



PD55015 PD55015S

RF POWER TRANSISTORS *The LdmoST FAMILY*

N-CHANNEL ENHANCEMENT-MODE LATERAL MOSFETs

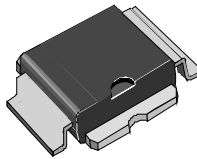
- EXCELLENT THERMAL STABILITY
- COMMON SOURCE CONFIGURATION
- $P_{OUT} = 15\text{ W}$ with 14 dB gain @ 500 MHz / 12.5 V
- NEW RF PLASTIC PACKAGE

DESCRIPTION

The PD55015 is a common source N-Channel, enhancement-mode lateral Field-Effect RF power transistor. It is designed for high gain, broad band commercial and industrial applications. It operates at 12 V in common source mode at frequencies of up to 1 GHz. PD55015 boasts the excellent gain, linearity and reliability of ST's latest LDMOS technology mounted in the first true SMD plastic RF power package, PowerSO-10RF. PD55015's superior linearity performance makes it an ideal solution for car mobile radio.

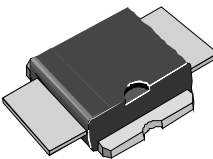
The PowerSO-10 plastic package, designed to offer high reliability, is the first ST JEDEC approved, high power SMD package. It has been specially optimized for RF needs and offers excellent RF performances and ease of assembly.

Mounting recommendations are available in www.st.com/rfl (look for application note AN1294)



**PowerSO-10RF
(formed lead)**

| | |
|------------------------------|----------------------------|
| ORDER CODE PD55015 | BRANDING PD55015 |
|------------------------------|----------------------------|



**PowerSO-10RF
(straight lead)**

| | |
|-------------------------------|-----------------------------|
| ORDER CODE PD55015S | BRANDING PD55015S |
|-------------------------------|-----------------------------|

ABSOLUTE MAXIMUM RATINGS (T_{CASE} = 25°C)

| Symbol | Parameter | Value | Unit |
|----------------------|---|-------------|------|
| V _{(BR)DSS} | Drain-Source Voltage | 40 | V |
| V _{GS} | Gate-Source Voltage | ± 20 | V |
| I _D | Drain Current | 5 | A |
| P _{DISS} | Power Dissipation (@ T _c = 70°C) | 73 | W |
| T _j | Max. Operating Junction Temperature | 165 | °C |
| T _{STG} | Storage Temperature | -65 to +150 | °C |

THERMAL DATA

| | | | |
|----------------------|-----------------------------------|-----|------|
| R _{th(j-c)} | Junction -Case Thermal Resistance | 1.2 | °C/W |
|----------------------|-----------------------------------|-----|------|

PD55015 - PD55015S

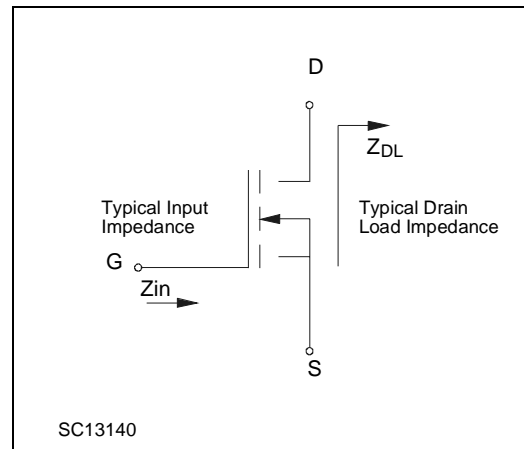
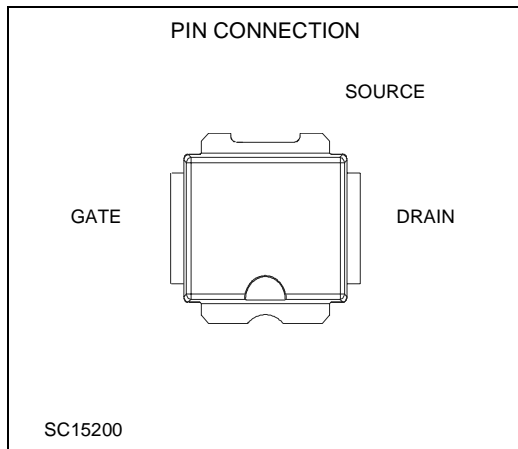
ELECTRICAL SPECIFICATION ($T_{CASE} = 25^{\circ}C$)

STATIC

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|--------------|-----------------|-------------------|------|------|------|---------|
| I_{DSS} | $V_{GS} = 0 V$ | $V_{DS} = 28 V$ | | | 1 | μA |
| I_{GSS} | $V_{GS} = 20 V$ | $V_{DS} = 0 V$ | | | 1 | μA |
| $V_{GS(Q)}$ | $V_{DS} = 10 V$ | $I_D = 150 mA$ | 2.0 | | 5.0 | V |
| $V_{DS(ON)}$ | $V_{GS} = 10 V$ | $I_D = 2.5 A$ | | | 0.8 | V |
| g_{FS} | $V_{DS} = 10 V$ | $I_D = 2.5 A$ | 2.0 | 2.5 | | mho |
| C_{ISS} | $V_{GS} = 0 V$ | $V_{DS} = 12.5 V$ | | 89 | | pF |
| C_{OSS} | $V_{GS} = 0 V$ | $V_{DS} = 12.5 V$ | | 60 | | pF |
| C_{RSS} | $V_{GS} = 0 V$ | $V_{DS} = 12.5 V$ | | 6.5 | | pF |

DYNAMIC

| Symbol | Test Conditions | | Min. | Typ. | Max. | Unit |
|---------------|-------------------|--|------|------|------|------|
| P_{1dB} | $V_{DD} = 12.5 V$ | $I_{DQ} = 150 mA$ $f = 500 MHz$ | 15 | | | W |
| G_P | $V_{DD} = 12.5 V$ | $I_{DQ} = 150 mA$ $P_{OUT} = 15 W$ $f = 500 MHz$ | 12 | 14 | | dB |
| η_D | $V_{DD} = 12.5 V$ | $I_{DQ} = 150 mA$ $P_{OUT} = 15 W$ $f = 500 MHz$ | 50 | 55 | | % |
| Load mismatch | $V_{DD} = 15.5 V$ | $I_{DQ} = 150 mA$ $P_{OUT} = 15 W$ $f = 500 MHz$ ALL PHASE ANGLES | 20:1 | | | VSWR |



IMPEDANCE DATA

PD55015

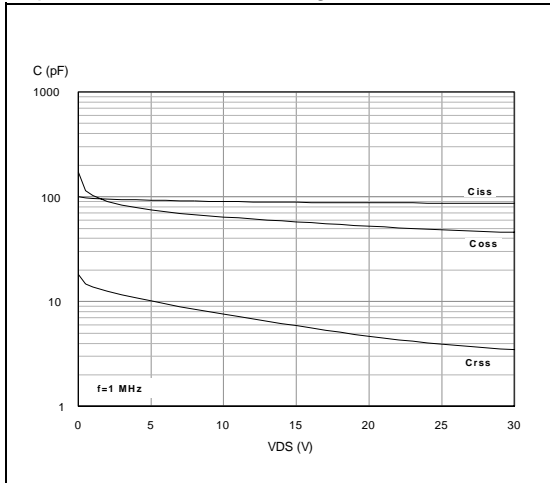
| FREQ. MHz | $Z_{IN} (\Omega)$ | $Z_{DL} (\Omega)$ |
|-----------|-------------------|-------------------|
| 480 | $1.58 + j 0.56$ | $1.27 - j 1.36$ |
| 500 | $1.53 + j 0.77$ | $1.51 - j 1.81$ |
| 520 | $1.70 + j 1.17$ | $1.44 - j 2.13$ |

PD55015S

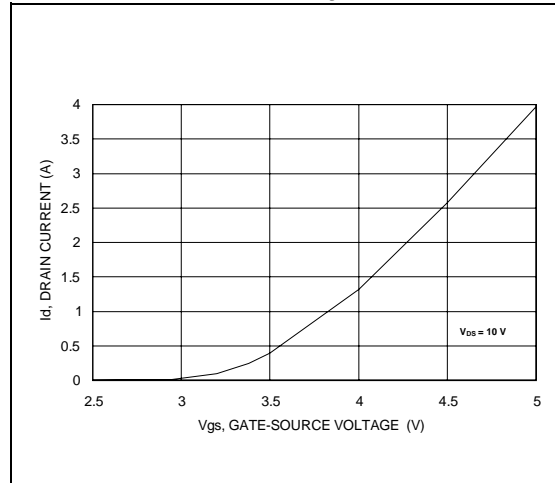
| FREQ. MHz | $Z_{IN} (\Omega)$ | $Z_{DL} (\Omega)$ |
|-----------|-------------------|-------------------|
| 480 | $1.30 - j 0.54$ | $1.18 + j 0.04$ |
| 500 | $1.26 - j 0.30$ | $1.32 - j 0.22$ |
| 520 | $1.34 - j 0.11$ | $1.46 - j 0.22$ |
| 876 | $0.33 + j 0.44$ | $1.36 - j 0.21$ |
| 900 | $0.33 + j 0.70$ | $1.29 - j 1.03$ |
| 915 | $0.33 + j 0.87$ | $1.27 - j 0.37$ |

