

To our customers,

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## Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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# RQA0008RXDQS

Silicon N-Channel MOS FET

REJ03G1326-0100

Rev.1.00

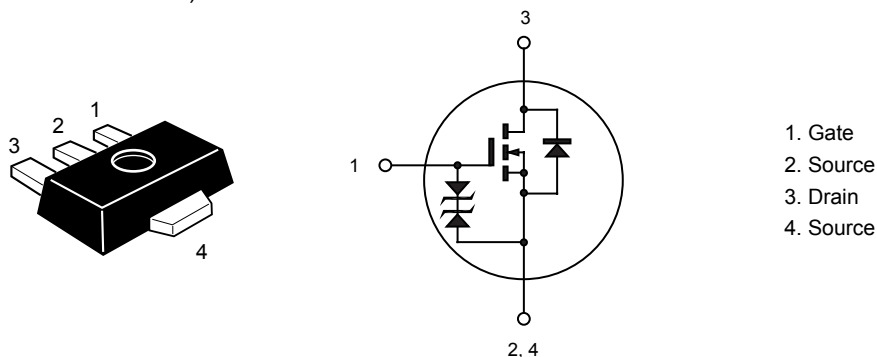
Oct 16, 2006

## Features

- High Output Power, High Gain, High Efficiency  
Pout = +36 dBm, Linear Gain = 18 dB, PAE = 65% (f = 520 MHz)
- Compact package capable of surface mounting

## Outline

RENESAS Package code: PLZZ0004CA-A  
(Package Name : UPAK®)



1. Gate
2. Source
3. Drain
4. Source

Note: Marking is "RX".

\*UPAK is a trademark of Renesas Technology Corp.

## Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	$V_{DSS}$	16	V
Gate to source voltage	$V_{GSS}$	±5	V
Drain current	$I_D$	2.4	A
Channel dissipation	$P_{ch}^{note1}$	10	W
Channel temperature	$T_{ch}$	150	°C
Storage temperature	$T_{stg}$	-55 to +150	°C

Note1: Value at  $T_c = 25^\circ\text{C}$

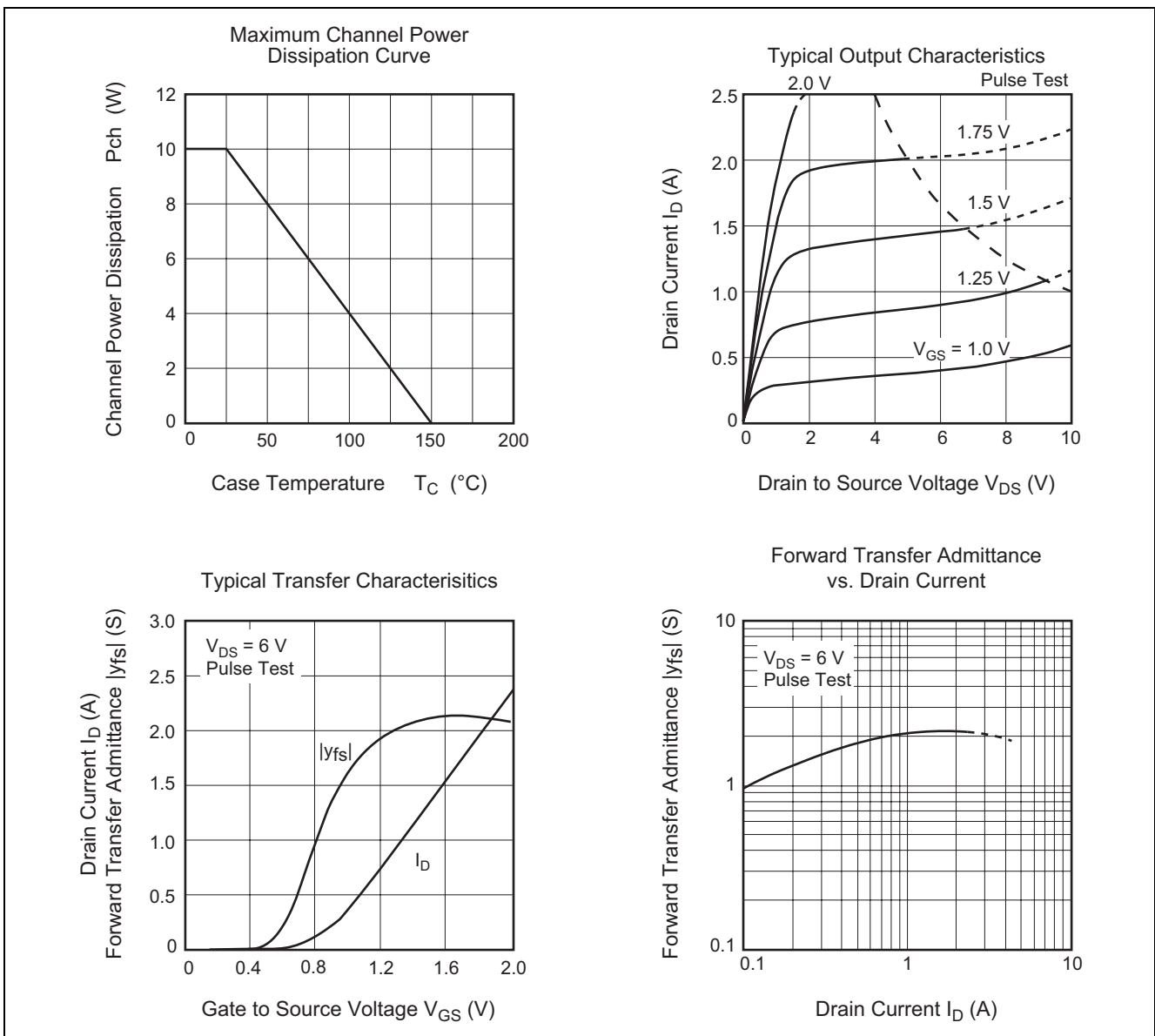
This Device is sensitive to Electro Static Discharge. An Adequate careful handling procedure is requested.

