



PD55035-E PD55035S-E

RF POWER transistor, LdmoST plastic family N-channel enhancement-mode, lateral MOSFETs

Features

- Excellent thermal stability
- Common source configuration
- $P_{OUT} = 35\text{ W}$ with 16.9dB gain @ 500 MHz / 12.5 V
- New RF plastic package

Description

The device 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. The device 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. Device'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/rf/ (look for application note AN1294).

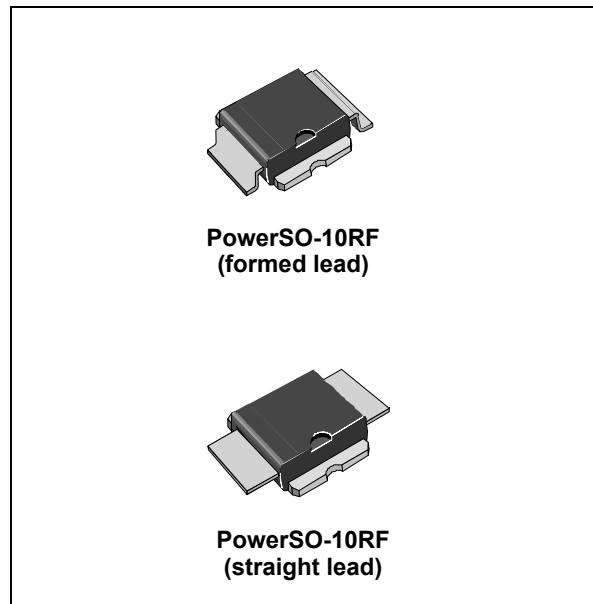


Figure 1. Pin connection

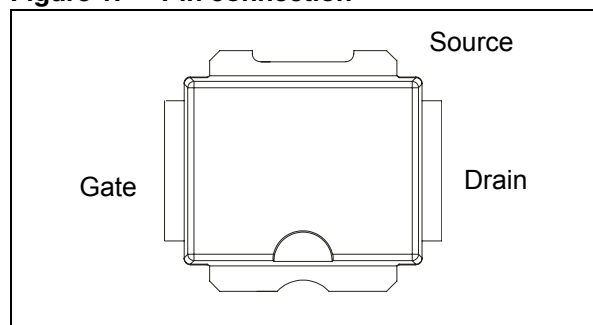


Table 1. Device summary

| Order code | Package | Packing |
|--------------|------------------------------|---------------|
| PD55035-E | PowerSO-10RF (formed lead) | Tube |
| PD55035S-E | PowerSO-10RF (straight lead) | Tube |
| PD55035TR-E | PowerSO-10RF (formed lead) | Tape and reel |
| PD55035STR-E | PowerSO-10RF (straight lead) | Tape and reel |

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1 Electrical data

1.1 Maximum ratings

Table 2. Absolute maximum ratings ($T_{CASE} = 25^{\circ}C$)

| Symbol | Parameter | Value | Unit |
|---------------|--|-------------|-------------|
| $V_{(BR)DSS}$ | Drain-source voltage | 40 | V |
| V_{GS} | Gate-source voltage | ± 20 | V |
| I_D | Drain current | 7 | A |
| P_{DISS} | Power dissipation (@ $T_C = 70^{\circ}C$) | 95 | W |
| T_J | Max. operating junction temperature | 165 | $^{\circ}C$ |
| T_{STG} | Storage temperature | -65 to +150 | $^{\circ}C$ |

1.2 Thermal data

Table 3. Thermal data

| Symbol | Parameter | Value | Unit |
|------------|------------------------------------|-------|---------------|
| R_{thJC} | Junction - case thermal resistance | 1.0 | $^{\circ}C/W$ |

2 Electrical characteristics

$T_{CASE} = +25\text{ }^{\circ}\text{C}$

2.1 Static

Table 4. Static

| Symbol | Test conditions | | Min. | Typ. | Max. | Unit |
|--------------|------------------------|--------------------------|------|------|------|---------------|
| I_{DSS} | $V_{GS} = 0$ | $V_{DS} = 28\text{ V}$ | | | 1 | μA |
| I_{GSS} | $V_{GS} = 20\text{ V}$ | $V_{DS} = 0$ | | | 1 | μA |
| $V_{GS(Q)}$ | $V_{DS} = 28\text{ V}$ | $I_D = 100\text{ mA}$ | 2.0 | | 5.0 | V |
| $V_{DS(ON)}$ | $V_{GS} = 10\text{ V}$ | $I_D = 3\text{ A}$ | | 0.8 | 0.95 | V |
| G_{FS} | $V_{DS} = 10\text{ V}$ | $I_D = 3\text{ A}$ | 2.5 | | | mho |
| C_{ISS} | $V_{GS} = 0$ | $V_{DS} = 12.5\text{ V}$ | | 92 | | pF |
| C_{OSS} | $V_{GS} = 0$ | $V_{DS} = 12.5\text{ V}$ | | 73 | | pF |
| C_{RSS} | $V_{GS} = 0$ | $V_{DS} = 12.5\text{ V}$ | | 6.1 | | pF |

2.2 Dynamic

Table 5. Dynamic

| Symbol | Test conditions | | Min. | Typ. | Max. | Unit |
|---------------|--|----------------------|------|------|------|------|
| P_{OUT} | $V_{DD} = 12.5\text{ V}$, $I_{DQ} = 200\text{ mA}$ | $f = 500\text{ MHz}$ | 35 | | | W |
| G_P | $V_{DD} = 12.5\text{ V}$, $I_{DQ} = 200\text{ mA}$, $P_{OUT} = 35\text{ W}$, $f = 500\text{ MHz}$ | | 13 | 16.9 | | dB |
| η_D | $V_{DD} = 12.5\text{ V}$, $I_{DQ} = 200\text{ mA}$, $P_{OUT} = 35\text{ W}$, $f = 500\text{ MHz}$ | | | 62 | | % |
| Load mismatch | $V_{DD} = 15.5\text{ V}$, $I_{DQ} = 200\text{ mA}$, $P_{OUT} = 35\text{ W}$, $f = 500\text{ MHz}$ All phase angles | | 20:1 | | | VSWR |

2.3 Moisture sensitivity level

Table 6. Moisture sensitivity level

| Test methodology | Rating |
|------------------|--------|
| J-STD-020B | MSL 3 |

3 Impedance

Figure 2. Current conventions

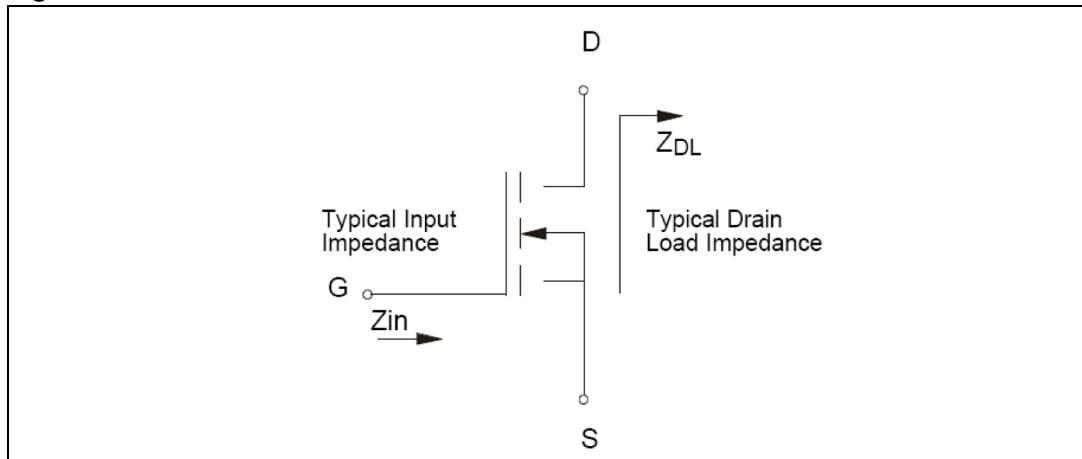


Table 7. Impedance data

| Freq. (MHz) | $Z_{IN} (\Omega)$ | $Z_{DL}(\Omega)$ |
|-------------|-------------------|------------------|
| 175 | $3.34 - j 5.84$ | $1.67 + j 1.45$ |
| 480 | $0.53 - j 1.08$ | $0.86 + j 0.25$ |
| 500 | $0.45 - j 1.21$ | $1.05 + j 0.03$ |
| 520 | $0.42 - j 1.20$ | $1.04 + j 0.15$ |

