



PD57002 PD57002S

RF POWER TRANSISTORS The *LdmoST* Plastic FAMILY

N-CHANNEL ENHANCEMENT-MODE LATERAL MOSFETs

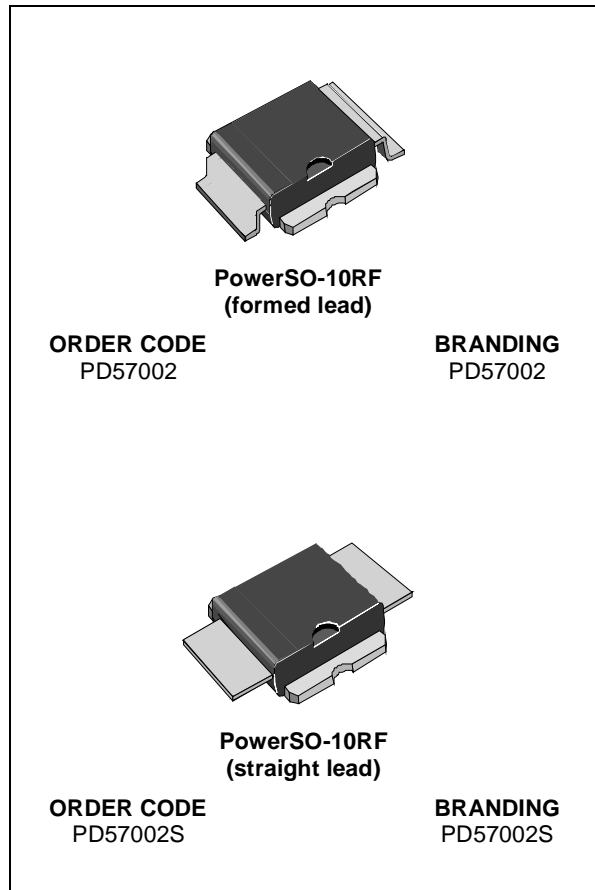
- EXCELLENT THERMAL STABILITY
- COMMON SOURCE CONFIGURATION
- $P_{OUT} = 2\text{ W}$ with 15 dB gain @ 960 MHz / 28 V
- NEW RF PLASTIC PACKAGE

DESCRIPTION

The PD57002 is a common source N-Channel, enhancement-mode lateral Field-Effect RF power transistor designed for broadband commercial and industrial applications at frequencies up to 1000 MHz. The PD57002 is designed for high gain and broadband performance operating in common source mode at 28 V. It is ideal for digital cellular BTS applications requiring high linearity.

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)



ABSOLUTE MAXIMUM RATINGS ($T_{CASE} = 25^{\circ}\text{C}$)

| Symbol | Parameter | Value | Unit |
|---------------|---|-------------|--------------------|
| $V_{(BR)DSS}$ | Drain-Source Voltage | 65 | V |
| V_{GS} | Gate-Source Voltage | ± 20 | V |
| I_D | Drain Current | 0.25 | A |
| P_{DISS} | Power Dissipation (@ $T_c = 70^{\circ}\text{C}$) | 4.75 | W |
| T_j | Max. Operating Junction Temperature | 165 | $^{\circ}\text{C}$ |
| T_{STG} | Storage Temperature | -65 to +150 | $^{\circ}\text{C}$ |

THERMAL DATA

| | | | |
|---------------|-----------------------------------|----|-----------------------------|
| $R_{th(j-c)}$ | Junction -Case Thermal Resistance | 20 | $^{\circ}\text{C}/\text{W}$ |
|---------------|-----------------------------------|----|-----------------------------|

PD57002 - PD57002S

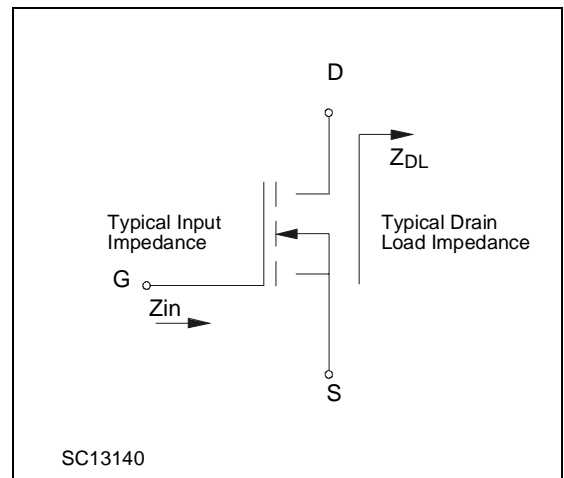
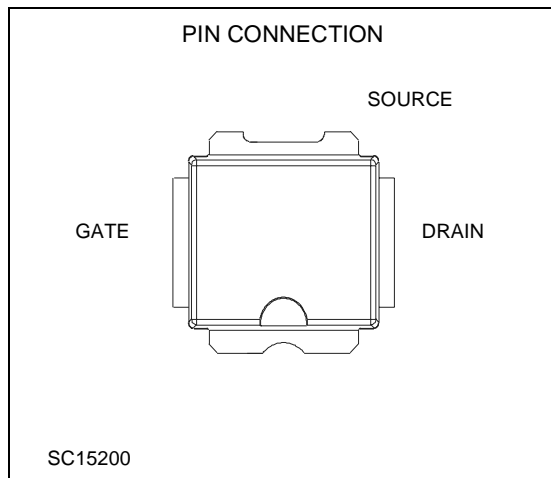
ELECTRICAL SPECIFICATION (T_{CASE} = 25°C)

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} = 28 V | I _D = 10 mA | 2.0 | | 5.0 | V |
| V _{DS(ON)} | V _{GS} = 10 V | I _D = 125 mA | | 0.7 | 0.9 | V |
| g _{FS} | V _{DS} = 10 V | I _D = 200 mA | | -- | | mho |
| C _{ISS} | V _{GS} = 0 V | V _{DS} = 28 V | | 7.1 | | pF |
| C _{OSS} | V _{GS} = 0 V | V _{DS} = 28 V | | 5.8 | | pF |
| C _{RSS} | V _{GS} = 0 V | V _{DS} = 28 V | | 0.1 | | pF |

DYNAMIC

| Symbol | Test Conditions | | | | Min. | Typ. | Max. | Unit |
|------------------|------------------------|-------------------------|------------------------|-------------|------|------|------|------|
| P _{1dB} | V _{DD} = 28 V | I _{DQ} = 10 mA | | f = 960 MHz | 2 | | | W |
| G _P | V _{DD} = 28 V | I _{DQ} = 10 mA | P _{OUT} = 2 W | f = 960 MHz | 15 | | | dB |
| η _D | V _{DD} = 28 V | I _{DQ} = 10 mA | P _{OUT} = 2 W | f = 960 MHz | 45 | | | % |
| Load mismatch | V _{DD} = 28 V | I _{DQ} = 10 mA | P _{OUT} = 2 W | f = 960 MHz | 10:1 | | | VSWR |
| | ALL PHASE ANGLES | | | | | | | |