### Electrical Characteristics

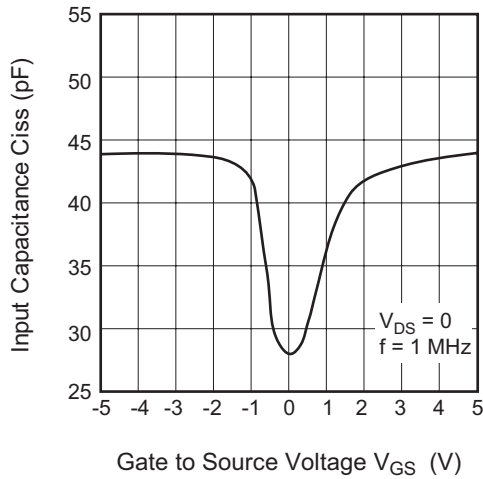
(Ta = 25°C)

Item	Symbol	Min.	Typ	Max.	Unit	Test Conditions
Zero gate voltage drain current	$I_{DSS}$	—	—	10	$\mu A$	$V_{DS} = 16 V, V_{GS} = 0$
Gate to source leak current	$I_{GSS}$	—	—	$\pm 2$	$\mu A$	$V_{GS} = \pm 5 V, V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	0.15	0.4	0.8	V	$V_{DS} = 6 V, I_D = 1 mA$
Forward Transfer Admittance	$ y_{fs} $	1.7	2.4	3.1	S	$V_{DS} = 6 V, I_D = 1.2 A$
Input capacitance	$C_{iss}$	—	44	—	pF	$V_{GS} = 5 V, V_{DS} = 0, f = 1 MHz$
Output capacitance	$C_{oss}$	—	25	—	pF	$V_{DS} = 6 V, V_{GS} = 0, f = 1 MHz$
Reverse transfer capacitance	$C_{rss}$	—	6.0	—	pF	$V_{DG} = 6 V, V_{GS} = 0, f = 1 MHz$
Output Power	Pout	35	36	—	dBm	$V_{DS} = 6 V, I_{DQ} = 400 mA$
		3.16	3.98	—	W	$f = 520 MHz,$
Power Added Efficiency	PAE	50	65	—	%	Pin = +20 dBm (100mW)

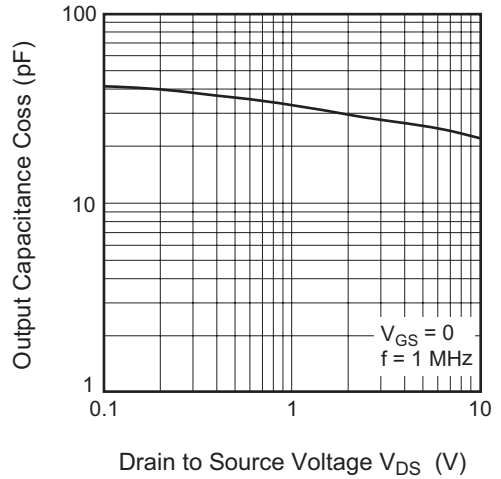
### Main Characteristics



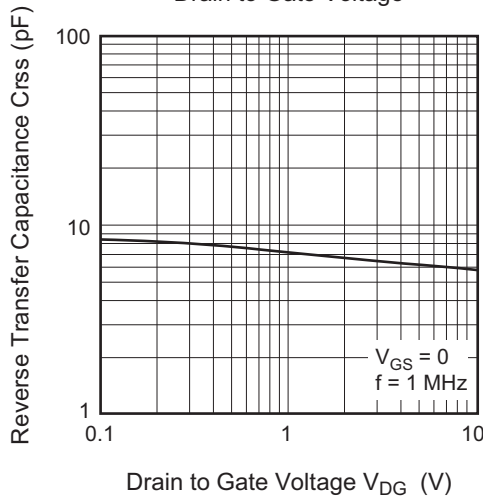
Input Capacitance vs. Gate to Source Voltage



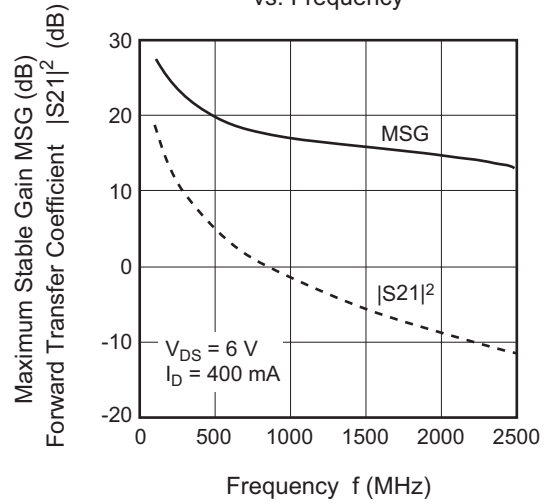
Output Capacitance vs. Drain to Source Voltage