4 Typical performance

Figure 3. Capacitance vs supply voltage

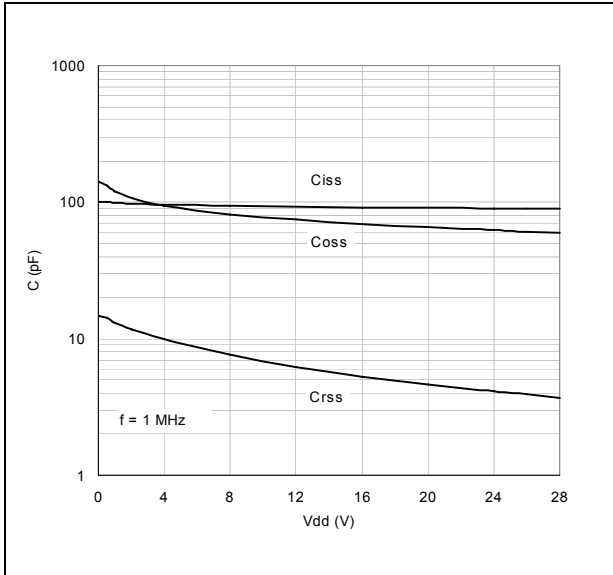


Figure 4. Drain current vs gate source voltage

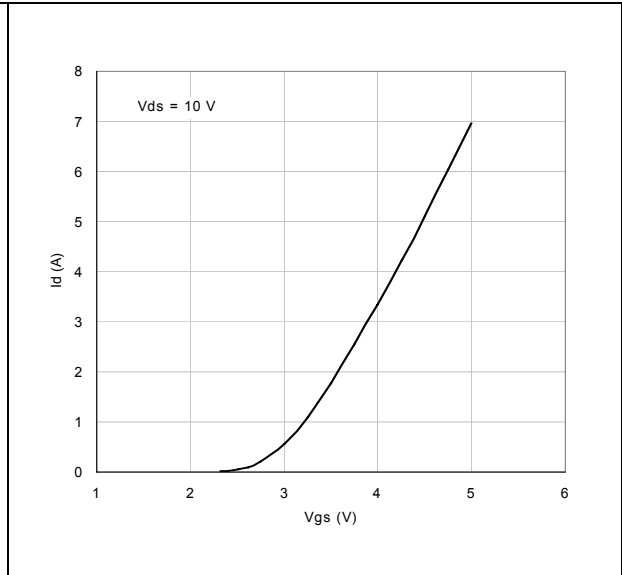


Figure 5. Gate-source voltage vs case temperature

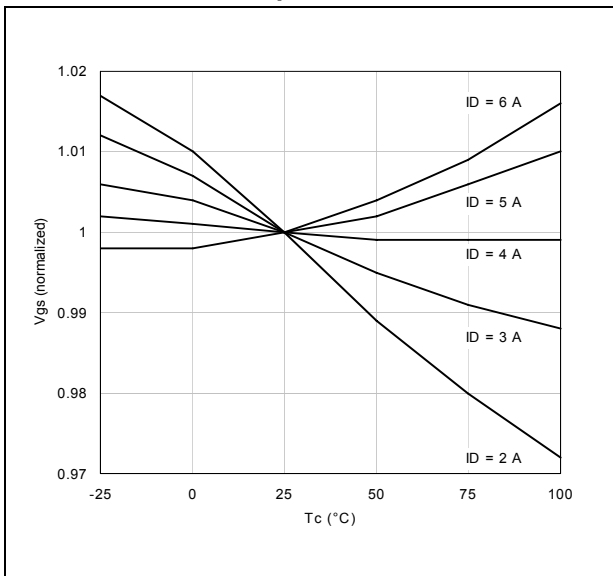


Figure 6. Output power vs input power

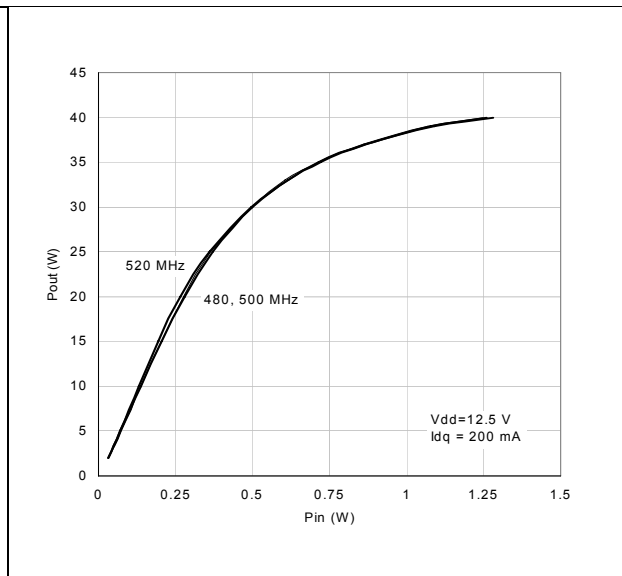


Figure 7. Power gain vs output power

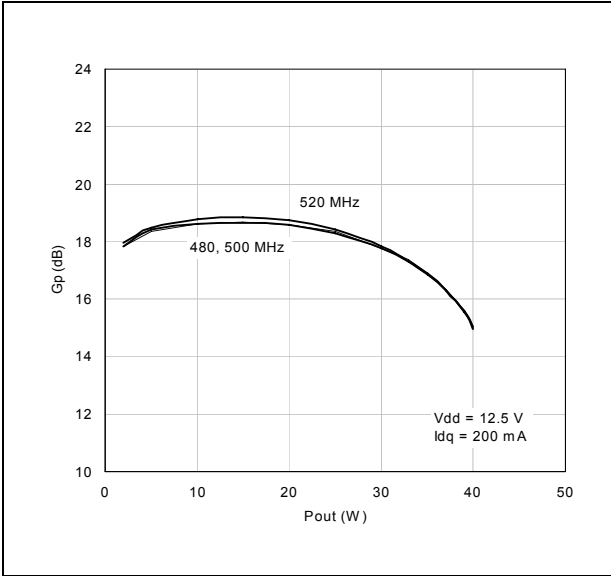


Figure 8. Efficiency vs output power

