

# MRF158



## The Broadband RF TMOS® Line 2W, 500MHz, 28V

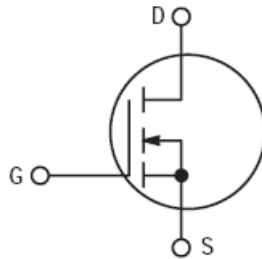
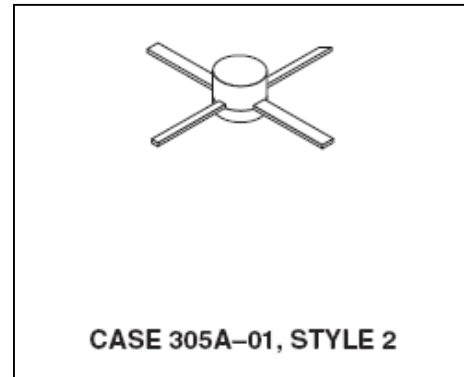
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Designed for wideband large signal amplifier and oscillator applications to 500MHz

N-Channel enhancement mode

- Guaranteed 28 volt, 500 MHz performance  
Output power = 2.0 watts  
Minimum gain = 16 dB (Min.)  
Efficiency = 55% (Typ.)
- Facilitates manual gain control, ALC and modulation techniques
- 100% tested for load mismatch at all phase angles with 30:1 VSWR
- Excellent thermal stability ideally suited for Class A operation

### Product Image



### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain-Source Voltage	$V_{DSS}$	65	Vdc
Drain-Gate Voltage ( $R_{GS} = 1.0 \text{ M}\Omega$ )	$V_{DGR}$	65	Vdc
Gate-Source Voltage	$V_{GS}$	$\pm 20$	Vdc
Drain Current — Continuous	$I_D$	0.5	Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	8.0 45	Watts $\text{mW}/^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-65 to +150	$^\circ\text{C}$
Operating Junction Temperature	$T_J$	200	$^\circ\text{C}$

### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	13.2	$^\circ\text{C}/\text{W}$

**NOTE — CAUTION** — MOS devices are susceptible to damage from electrostatic charge. Reasonable precautions in handling and packaging MOS devices should be observed.

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### ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
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#### OFF CHARACTERISTICS

Drain-Source Breakdown Voltage (V <sub>GS</sub> = 0, I <sub>D</sub> = 1.0 mA)	V <sub>(BR)DSS</sub>	65	—	—	Vdc
Zero Gate Voltage Drain Current (V <sub>DS</sub> = 28 V, V <sub>GS</sub> = 0)	I <sub>DSS</sub>	—	—	0.5	mAdc
Gate-Source Leakage Current (V <sub>GS</sub> = 20 V, V <sub>DS</sub> = 0)	I <sub>GSS</sub>	—	—	1.0	μAdc

#### ON CHARACTERISTICS

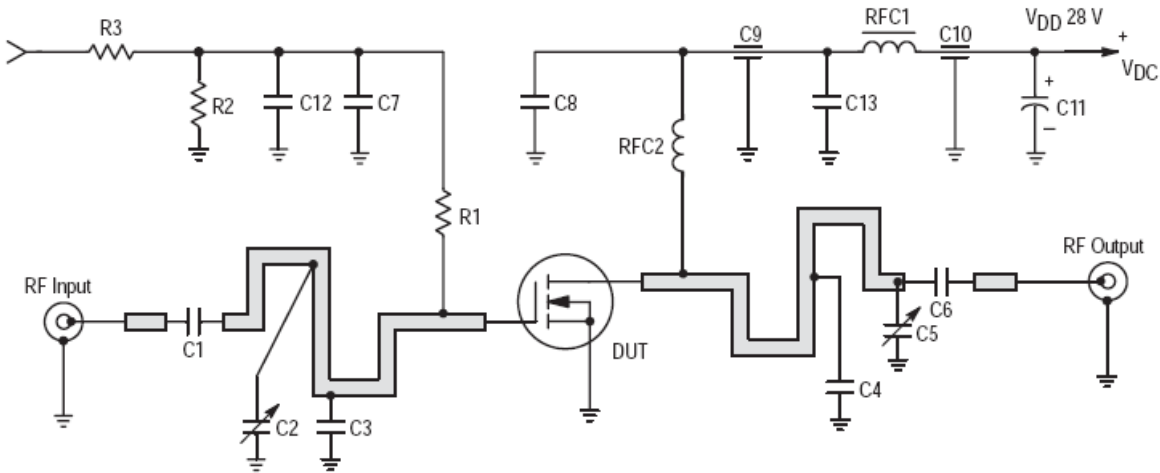
Gate Threshold Voltage (I <sub>D</sub> = 10 mA, V <sub>DS</sub> = 10 V)	V <sub>GS(th)</sub>	2.0	4.0	5.0	Vdc
Forward Transconductance (V <sub>DS</sub> = 10 V, I <sub>D</sub> = 100 mA)	g <sub>fs</sub>	80	110	—	mmhos

#### DYNAMIC CHARACTERISTICS

Input Capacitance (V <sub>DS</sub> = 28 V, V <sub>GS</sub> = 0, f = 1.0 MHz)	C <sub>iss</sub>	—	3.0	—	pF
Output Capacitance (V <sub>DS</sub> = 28 V, V <sub>GS</sub> = 0, f = 1.0 MHz)	C <sub>oss</sub>	—	4.0	—	pF
Reverse Transfer Capacitance (V <sub>DS</sub> = 28 V, V <sub>GS</sub> = 0, f = 1.0 MHz)	C <sub>rss</sub>	—	0.45	—	pF