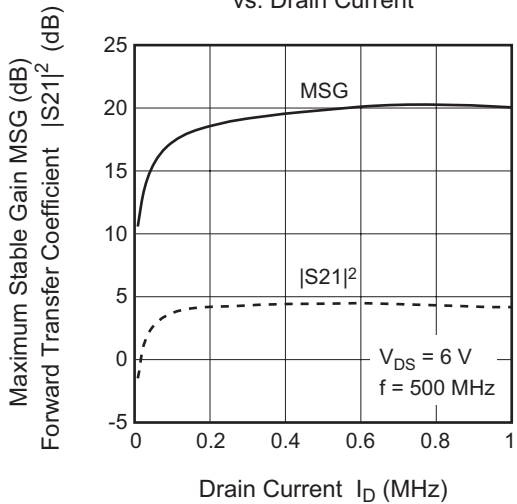
Reverse Transfer Capacitance vs. Drain to Gate Voltage



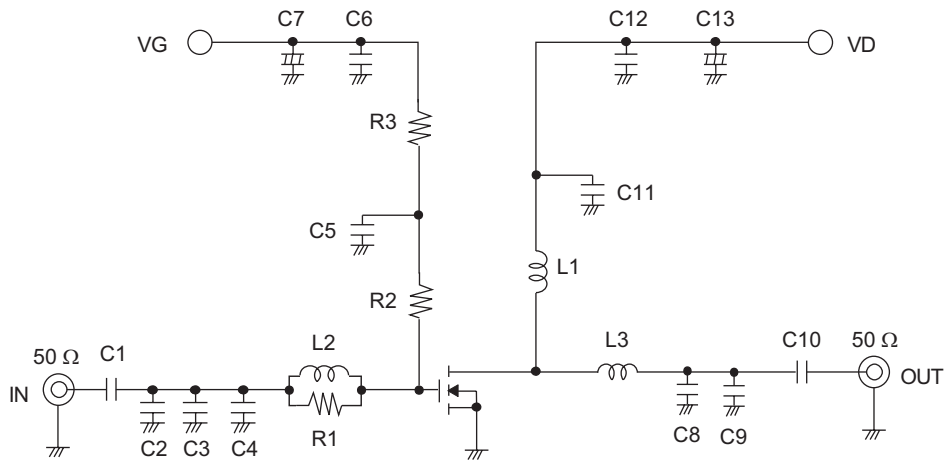
Maximum Stable Gain,  $|S_{21}|^2$  vs. Frequency



Maximum Stable Gain,  $|S_{21}|^2$  vs. Drain Current

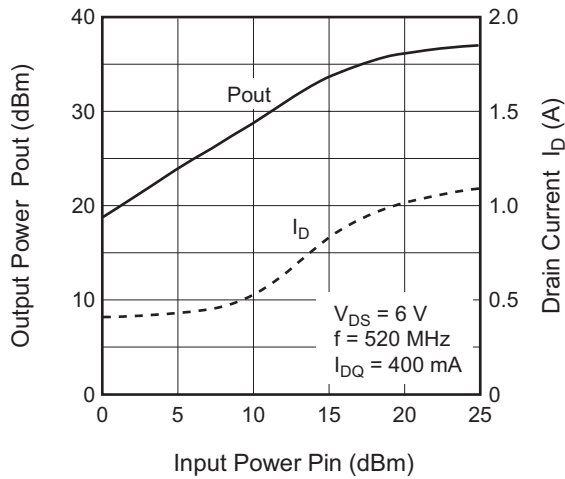


## Evaluation Circuit (f = 520 MHz)

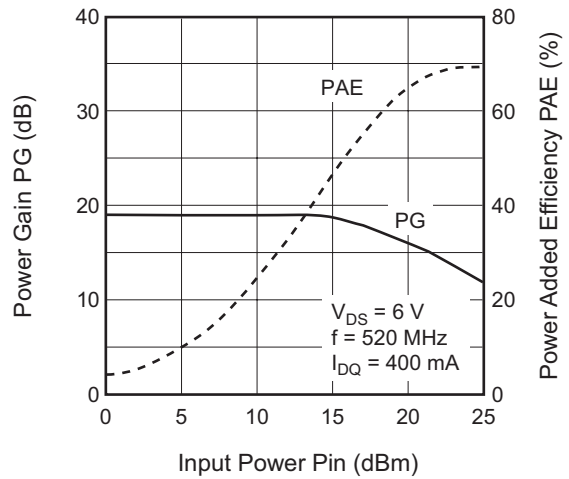


C1, C5, C10, C11:	100 pF Chip Capacitor
C2, C3, C8:	10 pF Chip Capacitor
C4:	5 pF Chip Capacitor
C6, C12:	1000 pF Chip Capacitor
C7, C13:	2.2 $\mu$ F Electrolysis Capacitor
C9:	11 pF Chip Capacitor
L1:	8 Turns D : 0.5 mm, $\phi$ 2.4 mm Enamel Wire
L2:	1.2 nH Chip Inductor
L3:	1.0 nH Chip Inductor
R1:	51 $\Omega$ Chip Resistor
R2:	510 $\Omega$ Chip Resistor
R3:	3.3 k $\Omega$ Chip Resistor

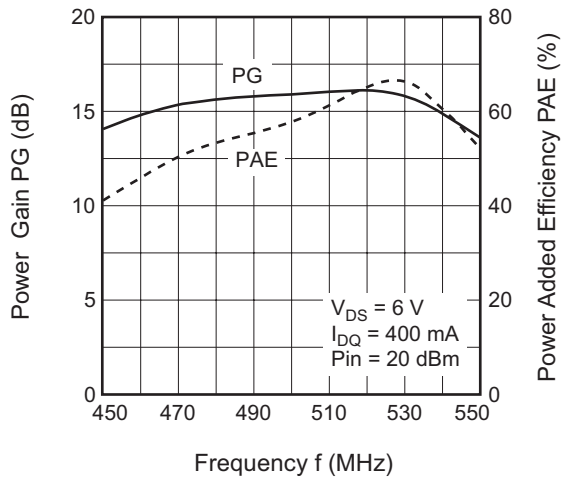
Output Power, Drain Current vs. Input Power