TYPICAL PERFORMANCE

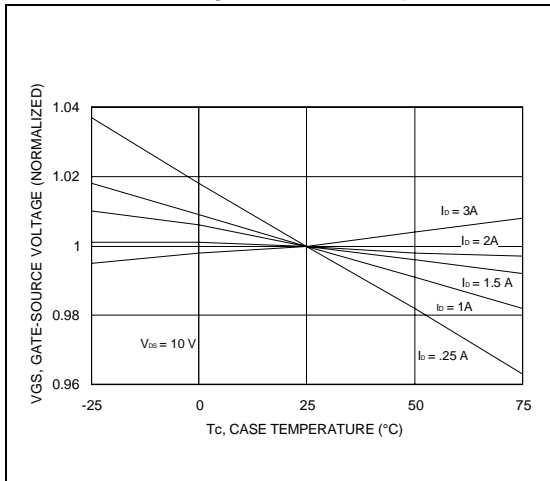
Capacitance vs. Drain Voltage



Drain Current vs. Gate Voltage



Gate-Source Voltage vs. Case Temperature

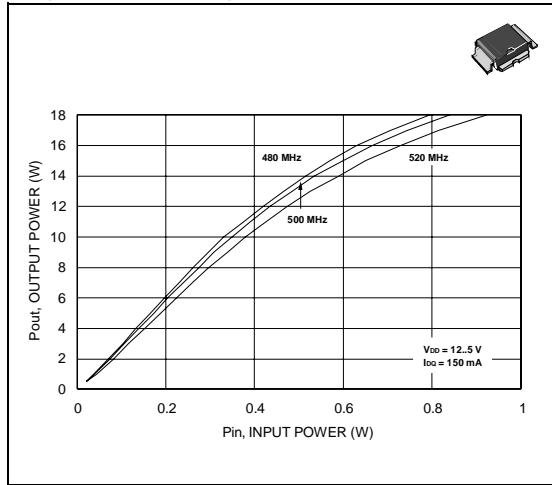


PD55015 - PD55015S

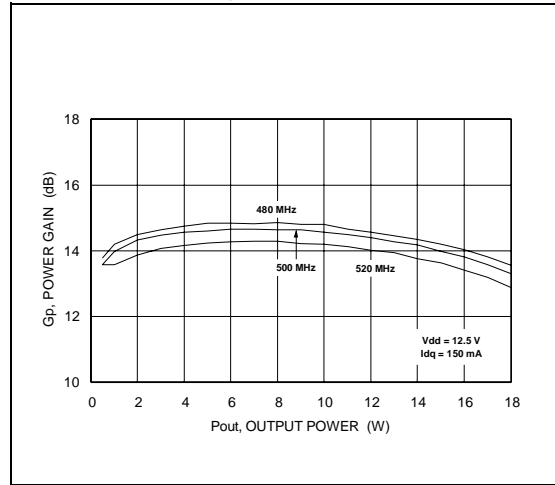
TYPICAL PERFORMANCE

Output Power vs. Input Power

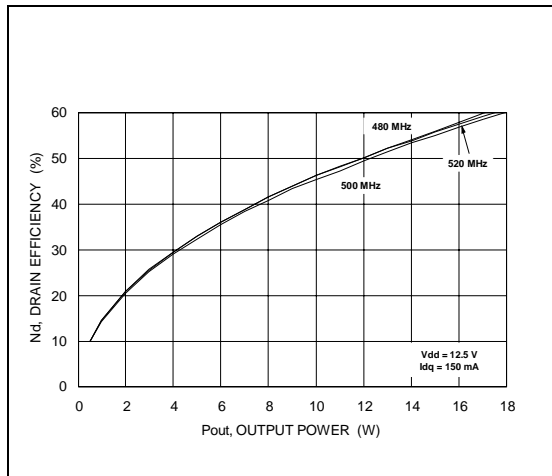
PD55015



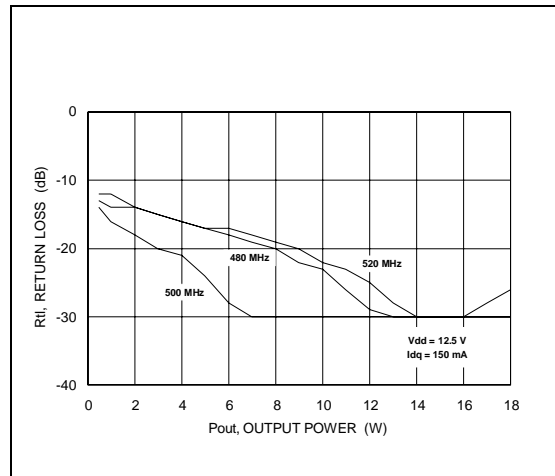
Power Gain vs. Output Power



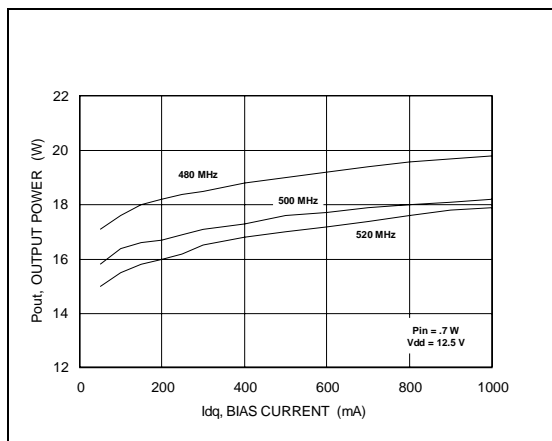
Drain Efficiency vs. Output Power



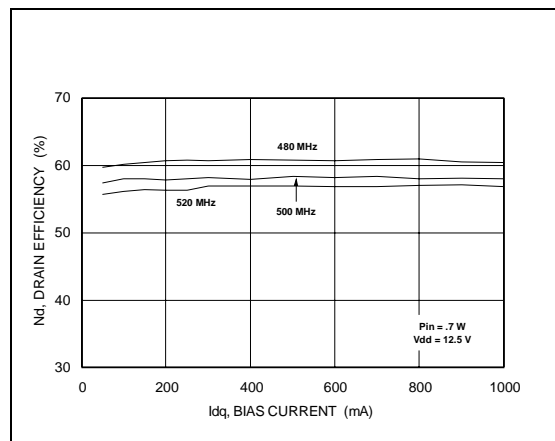
Return Loss vs. Output Power



Output Power vs. Bias Current

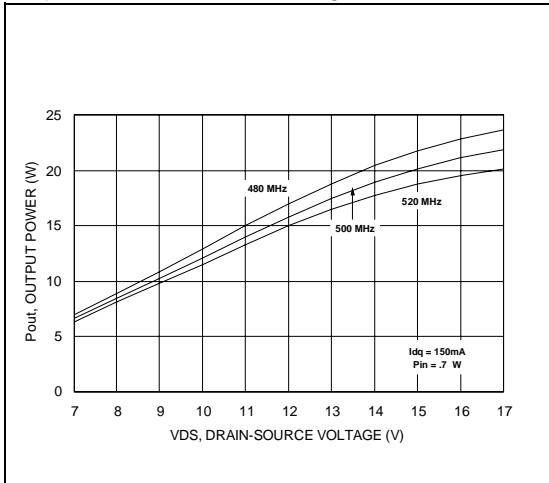


Drain Efficiency vs. Bias Current

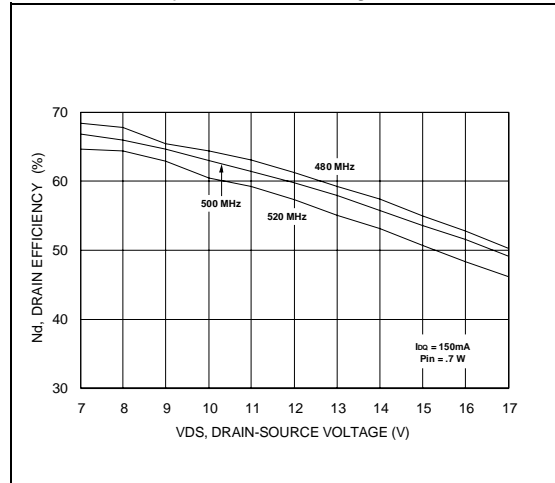


TYPICAL PERFORMANCE

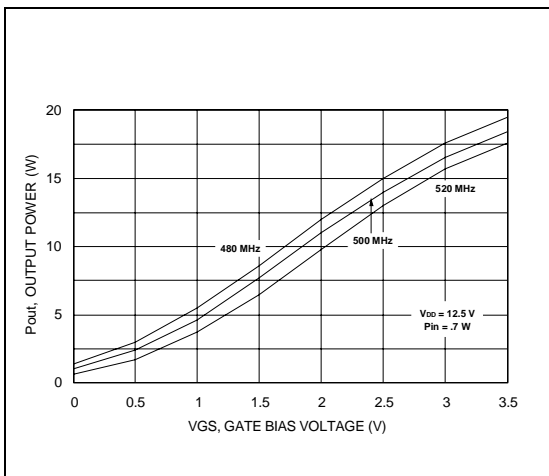
Output Power vs. Drain Voltage



Drain Efficiency vs. Drain Voltage

