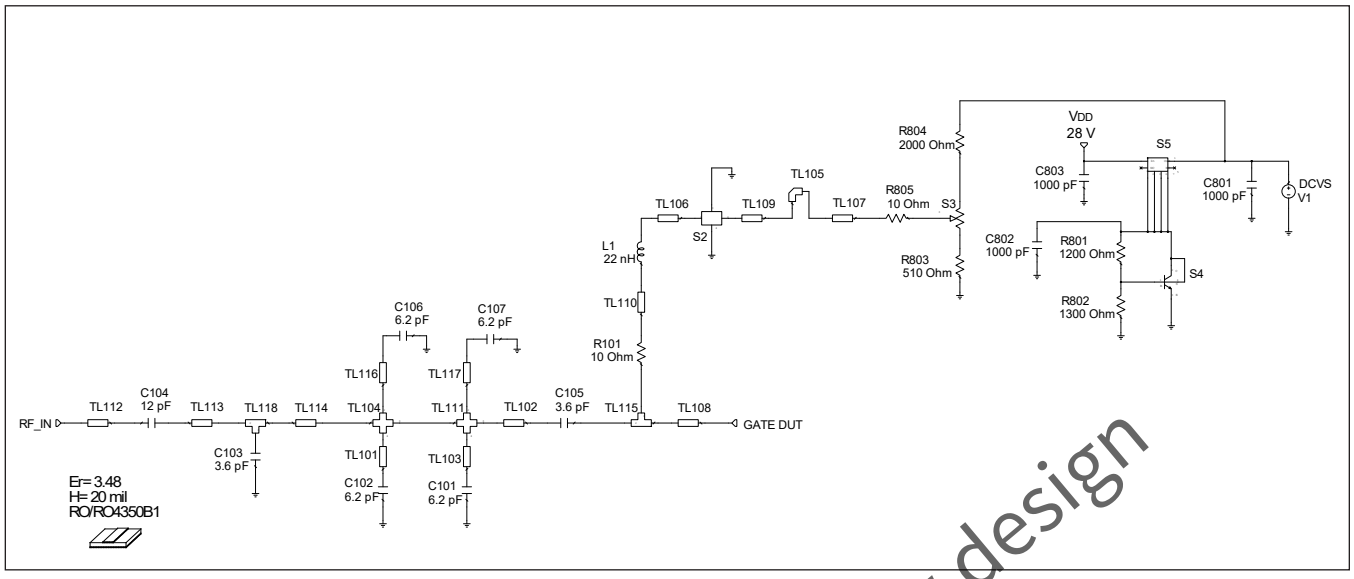
Power Sweep, CW
Gain & Efficiency vs. Output Power
V_{DD} = 28 V, I_{DQ} = 150 mA, f = 2140 MHz