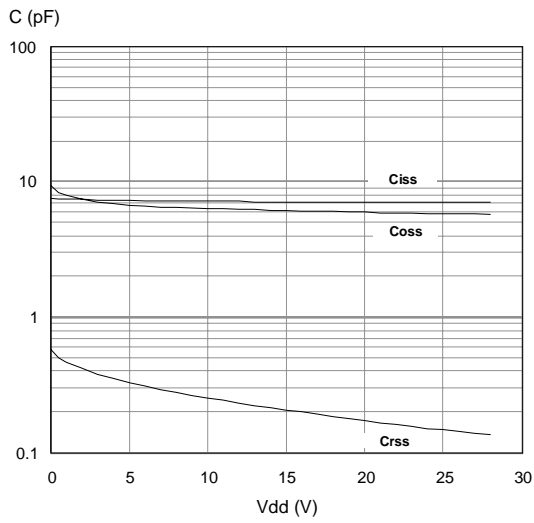
IMPEDANCE DATA

PD57002S

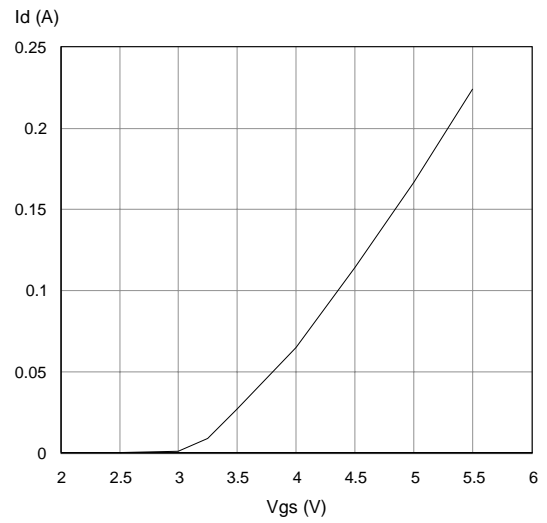
| FREQ. MHz | Z _{IN} (Ω) | Z _{DL} (Ω) |
|-----------|---------------------|---------------------|
| 925 | 1.894 - j 13.43 | 6.445 + j 23.60 |
| 945 | 2.440 - j 12.53 | 7.245 + j 25.09 |
| 960 | 2.760 - j 12.13 | 7.715 + j 25.69 |

TYPICAL PERFORMANCE

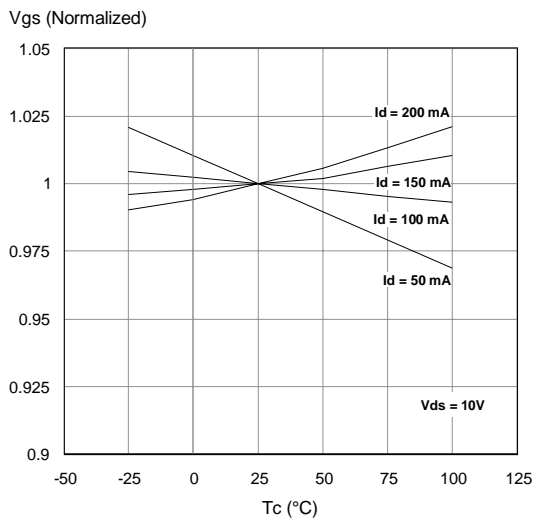
Capacitances vs. Drain Voltage



Drain Current vs Gate-Source Voltage



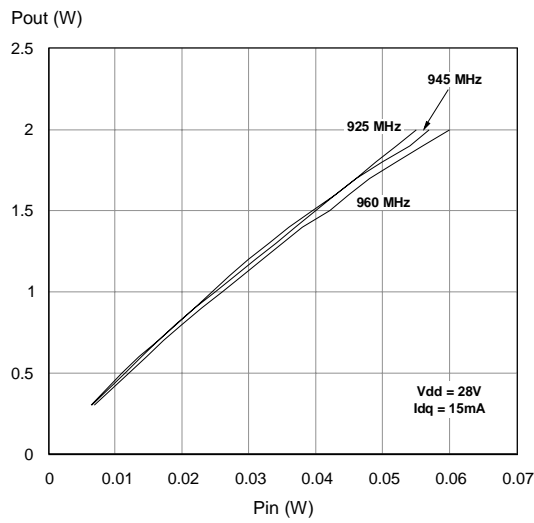
Gate-Source Voltage vs Case Temperature



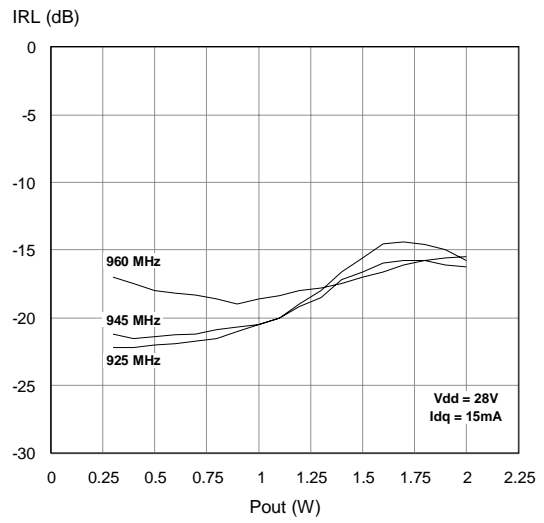
PD57002 - PD57002S

TYPICAL PERFORMANCE (PD57002S)