#### FUNCTIONAL CHARACTERISTICS (Figure 1)

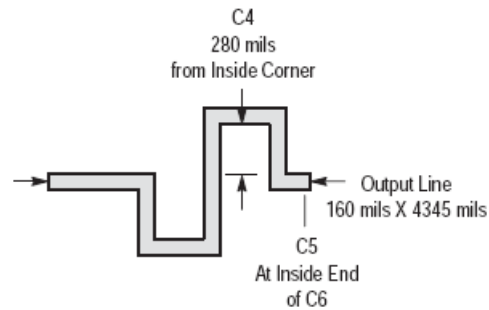
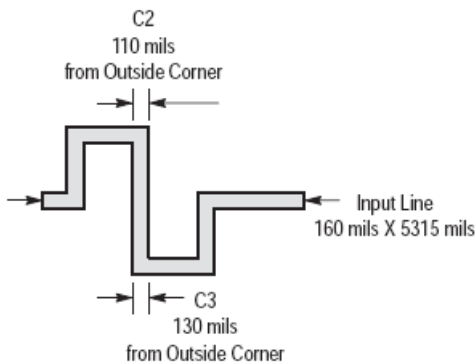
Common Source Power Gain (V <sub>DD</sub> = 28 Vdc, P <sub>out</sub> = 2.0 W, f = 500 MHz, I <sub>DQ</sub> = 25 mA)	G <sub>ps</sub>	16	18	—	dB
Drain Efficiency (Figure 1) (V <sub>DD</sub> = 28 Vdc, P <sub>out</sub> = 2.0 W, f = 500 MHz, I <sub>DQ</sub> = 25 mA)	η	50	55	—	%
Electrical Ruggedness (Figure 1) (V <sub>DD</sub> = 28 Vdc, P <sub>out</sub> = 2.0 W, f = 500 MHz, I <sub>DQ</sub> = 25 mA, VSWR 30:1 at all Phase Angles)	ψ	No Degradation in Output Power			
Series Equivalent Input Impedance (V <sub>DD</sub> = 28 V, P <sub>out</sub> = 2.0 W, f = 500 MHz, I <sub>DQ</sub> = 25 mA)	Z <sub>in</sub>	—	5.9 - j19.4	—	Ohms
Series Equivalent Output Impedance (V <sub>DD</sub> = 28 V, P <sub>out</sub> = 2.0 W, f = 500 MHz, I <sub>DQ</sub> = 25 mA)	Z <sub>out</sub>	—	14.5 - j29	—	Ohms



- C1, C6, C12    270 pF, Chip Capacitors
- C2, C5        1–10 pF, Johanson Trimmer Capacitors
- C3            30 pF, 100 mil ATC Chip Capacitor
- C4            3.9 pF, 100 mil ATC Chip Capacitor
- C7, C8        0.1 μF, Blue Capacitors
- C9, C10       680 pF, Feed Through Capacitors
- C11           50 μF, 50 V Electrolytic Capacitor
- C13           240 pF, 100 mil ATC Chip Capacitor

- R1            150 Ω, 1/2 Watt
- R2            10 kΩ, 1/2 Watt
- R3            1 kΩ, 1/2 Watt
- RFC1        Ferroxcube VK200–19/4B
- RFC2        8 Turns, #20 AWG, Enameled, ID 110 mils

Board Material — 0.062", Teflon® Fiberglass, 1 oz.,  
Copper clad both sides,  $\epsilon_r = 2.55$



NOTE: Due to variation in Chip Capacitor values and board material, these are approximate positions.

Figure 1. MRF158 500 MHz Test Circuit

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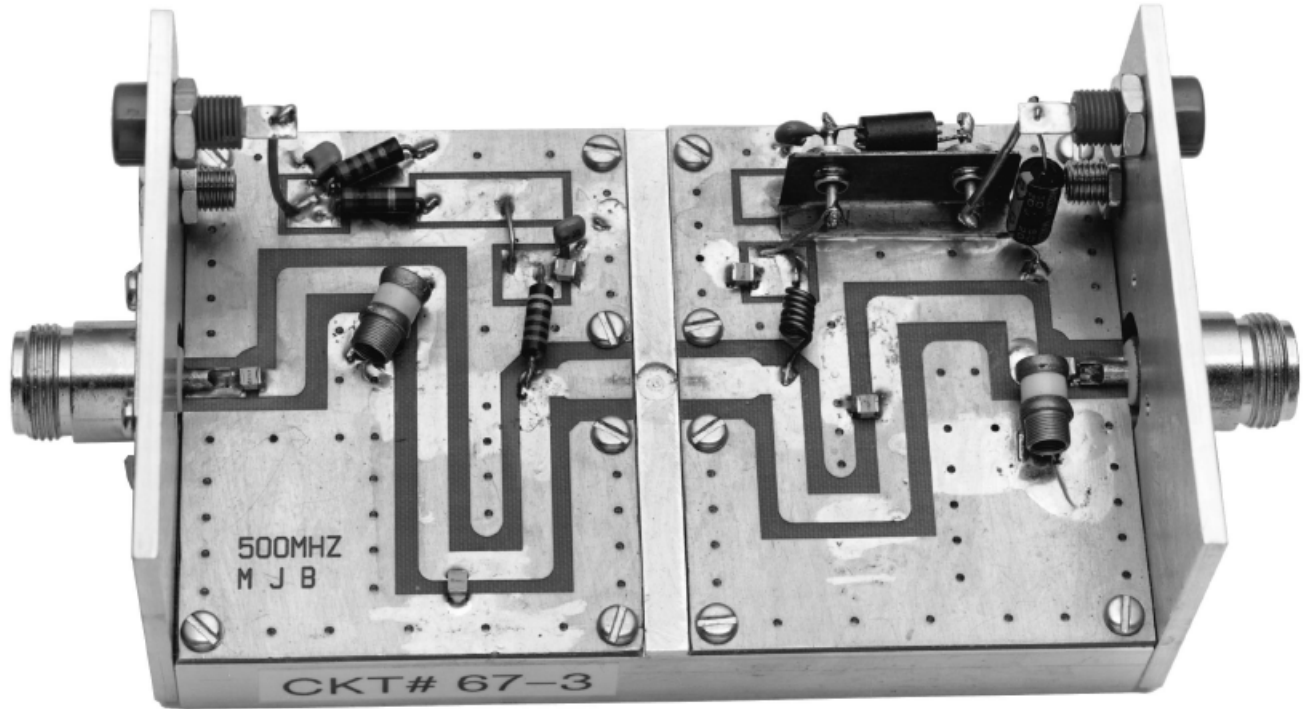