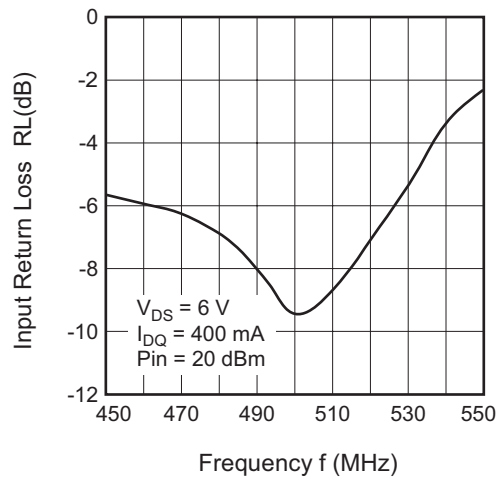
Power Gain, Power Added Efficiency vs. Input Power



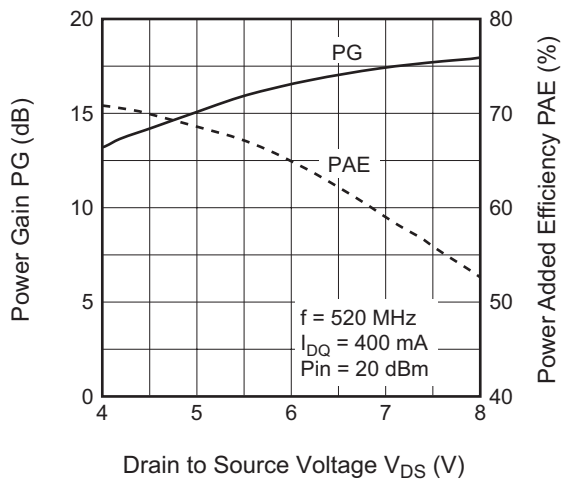
Power Gain, Power Added Efficiency vs. Frequency



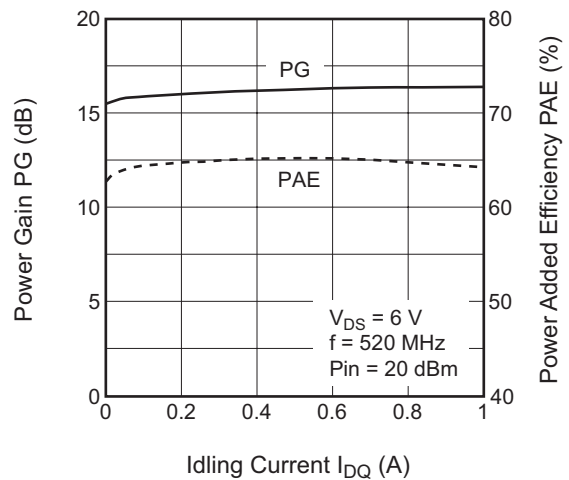
Input Return Loss vs. Frequency



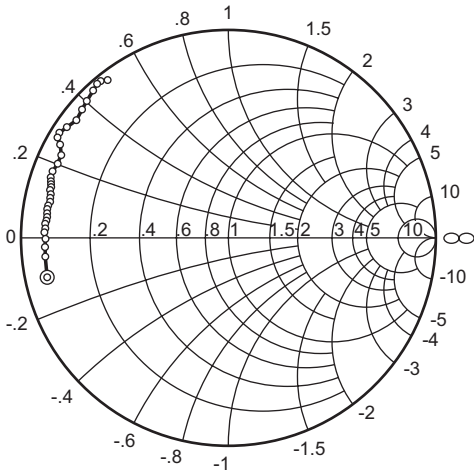
Power Gain, Power Added Efficiency, vs. Drain to Source Voltage



Power Gain, Power Added Efficiency vs. Idling Current

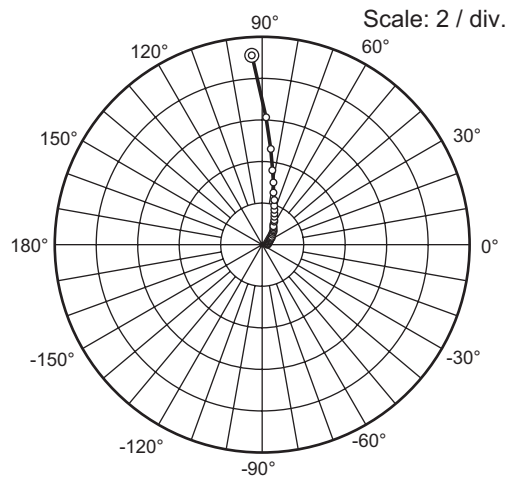


S<sub>11</sub> Parameter vs. Frequency



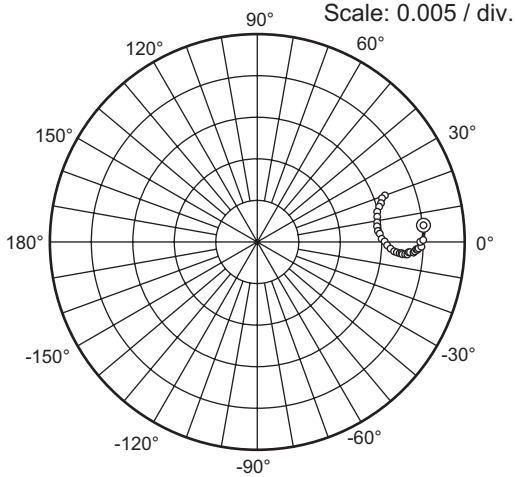
Condition:  $V_{DS} = 6V$ ,  $I_{DQ} = 400\text{ mA}$ ,  $Z_o = 50\ \Omega$   
 100 to 1000 MHz (50 MHz Step)  
 1000 to 2500 MHz (200 MHz Step)