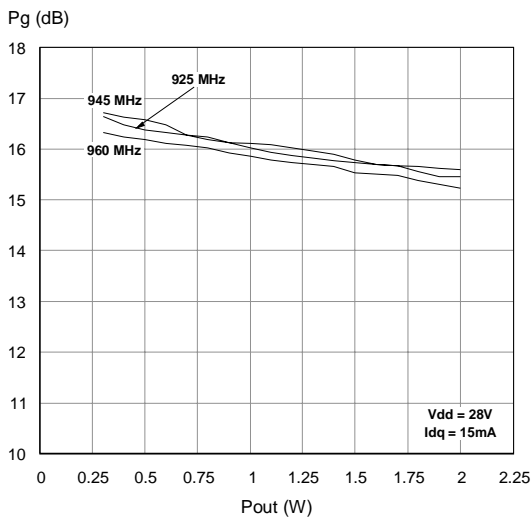
Output Power vs Input Power



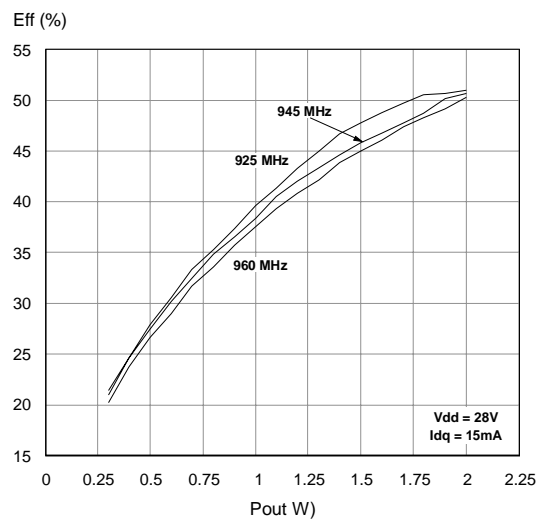
Input Return Loss vs Output Power



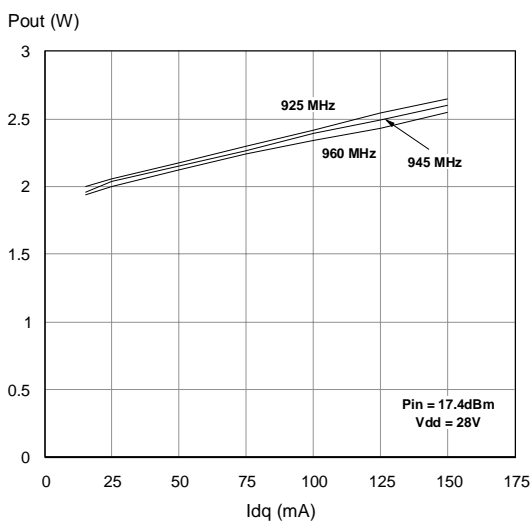
Power Gain vs Output Power



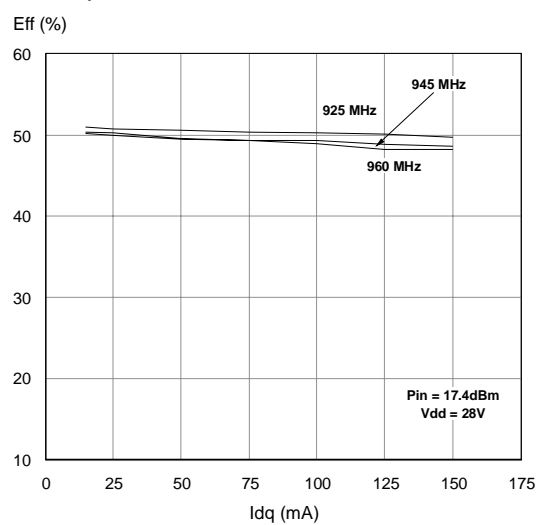
Efficiency vs. Output Power



Output Power vs Drain Current

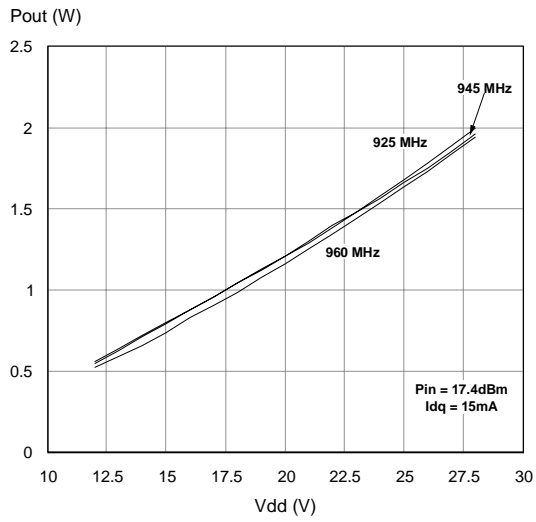


Efficiency vs Drain Current

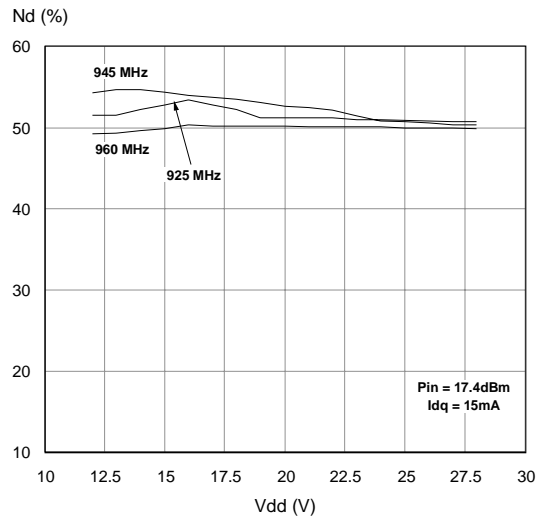


TYPICAL PERFORMANCE (PD57002S)

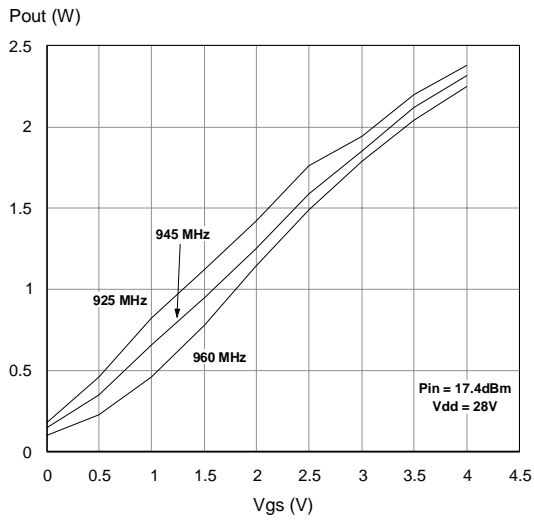
Output Power vs Drain Voltage



Efficiency vs Drain Voltage



Output Power vs Gate-Source Voltage



PD57002 - PD57002S

COMMON SOURCE S-PARAMETER (PD57002)

($V_{DS} = 28V$ $I_{DS} = 75mA$)