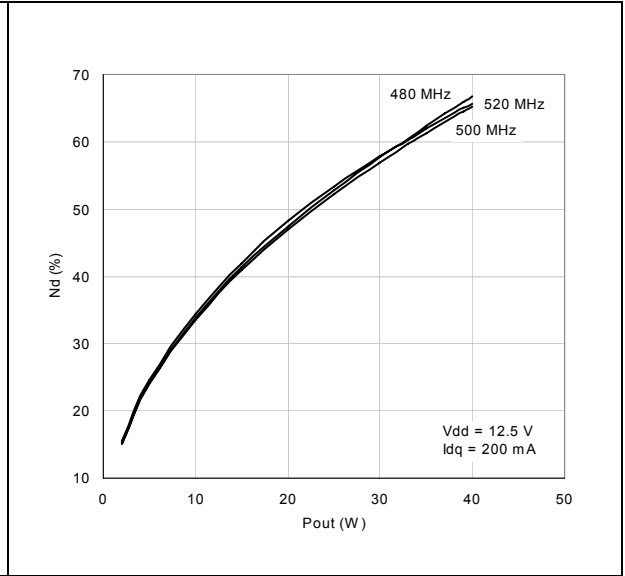


Figure 9. Input return loss vs output power

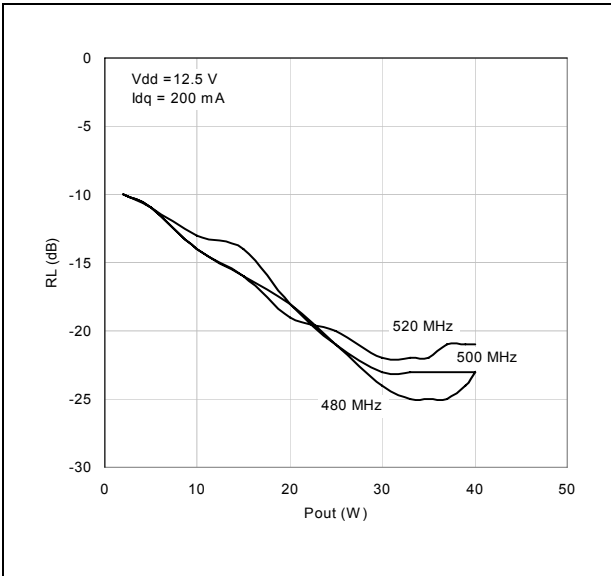


Figure 10. Output power vs bias current

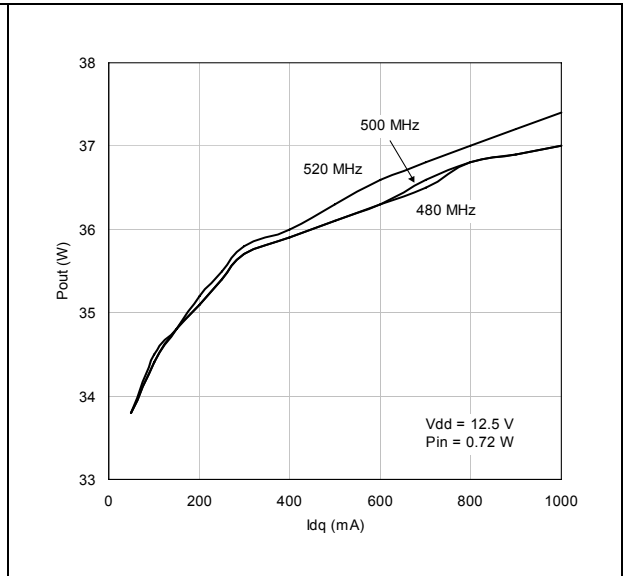


Figure 11. Efficiency vs bias current

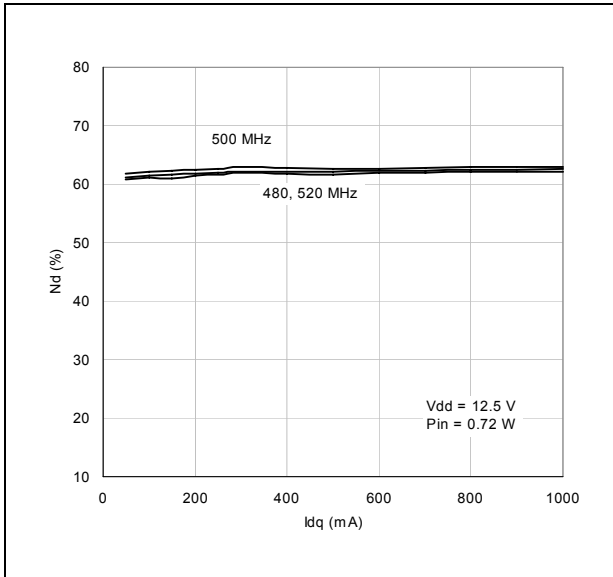


Figure 12. Output power vs supply voltage

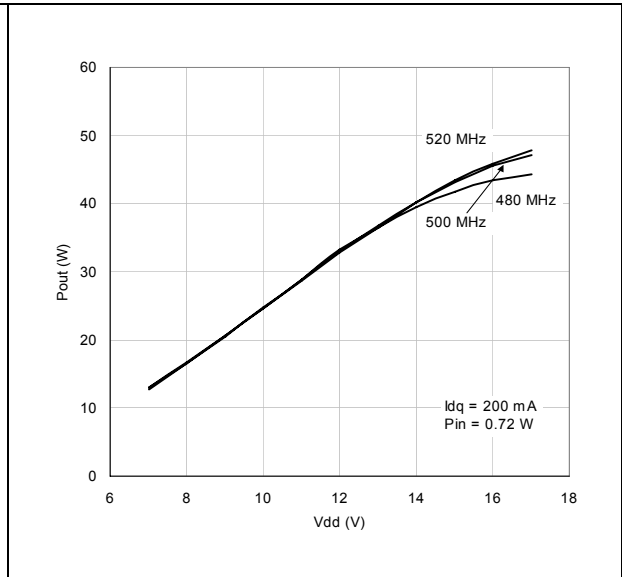


Figure 13. Efficiency vs supply voltage

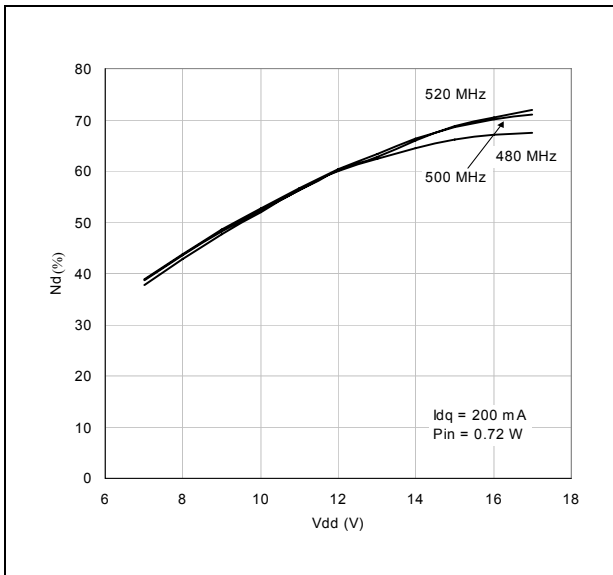
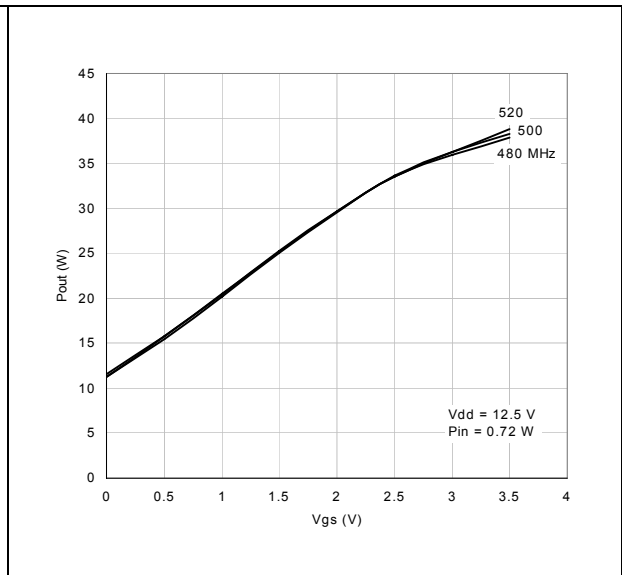