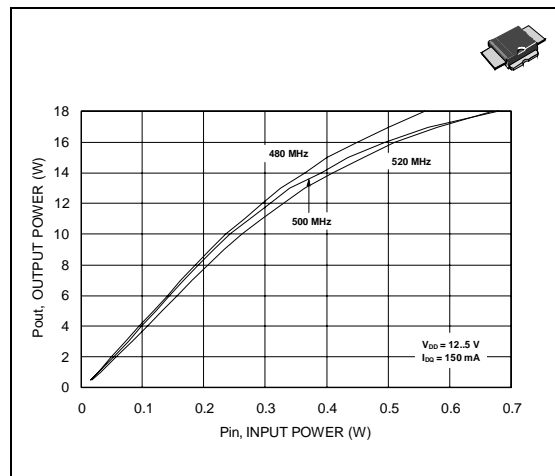


Output Power vs. Gate Bias Voltage

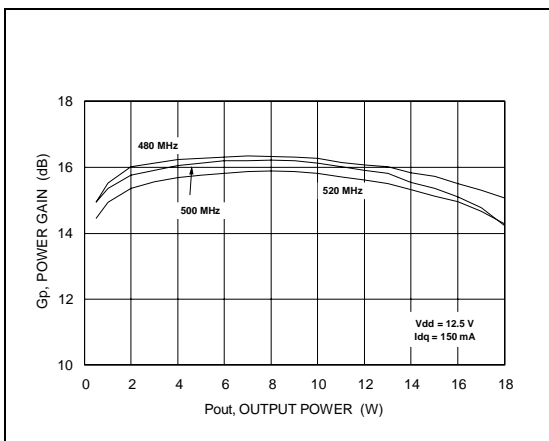


Output Power vs. Input Power

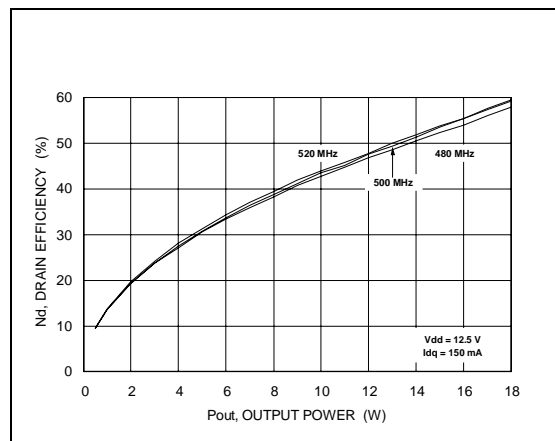
PD55015S



Power Gain vs. Output Power



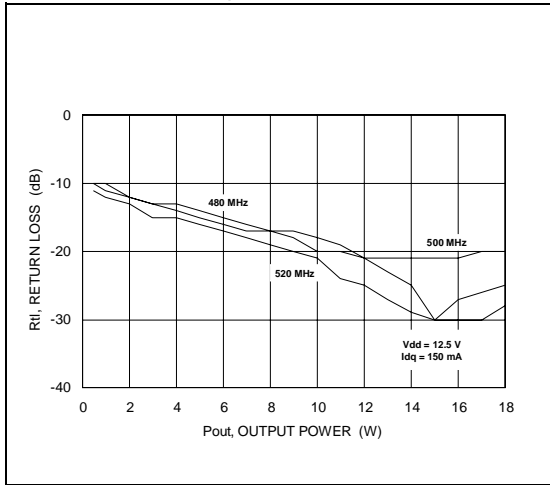
Drain Efficiency vs. Output Power



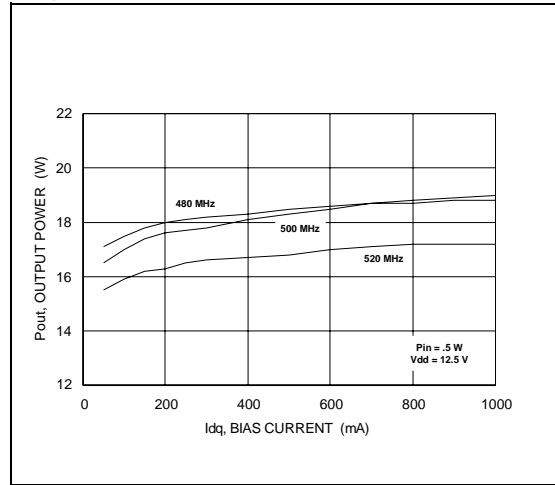
PD55015 - PD55015S

TYPICAL PERFORMANCE

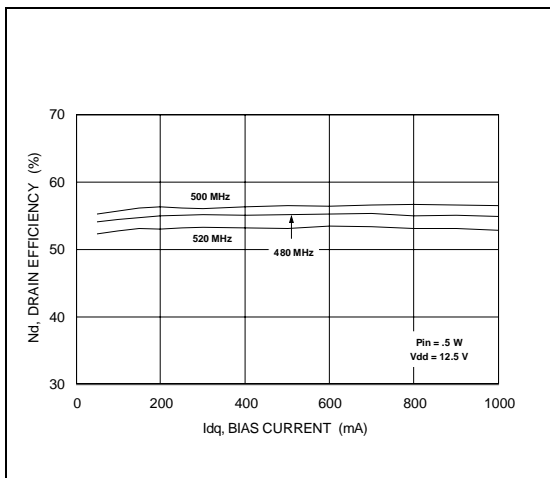
Return Loss vs. Output Power



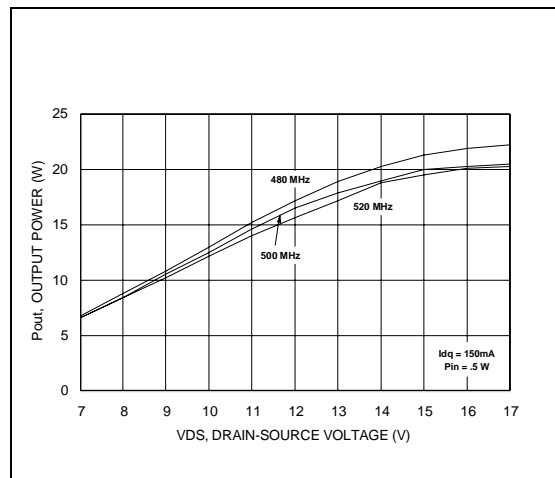
Output Power vs. Bias Current



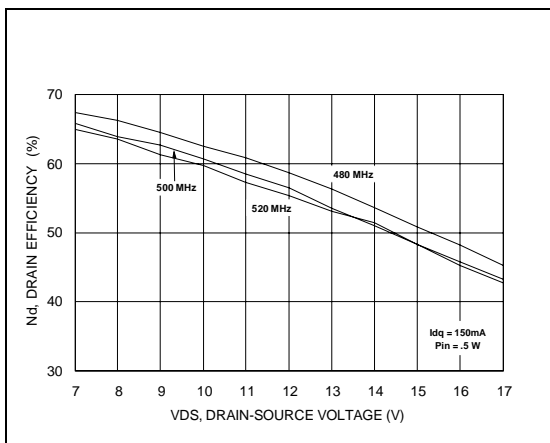
Drain Efficiency vs. Bias Current



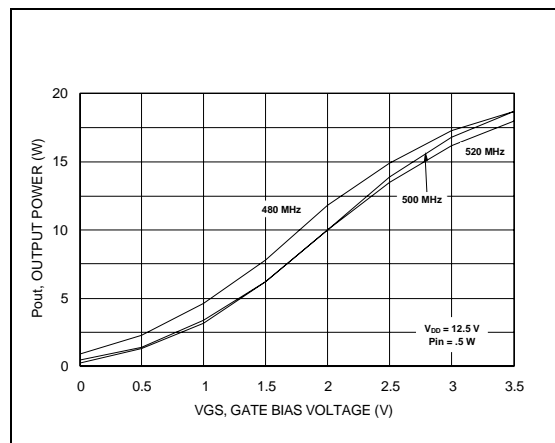
Output Power vs. Drain Voltage



Drain Efficiency vs. Drain Voltage

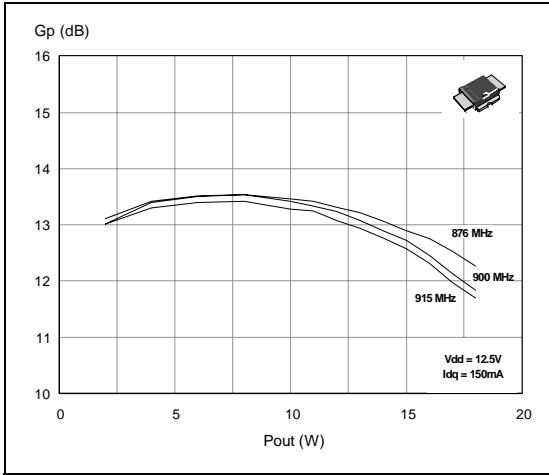


Output Power vs. Gate Bias Voltage

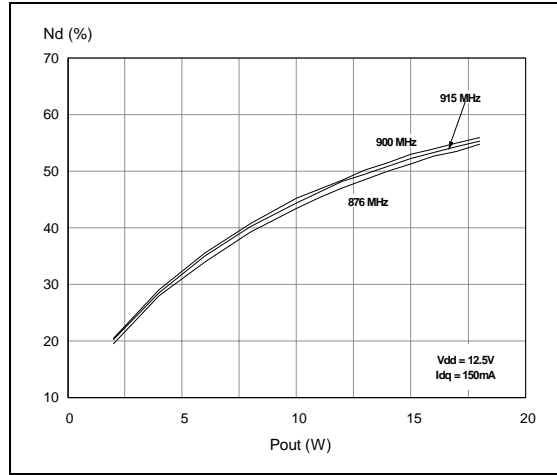


TYPICAL PERFORMANCE (876 - 915MHz)