Figure 2. MRF158 Broadband Test Fixture

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### TYPICAL CHARACTERISTICS

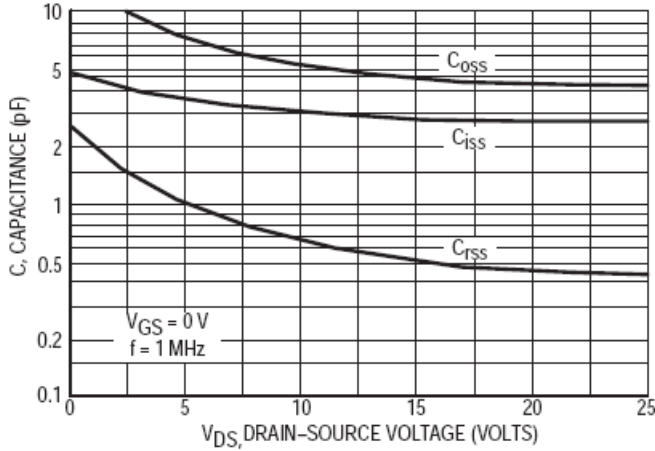


Figure 3. Capacitance versus Drain-Source Voltage

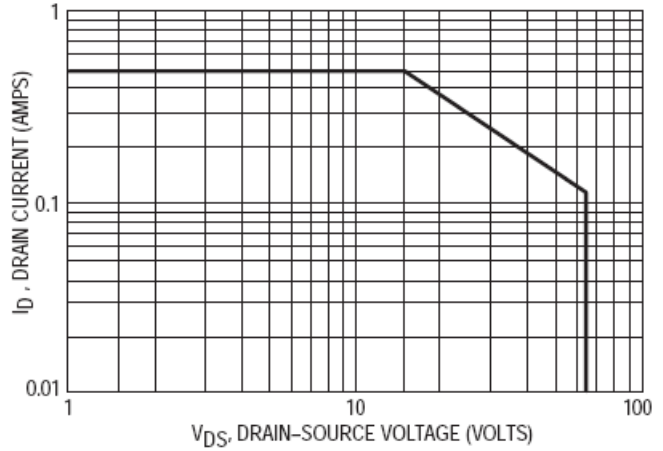


Figure 4. DC Safe Operating Area

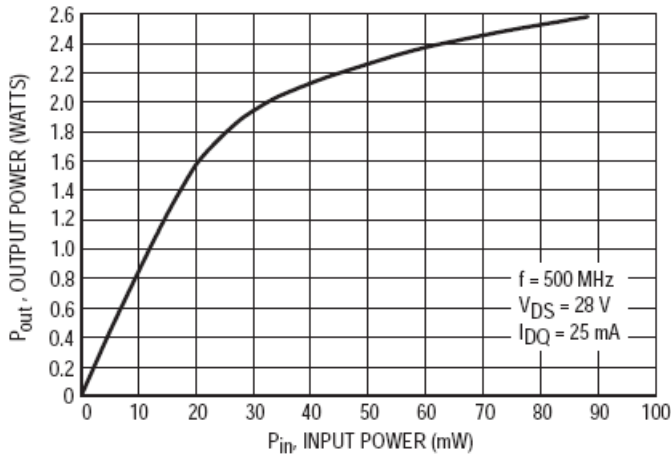


Figure 5. Output Power versus Input Power

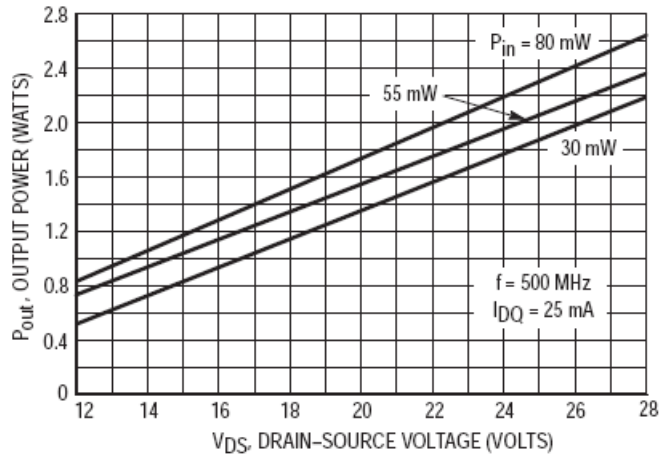


Figure 6. Output Power versus Voltage

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Table 1. Common Source S-Parameters ( $V_{DS} = 13\text{ V}$ ,  $I_D = 100\text{ mA}$ )

f MHz	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
	S <sub>11</sub>	∠	S <sub>21</sub>	∠	S <sub>12</sub>	∠	S <sub>22</sub>	∠
5	1.000	-2	9.45	179	0.000	89	0.965	-1
10	0.997	-4	9.45	177	0.005	92	0.969	-3
15	0.999	-5	9.50	176	0.007	86	0.962	-5
20	0.997	-7	9.45	174	0.009	91	0.958	-6
25	0.997	-9	9.44	173	0.012	88	0.958	-7
30	0.996	-10	9.40	172	0.014	82	0.960	-8
35	0.994	-12	9.38	170	0.016	78	0.956	-10
40	0.993	-14	9.35	169	0.016	77	0.958	-11
45	0.990	-15	9.34	167	0.020	79	0.957	-12
50	0.988	-17	9.29	166	0.021	76	0.957	-14
55	0.985	-19	9.25	165	0.023	77	0.955	-15
60	0.983	-21	9.26	163	0.026	75	0.952	-17
65	0.980	-22	9.19	162	0.028	74	0.947	-18
70	0.977	-24	9.15	160	0.029	74	0.943	-20
75	0.973	-25	9.11	159	0.031	74	0.942	-21
80	0.970	-27	9.04	158	0.034	70	0.935	-22
85	0.967	-29	8.98	157	0.035	71	0.932	-24
90	0.963	-30	8.91	155	0.037	67	0.929	-25
95	0.961	-32	8.90	154	0.039	68	0.924	-26
100	0.957	-33	8.81	153	0.040	67	0.917	-27
105	0.953	-35	8.77	151	0.041	64	0.916	-28
109	0.950	-36	8.69	150	0.042	65	0.914	-30
114	0.943	-38	8.62	149	0.045	63	0.906	-31
119	0.940	-40	8.56	148	0.045	62	0.907	-32
124	0.933	-41	8.49	146	0.049	61	0.901	-33
129	0.933	-43	8.46	145	0.049	60	0.901	-35
134	0.923	-44	8.37	144	0.052	59	0.896	-36
139	0.921	-45	8.29	143	0.052	58	0.890	-37
144	0.917	-47	8.22	142	0.055	57	0.885	-39
149	0.913	-48	8.16	140	0.055	55	0.878	-40