S<sub>21</sub> Parameter vs. Frequency



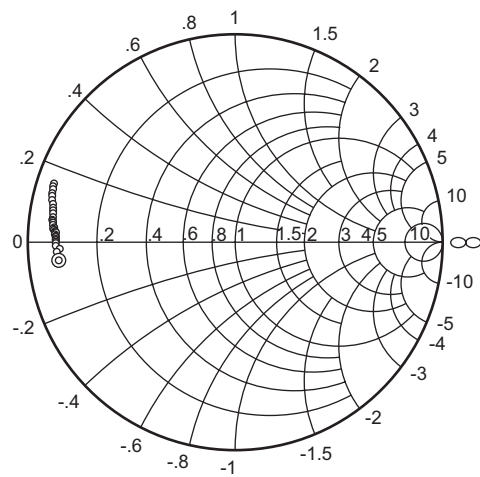
Condition:  $V_{DS} = 6V$ ,  $I_{DQ} = 400\text{ mA}$ ,  $Z_o = 50\ \Omega$   
 100 to 1000 MHz (50 MHz Step)  
 1000 to 2500 MHz (200 MHz Step)

S<sub>12</sub> Parameter vs. Frequency



Condition:  $V_{DS} = 6V$ ,  $I_{DQ} = 400\text{ mA}$ ,  $Z_o = 50\ \Omega$   
 100 to 1000 MHz (50 MHz Step)  
 1000 to 2500 MHz (200 MHz Step)

S<sub>22</sub> Parameter vs. Frequency



Condition:  $V_{DS} = 6V$ ,  $I_{DQ} = 400\text{ mA}$ ,  $Z_o = 50\ \Omega$   
 100 to 1000 MHz (50 MHz Step)  
 1000 to 2500 MHz (200 MHz Step)



## S Parameter

 $(V_{DS} = 6\text{ V}, I_{DQ} = 50\text{ mA}, Z_o = 50\ \Omega)$ 

f (MHz)	S11		S21		S12		S22	
	MAG	ANG (deg.)	MAG	ANG (deg.)	MAG	ANG (deg.)	MAG	ANG (deg.)
100	0.826	-158.1	7.94	92.7	0.050	3.2	0.730	-161.1
150	0.818	-166.9	5.34	85.2	0.049	-2.2	0.737	-166.6
200	0.803	-171.2	3.98	79.7	0.048	-7.2	0.726	-169.1
250	0.808	-174.0	3.11	75.3	0.047	-10.8	0.732	-170.7
300	0.823	-176.2	2.56	71.1	0.046	-14.4	0.756	-171.5
350	0.826	-177.9	2.15	67.2	0.045	-17.2	0.758	-172.1
400	0.831	-179.3	1.85	63.3	0.044	-20.4	0.767	-172.8
450	0.835	-179.6	1.62	59.6	0.043	-23.0	0.773	-173.1
500	0.837	-178.4	1.43	55.9	0.042	-25.5	0.783	-173.5
550	0.842	-177.1	1.28	52.7	0.041	-27.9	0.796	-173.7
600	0.846	-176.0	1.15	49.7	0.039	-30.2	0.800	-174.1
650	0.852	-174.7	1.05	46.8	0.038	-32.3	0.811	-174.5
700	0.852	-173.4	0.95	43.5	0.037	-34.3	0.817	-175.0
750	0.857	-172.0	0.86	40.8	0.035	-36.2	0.826	-175.4
800	0.862	-171.1	0.79	38.1	0.034	-38.2	0.834	-175.8
850	0.870	-169.9	0.73	35.1	0.032	-39.8	0.839	-176.1
900	0.877	-168.5	0.68	32.5	0.031	-41.2	0.848	-176.9
950	0.881	-167.7	0.63	30.1	0.030	-42.4	0.857	-177.3
1000	0.887	-166.9	0.58	27.9	0.028	-43.8	0.861	-178.0
1050	0.889	-165.7	0.54	25.5	0.027	-44.8	0.866	-178.3
1100	0.895	-164.7	0.51	23.3	0.026	-46.0	0.873	-179.0
1150	0.902	-163.8	0.47	21.4	0.025	-46.8	0.880	-179.6
1200	0.901	-162.7	0.45	19.2	0.023	-47.6	0.882	-179.9
1250	0.904	-161.6	0.42	17.1	0.022	-47.8	0.887	-179.2
1300	0.903	-160.3	0.39	15.4	0.021	-48.3	0.891	-178.9
1350	0.899	-159.1	0.37	13.0	0.020	-48.8	0.895	-178.3
1400	0.901	-157.4	0.35	11.0	0.019	-48.7	0.896	-177.9
1450	0.909	-155.6	0.33	8.8	0.018	-48.7	0.901	-177.0
1500	0.922	-154.1	0.31	7.0	0.017	-48.2	0.902	-176.7
1550	0.937	-153.2	0.29	6.0	0.016	-47.9	0.905	-175.8
1600	0.953	-152.5	0.28	4.5	0.015	-47.1	0.910	-175.3
1650	0.960	-151.9	0.27	3.1	0.014	-46.1	0.910	-174.8
1700	0.958	-151.1	0.25	1.7	0.013	-45.1	0.911	-174.0
1750	0.948	-150.1	0.24	0.2	0.013	-43.8	0.916	-173.3
1800	0.941	-148.4	0.23	-1.7	0.012	-41.4	0.920	-172.6
1850	0.938	-146.6	0.22	-3.4	0.011	-39.5	0.919	-172.0
1900	0.936	-144.9	0.21	-4.3	0.011	-37.3	0.921	-171.2
1950	0.940	-143.4	0.20	-5.3	0.010	-33.4	0.924	-170.6
2000	0.945	-142.0	0.19	-6.1	0.010	-30.4	0.926	-170.1
2050	0.950	-140.8	0.19	-7.1	0.009	-26.4	0.929	-169.4
2100	0.951	-139.2	0.18	-8.3	0.009	-22.5	0.933	-168.9
2150	0.955	-137.6	0.17	-10.2	0.009	-18.8	0.937	-168.3
2200	0.959	-135.8	0.16	-11.8	0.009	-14.1	0.935	-167.7
2250	0.962	-134.3	0.16	-13.3	0.009	-9.7	0.936	-167.2
2300	0.972	-133.2	0.15	-14.3	0.009	-5.6	0.939	-166.5
2350	0.976	-132.4	0.15	-15.8	0.009	-1.4	0.942	-165.9
2400	0.975	-131.7	0.14	-16.9	0.009	2.0	0.943	-165.4
2450	0.968	-131.0	0.14	-17.6	0.009	5.8	0.942	-164.8
2500	0.962	-129.9	0.13	-18.2	0.009	8.9	0.944	-164.2