Figure 14. Output power vs gate voltage



5 Test circuit

Figure 15. 500 MHz test circuit schematic (engineering)

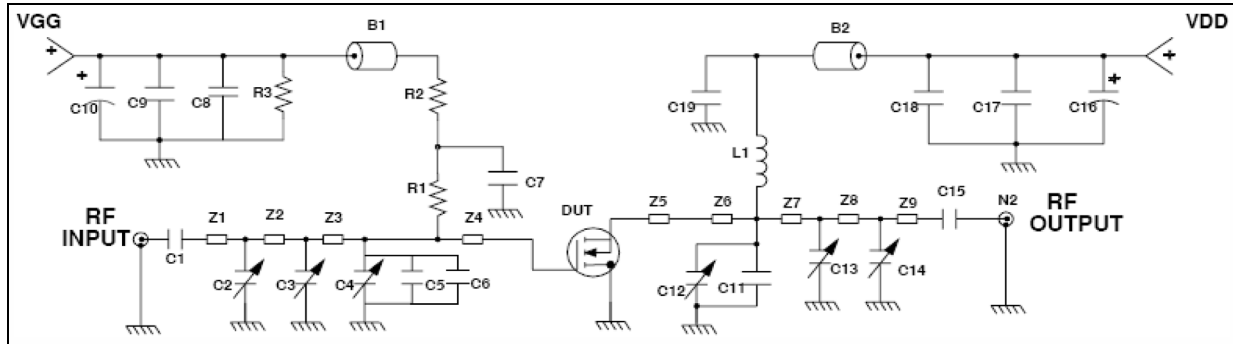


Table 8. Test circuit component part list

| Component | Description |
|----------------------|---|
| B1,B2 | Ferrite bead |
| C1,C13 | 300 pF, 100 mil chip capacitor |
| C2,C3,C4,C12,C13,C14 | 1 to 20 pF trimmer capacitor |
| C6 | 39 pF ATC 100B surface mount ceramic chip capacitor |
| C7, C19 | 120 pF 100 mil chip capacitor |
| C10, C16 | 10 μ F, 50 V electrolytic capacitor |
| C9, C17 | 0.1 mF, 100 mil chip cap |
| C8, C18 | 1.000 pF 100 mil chip cap |
| C5, C11 | 33 pF, 100 mil chip cap |
| L1 | 56 nH, 7 turn, Coilcraft |
| 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. |

6 Typical performance 175 MHz

Figure 16. Output power vs input power

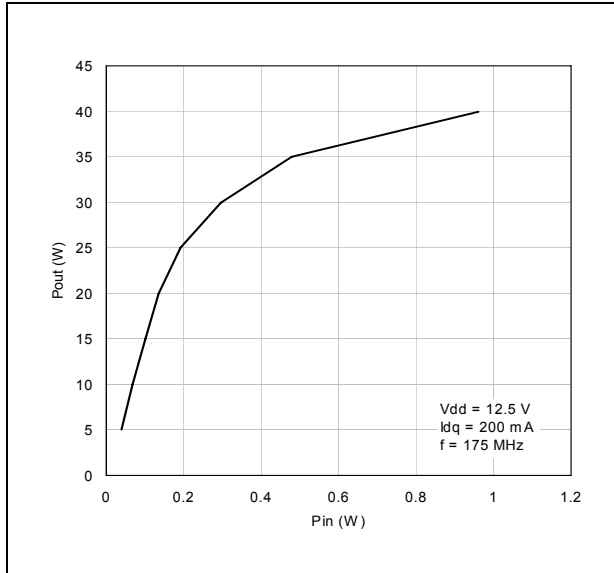


Figure 17. Power gain vs output power

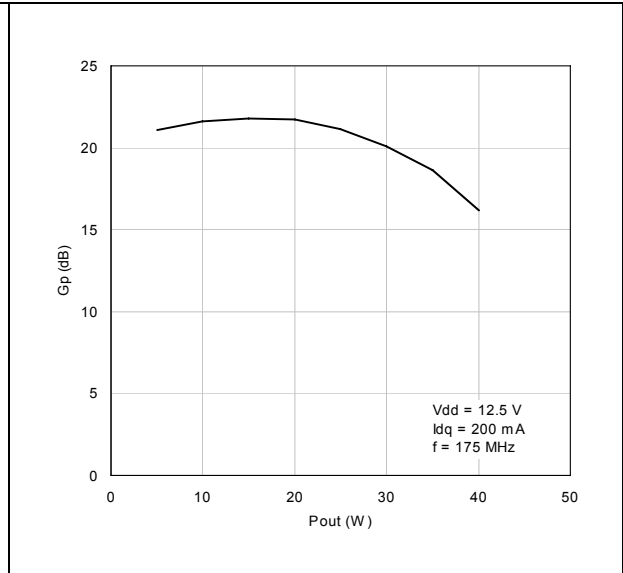


Figure 18. Efficiency vs output power

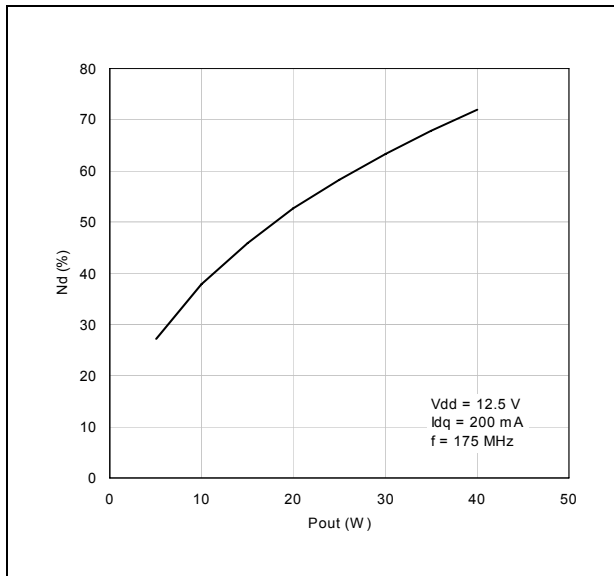


Figure 19. Input return loss vs output power

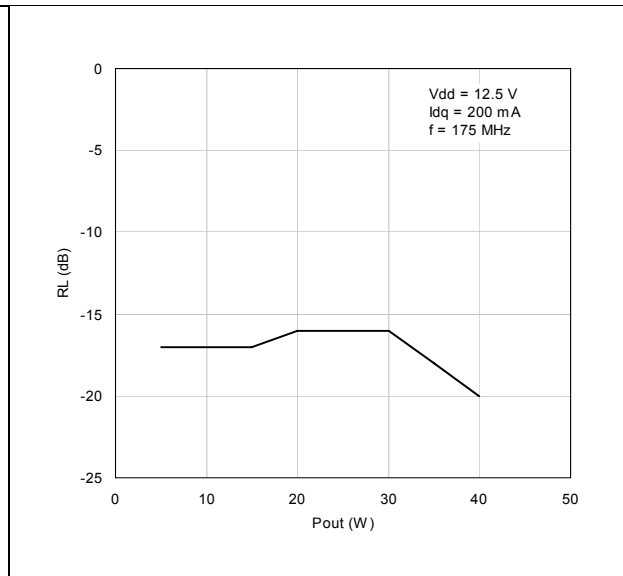


Figure 20. 175 MHz test circuit schematic (engineering)