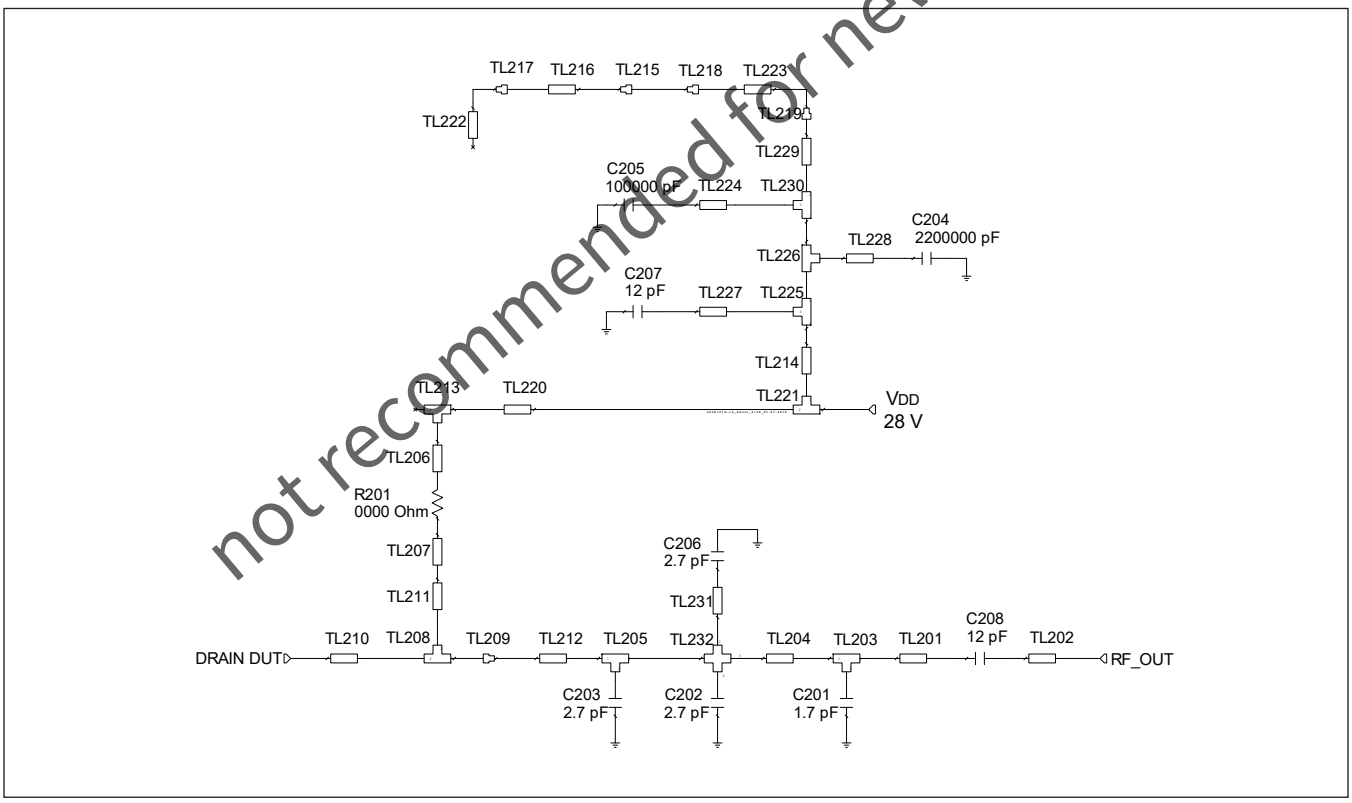
Two-tone Gain vs. Output Power
V_{DD} = 28 V, f_1 = 2139.05 MHz, f_2 = 2140.05 MHz



Reference Circuit, 2140 MHz



Reference circuit input schematic for ƒ = 2140 MHz



Reference circuit output schematic for ƒ = 2140 MHz

Reference Circuit, 2140 MHz (cont.)

Description	
DUT	PTFA220121M
PCB	0.508 mm [.020"] thick, εr = 3.48, Rogers 4350, 1 oz. copper