| FREQ (MHz) | $ S_{11} $ | $\angle S_{11}$ | $ S_{21} $ | $\angle S_{21}$ | $ S_{12} $ | $\angle S_{12}$ | $ S_{22} $ | $\angle S_{22}$ |
|---------------|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|
| 50 | 0.980 | -16 | 10.01 | 166 | 0.006 | 75 | 0.963 | -12 |
| 100 | 0.972 | -31 | 9.63 | 153 | 0.012 | 64 | 0.949 | -23 |
| 150 | 0.966 | -46 | 9.04 | 141 | 0.017 | 53 | 0.942 | -35 |
| 200 | 0.951 | -59 | 8.46 | 129 | 0.020 | 42 | 0.918 | -45 |
| 250 | 0.944 | -70 | 7.78 | 119 | 0.023 | 32 | 0.911 | -54 |
| 300 | 0.936 | -80 | 7.09 | 110 | 0.025 | 23 | 0.896 | -63 |
| 350 | 0.925 | -90 | 6.50 | 101 | 0.026 | 16 | 0.885 | -70 |
| 400 | 0.926 | -98 | 5.93 | 93 | 0.026 | 8 | 0.888 | -77 |
| 450 | 0.924 | -105 | 5.43 | 85 | 0.026 | 2 | 0.886 | -83 |
| 500 | 0.919 | -112 | 4.96 | 78 | 0.027 | -2 | 0.897 | -89 |
| 550 | 0.921 | -117 | 4.52 | 72 | 0.027 | -9 | 0.894 | -95 |
| 600 | 0.915 | -122 | 4.17 | 66 | 0.026 | -15 | 0.896 | -99 |
| 650 | 0.920 | -127 | 3.84 | 61 | 0.026 | -20 | 0.904 | -104 |
| 700 | 0.922 | -131 | 3.55 | 56 | 0.024 | -25 | 0.914 | -108 |
| 750 | 0.921 | -135 | 3.31 | 51 | 0.024 | -29 | 0.920 | -112 |
| 800 | 0.922 | -138 | 3.07 | 46 | 0.023 | -33 | 0.929 | -116 |
| 850 | 0.924 | -141 | 2.87 | 42 | 0.022 | -38 | 0.937 | -119 |
| 900 | 0.922 | -145 | 2.69 | 38 | 0.021 | -39 | 0.934 | -123 |
| 950 | 0.926 | -147 | 2.52 | 34 | 0.020 | -43 | 0.931 | -125 |
| 1000 | 0.919 | -150 | 2.38 | 30 | 0.019 | -45 | 0.938 | -128 |
| 1050 | 0.920 | -153 | 2.24 | 27 | 0.018 | -49 | 0.941 | -131 |
| 1100 | 0.918 | -155 | 2.13 | 23 | 0.018 | -51 | 0.941 | -134 |
| 1150 | 0.916 | -158 | 2.02 | 19 | 0.017 | -56 | 0.943 | -136 |
| 1200 | 0.921 | -160 | 1.92 | 16 | 0.016 | -60 | 0.940 | -138 |
| 1250 | 0.912 | -162 | 1.84 | 12 | 0.015 | -62 | 0.943 | -141 |
| 1300 | 0.914 | -164 | 1.76 | 9 | 0.014 | -70 | 0.944 | -143 |
| 1350 | 0.914 | -166 | 1.68 | 6 | 0.013 | -71 | 0.942 | -144 |
| 1400 | 0.908 | -168 | 1.61 | 3 | 0.013 | -75 | 0.947 | -146 |
| 1450 | 0.909 | -170 | 1.54 | 0 | 0.012 | -88 | 0.940 | -148 |
| 1500 | 0.900 | -172 | 1.45 | -3 | 0.011 | -108 | 0.934 | -149 |

COMMON SOURCE S-PARAMETER (PD57002)

($V_{DS} = 28V$ $I_{DS} = 150mA$)

| FREQ (MHz) | $ S_{11} $ | $\angle S_{11}$ | $ S_{21} $ | $\angle S_{21}$ | $ S_{12} $ | $\angle S_{12}$ | $ S_{22} $ | $\angle S_{22}$ |
|---------------|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|
| 50 | 0.998 | -17 | 10.95 | 166 | 0.006 | 77 | 0.960 | -12 |
| 100 | 0.989 | -32 | 10.50 | 153 | 0.011 | 63 | 0.946 | -24 |
| 150 | 0.975 | -47 | 9.83 | 140 | 0.016 | 52 | 0.937 | -35 |
| 200 | 0.965 | -61 | 9.15 | 128 | 0.020 | 41 | 0.912 | -45 |
| 250 | 0.954 | -72 | 8.40 | 118 | 0.022 | 31 | 0.904 | -54 |
| 300 | 0.943 | -82 | 7.63 | 108 | 0.024 | 22 | 0.885 | -63 |
| 350 | 0.939 | -92 | 6.98 | 100 | 0.025 | 15 | 0.876 | -70 |
| 400 | 0.934 | -100 | 6.35 | 92 | 0.025 | 7 | 0.880 | -77 |
| 450 | 0.931 | -107 | 5.81 | 84 | 0.026 | 2 | 0.877 | -83 |
| 500 | 0.930 | -113 | 5.30 | 77 | 0.026 | -3 | 0.885 | -89 |
| 550 | 0.927 | -119 | 4.82 | 71 | 0.025 | -9 | 0.886 | -95 |
| 600 | 0.925 | -124 | 4.45 | 65 | 0.025 | -15 | 0.886 | -99 |
| 650 | 0.927 | -128 | 4.09 | 60 | 0.025 | -21 | 0.896 | -104 |
| 700 | 0.926 | -133 | 3.78 | 55 | 0.023 | -25 | 0.906 | -108 |
| 750 | 0.930 | -136 | 3.52 | 50 | 0.022 | -29 | 0.912 | -112 |
| 800 | 0.930 | -140 | 3.27 | 45 | 0.021 | -33 | 0.923 | -115 |
| 850 | 0.931 | -143 | 3.06 | 41 | 0.021 | -36 | 0.929 | -119 |
| 900 | 0.930 | -146 | 2.87 | 36 | 0.200 | -40 | 0.930 | -122 |
| 950 | 0.929 | -149 | 2.68 | 33 | 0.019 | -42 | 0.928 | -125 |
| 1000 | 0.931 | -152 | 2.53 | 29 | 0.018 | -46 | 0.933 | -128 |
| 1050 | 0.926 | -154 | 2.38 | 25 | 0.017 | -48 | 0.932 | -130 |
| 1100 | 0.927 | -157 | 2.27 | 21 | 0.016 | -54 | 0.935 | -133 |
| 1150 | 0.926 | -159 | 2.15 | 18 | 0.016 | -57 | 0.938 | -136 |
| 1200 | 0.925 | -161 | 2.04 | 14 | 0.015 | -58 | 0.940 | -138 |
| 1250 | 0.923 | -164 | 1.95 | 11 | 0.014 | -62 | 0.941 | -140 |
| 1300 | 0.918 | -165 | 1.87 | 8 | 0.013 | -68 | 0.939 | -142 |
| 1350 | 0.917 | -167 | 1.79 | 4 | 0.012 | -71 | 0.936 | -144 |
| 1400 | 0.916 | -169 | 1.72 | 1 | 0.012 | -74 | 0.939 | -146 |
| 1450 | 0.911 | -171 | 1.63 | -2 | 0.011 | -89 | 0.934 | -147 |
| 1500 | 0.904 | -172 | 1.54 | -5 | 0.011 | -109 | 0.933 | -148 |

PD57002 - PD57002S

COMMON SOURCE S-PARAMETER (PD57002)