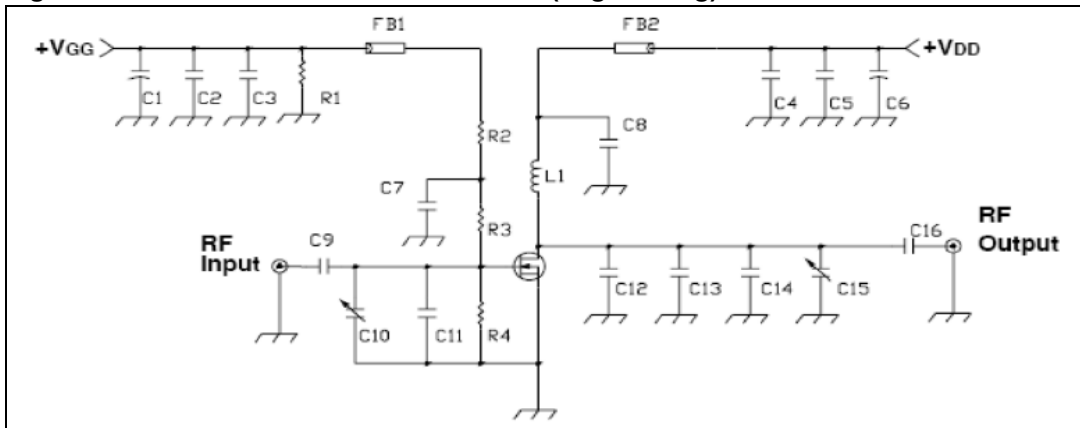


Table 9. 175 MHz test circuit component part list

| Component | Description |
|-----------|---|
| C1, C6 | 10 μ F electrolytic capacitor |
| C2, C5 | 0.1 μ F chip capacitor |
| C3, C4 | 0.01 μ F chip capacitor |
| C7, C8 | 1200 pF chip capacitor |
| C9, C16 | 1000 pF chip capacitor |
| C10 | ARCO 406 trimmer capacitor |
| C11 | 62 pF chip capacitor |
| C12 | 15 pF chip capacitor |
| C13 | 20 pF chip capacitor |
| C14 | 75 pF chip capacitor |
| C15 | Johanson 1-20 pF trimmer capacitor |
| R1 | 33 k Ω chip resistor |
| R2 | 18 Ω chip resistor |
| R3 | 27 Ω chip resistor |
| R4 | 47 Ω chip resistor |
| L1 | 5 turn, 16 AWG magnetwire, ID = 0.25", inductor |
| FB1, FB2 | Ferrite bead |
| Board | Roger, ultra lam 2000 THK 0.030", $\epsilon_r = 2.55$ 2oz. ED Cu 2 sides. |

7 Common source s-parameter

Table 10. S-parameter for PD55035S-E ($V_{DS} = 12.5\text{ V}$ $I_{DS} = 500\text{ mA}$)

| Freq (MHz) | $ S_{11} $ | $S_{11} < \Phi$ | $ S_{21} $ | $S_{21} < \Phi$ | $ S_{12} $ | $S_{12} < \Phi$ | $ S_{22} $ | $S_{22} < \Phi$ |
|------------|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|
| 50 | 0.823 | -162 | 14.28 | 86 | 0.015 | -3 | 0.782 | -168 |
| 100 | 0.855 | -169 | 6.87 | 75 | 0.015 | -11 | 0.798 | -171 |
| 150 | 0.875 | -172 | 4.50 | 68 | 0.014 | -17 | 0.813 | -172 |
| 200 | 0.891 | -173 | 3.18 | 60 | 0.013 | -24 | 0.835 | -172 |
| 250 | 0.902 | -174 | 2.42 | 53 | 0.012 | -29 | 0.856 | -172 |
| 300 | 0.918 | -175 | 1.90 | 47 | 0.011 | -32 | 0.876 | -173 |
| 350 | 0.924 | -176 | 1.52 | 42 | 0.010 | -36 | 0.890 | -173 |
| 400 | 0.934 | -176 | 1.25 | 37 | 0.008 | -37 | 0.903 | -174 |
| 450 | 0.940 | -177 | 1.03 | 33 | 0.007 | -38 | 0.918 | -175 |
| 500 | 0.949 | -177 | 0.87 | 29 | 0.007 | -40 | 0.928 | -175 |
| 550 | 0.956 | -178 | 0.74 | 26 | 0.005 | -40 | 0.935 | -176 |
| 600 | 0.958 | -179 | 0.65 | 23 | 0.004 | -36 | 0.946 | -177 |
| 650 | 0.963 | -180 | 0.56 | 20 | 0.004 | -36 | 0.952 | -178 |
| 700 | 0.968 | 180 | 0.49 | 18 | 0.003 | -27 | 0.955 | -178 |
| 750 | 0.971 | 179 | 0.44 | 15 | 0.003 | -21 | 0.959 | -179 |
| 800 | 0.970 | 179 | 0.39 | 13 | 0.002 | -5 | 0.962 | -179 |
| 850 | 0.973 | 178 | 0.35 | 12 | 0.002 | 11 | 0.967 | -180 |
| 900 | 0.975 | 178 | 0.32 | 10 | 0.002 | 24 | 0.967 | 179 |
| 950 | 0.974 | 177 | 0.29 | 8 | 0.002 | 27 | 0.971 | 179 |
| 1000 | 0.976 | 177 | 0.26 | 7 | 0.003 | 47 | 0.972 | 178 |
| 1050 | 0.977 | 176 | 0.24 | 5 | 0.002 | 61 | 0.976 | 178 |
| 1100 | 0.976 | 176 | 0.22 | 4 | 0.003 | 69 | 0.976 | 177 |
| 1150 | 0.978 | 176 | 0.20 | 2 | 0.003 | 72 | 0.974 | 177 |
| 1200 | 0.979 | 175 | 0.19 | 1 | 0.004 | 78 | 0.975 | 176 |
| 1250 | 0.980 | 175 | 0.18 | -1 | 0.004 | 87 | 0.977 | 176 |
| 1300 | 0.979 | 174 | 0.16 | -2 | 0.005 | 86 | 0.976 | 176 |
| 1350 | 0.977 | 174 | 0.15 | -3 | 0.006 | 88 | 0.975 | 175 |
| 1400 | 0.975 | 174 | 0.14 | -3 | 0.006 | 91 | 0.977 | 174 |
| 1450 | 0.974 | 173 | 0.13 | -3 | 0.006 | 97 | 0.975 | 174 |
| 1500 | 0.972 | 173 | 0.12 | -4 | 0.007 | 117 | 0.969 | 174 |