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f MHz	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
	S <sub>11</sub>	∠	S <sub>21</sub>	∠	S <sub>12</sub>	∠	S <sub>22</sub>	∠
154	0.911	-50	8.11	140	0.057	53	0.874	-41
159	0.905	-51	8.02	138	0.059	54	0.868	-42
164	0.902	-52	7.94	137	0.059	53	0.863	-43
169	0.896	-54	7.87	136	0.062	52	0.856	-44
174	0.893	-55	7.79	135	0.063	50	0.851	-45
179	0.890	-56	7.71	134	0.062	50	0.846	-46
184	0.882	-58	7.64	133	0.065	48	0.845	-47
189	0.881	-59	7.59	132	0.065	47	0.840	-48
194	0.874	-60	7.53	131	0.066	47	0.834	-49
199	0.868	-61	7.43	130	0.067	47	0.828	-50
204	0.864	-62	7.36	129	0.068	46	0.829	-51
209	0.861	-63	7.31	128	0.070	45	0.824	-52
214	0.856	-65	7.24	127	0.070	44	0.820	-53
219	0.853	-66	7.17	126	0.070	43	0.813	-54
224	0.848	-67	7.10	125	0.072	41	0.806	-55
229	0.847	-68	7.02	124	0.074	41	0.803	-56
234	0.841	-69	6.94	124	0.075	40	0.800	-57
239	0.839	-70	6.92	122	0.074	39	0.789	-58
244	0.832	-71	6.80	122	0.076	40	0.783	-59
249	0.828	-72	6.73	121	0.077	38	0.780	-60
254	0.825	-73	6.68	120	0.077	39	0.778	-60
259	0.820	-74	6.60	119	0.078	36	0.772	-61
264	0.816	-75	6.54	118	0.078	35	0.769	-62
269	0.813	-76	6.48	117	0.078	36	0.765	-63
274	0.810	-77	6.42	117	0.079	34	0.765	-64
279	0.806	-78	6.34	116	0.080	35	0.762	-64
284	0.799	-79	6.29	115	0.080	34	0.757	-65
289	0.800	-80	6.23	114	0.081	31	0.756	-66
294	0.795	-81	6.18	113	0.081	33	0.753	-67
299	0.789	-82	6.12	113	0.084	31	0.750	-67
304	0.791	-83	6.07	112	0.082	31	0.742	-68
308	0.790	-84	5.99	111	0.084	30	0.742	-69
313	0.787	-85	5.95	110	0.084	29	0.737	-70

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	S <sub>11</sub>	∠	S <sub>21</sub>	∠	S <sub>12</sub>	∠	S <sub>22</sub>	∠
318	0.784	-85	5.88	109	0.083	30	0.729	-70
323	0.779	-86	5.80	109	0.084	28	0.726	-71
328	0.778	-87	5.77	108	0.085	27	0.723	-72
333	0.773	-88	5.69	107	0.085	28	0.720	-72
338	0.771	-89	5.64	107	0.084	26	0.716	-73
343	0.766	-89	5.60	106	0.086	25	0.716	-74
348	0.766	-90	5.55	106	0.086	25	0.712	-74
353	0.763	-91	5.50	105	0.086	24	0.708	-75
358	0.761	-92	5.43	104	0.086	24	0.708	-75
363	0.761	-93	5.41	104	0.086	24	0.706	-76
368	0.755	-94	5.35	103	0.086	23	0.702	-77
373	0.753	-94	5.29	102	0.087	23	0.704	-77
378	0.752	-95	5.25	101	0.086	23	0.700	-78
383	0.750	-96	5.20	101	0.087	22	0.697	-79
388	0.747	-96	5.15	100	0.089	21	0.692	-79
393	0.742	-97	5.08	100	0.087	21	0.693	-80
398	0.741	-98	5.04	99	0.088	20	0.689	-81
403	0.743	-98	5.01	98	0.088	20	0.684	-81
408	0.740	-99	4.97	98	0.088	19	0.682	-81
413	0.734	-100	4.90	97	0.089	19	0.682	-82
418	0.738	-100	4.87	97	0.088	18	0.677	-83
423	0.733	-101	4.82	96	0.089	18	0.676	-83
428	0.735	-102	4.80	96	0.089	17	0.674	-84
433	0.731	-102	4.74	95	0.088	16	0.672	-84
438	0.732	-103	4.70	94	0.088	17	0.673	-85
443	0.728	-104	4.67	94	0.089	16	0.670	-85
448	0.729	-105	4.64	93	0.090	16	0.671	-86
453	0.727	-105	4.59	93	0.088	16	0.668	-86
458	0.723	-105	4.56	92	0.089	15	0.668	-87
463	0.721	-106	4.50	91	0.088	15	0.668	-87
468	0.720	-107	4.46	91	0.088	15	0.665	-87
473	0.719	-107	4.42	90	0.089	13	0.662	-88
478	0.717	-107	4.38	90	0.089	13	0.662	-89
483	0.717	-108	4.35	89	0.088	13	0.658	-89