Electrical Characteristics at 2140 MHz

Transmission Line	Electrical Characteristics	Dimensions: mm	Dimensions: mils
Input			
TL101, TL103	0.000 λ, 144.35 Ω	W = 0.025, L = 0.000	W = 1, L = 0
TL102	0.019 λ, 51.98 Ω	W = 1.087, L = 1.575	W = 43, L = 62
TL104, TL111		W1 = 1.087, W2 = 0.813, W3 = 1.087, W4 = 0.813	W1 = 43, W2 = 32, W3 = 43, W4 = 32
TL105		W = 1.524	W = 60
TL106	0.018 λ, 54.17 Ω	W = 1.016, L = 1.524	W = 40, L = 60
TL107	0.061 λ, 41.75 Ω	W = 1.524, L = 5.080	W = 60, L = 200
TL108	0.022 λ, 25.04 Ω	W = 3.048, L = 1.778	W = 120, L = 70
TL109	0.006 λ, 41.75 Ω	W = 1.524, L = 0.508	W = 60, L = 20
TL110	0.015 λ, 41.75 Ω	W = 1.524, L = 1.270	W = 60, L = 50
TL112	0.039 λ, 51.98 Ω	W = 1.087, L = 3.264	W = 43, L = 129
TL113	0.180 λ, 51.98 Ω	W = 1.087, L = 15.291	W = 43, L = 602
TL114	0.039 λ, 51.98 Ω	W = 1.087, L = 3.302	W = 43, L = 130
TL115	0.009 λ, 25.04 Ω	W1 = 3.048, W2 = 3.048, W3 = 0.762	W1 = 120, W2 = 120, W3 = 30
TL116, TL117	0.000 λ, 144.35 Ω	W = 0.025, L = 0.000	W = 1, L = 0
TL118	0.010 λ, 51.98 Ω	W1 = 1.087, W2 = 1.087, W3 = 0.813	W1 = 43, W2 = 43, W3 = 32

table continued next page

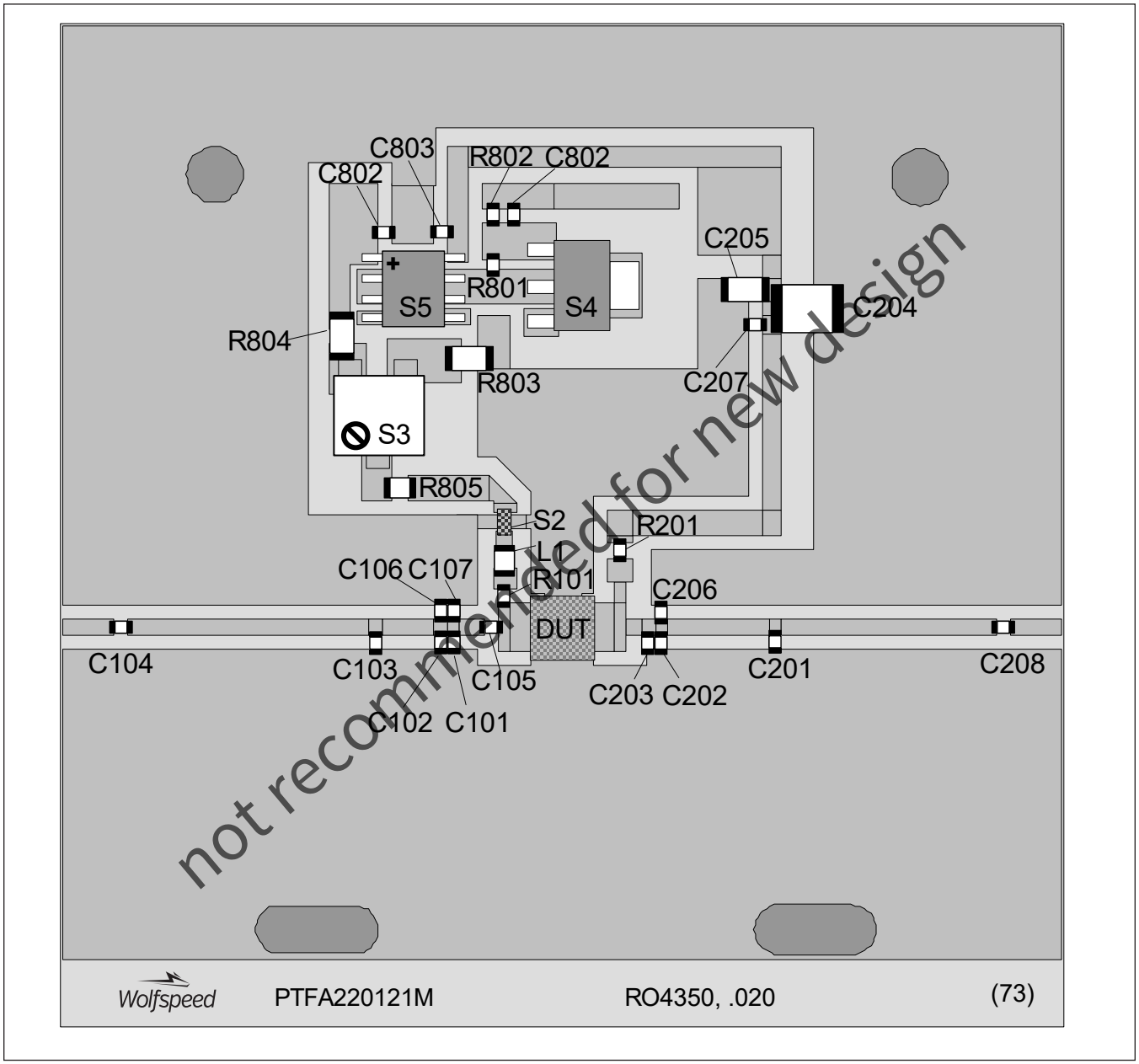
Reference Circuit, 2140 MHz (cont.)