Table 11. S-parameter PD55035-E ($V_{DS} = 12.5\text{ V}$ $I_{DS} = 1\text{ A}$)

| Freq (MHz) | $ S_{11} $ | $S_{11} < \Phi$ | $ S_{21} $ | $S_{21} < \Phi$ | $ S_{12} $ | $S_{12} < \Phi$ | $ S_{22} $ | $S_{22} < \Phi$ |
|------------|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|
| 50 | 0.845 | -165 | 14.89 | 87 | 0.012 | 0 | 0.818 | -171 |
| 100 | 0.877 | -171 | 7.23 | 78 | 0.011 | -8 | 0.829 | -174 |
| 150 | 0.894 | -174 | 4.81 | 72 | 0.011 | -12 | 0.836 | -175 |
| 200 | 0.905 | -175 | 3.46 | 65 | 0.010 | -17 | 0.849 | -175 |
| 250 | 0.909 | -176 | 2.69 | 59 | 0.010 | -20 | 0.863 | -175 |
| 300 | 0.920 | -176 | 2.15 | 54 | 0.009 | -23 | 0.877 | -175 |
| 350 | 0.924 | -177 | 1.75 | 48 | 0.008 | -27 | 0.887 | -175 |
| 400 | 0.933 | -177 | 1.46 | 44 | 0.007 | -28 | 0.898 | -176 |
| 450 | 0.937 | -178 | 1.22 | 39 | 0.007 | -28 | 0.910 | -176 |
| 500 | 0.946 | -178 | 1.05 | 36 | 0.006 | -28 | 0.919 | -177 |
| 550 | 0.951 | -179 | 0.90 | 32 | 0.005 | -26 | 0.925 | -177 |
| 600 | 0.953 | -180 | 0.79 | 29 | 0.004 | -23 | 0.936 | -178 |
| 650 | 0.959 | 180 | 0.69 | 26 | 0.004 | -19 | 0.942 | -178 |
| 700 | 0.963 | 179 | 0.61 | 24 | 0.003 | -13 | 0.946 | -179 |
| 750 | 0.965 | 179 | 0.55 | 21 | 0.003 | -4 | 0.951 | -179 |
| 800 | 0.964 | 178 | 0.49 | 19 | 0.003 | 6 | 0.954 | -180 |
| 850 | 0.967 | 178 | 0.44 | 17 | 0.003 | 14 | 0.960 | 180 |
| 900 | 0.970 | 177 | 0.40 | 15 | 0.003 | 31 | 0.960 | 179 |
| 950 | 0.971 | 177 | 0.37 | 13 | 0.003 | 39 | 0.965 | 179 |
| 1000 | 0.972 | 176 | 0.34 | 11 | 0.003 | 55 | 0.964 | 178 |
| 1050 | 0.972 | 176 | 0.31 | 9 | 0.003 | 53 | 0.970 | 178 |
| 1100 | 0.973 | 176 | 0.29 | 8 | 0.003 | 64 | 0.969 | 177 |
| 1150 | 0.975 | 175 | 0.26 | 6 | 0.004 | 70 | 0.966 | 179 |
| 1200 | 0.976 | 175 | 0.25 | 4 | 0.004 | 75 | 0.971 | 176 |
| 1250 | 0.975 | 174 | 0.22 | 3 | 0.005 | 85 | 0.972 | 176 |
| 1300 | 0.975 | 174 | 0.21 | 2 | 0.005 | 81 | 0.970 | 175 |
| 1350 | 0.974 | 174 | 0.19 | 1 | 0.005 | 85 | 0.970 | 175 |
| 1400 | 0.973 | 174 | 0.18 | 0 | 0.006 | 89 | 0.971 | 174 |
| 1450 | 0.972 | 173 | 0.17 | -1 | 0.006 | 95 | 0.971 | 174 |
| 1500 | 0.970 | 173 | 0.16 | -1 | 0.008 | 110 | 0.965 | 174 |

Table 12. S-parameter for PD55035-E ($V_{DS} = 12.5\text{ V}$ $I_{DS} = 2\text{ A}$)

| Freq (MHz) | $ S_{11} $ | $S_{11} < \Phi$ | $ S_{21} $ | $S_{21} < \Phi$ | $ S_{12} $ | $S_{12} < \Phi$ | $ S_{22} $ | $S_{22} < \Phi$ |
|------------|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|
| 50 | 0.863 | -165 | 15.03 | 88 | 0.010 | 0 | 0.841 | -173 |
| 100 | 0.892 | -171 | 7.33 | 80 | 0.009 | -5 | 0.848 | -176 |
| 150 | 0.909 | -174 | 4.91 | 74 | 0.009 | -9 | 0.853 | -176 |
| 200 | 0.916 | -176 | 3.56 | 68 | 0.009 | -11 | 0.860 | -176 |
| 250 | 0.920 | -177 | 2.81 | 63 | 0.008 | -12 | 0.872 | -177 |
| 300 | 0.927 | -177 | 2.26 | 58 | 0.008 | -15 | 0.880 | -177 |
| 350 | 0.929 | -178 | 1.86 | 52 | 0.007 | -18 | 0.889 | -177 |
| 400 | 0.935 | -178 | 1.57 | 48 | 0.006 | -20 | 0.896 | -177 |
| 450 | 0.938 | -179 | 1.33 | 44 | 0.006 | -20 | 0.906 | -178 |
| 500 | 0.944 | -179 | 1.14 | 40 | 0.005 | -16 | 0.914 | -177 |
| 550 | 0.950 | -180 | 0.99 | 37 | 0.005 | -15 | 0.918 | -178 |
| 600 | 0.952 | 180 | 0.87 | 33 | 0.004 | -14 | 0.929 | -179 |
| 650 | 0.956 | 179 | 0.77 | 30 | 0.004 | -9 | 0.935 | -179 |
| 700 | 0.960 | 179 | 0.69 | 28 | 0.003 | 4 | 0.940 | -179 |
| 750 | 0.964 | 179 | 0.61 | 25 | 0.003 | 11 | 0.946 | 180 |
| 800 | 0.964 | 178 | 0.55 | 23 | 0.003 | 20 | 0.949 | 180 |
| 850 | 0.965 | 177 | 0.50 | 21 | 0.003 | 32 | 0.955 | 179 |
| 900 | 0.968 | 177 | 0.46 | 18 | 0.003 | 38 | 0.954 | 179 |
| 950 | 0.969 | 177 | 0.42 | 17 | 0.003 | 46 | 0.959 | 178 |
| 1000 | 0.971 | 176 | 0.39 | 14 | 0.003 | 47 | 0.959 | 177 |
| 1050 | 0.971 | 176 | 0.36 | 12 | 0.004 | 57 | 0.967 | 177 |
| 1100 | 0.970 | 176 | 0.33 | 11 | 0.004 | 60 | 0.964 | 177 |
| 1150 | 0.973 | 175 | 0.30 | 9 | 0.004 | 69 | 0.964 | 176 |
| 1200 | 0.975 | 175 | 0.28 | 7 | 0.004 | 72 | 0.966 | 176 |
| 1250 | 0.973 | 174 | 0.26 | 5 | 0.005 | 78 | 0.971 | 175 |
| 1300 | 0.971 | 174 | 0.24 | 4 | 0.006 | 80 | 0.968 | 175 |
| 1350 | 0.973 | 174 | 0.23 | 3 | 0.006 | 83 | 0.970 | 174 |
| 1400 | 0.971 | 173 | 0.21 | 2 | 0.006 | 83 | 0.971 | 174 |
| 1450 | 0.969 | 173 | 0.20 | 1 | 0.006 | 91 | 0.970 | 174 |
| 1500 | 0.968 | 173 | 0.18 | 1 | 0.008 | 112 | 0.969 | 173 |