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	S <sub>11</sub>	∠	S <sub>21</sub>	∠	S <sub>12</sub>	∠	S <sub>22</sub>	∠
488	0.715	-109	4.32	89	0.088	13	0.660	-89
493	0.714	-109	4.28	88	0.090	13	0.655	-90
498	0.714	-110	4.25	88	0.090	12	0.655	-91
503	0.713	-110	4.22	87	0.089	12	0.652	-91
507	0.712	-111	4.17	87	0.090	11	0.650	-91
512	0.711	-111	4.15	86	0.089	11	0.649	-92
517	0.706	-112	4.11	86	0.090	11	0.650	-92
522	0.705	-112	4.07	85	0.089	10	0.650	-93
527	0.706	-113	4.07	85	0.089	10	0.648	-93
532	0.705	-113	4.02	84	0.088	10	0.649	-93
537	0.704	-114	4.00	84	0.088	9	0.645	-94
542	0.704	-114	3.95	83	0.089	9	0.646	-94
547	0.704	-115	3.93	82	0.087	10	0.646	-95
552	0.704	-116	3.90	82	0.090	8	0.645	-95
557	0.702	-116	3.87	82	0.089	8	0.646	-96
562	0.699	-117	3.83	81	0.088	8	0.646	-96
567	0.699	-117	3.80	81	0.089	8	0.641	-96
572	0.700	-117	3.76	80	0.088	7	0.640	-97
577	0.699	-118	3.74	80	0.087	7	0.640	-97
582	0.698	-118	3.70	80	0.088	7	0.641	-98
587	0.699	-118	3.69	79	0.087	7	0.637	-98
592	0.697	-119	3.67	79	0.088	6	0.638	-98
597	0.698	-119	3.64	78	0.088	6	0.633	-99
602	0.698	-119	3.62	78	0.087	6	0.638	-99
607	0.695	-120	3.58	77	0.087	6	0.637	-99
612	0.696	-120	3.57	77	0.087	6	0.637	-100
617	0.694	-121	3.54	76	0.086	5	0.636	-100
622	0.695	-121	3.52	76	0.087	5	0.635	-100
627	0.692	-121	3.48	75	0.088	5	0.637	-101
632	0.691	-122	3.46	75	0.085	4	0.634	-101
637	0.691	-122	3.44	74	0.087	4	0.641	-102
642	0.689	-123	3.41	74	0.087	3	0.637	-102
647	0.687	-123	3.38	74	0.087	3	0.634	-103
652	0.689	-124	3.36	73	0.085	3	0.636	-103

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## The Broadband RF TMOS® Line 2W, 500MHz, 28V

M/A-COM Products  
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Table 1. Common Source S-Parameters ( $V_{DS} = 13\text{ V}$ ,  $I_D = 100\text{ mA}$ ) (continued)

f MHz	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
	S <sub>11</sub>	∠	S <sub>21</sub>	∠	S <sub>12</sub>	∠	S <sub>22</sub>	∠
657	0.686	-124	3.34	73	0.086	1	0.635	-103
662	0.688	-125	3.30	72	0.086	3	0.634	-104
667	0.689	-125	3.28	72	0.086	2	0.634	-104
672	0.693	-125	3.27	72	0.086	2	0.631	-104
677	0.687	-126	3.24	71	0.086	1	0.632	-104
682	0.689	-126	3.22	71	0.083	1	0.629	-105
687	0.687	-126	3.20	70	0.083	1	0.630	-105
692	0.686	-127	3.17	70	0.083	1	0.630	-105
697	0.690	-127	3.16	70	0.083	0	0.630	-106
702	0.687	-127	3.14	69	0.084	0	0.627	-106
706	0.688	-128	3.12	69	0.083	1	0.630	-106
711	0.685	-128	3.10	68	0.083	0	0.632	-107
716	0.686	-128	3.08	68	0.085	0	0.636	-107
721	0.688	-128	3.08	68	0.084	-1	0.634	-107
726	0.685	-129	3.05	67	0.083	0	0.634	-108
731	0.685	-130	3.02	67	0.083	-1	0.634	-108
736	0.684	-130	3.01	66	0.083	-1	0.635	-108
741	0.680	-130	2.98	66	0.082	-1	0.631	-109
746	0.681	-130	2.97	65	0.083	-2	0.636	-109
751	0.682	-131	2.96	65	0.082	-2	0.631	-110
756	0.683	-131	2.93	65	0.082	-2	0.632	-109
761	0.681	-132	2.90	64	0.082	-1	0.630	-110
766	0.683	-132	2.89	64	0.083	-3	0.632	-110
771	0.684	-132	2.87	64	0.082	-3	0.631	-110
776	0.682	-133	2.85	63	0.081	-4	0.628	-111
781	0.684	-133	2.85	63	0.080	-3	0.630	-111
786	0.686	-133	2.83	63	0.079	-4	0.629	-111
791	0.684	-134	2.81	62	0.080	-3	0.632	-112
796	0.685	-134	2.79	62	0.080	-4	0.631	-112
801	0.683	-134	2.77	62	0.079	-4	0.634	-112
806	0.685	-134	2.75	61	0.079	-2	0.632	-112
811	0.683	-135	2.75	61	0.078	-4	0.635	-113
816	0.684	-135	2.73	60	0.079	-4	0.637	-113
821	0.683	-135	2.70	60	0.077	-3	0.633	-113
826	0.682	-135	2.69	60	0.078	-5	0.637	-114

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## The Broadband RF TMOS® Line 2W, 500MHz, 28V

M/A-COM Products  
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Table 1. Common Source S-Parameters ( $V_{DS} = 13\text{ V}$ ,  $I_D = 100\text{ mA}$ ) (continued)