Electrical Characteristics at 2140 MHz

Transmission Line	Electrical Characteristics	Dimensions: mm	Dimensions: mils
Output			
TL201	0.161 λ, 51.98 Ω	W = 1.087, L = 13.627	W = 43, L = 537
TL202	0.039 λ, 51.98 Ω	W = 1.087, L = 3.264	W = 43, L = 129
TL203, TL205	0.010 λ, 51.98 Ω	W1 = 1.087, W2 = 1.087, W3 = 0.813	W1 = 43, W2 = 43, W3 = 32
TL204	0.075 λ, 51.98 Ω	W = 1.087, L = 6.375	W = 43, L = 251
TL206	0.006 λ, 41.75 Ω	W = 1.524, L = 0.508	W = 60, L = 20
TL207	0.018 λ, 41.75 Ω	W = 1.524, L = 1.524	W = 60, L = 60
TL208	0.009 λ, 25.04 Ω	W1 = 3.048, W2 = 3.048, W3 = 0.762	W1 = 120, W2 = 120, W3 = 30
TL209		W1 = 1.087, W2 = 3.048	W1 = 43, W2 = 120
TL210	0.022 λ, 25.04 Ω	W = 3.048, L = 1.778	W = 120, L = 70
TL211	0.015 λ, 63.89 Ω	W = 0.762, L = 1.270	W = 30, L = 50
TL212	0.012 λ, 51.98 Ω	W = 1.087, L = 1.041	W = 43, L = 41
TL213	0.018 λ, 41.75 Ω	W1 = 1.524, W2 = 1.524, W3 = 1.524	W1 = 60, W2 = 60, W3 = 60
TL214	0.133 λ, 47.12 Ω	W = 1.270, L = 11.186	W = 50, L = 440
TL215		W1 = 0.020, W2 = 0.020, Offset = 0.007	W1 = 20, W2 = 780, Offset = 286
TL216	0.017 λ, 4.80 Ω	W = 19.850, L = 1.270	W = 782, L = 50
TL217		W1 = 0.001, W2 = 0.001, Offset = 0.011	W1 = 1, W2 = 50, Offset = 416
TL218		W1 = 0.005, W2 = 0.005, Offset = 0.000	W1 = 5, W2 = 208, Offset = 0
TL219		W1 = 0.001, W2 = 0.005, Offset = –0.002	W1 = 1, W2 = 208, Offset = –79
TL220	0.098 λ, 41.75 Ω	W = 1.524, L = 8.204	W = 60, L = 323
TL221	0.015 λ, 41.75 Ω	W1 = 1.524, W2 = 1.524, W3 = 1.270	W1 = 60, W2 = 60, W3 = 50
TL222	0.087 λ, 47.12 Ω	W = 1.270, L = 7.290	W = 50, L = 287
TL223	0.071 λ, 15.92 Ω	W = 5.283, L = 5.690	W = 208, L = 224
TL224	0.000 λ, 41.75 Ω	W = 1.524, L = 0.000	W = 60, L = 0
TL225	0.014 λ, 47.12 Ω	W = 1.270, W2 = 1.270, W3 = 1.191	W = 50, W2 = 50, W3 = 47
TL226	0.009 λ, 47.12 Ω	W = 1.270, W2 = 1.270, W3 = 0.762	W = 50, W2 = 50, W3 = 30
TL227	0.000 λ, 63.89 Ω	W = 0.762, L = 0.000	W = 30, L = 0
TL228	0.000 λ, 25.04 Ω	W = 3.048, L = 0.000	W = 120, L = 0
TL229	0.017 λ, 47.12 Ω	W = 1.270, L = 1.422	W = 50, L = 56
TL230	0.018 λ, 47.12 Ω	W1 = 1.270, W2 = 1.270, W3 = 1.524	W1 = 50, W2 = 50, W3 = 60
TL231	0.000 λ, 144.35 Ω	W = 0.025, L = 0.000	W = 1, L = 0
TL232		W1 = 1.087, W2 = 0.813, W3 = 1.087 W4 = 0.813	W1 = 43, W2 = 32, W3 = 43, W4 = 32