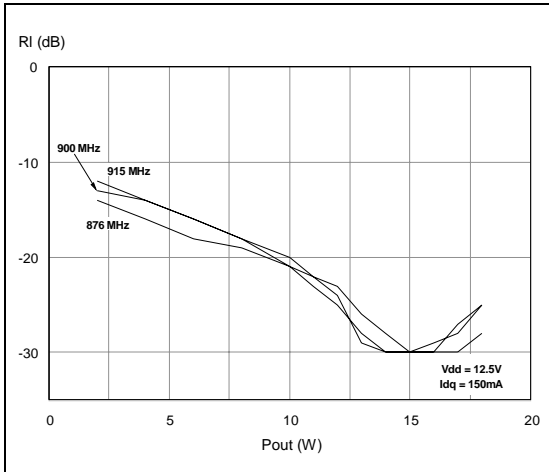
Power Gain vs. Output Power **PD55015S**



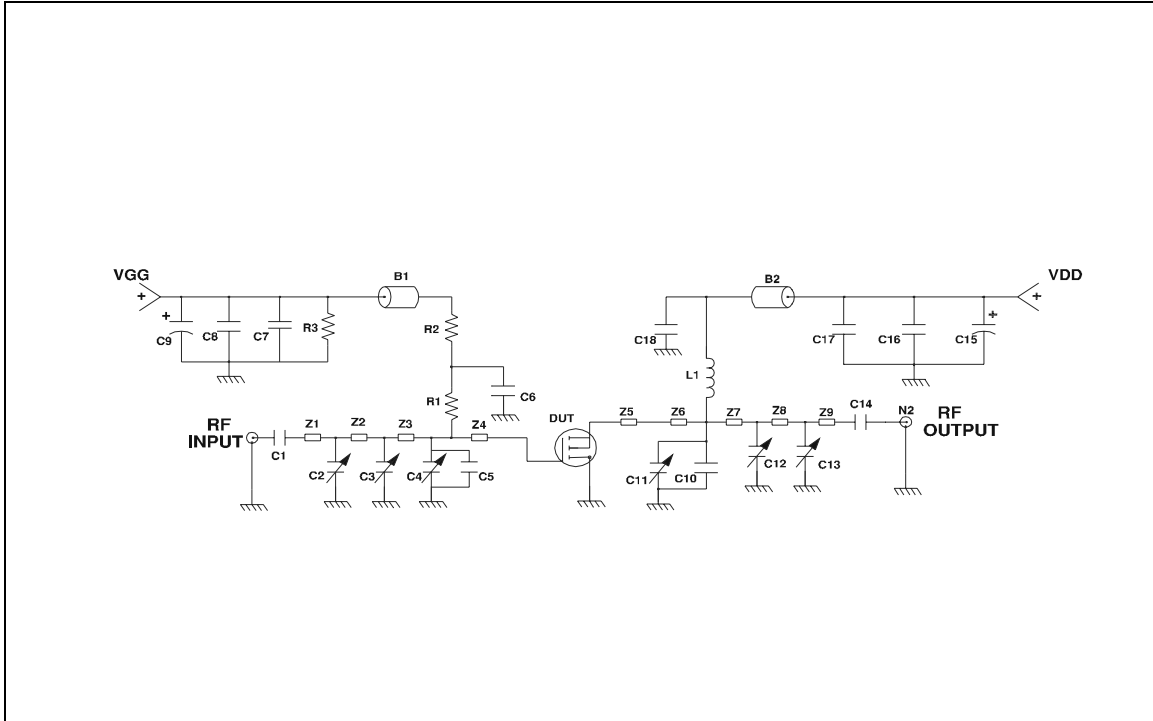
Drain Efficiency vs. Output Power



Input Return Loss vs Output Power



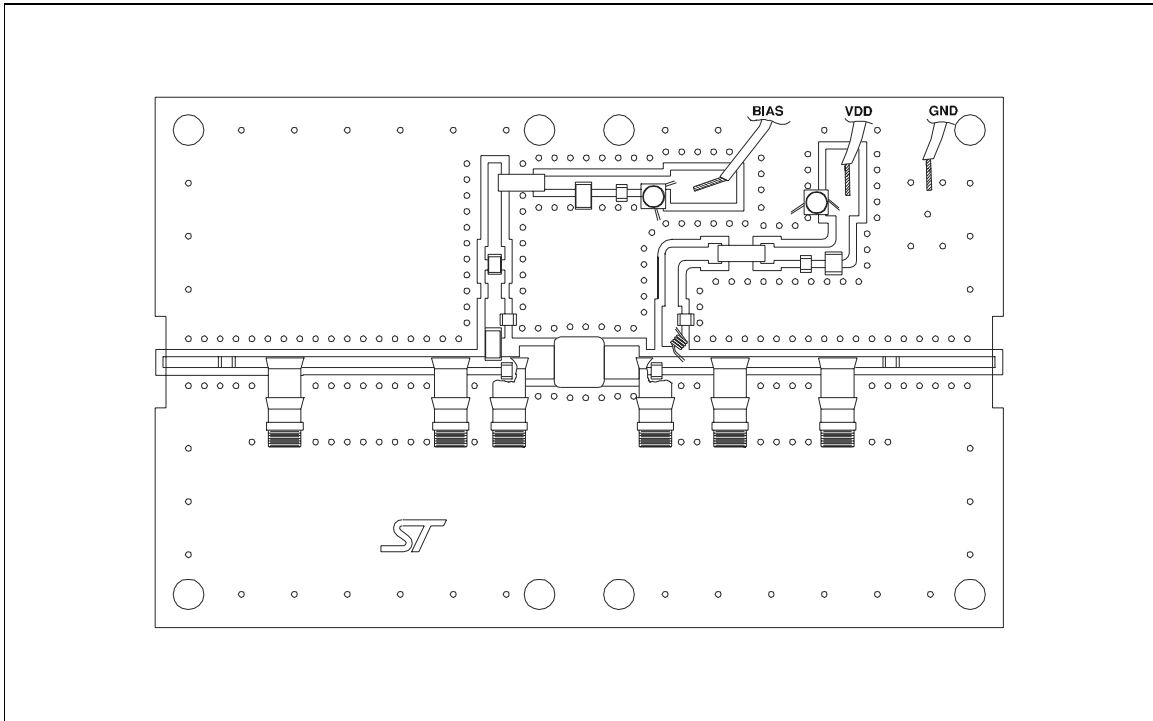
TEST CIRCUIT SCHEMATIC



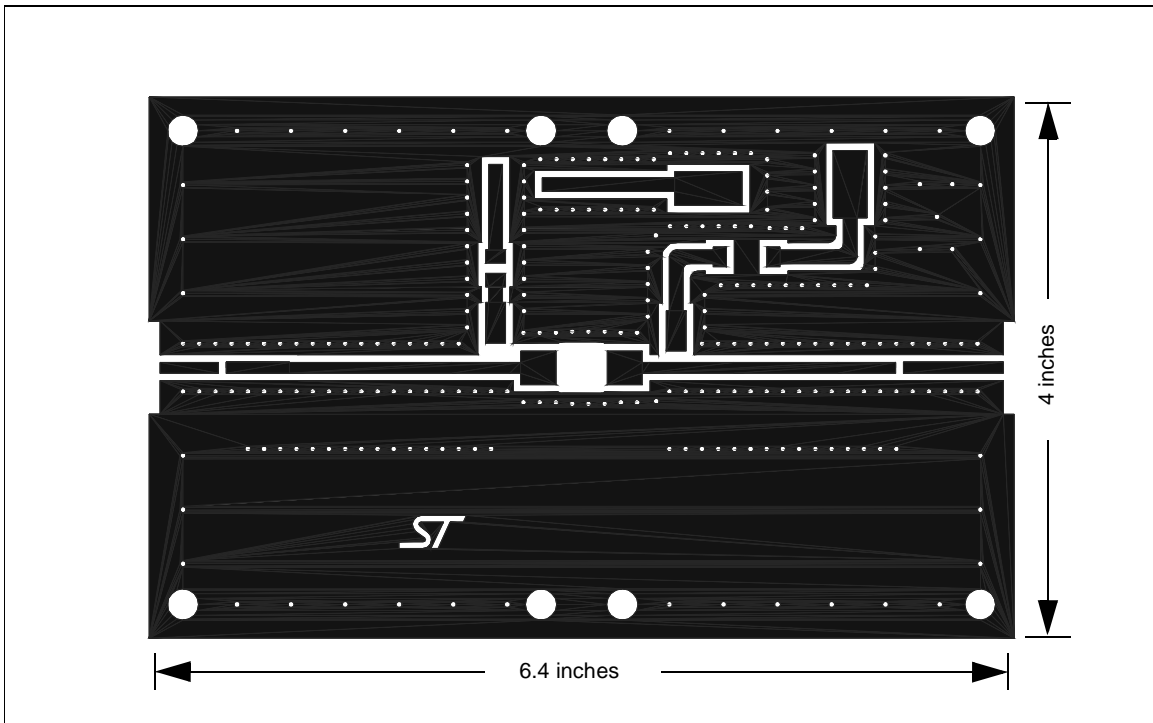
TEST CIRCUIT COMPONENT PART LIST

| COMPONENT | DESCRIPTION |
|----------------------|---|
| B1,B2 | FERRITE BEAD - Fair-rite Corp #2743021447 |
| C1,C12 | 300 pF, 100 mil CHIP CAPACITOR |
| C2,C3,C4,C11,C12,C13 | 1 to 20 pF TRIMMER CAPACITOR |
| C6, C18 | 120 pF 100 mil CHIP CAPACITOR |
| C9, C15 | 10 μ F, 50 V ELECTROLYTIC CAPACITOR |
| C8, C16 | 0.1 mF, 100 mil CHIP CAP |
| C7, C17 | 1.000 pF 100 mil CHIP CAP |
| C5, C10 | 33 pF, 100 mil CHIP CAP |
| L1 | 56 nH, 6 TURNS, 18 AWG MAGNET WIRE, $l_d = .140$ " HAND WOUND CHOKE |
| N1, N2 | TYPE N FLANGE MOUNT |
| R1 | 15 Ω , 1 W CHIP RESISTOR |
| R2 | 1 K Ω , 1 W CHIP RESISTOR |
| R3 | 33 K Ω , 1 W CHIP RESISTOR |
| Z1 | 0.471" X 0.080" MICROSTRIP |
| Z2 | 1.082" X 0.080" MICROSTRIP |
| Z3 | 0.372" X 0.080" MICROSTRIP |
| Z4,Z5 | 0.260" X 0.223" MICROSTRIP |
| Z6 | 0.050" X 0.080" MICROSTRIP |
| Z7 | 0.551" X 0.080" MICROSTRIP |
| Z8 | 0.825" X 0.080" MICROSTRIP |
| Z9 | 0.489" X 0.080" MICROSTRIP |
| BOARD | ROGER, ULTRA LAM 2000 THK 0.030", $\epsilon_r = 2.55$ 2oz. ED cu 2 SIDES. |

TEST CIRCUIT



TEST CIRCUIT PHOTOMASTER



PD55015 - PD55015S

COMMON SOURCE S-PARAMETER (PD55015S)

($V_{DS} = 12.5V$ $I_{DS} = 225mA$)

| FREQ (MHz) | $ S_{11} $ | $\angle S_{11}$ | $ S_{21} $ | $\angle S_{21}$ | $ S_{12} $ | $\angle S_{12}$ | $ S_{22} $ | $\angle S_{22}$ |
|---------------|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|
| 50 | 0.769 | -161 | 12.12 | 85 | 0.027 | -3 | 0.730 | -160 |
| 100 | 0.820 | -167 | 5.77 | 74 | 0.026 | -14 | 0.746 | -166 |