f MHz	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
	S <sub>11</sub>	∠	S <sub>21</sub>	∠	S <sub>12</sub>	∠	S <sub>22</sub>	∠
831	0.682	-136	2.67	59	0.077	-4	0.635	-114
836	0.681	-136	2.66	59	0.077	-5	0.638	-114
841	0.681	-136	2.64	58	0.079	-4	0.635	-115
846	0.679	-137	2.63	58	0.078	-4	0.637	-115
851	0.678	-137	2.61	58	0.077	-5	0.634	-115
856	0.682	-137	2.59	57	0.077	-5	0.635	-115
861	0.680	-137	2.59	57	0.077	-4	0.634	-115
866	0.681	-138	2.57	57	0.077	-6	0.635	-116
871	0.682	-138	2.55	56	0.075	-6	0.633	-116
876	0.684	-139	2.54	56	0.075	-5	0.631	-116
881	0.683	-139	2.53	56	0.075	-5	0.635	-117
886	0.681	-139	2.52	55	0.074	-6	0.633	-117
891	0.685	-140	2.50	55	0.074	-6	0.633	-117
896	0.683	-140	2.49	55	0.075	-6	0.638	-117
901	0.680	-140	2.47	54	0.073	-5	0.640	-118
905	0.681	-140	2.46	54	0.074	-7	0.637	-118
910	0.684	-140	2.44	54	0.074	-8	0.639	-118
915	0.683	-141	2.43	53	0.073	-6	0.639	-119
920	0.686	-141	2.42	53	0.074	-6	0.643	-119
925	0.683	-141	2.40	53	0.073	-7	0.641	-119
930	0.684	-141	2.39	52	0.072	-7	0.640	-120
935	0.682	-142	2.38	52	0.073	-6	0.638	-120
940	0.685	-142	2.37	52	0.072	-6	0.639	-120
945	0.683	-142	2.36	51	0.072	-7	0.638	-120
950	0.683	-143	2.34	51	0.071	-7	0.639	-120
955	0.683	-143	2.33	51	0.070	-7	0.638	-120
960	0.683	-143	2.32	51	0.073	-8	0.640	-121
965	0.683	-143	2.31	50	0.070	-8	0.640	-121
970	0.684	-144	2.30	50	0.071	-7	0.643	-121
975	0.684	-144	2.28	50	0.069	-8	0.640	-121
980	0.682	-144	2.27	49	0.068	-6	0.641	-122
985	0.685	-144	2.26	49	0.069	-9	0.643	-122
990	0.684	-145	2.25	48	0.067	-8	0.644	-122
995	0.683	-145	2.24	48	0.069	-8	0.644	-123
1000	0.684	-145	2.23	48	0.068	-8	0.643	-123

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## The Broadband RF TMOS® Line 2W, 500MHz, 28V

M/A-COM Products  
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Table 2. Common Source S-Parameters ( $V_{DS} = 28\text{ V}$ ,  $I_D = 100\text{ mA}$ )

f MHz	S11		S21		S12		S22	
	S11	$\phi$	S21	$\phi$	S12	$\phi$	S22	$\phi$
5	1.002	-1	7.98	179	0.001	80	0.966	-1
10	0.999	-3	7.99	178	0.003	105	0.969	-2
15	0.999	-4	8.03	176	0.005	87	0.962	-3
20	0.998	-6	7.99	175	0.007	72	0.959	-4
25	0.999	-7	8.00	174	0.008	82	0.959	-5
30	0.997	-9	7.97	173	0.010	89	0.962	-6
35	0.999	-10	7.95	172	0.012	85	0.961	-7
40	0.996	-12	7.94	170	0.014	74	0.962	-8
45	0.994	-13	7.95	169	0.015	77	0.960	-9
50	0.991	-15	7.91	168	0.017	79	0.959	-10
55	0.990	-16	7.88	167	0.017	83	0.959	-11
60	0.988	-18	7.91	165	0.021	77	0.957	-12
65	0.989	-19	7.85	164	0.020	76	0.957	-13
70	0.983	-20	7.83	163	0.022	74	0.954	-15
75	0.981	-22	7.80	162	0.025	78	0.952	-16
80	0.980	-23	7.76	161	0.026	73	0.948	-17
85	0.979	-25	7.72	160	0.026	72	0.946	-18
90	0.977	-26	7.67	158	0.029	72	0.944	-19
95	0.973	-28	7.68	157	0.030	68	0.939	-19
100	0.970	-29	7.62	156	0.031	68	0.934	-20
105	0.970	-30	7.60	155	0.031	68	0.932	-21
109	0.967	-32	7.54	154	0.034	66	0.931	-22
114	0.961	-33	7.49	153	0.034	67	0.926	-23
119	0.960	-34	7.46	152	0.036	66	0.925	-24
124	0.956	-36	7.42	150	0.038	65	0.923	-25
129	0.954	-37	7.41	149	0.039	65	0.923	-26
134	0.948	-38	7.35	148	0.041	63	0.920	-27
139	0.946	-40	7.29	147	0.042	61	0.916	-28
144	0.944	-41	7.25	146	0.044	61	0.913	-29
149	0.939	-42	7.20	145	0.044	60	0.909	-30
154	0.939	-43	7.17	144	0.046	60	0.904	-31
159	0.935	-45	7.11	143	0.046	58	0.900	-32
164	0.932	-46	7.06	142	0.048	57	0.897	-33
169	0.928	-47	7.01	141	0.049	59	0.891	-34
174	0.927	-48	6.94	140	0.049	55	0.885	-34

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## The Broadband RF TMOS® Line 2W, 500MHz, 28V

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Table 2. Common Source S-Parameters ( $V_{DS} = 28\text{ V}$ ,  $I_D = 100\text{ mA}$ )

f MHz	S11		S21		S12		S22	
	S <sub>11</sub>	∠	S <sub>21</sub>	∠	S <sub>12</sub>	∠	S <sub>22</sub>	∠
179	0.922	-49	6.89	139	0.051	55	0.882	-35
184	0.918	-51	6.85	138	0.052	54	0.883	-36
189	0.915	-52	6.82	137	0.053	53	0.878	-36
194	0.912	-53	6.78	136	0.053	50	0.874	-37
199	0.904	-54	6.71	135	0.054	52	0.867	-38
204	0.902	-55	6.65	134	0.054	51	0.868	-39
209	0.902	-56	6.62	133	0.056	50	0.866	-39
214	0.898	-58	6.57	132	0.058	50	0.863	-40
219	0.896	-59	6.52	132	0.059	49	0.858	-41
224	0.888	-60	6.47	131	0.059	48	0.850	-42
229	0.887	-61	6.42	130	0.060	46	0.847	-43
234	0.885	-62	6.36	129	0.061	46	0.846	-44
239	0.882	-63	6.35	128	0.062	46	0.837	-45
244	0.876	-64	6.25	127	0.062	45	0.833	-45
249	0.872	-65	6.19	126	0.063	43	0.829	-46
254	0.869	-66	6.15	125	0.064	43	0.828	-47
259	0.867	-67	6.09	125	0.065	43	0.823	-47
264	0.863	-68	6.06	124	0.065	42	0.818	-48
269	0.860	-69	6.01	123	0.065	42	0.816	-48
274	0.856	-70	5.95	122	0.067	41	0.815	-49
279	0.854	-71	5.91	121	0.068	40	0.812	-50
284	0.848	-72	5.87	120	0.068	39	0.809	-50
289	0.849	-73	5.84	120	0.068	38	0.807	-51
294	0.845	-74	5.78	119	0.069	38	0.805	-52
299	0.840	-75	5.73	118	0.070	36	0.800	-53
304	0.839	-75	5.68	117	0.068	37	0.795	-53
308	0.840	-76	5.63	117	0.069	35	0.793	-54
313	0.835	-77	5.59	116	0.071	35	0.790	-55
318	0.832	-78	5.54	115	0.071	35	0.784	-55
323	0.829	-79	5.48	114	0.070	34	0.783	-56
328	0.829	-80	5.45	114	0.072	33	0.778	-56
333	0.825	-81	5.39	113	0.071	33	0.776	-57
338	0.821	-82	5.35	112	0.073	32	0.771	-58