($V_{DS} = 13.5V$ $I_{DS} = 75mA$)

| FREQ (MHz) | $ S_{11} $ | $\angle S_{11}$ | $ S_{21} $ | $\angle S_{21}$ | $ S_{12} $ | $\angle S_{12}$ | $ S_{22} $ | $\angle S_{22}$ |
|---------------|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|
| 50 | 0.969 | -17 | 10.14 | 166 | 0.009 | 74 | 0.973 | -14 |
| 100 | 0.959 | -33 | 9.72 | 152 | 0.017 | 63 | 0.954 | -27 |
| 150 | 0.949 | -48 | 9.06 | 139 | 0.243 | 50 | 0.944 | -40 |
| 200 | 0.925 | -61 | 8.31 | 127 | 0.030 | 39 | 0.910 | -51 |
| 250 | 0.915 | -73 | 7.57 | 117 | 0.033 | 28 | 0.901 | -61 |
| 300 | 0.906 | -83 | 6.82 | 108 | 0.035 | 20 | 0.875 | -70 |
| 350 | 0.890 | -92 | 6.23 | 99 | 0.038 | 13 | 0.862 | -77 |
| 400 | 0.892 | -100 | 5.65 | 91 | 0.039 | 5 | 0.866 | -85 |
| 450 | 0.888 | -106 | 5.19 | 84 | 0.038 | -2 | 0.858 | -90 |
| 500 | 0.881 | -113 | 4.72 | 77 | 0.039 | -6 | 0.870 | -96 |
| 550 | 0.888 | -119 | 4.30 | 71 | 0.039 | -13 | 0.873 | -102 |
| 600 | 0.882 | -123 | 3.95 | 65 | 0.038 | -18 | 0.872 | -106 |
| 650 | 0.888 | -128 | 3.62 | 60 | 0.038 | -24 | 0.880 | -111 |
| 700 | 0.893 | -132 | 3.36 | 55 | 0.036 | -28 | 0.890 | -116 |
| 750 | 0.890 | -135 | 3.12 | 51 | 0.036 | -32 | 0.895 | -119 |
| 800 | 0.895 | -139 | 2.92 | 46 | 0.034 | -36 | 0.904 | -122 |
| 850 | 0.895 | -142 | 2.73 | 42 | 0.033 | -41 | 0.911 | -126 |
| 900 | 0.893 | -145 | 2.56 | 37 | 0.032 | -44 | 0.914 | -129 |
| 950 | 0.898 | -148 | 2.40 | 34 | 0.030 | -47 | 0.911 | -132 |
| 1000 | 0.892 | -150 | 2.25 | 30 | 0.030 | -50 | 0.918 | -134 |
| 1050 | 0.895 | -153 | 2.13 | 26 | 0.029 | -54 | 0.921 | -137 |
| 1100 | 0.896 | -155 | 2.20 | 23 | 0.028 | -58 | 0.922 | -140 |
| 1150 | 0.894 | -158 | 1.92 | 19 | 0.027 | -60 | 0.926 | -142 |
| 1200 | 0.900 | -160 | 1.83 | 16 | 0.026 | -64 | 0.924 | -144 |
| 1250 | 0.890 | -162 | 1.74 | 12 | 0.025 | -67 | 0.923 | -147 |
| 1300 | 0.895 | -164 | 1.67 | 9 | 0.024 | -72 | 0.922 | -149 |
| 1350 | 0.898 | -166 | 1.58 | 6 | 0.023 | -73 | 0.919 | -150 |
| 1400 | 0.893 | -169 | 1.51 | 3 | 0.023 | -79 | 0.920 | -152 |
| 1450 | 0.895 | -170 | 1.43 | 0 | 0.021 | -86 | 0.916 | -153 |
| 1500 | 0.885 | -172 | 1.35 | -1 | 0.020 | -95 | 0.912 | -154 |

COMMON SOURCE S-PARAMETER (PD57002)(V_{DS} = 13.5V I_{DS} = 150mA)

| FREQ (MHz) | S ₁₁ | ∠S ₁₁ | S ₂₁ | ∠S ₂₁ | S ₁₂ | ∠S ₁₂ | S ₂₂ | ∠S ₂₂ |
|---------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|-----------------|------------------|
| 50 | 0.986 | -18 | 11.58 | 165 | 0.009 | 75 | 0.964 | -14 |
| 100 | 0.972 | -34 | 11.04 | 151 | 0.017 | 62 | 0.940 | -28 |
| 150 | 0.955 | -50 | 10.25 | 138 | 0.024 | 49 | 0.931 | -41 |
| 200 | 0.934 | -63 | 9.35 | 126 | 0.029 | 38 | 0.891 | -52 |
| 250 | 0.921 | -75 | 8.48 | 115 | 0.032 | 28 | 0.883 | -62 |
| 300 | 0.909 | -85 | 7.59 | 106 | 0.034 | 19 | 0.856 | -71 |
| 350 | 0.897 | -94 | 6.93 | 98 | 0.036 | 12 | 0.841 | -78 |
| 400 | 0.895 | -102 | 6.27 | 90 | 0.037 | 4 | 0.847 | -86 |
| 450 | 0.892 | -109 | 5.76 | 83 | 0.037 | -2 | 0.840 | -91 |
| 500 | 0.889 | -115 | 5.23 | 76 | 0.037 | -7 | 0.852 | -97 |
| 550 | 0.889 | -121 | 4.75 | 70 | 0.037 | -13 | 0.852 | -103 |
| 600 | 0.886 | -125 | 4.37 | 65 | 0.037 | -19 | 0.853 | -107 |
| 650 | 0.891 | -130 | 4.00 | 59 | 0.036 | -23 | 0.863 | -111 |
| 700 | 0.892 | -134 | 3.72 | 55 | 0.035 | -29 | 0.871 | -116 |
| 750 | 0.895 | -137 | 3.45 | 50 | 0.034 | -32 | 0.878 | -119 |
| 800 | 0.897 | -141 | 3.23 | 46 | 0.033 | -36 | 0.885 | -123 |
| 850 | 0.898 | -144 | 3.02 | 41 | 0.032 | -40 | 0.897 | -126 |
| 900 | 0.898 | -147 | 2.84 | 37 | 0.031 | -43 | 0.895 | -129 |
| 950 | 0.902 | -149 | 2.66 | 33 | 0.029 | -47 | 0.896 | -132 |
| 1000 | 0.90058 | -152 | 2.50 | 29 | 0.028 | -49 | 0.904 | -134 |
| 1050 | 0.897 | -155 | 2.36 | 26 | 0.028 | -53 | 0.906 | -137 |
| 1100 | 0.900 | -157 | 2.24 | 22 | 0.027 | -56 | 0.909 | -140 |
| 1150 | 0.898 | -159 | 2.13 | 19 | 0.026 | -59 | 0.912 | -142 |
| 1200 | 0.901 | -162 | 2.03 | 15 | 0.025 | -63 | 0.910 | -144 |
| 1250 | 0.898 | -164 | 1.92 | 12 | 0.024 | -65 | 0.913 | -147 |
| 1300 | 0.897 | -166 | 1.84 | 8 | 0.023 | -71 | 0.912 | -149 |
| 1350 | 0.897 | -167 | 1.75 | 5 | 0.022 | -74 | 0.909 | -150 |
| 1400 | 0.896 | -170 | 1.67 | 2 | 0.021 | -76 | 0.912 | -152 |
| 1450 | 0.895 | -171 | 1.58 | -1 | 0.021 | -85 | 0.905 | -153 |
| 1500 | 0.888 | -173 | 1.50 | -2 | 0.020 | -97 | 0.900 | -154 |