| 150 | 0.847 | -170 | 3.75 | 66 | 0.025 | -21 | 0.769 | -167 |
| 200 | 0.869 | -172 | 2.66 | 59 | 0.023 | -29 | 0.798 | -168 |
| 250 | 0.884 | -172 | 2.00 | 51 | 0.022 | -34 | 0.851 | -168 |
| 300 | 0.900 | -173 | 1.56 | 45 | 0.019 | -39 | 0.849 | -169 |
| 350 | 0.914 | -174 | 1.25 | 40 | 0.018 | -43 | 0.872 | -171 |
| 400 | 0.925 | -175 | 1.02 | 35 | 0.016 | -47 | 0.890 | -171 |
| 450 | 0.936 | -176 | 0.84 | 31 | 0.014 | -50 | 0.905 | -172 |
| 500 | 0.944 | -176 | 0.71 | 28 | 0.013 | -51 | 0.919 | -173 |
| 550 | 0.950 | -177 | 0.61 | 24 | 0.011 | -53 | 0.927 | -174 |
| 600 | 0.955 | -178 | 0.52 | 22 | 0.010 | -56 | 0.940 | -175 |
| 650 | 0.960 | -179 | 0.46 | 19 | 0.008 | -55 | 0.941 | -176 |
| 700 | 0.963 | -179 | 0.40 | 17 | 0.007 | -58 | 0.950 | -177 |
| 750 | 0.965 | -180 | 0.35 | 14 | 0.007 | -57 | 0.952 | -177 |
| 800 | 0.970 | 180 | 0.32 | 13 | 0.005 | -52 | 0.959 | -178 |
| 850 | 0.970 | 179 | 0.29 | 11 | 0.005 | -55 | 0.956 | -178 |
| 900 | 0.973 | 179 | 0.26 | 9 | 0.004 | -45 | 0.965 | -179 |
| 950 | 0.974 | 178 | 0.23 | 8 | 0.003 | -31 | 0.964 | -180 |
| 1000 | 0.976 | 178 | 0.21 | 6 | 0.003 | -30 | 0.965 | 180 |
| 1050 | 0.978 | 177 | 0.20 | 5 | 0.002 | -27 | 0.967 | 179 |
| 1100 | 0.977 | 177 | 0.18 | 3 | 0.001 | -13 | 0.970 | 179 |
| 1150 | 0.979 | 176 | 0.17 | 3 | 0.002 | 18 | 0.971 | 179 |
| 1200 | 0.979 | 176 | 0.16 | 1 | 0.002 | 42 | 0.966 | 179 |
| 1250 | 0.979 | 176 | 0.15 | 0 | 0.002 | 64 | 0.984 | 179 |
| 1300 | 0.979 | 175 | 0.14 | -2 | 0.003 | 75 | 0.991 | 176 |
| 1350 | 0.980 | 175 | 0.13 | -3 | 0.003 | 93 | 0.974 | 177 |
| 1400 | 0.979 | 175 | 0.12 | -3 | 0.004 | 90 | 0.975 | 176 |
| 1450 | 0.976 | 174 | 0.11 | -4 | 0.004 | 102 | 0.972 | 176 |
| 1500 | 0.978 | 174 | 0.10 | -4 | 0.006 | 112 | 0.976 | 175 |

COMMON SOURCE S-PARAMETER (PD55015S)

($V_{DS} = 12.5V$ $I_{DS} = 1.2A$)