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## The Broadband RF TMOS® Line 2W, 500MHz, 28V

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Table 2. Common Source S-Parameters ( $V_{DS} = 28\text{ V}$ ,  $I_D = 100\text{ mA}$ )

f MHz	S11		S21		S12		S22	
	S <sub>11</sub>	φ	S <sub>21</sub>	φ	S <sub>12</sub>	φ	S <sub>22</sub>	φ
343	0.818	-82	5.31	111	0.072	32	0.770	-58
348	0.816	-83	5.25	111	0.074	30	0.765	-59
353	0.814	-84	5.23	110	0.074	31	0.764	-59
358	0.810	-85	5.18	110	0.073	30	0.764	-59
363	0.810	-85	5.16	109	0.074	30	0.761	-60
368	0.807	-86	5.11	108	0.074	29	0.756	-61
373	0.805	-87	5.07	107	0.075	29	0.760	-61
378	0.801	-88	5.03	107	0.075	27	0.753	-62
383	0.799	-88	4.98	106	0.075	27	0.752	-62
388	0.796	-89	4.94	105	0.074	27	0.748	-63
393	0.796	-90	4.88	105	0.077	26	0.748	-63
398	0.790	-91	4.85	104	0.075	26	0.743	-64
403	0.794	-91	4.82	103	0.076	25	0.739	-64
408	0.789	-92	4.78	103	0.077	26	0.738	-65
413	0.785	-92	4.73	102	0.076	25	0.736	-66
418	0.788	-93	4.70	102	0.076	24	0.732	-66
423	0.783	-94	4.66	101	0.077	24	0.730	-66
428	0.784	-95	4.64	101	0.079	23	0.728	-67
433	0.779	-95	4.60	100	0.078	23	0.727	-67
438	0.779	-96	4.55	99	0.078	22	0.727	-68
443	0.775	-97	4.52	99	0.077	21	0.725	-68
448	0.778	-98	4.51	98	0.078	21	0.725	-69
453	0.776	-98	4.46	98	0.078	21	0.719	-69
458	0.771	-99	4.43	97	0.078	21	0.720	-70
463	0.771	-99	4.39	96	0.079	20	0.723	-70
468	0.769	-100	4.36	95	0.079	19	0.716	-71
473	0.767	-100	4.31	95	0.079	18	0.716	-71
478	0.765	-101	4.28	95	0.078	20	0.716	-72
483	0.764	-101	4.24	94	0.079	19	0.710	-72
488	0.763	-102	4.22	94	0.079	19	0.711	-72
493	0.762	-103	4.18	93	0.079	18	0.709	-73
498	0.760	-103	4.15	93	0.080	17	0.706	-73
503	0.760	-104	4.12	92	0.079	16	0.705	-74
507	0.758	-104	4.10	91	0.079	17	0.701	-74

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## The Broadband RF TMOS® Line 2W, 500MHz, 28V

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Table 2. Common Source S-Parameters ( $V_{DS} = 28\text{ V}$ ,  $I_D = 100\text{ mA}$ ) (continued)

f MHz	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
	S <sub>11</sub>	∠	S <sub>21</sub>	∠	S <sub>12</sub>	∠	S <sub>22</sub>	∠
512	0.758	-105	4.08	91	0.079	16	0.700	-74
517	0.751	-105	4.03	90	0.078	16	0.700	-75
522	0.750	-106	4.00	90	0.080	15	0.700	-75
527	0.753	-106	4.00	89	0.079	16	0.698	-76
532	0.750	-107	3.96	89	0.079	14	0.699	-76
537	0.749	-107	3.94	88	0.079	15	0.696	-76
542	0.748	-108	3.90	87	0.080	13	0.696	-77
547	0.749	-109	3.88	87	0.080	13	0.697	-77
552	0.750	-109	3.85	87	0.079	14	0.693	-78
557	0.747	-110	3.82	86	0.078	13	0.697	-78
562	0.743	-110	3.78	86	0.079	12	0.695	-79
567	0.744	-111	3.75	85	0.079	12	0.689	-79
572	0.742	-111	3.73	85	0.078	11	0.690	-79
577	0.743	-112	3.70	84	0.080	12	0.689	-80
582	0.743	-112	3.67	84	0.080	11	0.691	-80
587	0.742	-112	3.64	83	0.078	11	0.688	-80
592	0.740	-113	3.62	83	0.080	10	0.685	-81
597	0.741	-113	3.61	82	0.078	10	0.682	-81
602	0.739	-114	3.59	82	0.078	10	0.685	-82
607	0.736	-114	3.56	82	0.079	9	0.682	-82
612	0.737	-115	3.53	81	0.077	9	0.684	-82
617	0.735	-115	3.52	81	0.078	10	0.682	-82
622	0.736	-115	3.50	80	0.078	9	0.680	-83
627	0.732	-116	3.47	80	0.078	8	0.681	-83
632	0.733	-117	3.45	79	0.077	8	0.682	-84
637	0.730	-117	3.41	79	0.078	8	0.684	-84
642	0.731	-117	3.40	78	0.077	8	0.683	-85
647	0.728	-118	3.37	78	0.077	7	0.679	-85
652	0.730	-118	3.35	77	0.077	8	0.679	-85
657	0.725	-119	3.32	77	0.077	7	0.679	-85
662	0.725	-119	3.29	76	0.079	6	0.679	-86
667	0.727	-120	3.27	76	0.078	5	0.677	-86
672	0.731	-120	3.26	75	0.077	6	0.676	-86
677	0.727	-120	3.24	75	0.077	5	0.675	-87