## S Parameter

 $(V_{DS} = 6 \text{ V}, I_{DQ} = 100 \text{ mA}, Z_o = 50 \Omega)$ 

f (MHz)	S11		S21		S12		S22	
	MAG	ANG (deg.)	MAG	ANG (deg.)	MAG	ANG (deg.)	MAG	ANG (deg.)
100	0.864	-164.3	8.68	92.0	0.035	4.0	0.787	-168.2
150	0.856	-171.3	5.81	86.3	0.034	-0.1	0.798	-172.0
200	0.853	-174.7	4.33	82.0	0.034	-4.0	0.781	-174.4
250	0.857	-177.2	3.40	78.3	0.033	-6.4	0.784	-175.4
300	0.860	-179.3	2.81	75.1	0.033	-9.0	0.802	-175.8
350	0.858	179.2	2.38	72.2	0.033	-10.4	0.805	-176.3
400	0.859	178.0	2.06	68.8	0.032	-12.9	0.809	-177.1
450	0.858	176.8	1.82	65.6	0.031	-14.5	0.809	-177.6
500	0.859	175.4	1.62	62.8	0.031	-16.1	0.815	-177.8
550	0.864	174.5	1.46	60.0	0.030	-17.6	0.822	-178.1
600	0.865	173.5	1.33	57.4	0.029	-19.3	0.824	-178.3
650	0.866	172.2	1.21	55.1	0.029	-20.7	0.827	-178.6
700	0.866	171.0	1.11	52.2	0.028	-22.1	0.834	-179.2
750	0.866	169.8	1.02	49.6	0.027	-23.5	0.835	-179.3
800	0.872	168.8	0.94	47.3	0.026	-24.7	0.839	-179.7
850	0.878	167.5	0.88	44.6	0.026	-25.8	0.844	-179.7
900	0.883	166.5	0.82	42.1	0.025	-26.5	0.849	179.7
950	0.888	165.7	0.76	40.0	0.024	-27.2	0.856	179.4
1000	0.893	165.0	0.71	37.9	0.023	-28.1	0.857	178.9
1050	0.896	164.2	0.67	35.8	0.023	-28.6	0.862	178.6
1100	0.898	163.5	0.63	33.6	0.022	-29.3	0.865	178.2
1150	0.903	162.6	0.59	31.5	0.021	-29.7	0.870	177.9
1200	0.905	161.6	0.57	29.8	0.020	-29.8	0.871	177.3
1250	0.903	160.4	0.53	27.6	0.019	-29.8	0.875	176.8
1300	0.900	159.2	0.50	25.6	0.019	-29.9	0.879	176.6
1350	0.898	157.6	0.47	23.6	0.018	-30.1	0.882	176.1
1400	0.904	156.2	0.45	21.4	0.017	-29.4	0.885	175.7
1450	0.914	154.4	0.43	19.4	0.017	-29.2	0.885	175.5
1500	0.927	153.3	0.41	17.6	0.016	-28.2	0.888	174.9
1550	0.944	152.4	0.39	15.8	0.015	-27.2	0.891	174.1
1600	0.958	151.8	0.38	14.9	0.015	-26.1	0.892	173.6
1650	0.963	151.0	0.36	13.1	0.014	-25.0	0.897	173.2
1700	0.964	150.3	0.34	11.6	0.014	-23.7	0.899	172.6
1750	0.954	149.2	0.33	9.8	0.013	-22.7	0.903	172.2
1800	0.948	147.8	0.31	7.8	0.013	-20.2	0.906	171.3
1850	0.943	146.0	0.30	6.3	0.012	-18.7	0.906	170.9
1900	0.938	144.5	0.29	5.0	0.012	-16.9	0.908	170.2
1950	0.939	142.7	0.28	3.8	0.012	-14.3	0.908	169.5
2000	0.944	141.1	0.27	3.0	0.012	-11.5	0.912	169.2
2050	0.951	139.8	0.25	1.7	0.012	-9.2	0.915	168.5
2100	0.955	138.1	0.24	0.3	0.011	-6.2	0.918	167.9
2150	0.964	136.5	0.23	-1.5	0.011	-4.0	0.921	167.3
2200	0.968	134.8	0.23	-3.3	0.011	-1.6	0.922	167.0
2250	0.972	133.5	0.22	-5.1	0.011	0.7	0.926	166.3
2300	0.979	132.6	0.21	-6.4	0.011	3.2	0.924	165.6
2350	0.982	131.8	0.20	-7.9	0.011	5.7	0.929	165.1
2400	0.981	130.9	0.20	-9.3	0.012	7.7	0.929	164.7
2450	0.974	130.4	0.19	-10.3	0.012	10.0	0.931	164.0
2500	0.969	129.4	0.19	-11.1	0.012	11.7	0.931	163.5