PD57002 - PD57002S**COMMON SOURCE S-PARAMETER (PD57002S)** $(V_{DS} = 28V \quad I_{DS} = 75mA)$

| 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 | 0.993 | -16 | 9.99 | 166 | 0.007 | 77 | 0.929 | -12 |
| 100 | 0.987 | -31 | 9.60 | 153 | 0.013 | 64 | 0.916 | -24 |
| 150 | 0.979 | -46 | 9.03 | 141 | 0.018 | 53 | 0.911 | -36 |
| 200 | 0.961 | -59 | 8.36 | 130 | 0.022 | 42 | 0.889 | -46 |
| 250 | 0.950 | -71 | 7.66 | 119 | 0.025 | 32 | 0.883 | -56 |
| 300 | 0.933 | -80 | 6.95 | 111 | 0.027 | 24 | 0.864 | -64 |
| 350 | 0.928 | -89 | 6.39 | 102 | 0.029 | 17 | 0.860 | -71 |
| 400 | 0.924 | -97 | 5.84 | 94 | 0.030 | 8 | 0.866 | -79 |
| 450 | 0.922 | -103 | 5.36 | 87 | 0.029 | 2 | 0.862 | -85 |
| 500 | 0.924 | -110 | 4.90 | 80 | 0.030 | -2 | 0.872 | -90 |
| 550 | 0.922 | -115 | 4.48 | 74 | 0.030 | -9 | 0.877 | -96 |
| 600 | 0.923 | -120 | 4.12 | 69 | 0.030 | -14 | 0.877 | -101 |
| 650 | 0.922 | -125 | 3.78 | 63 | 0.029 | -19 | 0.890 | -105 |
| 700 | 0.923 | -128 | 3.51 | 58 | 0.028 | -24 | 0.892 | -110 |
| 750 | 0.925 | -132 | 3.26 | 54 | 0.027 | -27 | 0.893 | -113 |
| 800 | 0.925 | -135 | 3.04 | 49 | 0.026 | -31 | 0.900 | -117 |
| 850 | 0.931 | -138 | 2.85 | 45 | 0.027 | -35 | 0.907 | -120 |
| 900 | 0.933 | -141 | 2.66 | 41 | 0.026 | -38 | 0.912 | -123 |
| 950 | 0.934 | -144 | 2.49 | 37 | 0.024 | -41 | 0.914 | -125 |
| 1000 | 0.936 | -147 | 2.35 | 33 | 0.023 | -45 | 0.918 | -128 |
| 1050 | 0.937 | -149 | 2.21 | 30 | 0.023 | -47 | 0.927 | -130 |
| 1100 | 0.938 | -151 | 2.10 | 26 | 0.022 | -50 | 0.929 | -133 |
| 1150 | 0.936 | -154 | 1.99 | 23 | 0.022 | -53 | 0.935 | -135 |
| 1200 | 0.936 | -156 | 1.91 | 20 | 0.021 | -56 | 0.941 | -137 |
| 1250 | 0.934 | -158 | 1.81 | 17 | 0.020 | -60 | 0.945 | -139 |
| 1300 | 0.933 | -160 | 1.75 | 14 | 0.019 | -65 | 0.945 | -140 |
| 1350 | 0.930 | -162 | 1.67 | 10 | 0.018 | -67 | 0.940 | -142 |
| 1400 | 0.920 | -164 | 1.58 | 8 | 0.018 | -69 | 0.938 | -143 |
| 1450 | 0.916 | -166 | 1.51 | 5 | 0.017 | -78 | 0.935 | -144 |
| 1500 | 0.907 | -167 | 1.43 | 3 | 0.017 | -88 | 0.932 | -145 |

COMMON SOURCE S-PARAMETER (PD57002S)

($V_{DS} = 28V$ $I_{DS} = 150mA$)

| FREQ (MHz) | $ S_{11} $ | $\angle S_{11}$ | $ S_{21} $ | $\angle S_{21}$ | $ S_{12} $ | $\angle S_{12}$ | $ S_{22} $ | $\angle S_{22}$ |
|---------------|------------|-----------------|------------|-----------------|------------|-----------------|------------|-----------------|
| 50 | 0.997 | -17 | 10.84 | 166 | 0.007 | 77 | 0.924 | -12 |
| 100 | 0.988 | -32 | 10.39 | 153 | 0.012 | 62 | 0.909 | -24 |
| 150 | 0.972 | -47 | 9.73 | 140 | 0.017 | 51 | 0.904 | -36 |
| 200 | 0.962 | -60 | 8.98 | 129 | 0.021 | 42 | 0.880 | -47 |
| 250 | 0.950 | -72 | 8.21 | 118 | 0.024 | 31 | 0.874 | -56 |
| 300 | 0.942 | -82 | 7.43 | 110 | 0.026 | 22 | 0.856 | -64 |
| 350 | 0.934 | -91 | 6.82 | 101 | 0.027 | 15 | 0.852 | -71 |
| 400 | 0.932 | -99 | 6.22 | 93 | 0.028 | 8 | 0.857 | -79 |
| 450 | 0.928 | -106 | 5.70 | 86 | 0.028 | 3 | 0.853 | -84 |
| 500 | 0.924 | -112 | 5.20 | 79 | 0.028 | -3 | 0.863 | -90 |
| 550 | 0.923 | -117 | 4.74 | 73 | 0.029 | -9 | 0.871 | -96 |
| 600 | 0.922 | -122 | 4.37 | 98 | 0.028 | -14 | 0.869 | -100 |
| 650 | 0.922 | -126 | 4.00 | 62 | 0.028 | -19 | 0.885 | -105 |
| 700 | 0.923 | -130 | 3.71 | 57 | 0.027 | -25 | 0.885 | -109 |
| 750 | 0.927 | -134 | 3.46 | 53 | 0.026 | -27 | 0.888 | -113 |
| 800 | 0.926 | -137 | 3.22 | 48 | 0.025 | -30 | 0.896 | -116 |
| 850 | 0.926 | -140 | 3.01 | 44 | 0.024 | -35 | 0.905 | -119 |
| 900 | 0.927 | -143 | 2.82 | 40 | 0.023 | -37 | 0.908 | -122 |
| 950 | 0.927 | -146 | 2.64 | 36 | 0.024 | -41 | 0.908 | -125 |
| 1000 | 0.928 | -148 | 2.48 | 32 | 0.022 | -43 | 0.915 | -128 |
| 1050 | 0.927 | -151 | 2.34 | 29 | 0.022 | -48 | 0.923 | -130 |
| 1100 | 0.928 | -153 | 2.22 | 25 | 0.021 | -50 | 0.923 | -133 |
| 1150 | 0.927 | -155 | 2.11 | 22 | 0.020 | -54 | 0.932 | -135 |
| 1200 | 0.925 | -157 | 2.01 | 18 | 0.019 | -57 | 0.936 | -137 |
| 1250 | 0.926 | -159 | 1.91 | 15 | 0.019 | -60 | 0.936 | -138 |
| 1300 | 0.921 | -161 | 1.84 | 12 | 0.018 | -64 | 0.940 | -140 |
| 1350 | 0.919 | -163 | 1.76 | 9 | 0.017 | -67 | 0.936 | -141 |
| 1400 | 0.915 | -164 | 1.67 | 7 | 0.017 | -69 | 0.935 | -143 |
| 1450 | 0.912 | -166 | 1.59 | 4 | 0.016 | -77 | 0.933 | -144 |
| 1500 | 0.907 | -168 | 1.51 | 2 | 0.015 | -89 | 0.927 | -144 |