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## The Broadband RF TMOS® Line 2W, 500MHz, 28V

M/A-COM Products  
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Table 2. Common Source S-Parameters ( $V_{DS} = 28\text{ V}$ ,  $I_D = 100\text{ mA}$ ) (continued)

f MHz	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
	S <sub>11</sub>	∠	S <sub>21</sub>	∠	S <sub>12</sub>	∠	S <sub>22</sub>	∠
682	0.725	-121	3.21	75	0.077	4	0.673	-87
687	0.726	-121	3.19	74	0.078	6	0.672	-87
692	0.724	-121	3.17	74	0.076	6	0.672	-88
697	0.728	-122	3.17	74	0.075	6	0.672	-88
702	0.724	-122	3.13	73	0.075	5	0.672	-88
706	0.724	-122	3.12	73	0.077	5	0.670	-89
711	0.722	-123	3.10	72	0.077	5	0.674	-89
716	0.722	-123	3.09	72	0.076	4	0.676	-89
721	0.723	-124	3.08	71	0.075	2	0.674	-90
726	0.720	-124	3.05	71	0.075	4	0.672	-90
731	0.719	-124	3.03	70	0.075	4	0.676	-90
736	0.720	-125	3.02	70	0.076	3	0.675	-91
741	0.716	-125	2.99	70	0.075	2	0.672	-91
746	0.718	-126	2.98	69	0.075	3	0.677	-91
751	0.715	-126	2.97	69	0.075	3	0.670	-92
756	0.717	-126	2.94	68	0.075	3	0.673	-92
761	0.716	-127	2.92	68	0.075	2	0.668	-92
766	0.717	-127	2.90	67	0.075	2	0.673	-93
771	0.717	-128	2.88	67	0.073	2	0.669	-93
776	0.714	-128	2.86	67	0.076	1	0.668	-93
781	0.718	-128	2.86	66	0.074	1	0.668	-93
786	0.718	-129	2.85	66	0.073	1	0.670	-94
791	0.718	-129	2.82	66	0.073	1	0.670	-94
796	0.716	-129	2.81	65	0.072	0	0.668	-94
801	0.715	-130	2.79	65	0.073	-1	0.671	-95
806	0.718	-130	2.77	65	0.071	1	0.669	-95
811	0.714	-130	2.77	64	0.072	0	0.672	-95
816	0.714	-130	2.74	64	0.072	0	0.673	-96
821	0.714	-131	2.72	63	0.070	0	0.671	-96
826	0.715	-131	2.71	63	0.073	0	0.675	-96
831	0.713	-131	2.69	63	0.071	0	0.672	-96
836	0.713	-131	2.68	62	0.072	-1	0.672	-97
841	0.712	-132	2.67	62	0.069	0	0.671	-97
846	0.710	-132	2.65	61	0.071	-1	0.672	-97
851	0.708	-132	2.63	61	0.071	-1	0.670	-97

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## The Broadband RF TMOS<sup>®</sup> Line 2W, 500MHz, 28V

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Table 2. Common Source S-Parameters ( $V_{DS} = 28\text{ V}$ ,  $I_D = 100\text{ mA}$ ) (continued)

f MHz	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
	S <sub>11</sub>	∠	S <sub>21</sub>	∠	S <sub>12</sub>	∠	S <sub>22</sub>	∠
856	0.712	-133	2.62	61	0.071	-2	0.669	-98
861	0.710	-133	2.61	61	0.071	-2	0.669	-98
866	0.710	-134	2.59	60	0.071	-2	0.669	-98
871	0.710	-134	2.58	60	0.071	-2	0.669	-98
876	0.713	-134	2.57	59	0.069	-3	0.666	-99
881	0.711	-135	2.56	59	0.068	-3	0.667	-99
886	0.710	-135	2.54	59	0.069	-3	0.666	-99
891	0.711	-135	2.52	58	0.067	-3	0.668	-100
896	0.711	-136	2.52	58	0.070	-2	0.670	-100
901	0.709	-136	2.50	57	0.069	-5	0.669	-101
905	0.711	-136	2.49	57	0.069	-3	0.671	-101
910	0.711	-136	2.47	57	0.068	-4	0.674	-101
915	0.710	-137	2.46	56	0.068	-2	0.673	-101
920	0.712	-137	2.45	56	0.066	-4	0.673	-102
925	0.708	-137	2.42	56	0.067	-4	0.673	-102
930	0.709	-137	2.42	55	0.068	-3	0.673	-102
935	0.709	-138	2.41	55	0.066	-4	0.670	-102
940	0.709	-138	2.40	55	0.066	-2	0.672	-102
945	0.709	-138	2.39	54	0.065	-3	0.672	-103
950	0.708	-139	2.38	54	0.066	-4	0.671	-103
955	0.711	-139	2.36	54	0.065	-5	0.669	-103
960	0.709	-139	2.35	54	0.064	-4	0.672	-103
965	0.708	-140	2.34	53	0.064	-3	0.671	-104
970	0.707	-140	2.33	53	0.065	-5	0.673	-104
975	0.706	-140	2.32	52	0.065	-4	0.671	-104
980	0.707	-140	2.30	52	0.065	-4	0.669	-104
985	0.707	-140	2.29	51	0.064	-6	0.674	-105
990	0.708	-141	2.28	51	0.063	-4	0.674	-105
995	0.708	-141	2.28	51	0.063	-5	0.674	-105
1000	0.710	-141	2.26	50	0.063	-5	0.676	-106

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