| FREQ (MHz) | $ S_{11} $ | $\angle S_{11}$ | $ S_{21} $ | $\angle S_{21}$ | $ S_{12} $ | $\angle S_{12}$ | $ S_{22} $ | $\angle S_{22}$ |
|---------------|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|
| 50 | 0.826 | -170 | 13.80 | 85 | 0.015 | 0 | 0.821 | -171 |
| 100 | 0.872 | -173 | 6.68 | 79 | 0.014 | -6 | 0.824 | -174 |
| 150 | 0.893 | -175 | 4.49 | 74 | 0.014 | -11 | 0.828 | -175 |
| 200 | 0.905 | -176 | 3.30 | 70 | 0.014 | -15 | 0.838 | -176 |
| 250 | 0.907 | -177 | 2.59 | 64 | 0.013 | -17 | 0.843 | -176 |
| 300 | 0.914 | -178 | 2.11 | 60 | 0.012 | -20 | 0.856 | -176 |
| 350 | 0.920 | -178 | 1.74 | 55 | 0.012 | -22 | 0.867 | -176 |
| 400 | 0.925 | -178 | 1.47 | 51 | 0.011 | -25 | 0.876 | -176 |
| 450 | 0.931 | -179 | 1.26 | 46 | 0.010 | -28 | 0.884 | -177 |
| 500 | 0.937 | -179 | 1.09 | 43 | 0.009 | -30 | 0.895 | -177 |
| 550 | 0.940 | -180 | 0.95 | 39 | 0.008 | -29 | 0.904 | -177 |
| 600 | 0.945 | -180 | 0.84 | 36 | 0.007 | -31 | 0.915 | -177 |
| 650 | 0.949 | 180 | 0.75 | 33 | 0.007 | -26 | 0.915 | -178 |
| 700 | 0.953 | 179 | 0.67 | 31 | 0.006 | -27 | 0.926 | -178 |
| 750 | 0.955 | 179 | 0.60 | 28 | 0.005 | -25 | 0.929 | -179 |
| 800 | 0.959 | 178 | 0.54 | 26 | 0.005 | -20 | 0.936 | -179 |
| 850 | 0.961 | 178 | 0.49 | 24 | 0.004 | -14 | 0.934 | -180 |
| 900 | 0.962 | 178 | 0.45 | 22 | 0.004 | -4 | 0.944 | 180 |
| 950 | 0.964 | 177 | 0.42 | 20 | 0.004 | 1 | 0.943 | 180 |
| 1000 | 0.967 | 177 | 0.38 | 18 | 0.004 | 6 | 0.945 | 179 |
| 1050 | 0.968 | 176 | 0.35 | 16 | 0.003 | 16 | 0.948 | 179 |
| 1100 | 0.965 | 176 | 0.33 | 14 | 0.003 | 40 | 0.952 | 178 |
| 1150 | 0.970 | 176 | 0.31 | 13 | 0.003 | 36 | 0.955 | 179 |
| 1200 | 0.971 | 175 | 0.29 | 11 | 0.003 | 59 | 0.954 | 179 |
| 1250 | 0.971 | 175 | 0.27 | 9 | 0.004 | 60 | 0.971 | 178 |
| 1300 | 0.970 | 175 | 0.25 | 7 | 0.004 | 63 | 0.975 | 176 |
| 1350 | 0.972 | 174 | 0.24 | 5 | 0.004 | 67 | 0.959 | 176 |
| 1400 | 0.971 | 174 | 0.22 | 4 | 0.005 | 76 | 0.960 | 176 |
| 1450 | 0.970 | 174 | 0.20 | 3 | 0.005 | 88 | 0.961 | 175 |
| 1500 | 0.970 | 174 | 0.19 | 2 | 0.006 | 103 | 0.963 | 175 |

PD55015 - PD55015S

COMMON SOURCE S-PARAMETER (PD55015S)

($V_{DS} = 12.5V$ $I_{DS} = 2.25A$)

| FREQ (MHz) | $ S_{11} $ | $S_{11}\angle\Phi$ | $ S_{21} $ | $S_{21}\angle\Phi$ | $ S_{12} $ | $S_{12}\angle\Phi$ | $ S_{22} $ | $S_{22}\angle\Phi$ |
|---------------|------------|--------------------|------------|--------------------|------------|--------------------|------------|--------------------|
| 50 | 0.838 | -171 | 13.85 | 85 | 0.013 | 0 | 0.837 | -173 |
| 100 | 0.882 | -174 | 6.71 | 80 | 0.012 | -7 | 0.839 | -175 |
| 150 | 0.903 | -176 | 4.53 | 76 | 0.012 | -7 | 0.841 | -176 |
| 200 | 0.914 | -177 | 3.35 | 72 | 0.012 | -11 | 0.849 | -176 |
| 250 | 0.915 | -178 | 2.64 | 66 | 0.012 | -13 | 0.853 | -177 |
| 300 | 0.920 | -178 | 2.16 | 62 | 0.011 | -17 | 0.861 | -177 |
| 350 | 0.925 | -179 | 1.79 | 57 | 0.010 | -17 | 0.871 | -177 |
| 400 | 0.929 | -179 | 1.53 | 53 | 0.010 | -21 | 0.877 | -177 |
| 450 | 0.934 | -179 | 1.31 | 49 | 0.009 | -22 | 0.887 | -177 |
| 500 | 0.937 | -180 | 1.14 | 46 | 0.008 | -23 | 0.894 | -177 |
| 550 | 0.940 | 180 | 1.00 | 42 | 0.008 | -22 | 0.903 | -178 |
| 600 | 0.947 | 180 | 0.89 | 39 | 0.007 | -20 | 0.913 | -178 |
| 650 | 0.950 | 179 | 0.79 | 36 | 0.006 | -19 | 0.913 | -178 |
| 700 | 0.951 | 179 | 0.71 | 34 | 0.006 | -19 | 0.921 | -179 |
| 750 | 0.954 | 179 | 0.64 | 31 | 0.005 | -15 | 0.927 | -179 |
| 800 | 0.958 | 178 | 0.58 | 29 | 0.005 | -8 | 0.932 | -179 |
| 850 | 0.959 | 178 | 0.53 | 26 | 0.004 | -3 | 0.930 | 180 |
| 900 | 0.962 | 177 | 0.48 | 24 | 0.004 | 0 | 0.940 | 179 |
| 950 | 0.964 | 177 | 0.45 | 22 | 0.004 | 7 | 0.941 | 179 |
| 1000 | 0.966 | 177 | 0.41 | 20 | 0.004 | 16 | 0.939 | 179 |
| 1050 | 0.967 | 176 | 0.38 | 18 | 0.004 | 23 | 0.946 | 178 |
| 1100 | 0.965 | 176 | 0.36 | 17 | 0.003 | 40 | 0.950 | 178 |
| 1150 | 0.967 | 176 | 0.33 | 15 | 0.003 | 41 | 0.952 | 179 |
| 1200 | 0.970 | 175 | 0.32 | 13 | 0.004 | 58 | 0.950 | 178 |
| 1250 | 0.971 | 175 | 0.30 | 11 | 0.004 | 59 | 0.966 | 178 |
| 1300 | 0.693 | 175 | 0.27 | 8 | 0.004 | 57 | 0.973 | 176 |
| 1350 | 0.972 | 174 | 0.26 | 7 | 0.005 | 68 | 0.957 | 176 |
| 1400 | 0.971 | 174 | 0.24 | 6 | 0.005 | 76 | 0.958 | 176 |
| 1450 | 0.969 | 174 | 0.22 | 5 | 0.005 | 88 | 0.957 | 175 |
| 1500 | 0.969 | 173 | 0.21 | 4 | 0.007 | 99 | 0.961 | 175 |

COMMON SOURCE S-PARAMETER (PD55015)

($V_{DS} = 12.5V$ $I_{DS} = 225mA$)

| FREQ (MHz) | $ S_{11} $ | $\angle S_{11}$ | $ S_{21} $ | $\angle S_{21}$ | $ S_{12} $ | $\angle S_{12}$ | $ S_{22} $ | $\angle S_{22}$ |
|---------------|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|
| 50 | 0.783 | -164 | 10.63 | 89 | 0.027 | -2 | 0.762 | -164 |
| 100 | 0.831 | -170 | 5.23 | 77 | 0.027 | -12 | 0.775 | -170 |
| 150 | 0.857 | -173 | 3.36 | 68 | 0.026 | -18 | 0.784 | -171 |
| 200 | 0.873 | -174 | 2.40 | 60 | 0.024 | -24 | 0.810 | -172 |
| 250 | 0.886 | -175 | 1.82 | 54 | 0.022 | -30 | 0.827 | -172 |
| 300 | 0.899 | -176 | 1.43 | 47 | 0.020 | -34 | 0.852 | -173 |
| 350 | 0.909 | -177 | 1.15 | 42 | 0.018 | -37 | 0.870 | -174 |
| 400 | 0.921 | -178 | 0.95 | 37 | 0.016 | -41 | 0.882 | -175 |
| 450 | 0.928 | -179 | 0.80 | 33 | 0.015 | -44 | 0.896 | -175 |
| 500 | 0.937 | -180 | 0.67 | 28 | 0.013 | -45 | 0.911 | -177 |
| 550 | 0.943 | 179 | 0.58 | 25 | 0.011 | -45 | 0.920 | -177 |
| 600 | 0.947 | 178 | 0.50 | 22 | 0.010 | -48 | 0.929 | -178 |
| 650 | 0.954 | 177 | 0.44 | 19 | 0.008 | -45 | 0.935 | -179 |
| 700 | 0.956 | 177 | 0.39 | 16 | 0.008 | -45 | 0.941 | 180 |
| 750 | 0.959 | 176 | 0.34 | 14 | 0.006 | -42 | 0.945 | 179 |
| 800 | 0.960 | 175 | 0.31 | 11 | 0.005 | -35 | 0.947 | 18 |
| 850 | 0.964 | 174 | 0.28 | 9 | 0.005 | -26 | 0.954 | 177 |
| 900 | 0.965 | 173 | 0.25 | 7 | 0.004 | -7 | 0.955 | 177 |
| 950 | 0.968 | 173 | 0.23 | 6 | 0.003 | -6 | 0.958 | 176 |
| 1000 | 0.969 | 172 | 0.21 | 4 | 0.003 | 16 | 0.959 | 175 |
| 1050 | 0.968 | 171 | 0.19 | 2 | 0.003 | 27 | 0.965 | 175 |
| 1100 | 0.969 | 171 | 0.18 | 1 | 0.004 | 42 | 0.963 | 174 |
| 1150 | 0.968 | 170 | 0.16 | 0 | 0.004 | 52 | 0.961 | 174 |
| 1200 | 0.970 | 169 | 0.15 | -2 | 0.005 | 61 | 0.962 | 173 |
| 1250 | 0.969 | 169 | 0.14 | -3 | 0.006 | 65 | 0.965 | 172 |
| 1300 | 0.969 | 168 | 0.13 | -5 | 0.006 | 67 | 0.969 | 172 |
| 1350 | 0.968 | 167 | 0.12 | -6 | 0.007 | 69 | 0.963 | 171 |
| 1400 | 0.967 | 167 | 0.11 | -7 | 0.007 | 76 | 0.964 | 170 |
| 1450 | 0.966 | 166 | 0.11 | -8 | 0.009 | 78 | 0.962 | 170 |
| 1500 | 0.962 | 166 | 0.10 | -8 | 0.009 | 91 | 0.961 | 169 |