Table 13. S-parameter for PD55035S-E ($V_{DS} = 13.8\text{ V}$ $I_{DS} = 3\text{ A}$)

| Freq (MHz) | $ S_{11} $ | $S_{11} < \Phi$ | $ S_{21} $ | $S_{21} < \Phi$ | $ S_{12} $ | $S_{12} < \Phi$ | $ S_{22} $ | $S_{22} < \Phi$ |
|------------|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|
| 50 | 0.867 | -165 | 14.95 | 88 | 0.009 | 2 | 0.848 | -174 |
| 100 | 0.896 | -171 | 7.31 | 80 | 0.009 | -4 | 0.856 | -177 |
| 150 | 0.913 | -175 | 4.92 | 75 | 0.008 | -7 | 0.861 | -177 |
| 200 | 0.921 | -176 | 3.57 | 69 | 0.008 | -9 | 0.866 | -177 |
| 250 | 0.921 | -177 | 2.82 | 64 | 0.008 | -13 | 0.874 | -177 |
| 300 | 0.929 | -178 | 2.28 | 59 | 0.007 | -12 | 0.882 | -177 |
| 350 | 0.930 | -178 | 1.90 | 54 | 0.007 | -14 | 0.888 | -178 |
| 400 | 0.936 | -178 | 1.59 | 50 | 0.006 | -16 | 0.896 | -177 |
| 450 | 0.938 | -179 | 1.36 | 45 | 0.005 | -14 | 0.904 | -178 |
| 500 | 0.947 | -179 | 1.17 | 42 | 0.005 | -11 | 0.915 | -178 |
| 550 | 0.950 | 180 | 1.02 | 38 | 0.004 | -10 | 0.917 | -178 |
| 600 | 0.951 | 180 | 0.90 | 35 | 0.004 | -6 | 0.927 | -179 |
| 650 | 0.956 | 179 | 0.79 | 32 | 0.004 | -3 | 0.934 | -179 |
| 700 | 0.960 | 179 | 0.71 | 29 | 0.003 | 4 | 0.935 | -179 |
| 750 | 0.963 | 178 | 0.64 | 26 | 0.003 | 17 | 0.943 | 180 |
| 800 | 0.962 | 178 | 0.58 | 24 | 0.003 | 21 | 0.948 | 179 |
| 850 | 0.964 | 177 | 0.52 | 22 | 0.004 | 32 | 0.951 | 179 |
| 900 | 0.967 | 177 | 0.48 | 20 | 0.003 | 41 | 0.949 | 178 |
| 950 | 0.969 | 177 | 0.44 | 18 | 0.003 | 36 | 0.958 | 178 |
| 1000 | 0.969 | 176 | 0.40 | 15 | 0.004 | 53 | 0.956 | 178 |
| 1050 | 0.969 | 176 | 0.37 | 14 | 0.004 | 58 | 0.963 | 177 |
| 1100 | 0.969 | 175 | 0.34 | 12 | 0.004 | 64 | 0.963 | 177 |
| 1150 | 0.971 | 175 | 0.32 | 10 | 0.004 | 69 | 0.961 | 176 |
| 1200 | 0.973 | 175 | 0.30 | 8 | 0.004 | 71 | 0.965 | 176 |
| 1250 | 0.971 | 174 | 0.27 | 6 | 0.005 | 77 | 0.967 | 175 |
| 1300 | 0.971 | 174 | 0.26 | 5 | 0.006 | 78 | 0.970 | 174 |
| 1350 | 0.973 | 174 | 0.24 | 4 | 0.006 | 80 | 0.965 | 175 |
| 1400 | 0.970 | 173 | 0.22 | 2 | 0.007 | 87 | 0.973 | 174 |
| 1450 | 0.968 | 173 | 0.21 | 3 | 0.006 | 91 | 0.967 | 174 |
| 1500 | 0.968 | 173 | 0.19 | 1 | 0.008 | 111 | 0.965 | 173 |

8 Package mechanical data

In order to meet environmental requirements, ST offers these devices in different grades of ECOPACK[®] packages, depending on their level of environmental compliance. ECOPACK[®] specifications, grade definitions and product status are available at: www.st.com. ECOPACK[®] is an ST trademark.

Table 14. 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: Resin protrusions not included (max value: 0.15 mm per side)