Reference Circuit, 2140 MHz (cont.)

Circuit Assembly Information	
Test Fixture Part No.	LTN/ PTFA220121M
Find Gerber files for this test fixture on the Wolfspeed Web site at	**http://www.wolfspeed.com/RF**



Reference circuit assembly diagram (not to scale)

Reference Circuit, 2140 MHz (cont.)

Components Information

Component	Description	Manufacturer	P/N
Input			
C101, C102, C106, C107	Chip capacitor, 6.2 pF	ATC	ATC100A6R2CW150X
C103, C105	Chip capacitor, 3.6 pF	ATC	ATC100A3R6CW150X
C104	Chip capacitor, 12 pF	ATC	ATC100A120JW150X
C801, C802, C803	Chip capacitor, 1000 pF	Panasonic Electronic Components	ECJ-1VB1H102K
L1	Inductor, 22 nH	Coilcraft	0805HT-22NX_BG
R101, R805	Resistor, 10 Ω	Panasonic Electronic Components	ERJ-8GEYJ100V
R801	Resistor, 1200 Ω	Panasonic Electronic Components	ERJ-8GEYJ122V
R802	Resistor, 1300 Ω	Panasonic Electronic Components	ERJ-8GEYJ132V
R803	Resistor, 510 Ω	Panasonic Electronic Components	ERJ-8GEYJ511V
R804	Resistor, 2000 Ω	Panasonic Electronic Components	ERJ-8GEYJ202V
S2	EMI Suppression Capacitor	Murata	NFM18PS105R0J3D
S3	Potentiometer, 2k Ω	Bourns Inc.	3224W-1-202E
S4	Transistor	Fairchild Semiconductor	BCP56
S5	Voltage regulator	Fairchild Semiconductor	LM7805
Output			
C201	Chip capacitor, 1.7 pF	ATC	ATC100A1R7CW150X
C202, C203, C206	Chip capacitor, 2.7 pF	ATC	ATC100A2R7CW150X
C204	Chip capacitor, 2.2 µF	TDK Corporation	C4532X7R1H225M160KA
C205	Chip capacitor, 0.1 µF	Panasonic Electronic Components	ECJ-3VB1H104K
C207, C208	Chip capacitor, 12 pF	ATC	ATC100A120JW150X
R201	Resistor, 0.0 Ω	Panasonic Electronic Components	ERJ-8GEY0R00V