PD55015 - PD55015S

COMMON SOURCE S-PARAMETER (PD55015)

($V_{DS} = 12.5V$ $I_{DS} = 1.2A$)

| FREQ (MHz) | $ S_{11} $ | $\angle S_{11}$ | $ S_{21} $ | $\angle S_{21}$ | $ S_{12} $ | $\angle S_{12}$ | $ S_{22} $ | $\angle S_{22}$ |
|---------------|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|
| 50 | 0.837 | -171 | 11.65 | 85 | 0.015 | 0 | 0.845 | -173 |
| 100 | 0.882 | -174 | 5.65 | 79 | 0.014 | -6 | 0.848 | -176 |
| 150 | 0.904 | -177 | 3.81 | 75 | 0.014 | -7 | 0.848 | -177 |
| 200 | 0.913 | -178 | 2.82 | 71 | 0.014 | -10 | 0.858 | -178 |
| 250 | 0.915 | -179 | 2.22 | 66 | 0.014 | -12 | 0.859 | -178 |
| 300 | 0.919 | -173 | 1.82 | 61 | 0.012 | -13 | 0.869 | -179 |
| 350 | 0.924 | 179 | 1.52 | 56 | 0.012 | -16 | 0.875 | -179 |
| 400 | 0.928 | 179 | 1.30 | 52 | 0.011 | -17 | 0.880 | -179 |
| 450 | 0.931 | 178 | 1.11 | 48 | 0.011 | -17 | 0.890 | -180 |
| 500 | 0.934 | 178 | 0.97 | 44 | 0.010 | -16 | 0.897 | 180 |
| 550 | 0.938 | 177 | 0.86 | 40 | 0.009 | -15 | 0.902 | 179 |
| 600 | 0.943 | 176 | 0.75 | 37 | 0.008 | -15 | 0.911 | 179 |
| 650 | 0.945 | 176 | 0.68 | 34 | 0.007 | -10 | 0.916 | 178 |
| 700 | 0.948 | 175 | 0.61 | 31 | 0.007 | -5 | 0.919 | 178 |
| 750 | 0.950 | 174 | 0.55 | 28 | 0.006 | 0 | 0.924 | 177 |
| 800 | 0.953 | 174 | 0.50 | 26 | 0.006 | 6 | 0.925 | 177 |
| 850 | 0.954 | 173 | 0.46 | 23 | 0.006 | 12 | 0.932 | 176 |
| 900 | 0.954 | 172 | 0.42 | 21 | 0.006 | 22 | 0.937 | 176 |
| 950 | 0.959 | 172 | 0.39 | 19 | 0.006 | 26 | 0.939 | 175 |
| 1000 | 0.959 | 171 | 0.36 | 17 | 0.006 | 36 | 0.938 | 174 |
| 1050 | 0.959 | 170 | 0.33 | 14 | 0.007 | 36 | 0.947 | 174 |
| 1100 | 0.960 | 170 | 0.31 | 12 | 0.006 | 43 | 0.948 | 173 |
| 1150 | 0.960 | 169 | 0.29 | 11 | 0.006 | 48 | 0.946 | 173 |
| 1200 | 0.962 | 169 | 0.27 | 9 | 0.007 | 53 | 0.947 | 172 |
| 1250 | 0.961 | 168 | 0.25 | 6 | 0.008 | 59 | 0.950 | 172 |
| 1300 | 0.961 | 167 | 0.24 | 4 | 0.009 | 63 | 0.954 | 171 |
| 1350 | 0.961 | 167 | 0.22 | 2 | 0.009 | 62 | 0.949 | 170 |
| 1400 | 0.959 | 166 | 0.21 | 1 | 0.009 | 67 | 0.952 | 170 |
| 1450 | 0.959 | 166 | 0.19 | -1 | 0.010 | 72 | 0.949 | 169 |
| 1500 | 0.955 | 165 | 0.18 | -1 | 0.010 | 80 | 0.947 | 169 |

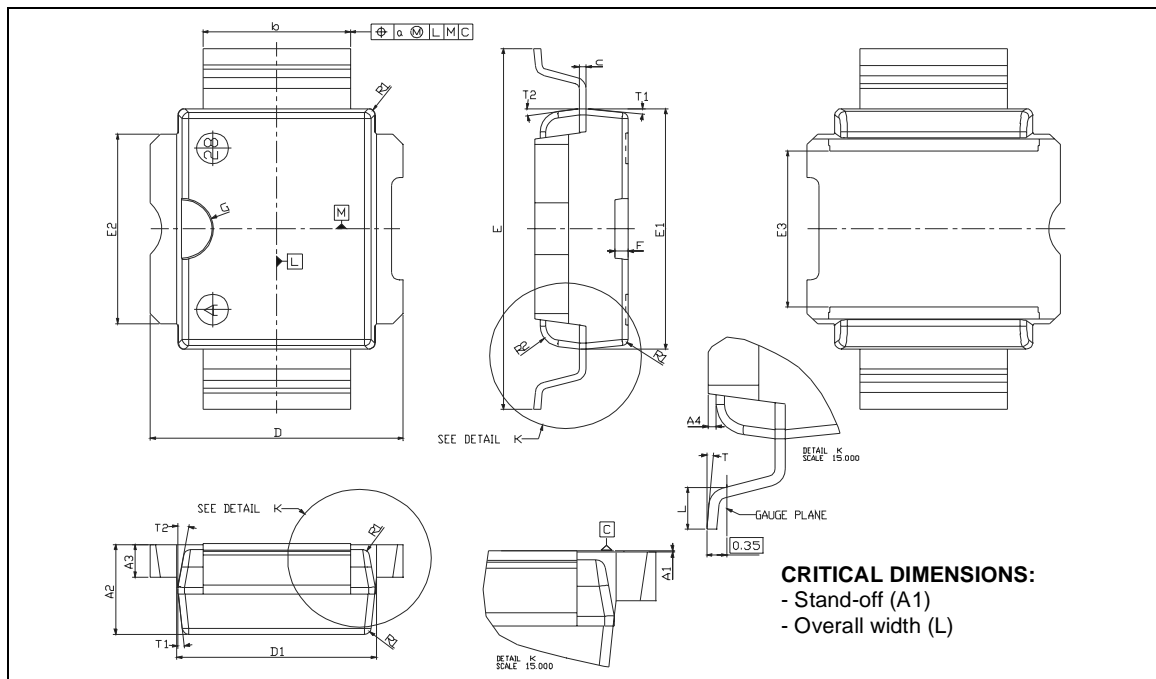
COMMON SOURCE S-PARAMETER (PD55015) $(V_{DS} = 12.5V \quad I_{DS} = 2.25A)$