Figure 21. Package dimensions

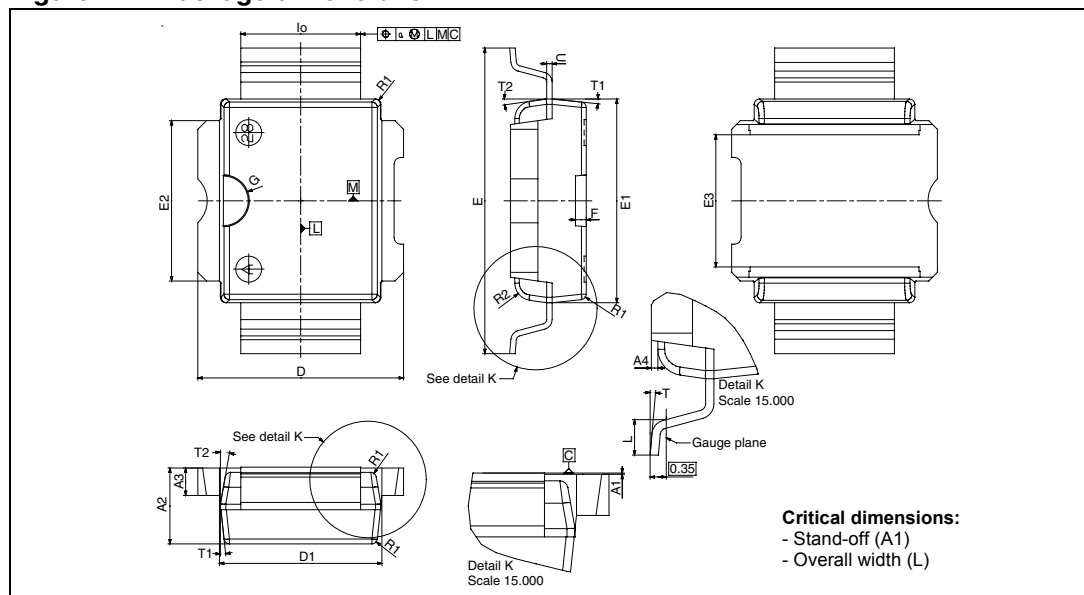


Table 15. PowerSO-10RF straight lead mechanical data

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

Figure 22. Package dimensions

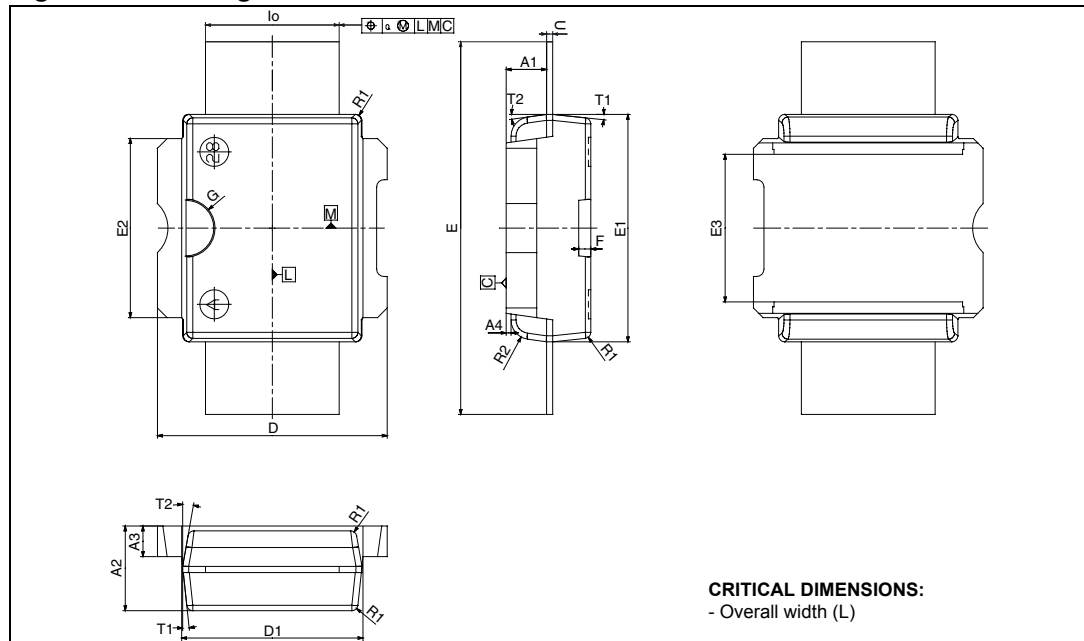


Figure 23. Tube information

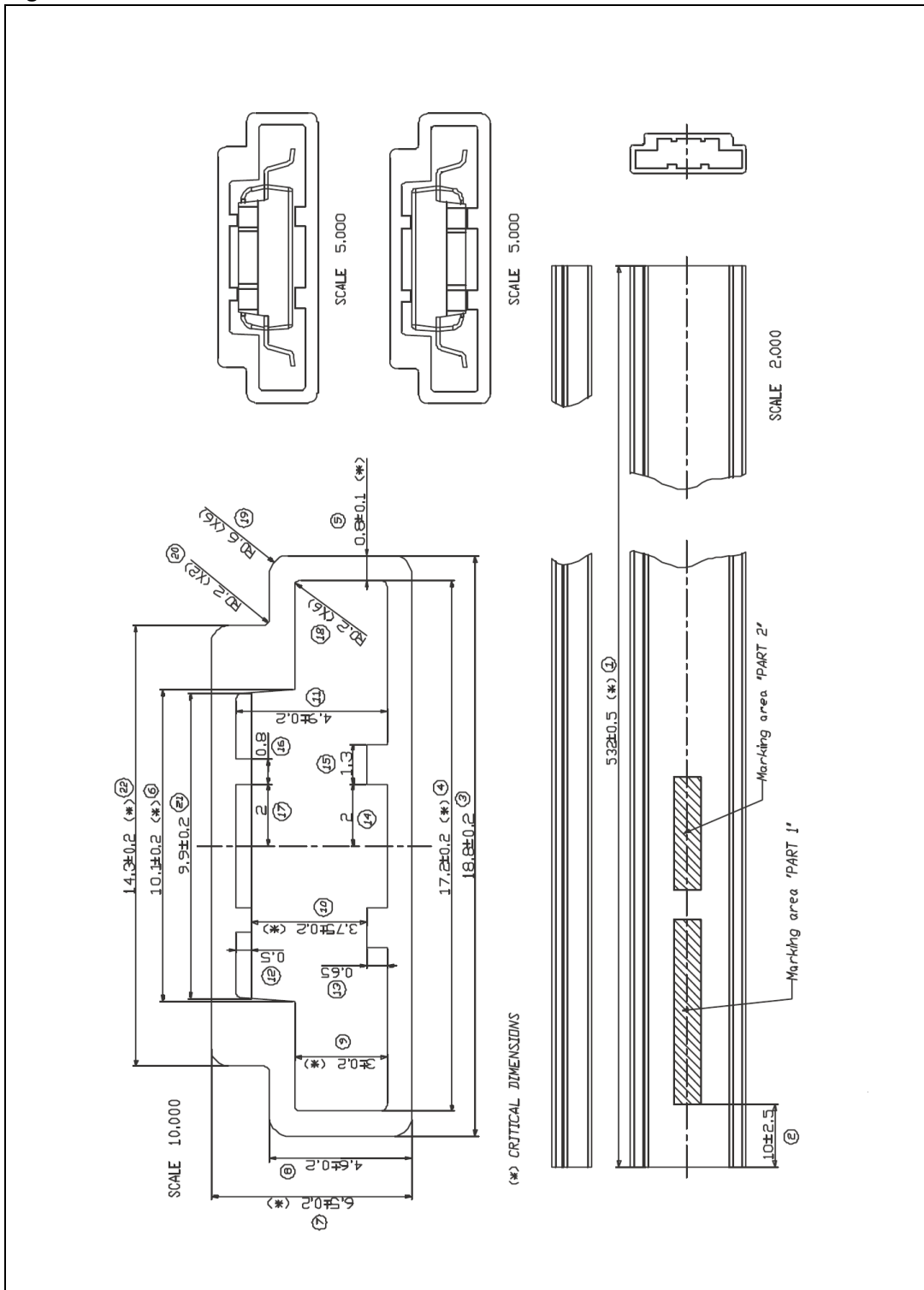
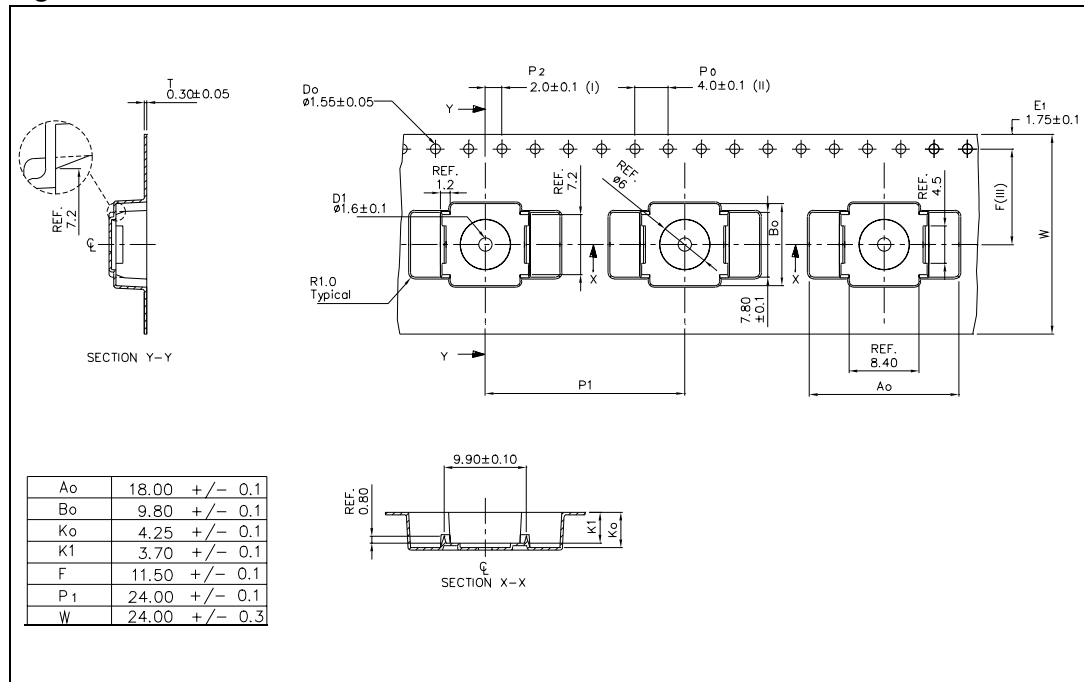


Figure 24. Reel information



9 Revision history

Table 16. Document revision history

| Date | Revision | Changes |
|-------------|----------|--|
| 11-May-2006 | 1 | Initial release. |
| 26-May-2010 | 2 | Added: Table 6: Moisture sensitivity level . |

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