## S Parameter

 $(V_{DS} = 6\text{ V}, I_{DQ} = 200\text{ mA}, Z_o = 50\ \Omega)$ 

f (MHz)	S11		S21		S12		S22	
	MAG	ANG (deg.)	MAG	ANG (deg.)	MAG	ANG (deg.)	MAG	ANG (deg.)
100	0.891	-166.7	9.03	92.3	0.026	3.0	0.840	-172.2
150	0.884	-173.4	6.05	87.2	0.026	1.7	0.838	-175.1
200	0.881	-176.7	4.55	83.5	0.025	-1.1	0.824	-176.7
250	0.884	-179.0	3.56	80.6	0.024	-3.1	0.822	-177.8
300	0.888	179.2	2.95	77.7	0.025	-5.0	0.840	-178.2
350	0.883	177.8	2.52	75.3	0.024	-5.3	0.841	-179.0
400	0.887	176.5	2.18	72.4	0.024	-6.9	0.843	-179.4
450	0.884	175.4	1.93	69.8	0.024	-7.8	0.842	-180.0
500	0.882	173.9	1.72	67.0	0.024	-8.7	0.844	179.9
550	0.884	173.1	1.57	64.9	0.023	-9.6	0.848	179.5
600	0.883	172.0	1.43	62.5	0.023	-10.5	0.849	179.3
650	0.884	170.7	1.31	60.4	0.022	-11.1	0.847	179.0
700	0.881	169.5	1.20	58.0	0.022	-12.2	0.853	178.4
750	0.882	168.4	1.11	55.8	0.022	-12.6	0.854	178.3
800	0.884	167.3	1.03	53.6	0.021	-13.0	0.855	177.9
850	0.889	166.0	0.97	51.4	0.021	-13.9	0.859	177.8
900	0.894	164.9	0.91	49.1	0.020	-14.3	0.862	177.2
950	0.899	164.3	0.85	46.9	0.020	-14.1	0.867	177.1
1000	0.902	163.6	0.80	45.2	0.019	-14.5	0.867	177.0
1050	0.904	162.7	0.75	43.0	0.019	-14.7	0.871	176.5
1100	0.908	162.0	0.71	41.1	0.019	-14.8	0.872	175.9
1150	0.909	161.3	0.68	39.3	0.018	-14.5	0.875	175.8
1200	0.909	160.2	0.65	37.4	0.018	-14.4	0.875	175.4
1250	0.907	159.0	0.61	35.4	0.017	-14.1	0.879	174.9
1300	0.905	157.7	0.58	33.6	0.017	-13.6	0.881	174.6
1350	0.900	156.4	0.55	31.4	0.016	-13.3	0.883	174.4
1400	0.906	155.0	0.52	29.2	0.016	-12.7	0.882	174.0
1450	0.918	153.6	0.50	27.4	0.016	-11.8	0.890	173.4
1500	0.932	152.3	0.48	25.7	0.015	-10.9	0.888	173.1
1550	0.946	151.3	0.46	24.0	0.015	-10.0	0.887	172.4
1600	0.959	150.7	0.44	22.9	0.015	-8.9	0.891	172.2
1650	0.967	150.1	0.43	21.4	0.015	-8.0	0.893	171.7
1700	0.964	149.4	0.41	19.6	0.014	-6.8	0.894	171.2
1750	0.956	148.2	0.39	17.8	0.014	-5.4	0.895	170.8
1800	0.949	146.7	0.38	15.8	0.014	-3.6	0.900	169.9
1850	0.942	145.2	0.37	14.2	0.014	-2.6	0.898	169.7
1900	0.938	143.7	0.35	12.9	0.014	-1.5	0.900	169.0
1950	0.936	141.9	0.33	11.9	0.014	0.7	0.902	168.3
2000	0.943	140.3	0.32	10.6	0.013	2.1	0.907	167.9
2050	0.947	138.8	0.31	9.4	0.014	4.2	0.909	167.4
2100	0.957	137.1	0.30	8.0	0.013	6.0	0.912	166.9
2150	0.963	135.7	0.29	6.1	0.014	6.7	0.917	166.4
2200	0.969	134.2	0.28	4.0	0.014	8.5	0.916	165.7
2250	0.972	132.9	0.27	2.3	0.014	9.3	0.918	165.5
2300	0.977	131.9	0.26	1.0	0.014	11.5	0.918	164.7
2350	0.981	131.1	0.25	-0.8	0.014	12.7	0.924	164.5
2400	0.976	130.4	0.25	-2.0	0.014	13.8	0.921	164.0
2450	0.973	129.7	0.24	-3.4	0.014	15.1	0.923	163.2
2500	0.965	128.7	0.23	-4.3	0.015	15.8	0.924	162.6