| FREQ (MHz) | $ S_{11} $ | $S_{11}\angle\Phi$ | $ S_{21} $ | $S_{21}\angle\Phi$ | $ S_{12} $ | $S_{12}\angle\Phi$ | $ S_{22} $ | $S_{22}\angle\Phi$ |
|---------------|------------|--------------------|------------|--------------------|------------|--------------------|------------|--------------------|
| 50 | 0.845 | -172 | 11.69 | 85 | 0.013 | 0 | 0.858 | -174 |
| 100 | 0.891 | -175 | 5.68 | 80 | 0.012 | -3 | 0.862 | -177 |
| 150 | 0.913 | -177 | 3.84 | 76 | 0.012 | -4 | 0.860 | -178 |
| 200 | 0.923 | -179 | 2.85 | 73 | 0.012 | -6 | 0.866 | -179 |
| 250 | 0.924 | -180 | 2.25 | 67 | 0.012 | -8 | 0.870 | -179 |
| 300 | 0.927 | 180 | 1.86 | 63 | 0.011 | -9 | 0.876 | -179 |
| 350 | 0.930 | 179 | 1.55 | 59 | 0.011 | -10 | 0.879 | -180 |
| 400 | 0.933 | 178 | 1.33 | 55 | 0.010 | -10 | 0.885 | -180 |
| 450 | 0.935 | 178 | 1.15 | 50 | 0.010 | -10 | 0.892 | 180 |
| 500 | 0.938 | 177 | 1.01 | 47 | 0.009 | -9 | 0.898 | 179 |
| 550 | 0.940 | 176 | 0.89 | 43 | 0.008 | -8 | 0.904 | 179 |
| 600 | 0.945 | 176 | 0.79 | 40 | 0.008 | -5 | 0.912 | 178 |
| 650 | 0.948 | 175 | 0.71 | 37 | 0.073 | -3 | 0.915 | 178 |
| 700 | 0.950 | 174 | 0.64 | 34 | 0.007 | 3 | 0.917 | 177 |
| 750 | 0.951 | 174 | 0.58 | 31 | 0.006 | 9 | 0.923 | 177 |
| 800 | 0.953 | 173 | 0.53 | 29 | 0.006 | 11 | 0.925 | 176 |
| 850 | 0.954 | 173 | 0.48 | 26 | 0.006 | 18 | 0.931 | 176 |
| 900 | 0.954 | 172 | 0.45 | 23 | 0.006 | 24 | 0.934 | 175 |
| 950 | 0.957 | 171 | 0.41 | 21 | 0.007 | 25 | 0.936 | 174 |
| 1000 | 0.959 | 171 | 0.38 | 19 | 0.007 | 36 | 0.939 | 174 |
| 1050 | 0.959 | 170 | 0.36 | 17 | 0.007 | 43 | 0.942 | 174 |
| 1100 | 0.960 | 170 | 0.33 | 15 | 0.007 | 47 | 0.943 | 173 |
| 1150 | 0.959 | 169 | 0.31 | 12 | 0.007 | 52 | 0.943 | 173 |
| 1200 | 0.961 | 168 | 0.29 | 11 | 0.007 | 53 | 0.943 | 172 |
| 1250 | 0.960 | 168 | 0.27 | 8 | 0.008 | 59 | 0.949 | 171 |
| 1300 | 0.961 | 167 | 0.26 | 6 | 0.009 | 60 | 0.950 | 171 |
| 1350 | 0.960 | 167 | 0.24 | 4 | 0.009 | 61 | 0.947 | 170 |
| 1400 | 0.592 | 166 | 0.22 | 2 | 0.009 | 64 | 0.945 | 170 |
| 1450 | 0.584 | 166 | 0.21 | 1 | 0.010 | 71 | 0.947 | 169 |
| 1500 | 0.954 | 165 | 0.19 | 0 | 0.010 | 82 | 0.945 | 168 |

PowerSO-10RF Formed Lead (Gull Wing) MECHANICAL DATA

| DIM. | mm | | | Inch | | |
|------|-------|--------|-------|-------|--------|--------|
| | MIN. | TYP. | MAX | MIN. | TYP. | MAX |
| A1 | 0 | 0.05 | 0.1 | 0. | 0.0019 | 0.0038 |
| A2 | 3.4 | 3.5 | 3.6 | 0.134 | 0.137 | 0.142 |
| A3 | 1.2 | 1.3 | 1.4 | 0.046 | 0.05 | 0.054 |
| A4 | 0.15 | 0.2 | 0.25 | 0.005 | 0.007 | 0.009 |
| a | | 0.2 | | | 0.007 | |
| b | 5.4 | 5.53 | 5.65 | 0.212 | 0.217 | 0.221 |
| c | 0.23 | 0.27 | 0.32 | 0.008 | 0.01 | 0.012 |
| D | 9.4 | 9.5 | 9.6 | 0.370 | 0.374 | 0.377 |
| D1 | 7.4 | 7.5 | 7.6 | 0.290 | 0.295 | 0.298 |
| E | 13.85 | 14.1 | 14.35 | 0.544 | 0.555 | 0.565 |
| E1 | 9.3 | 9.4 | 9.5 | 0.365 | 0.37 | 0.375 |
| E2 | 7.3 | 7.4 | 7.5 | 0.286 | 0.292 | 0.294 |
| E3 | 5.9 | 6.1 | 6.3 | 0.231 | 0.24 | 0.247 |
| F | | 0.5 | | | 0.019 | |
| G | | 1.2 | | | 0.047 | |
| L | 0.8 | 1 | 1.1 | 0.030 | 0.039 | 0.042 |
| R1 | | | 0.25 | | | 0.01 |
| R2 | | 0.8 | | | 0.031 | |
| T | 2 deg | 5 deg | 8 deg | 2 deg | 5 deg | 8 deg |
| T1 | | 6 deg | | | 6 deg | |
| T2 | | 10 deg | | | 10 deg | |

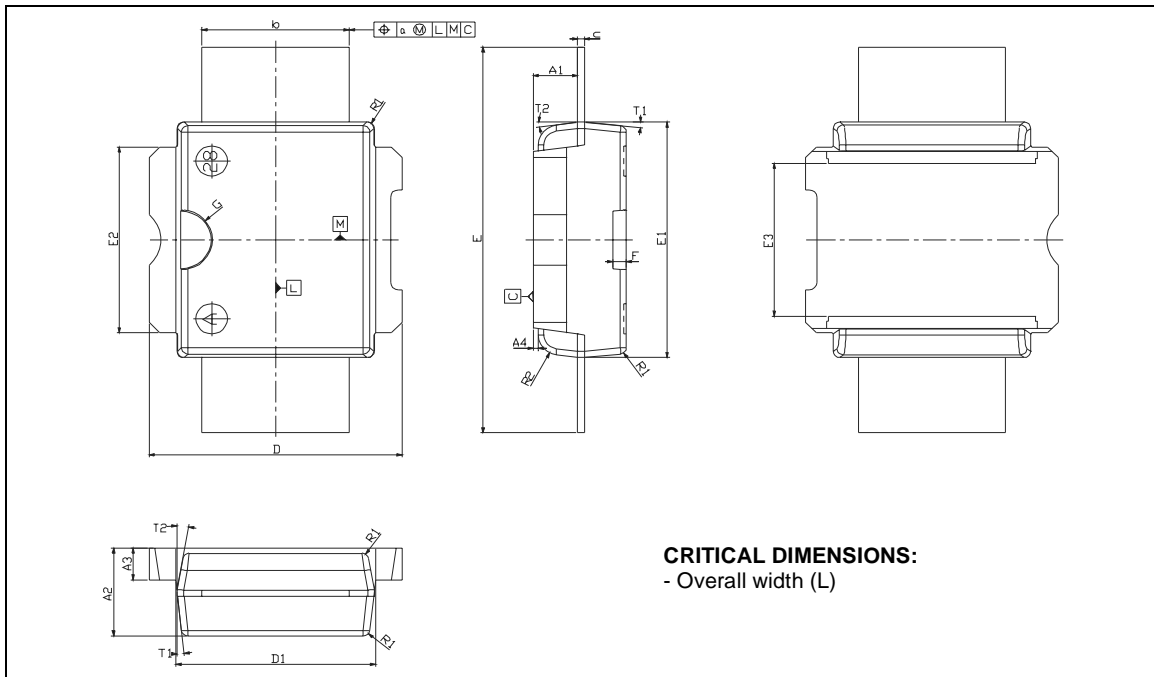
Note (1): Resin protrusions not included (max value: 0.15 mm per side)



PowerSO-10RF Straight Lead MECHANICAL DATA

| DIM. | mm | | | Inch | | |
|------|-------|--------|-------|-------|--------|-------|
| | MIN. | TYP. | MAX | MIN. | TYP. | MAX |
| A1 | 1.62 | 1.67 | 1.72 | 0.064 | 0.065 | 0.068 |
| A2 | 3.4 | 3.5 | 3.6 | 0.134 | 0.137 | 0.142 |
| A3 | 1.2 | 1.3 | 1.4 | 0.046 | 0.05 | 0.054 |
| A4 | 0.15 | 0.2 | 0.25 | 0.005 | 0.007 | 0.009 |
| a | | 0.2 | | | 0.007 | |
| b | 5.4 | 5.53 | 5.65 | 0.212 | 0.217 | 0.221 |
| c | 0.23 | 0.27 | 0.32 | 0.008 | 0.01 | 0.012 |
| D | 9.4 | 9.5 | 9.6 | 0.370 | 0.374 | 0.377 |
| D1 | 7.4 | 7.5 | 7.6 | 0.290 | 0.295 | 0.298 |
| E | 15.15 | 15.4 | 15.65 | 0.595 | 0.606 | 0.615 |
| E1 | 9.3 | 9.4 | 9.5 | 0.365 | 0.37 | 0.375 |
| E2 | 7.3 | 7.4 | 7.5 | 0.286 | 0.292 | 0.294 |
| E3 | 5.9 | 6.1 | 6.3 | 0.231 | 0.24 | 0.247 |
| F | | 0.5 | | | 0.019 | |
| G | | 1.2 | | | 0.047 | |
| R1 | | | 0.25 | | | 0.01 |
| R2 | | 0.8 | | | 0.031 | |
| T1 | | 6 deg | | | 6 deg | |
| T2 | | 10 deg | | | 10 deg | |

Note (1): Resin protrusions not included (max value: 0.15 mm per side)



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