Package Outline Specifications

Package PG-SON-10

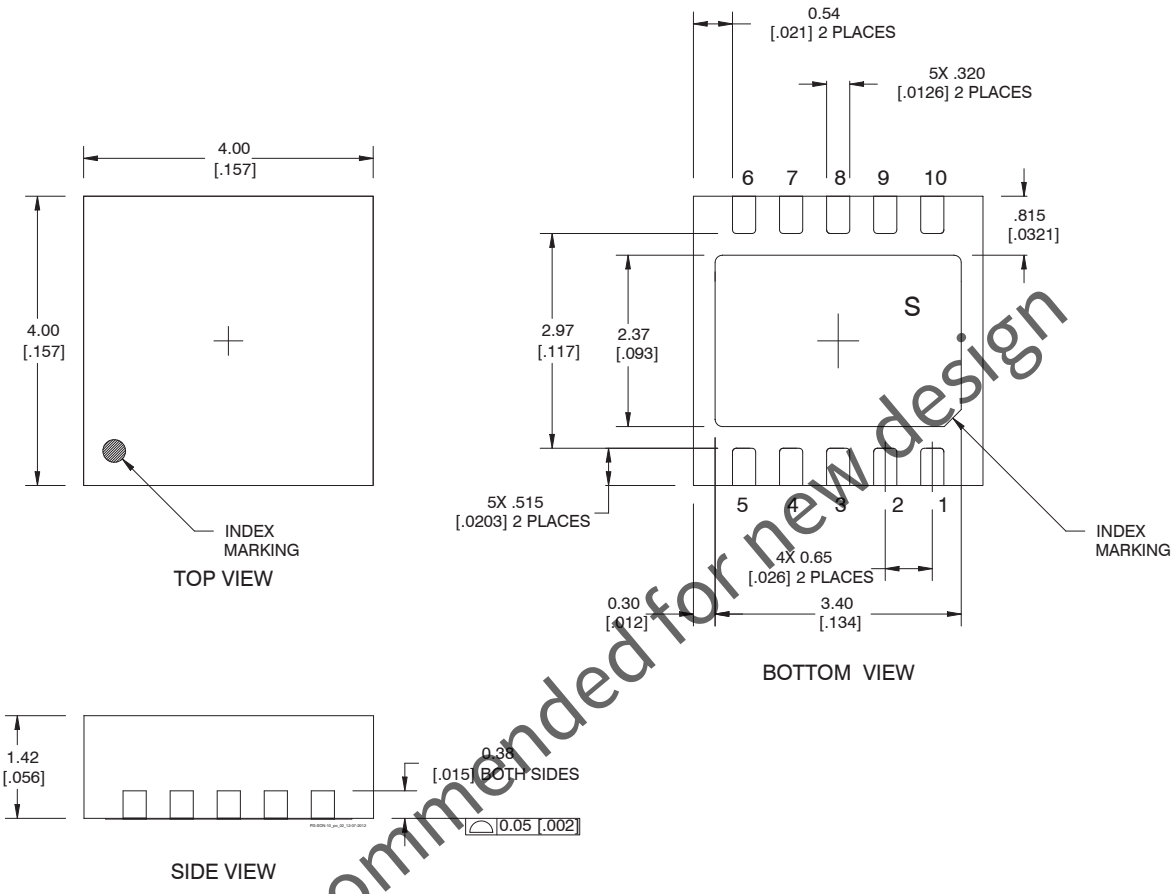


Diagram Notes—unless otherwise specified:

1. Interpret dimensions and tolerances per ASME Y14.5M-1994.
2. Primary dimensions are mm. Alternate dimensions are inches.
3. All tolerances ± 0.1 [.004].
4. Package dimension: 4.00 mm x 4.00 mm x 1.42 mm.
5. Pins: S = source, 1 – 5 = gate, 6 – 10 = drain.
6. NiPdAu plating (gold top layer): 0.025 – 0.127 micron [1 – 5 microinch].

Revision History

Revision	Date	Data Sheet Type	Page	Subjects (major changes since last revision)
10.1	2017-04-13	Data Sheet	2	Corrected OPN
11	2018-08-08	Production	All	Updated to Wolfspeed data sheet, not recommended for new design

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Notes

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