PD57002 - PD57002S**COMMON SOURCE S-PARAMETER (PD57002S)** $(V_{DS} = 13.5V \quad I_{DS} = 75mA)$

| 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 | 0.996 | -17 | 10.21 | 165 | 0.010 | 73 | 0.966 | -14 |
| 100 | 0.982 | -33 | 9.74 | 152 | 0.019 | 63 | 0.946 | -28 |
| 150 | 0.962 | -48 | 9.07 | 139 | 0.027 | 50 | 0.938 | -41 |
| 200 | 0.946 | -61 | 8.29 | 127 | 0.033 | 39 | 0.901 | -53 |
| 250 | 0.931 | -73 | 7.52 | 117 | 0.037 | 29 | 0.891 | -63 |
| 300 | 0.919 | -83 | 6.73 | 108 | 0.040 | 20 | 0.863 | -72 |
| 350 | 0.911 | -92 | 6.16 | 100 | 0.042 | 13 | 0.854 | -78 |
| 400 | 0.906 | -99 | 5.59 | 92 | 0.043 | 5 | 0.859 | -86 |
| 450 | 0.903 | -106 | 5.11 | 85 | 0.043 | -1 | 0.851 | -92 |
| 500 | 0.901 | -112 | 4.65 | 78 | 0.044 | -6 | 0.860 | -97 |
| 550 | 0.900 | -117 | 4.23 | 73 | 0.044 | -12 | 0.865 | -103 |
| 600 | 0.900 | -122 | 3.89 | 67 | 0.044 | -17 | 0.863 | -107 |
| 650 | 0.902 | -126 | 3.56 | 62 | 0.042 | -22 | 0.879 | -112 |
| 700 | 0.902 | -130 | 3.30 | 57 | 0.041 | -27 | 0.881 | -117 |
| 750 | 0.910 | -133 | 3.07 | 53 | 0.040 | -30 | 0.881 | -119 |
| 800 | 0.908 | -136 | 2.86 | 49 | 0.040 | -34 | 0.891 | -123 |
| 850 | 0.910 | -139 | 2.68 | 44 | 0.039 | -38 | 0.894 | -126 |
| 900 | 0.914 | -142 | 2.51 | 40 | 0.038 | -42 | 0.899 | -128 |
| 950 | 0.914 | -145 | 2.35 | 37 | 0.037 | -45 | 0.902 | -131 |
| 1000 | 0.917 | -147 | 2.21 | 33 | 0.036 | -49 | 0.907 | -133 |
| 1050 | 0.919 | -150 | 2.09 | 30 | 0.035 | -51 | 0.918 | -136 |
| 1100 | 0.921 | -152 | 1.98 | 26 | 0.034 | -53 | 0.914 | -138 |
| 1150 | 0.921 | -154 | 1.89 | 24 | 0.034 | -58 | 0.928 | -140 |
| 1200 | 0.920 | -156 | 1.81 | 20 | 0.032 | -61 | 0.927 | -142 |
| 1250 | 0.920 | -158 | 1.72 | 17 | 0.032 | -64 | 0.930 | -144 |
| 1300 | 0.919 | -160 | 1.65 | 14 | 0.032 | -68 | 0.928 | -146 |
| 1350 | 0.917 | -162 | 1.58 | 10 | 0.029 | -71 | 0.921 | -147 |
| 1400 | 0.913 | -163 | 1.50 | 8 | 0.029 | -73 | 0.923 | -149 |
| 1450 | 0.909 | -165 | 1.43 | 5 | 0.029 | -77 | 0.921 | -149 |
| 1500 | 0.905 | -167 | 1.35 | 4 | 0.028 | -84 | 0.913 | -150 |

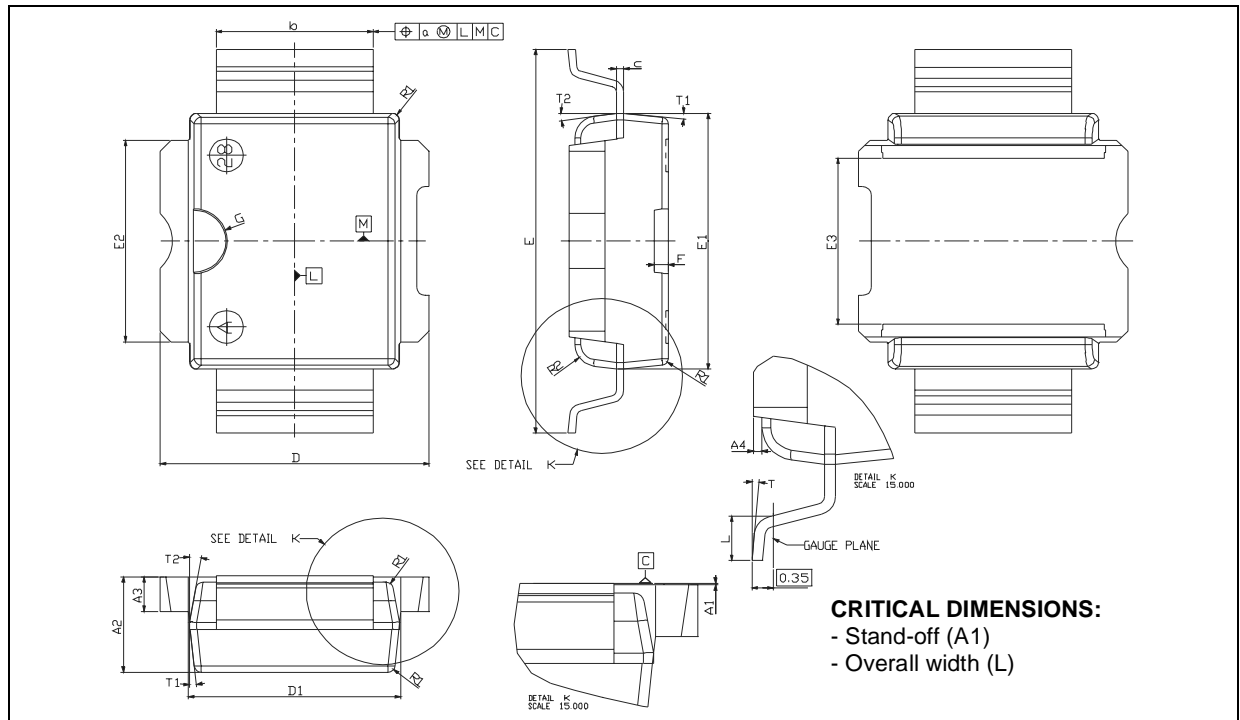
COMMON SOURCE S-PARAMETER (PD57002S) $(V_{DS} = 13.5V \quad I_{DS} = 150mA)$

| 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 | 0.990 | -18 | 11.68 | 165 | 0.010 | 74 | 0.953 | -15 |
| 100 | 0.976 | -35 | 11.11 | 151 | 0.019 | 63 | 0.932 | -28 |
| 150 | 0.952 | -50 | 10.31 | 138 | 0.027 | 49 | 0.924 | -42 |
| 200 | 0.933 | -64 | 9.36 | 126 | 0.032 | 38 | 0.882 | -54 |
| 250 | 0.917 | -75 | 8.44 | 115 | 0.036 | 28 | 0.872 | -64 |
| 300 | 0.905 | -85 | 7.53 | 107 | 0.038 | 19 | 0.841 | -73 |
| 350 | 0.895 | -94 | 6.87 | 99 | 0.040 | 12 | 0.832 | -79 |
| 400 | 0.891 | -102 | 6.22 | 91 | 0.041 | 4 | 0.838 | -87 |
| 450 | 0.886 | -108 | 5.69 | 84 | 0.042 | -1 | 0.829 | -93 |
| 500 | 0.884 | -114 | 5.17 | 77 | 0.042 | -7 | 0.840 | -98 |
| 550 | 0.884 | -119 | 4.70 | 72 | 0.042 | -13 | 0.847 | -104 |
| 600 | 0.883 | -124 | 4.33 | 66 | 0.041 | -17 | 0.844 | -108 |
| 650 | 0.886 | -128 | 3.95 | 61 | 0.041 | -22 | 0.859 | -112 |
| 700 | 0.889 | -132 | 3.67 | 57 | 0.039 | -28 | 0.860 | -117 |
| 750 | 0.892 | -135 | 3.41 | 52 | 0.039 | -30 | 0.862 | -119 |
| 800 | 0.893 | -138 | 3.18 | 48 | 0.038 | -35 | 0.873 | -123 |
| 850 | 0.894 | -141 | 2.99 | 44 | 0.037 | -38 | 0.876 | -126 |
| 900 | 0.894 | -144 | 2.79 | 40 | 0.036 | -41 | 0.883 | -128 |
| 950 | 0.898 | -146 | 2.62 | 36 | 0.035 | -45 | 0.883 | -131 |
| 1000 | 0.9 | -149 | 2.46 | 33 | 0.035 | -47 | 0.893 | -133 |
| 1050 | 0.902 | -151 | 2.32 | 29 | 0.034 | -51 | 0.903 | -136 |
| 1100 | 0.903 | -153 | 2.21 | 26 | 0.033 | -54 | 0.903 | -139 |
| 1150 | 0.902 | -155 | 2.10 | 23 | 0.032 | -58 | 0.914 | -140 |
| 1200 | 0.903 | -157 | 2.01 | 19 | 0.031 | -61 | 0.916 | -142 |
| 1250 | 0.904 | -159 | 1.91 | 16 | 0.031 | -63 | 0.919 | -144 |
| 1300 | 0.901 | -161 | 1.85 | 13 | 0.029 | -68 | 0.921 | -146 |
| 1350 | 0.901 | -163 | 1.76 | 10 | 0.028 | -71 | 0.911 | -147 |
| 1400 | 0.896 | -165 | 1.67 | 8 | 0.028 | -73 | 0.912 | -149 |
| 1450 | 0.894 | -166 | 1.59 | 5 | 0.028 | -78 | 0.904 | -149 |
| 1500 | 0.891 | -168 | 1.51 | 3 | 0.026 | -85 | 0.901 | -150 |

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 | |

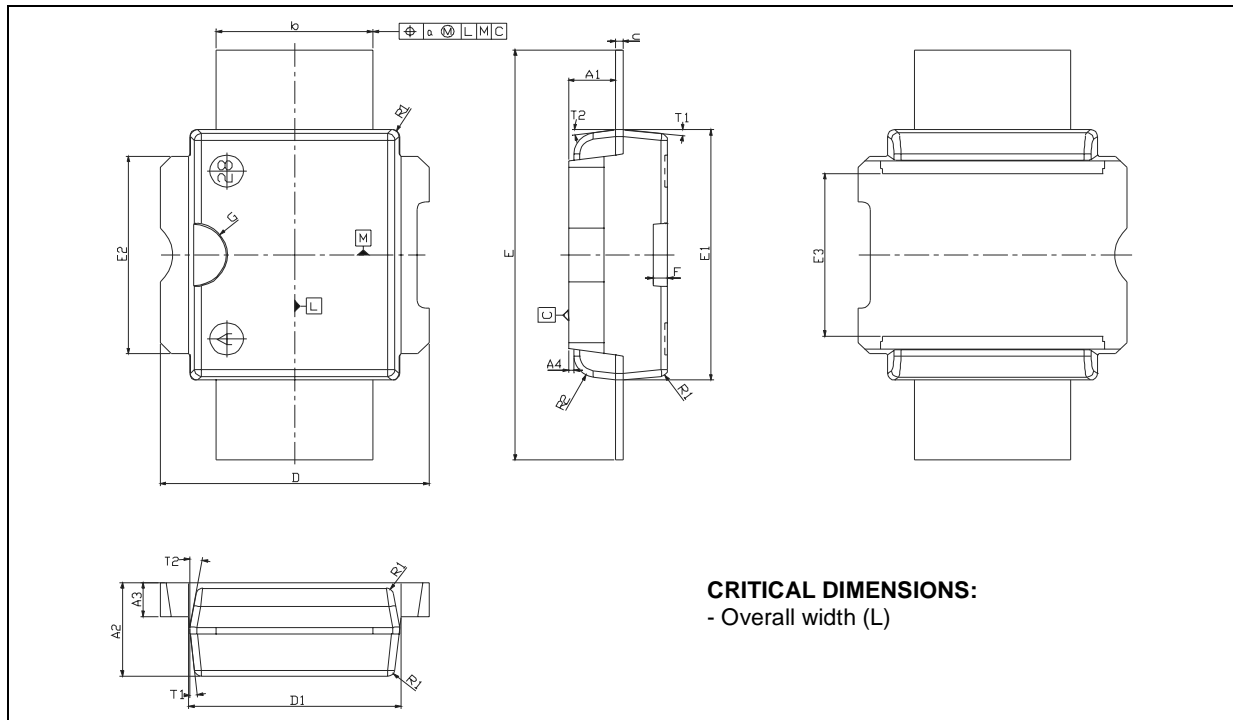
Note (1): Resin protrusions not included (max value: 0.15 mm per side)



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)



Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is registered trademark of STMicroelectronics
© 2003 STMicroelectronics - All Rights Reserved

All other names are the property of their respective owners.

STMicroelectronics GROUP OF COMPANIES
Australia - Brazil - China - Finland - France - Germany - Hong Kong - India - Italy - Japan - Malaysia - Malta - Morocco -
Singapore - Spain - Sweden - Switzerland - United Kingdom - U.S.A.

<http://www.st.com>