## S Parameter

 $(V_{DS} = 6 \text{ V}, I_{DQ} = 300 \text{ mA}, Z_o = 50 \Omega)$ 

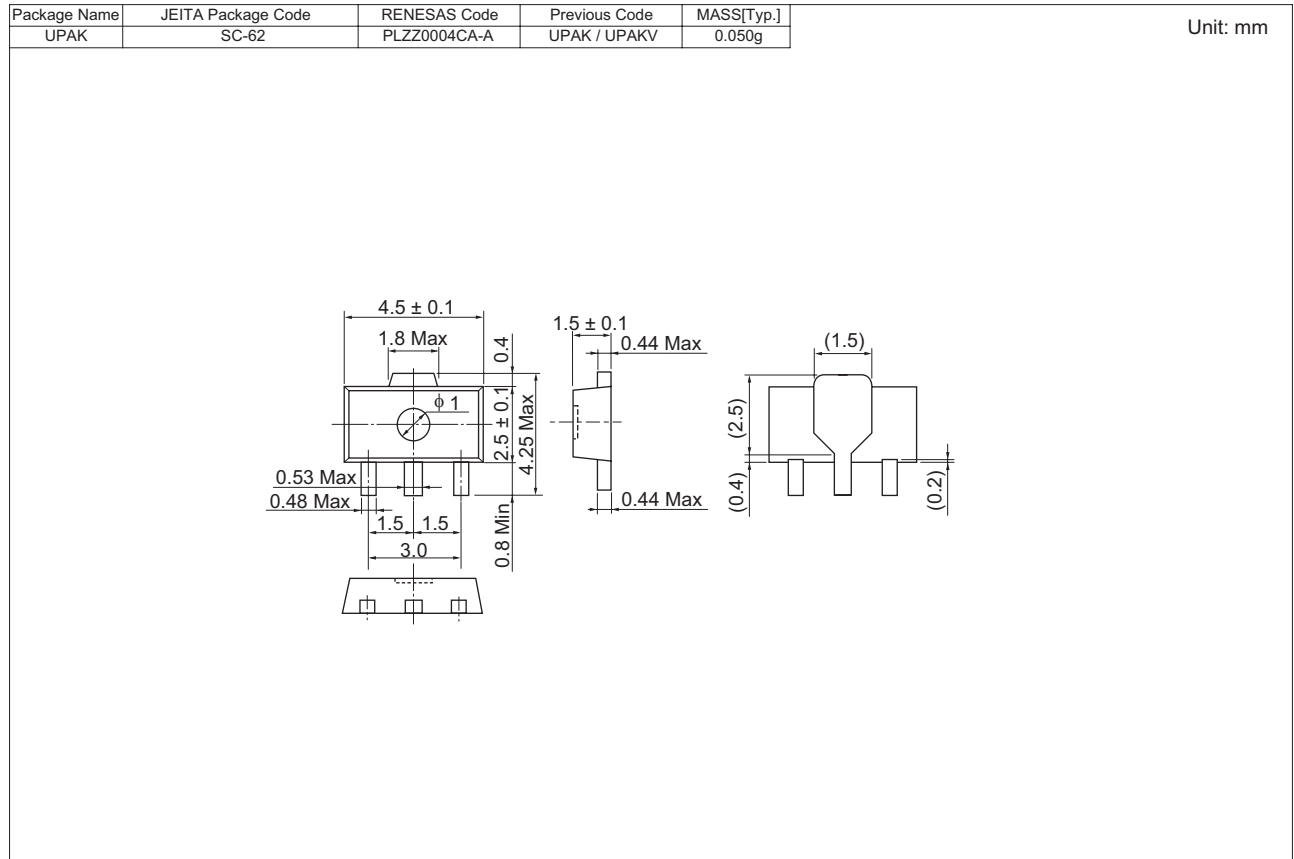
f (MHz)	S11		S21		S12		S22	
	MAG	ANG (deg.)	MAG	ANG (deg.)	MAG	ANG (deg.)	MAG	ANG (deg.)
100	0.905	-167.9	9.11	92.6	0.022	2.7	0.853	-173.6
150	0.895	-174.0	6.13	87.8	0.022	2.2	0.855	-176.1
200	0.895	-177.4	4.59	84.3	0.022	0.2	0.837	-177.5
250	0.896	-179.5	3.62	81.4	0.021	-0.7	0.858	-178.1
300	0.896	178.8	3.00	78.8	0.022	-2.9	0.855	-179.0
350	0.892	177.3	2.56	76.3	0.021	-3.1	0.859	-179.9
400	0.896	176.0	2.22	73.7	0.021	-3.9	0.857	179.9
450	0.894	174.9	1.97	71.3	0.021	-4.9	0.859	179.4
500	0.892	173.7	1.76	68.8	0.021	-5.5	0.857	179.0
550	0.893	172.5	1.60	66.6	0.020	-5.7	0.861	178.7
600	0.892	171.3	1.46	64.5	0.020	-6.3	0.859	178.5
650	0.891	170.2	1.34	62.5	0.020	-6.9	0.861	178.1
700	0.891	168.9	1.23	60.3	0.020	-7.2	0.859	177.9
750	0.893	167.8	1.14	58.2	0.019	-7.4	0.864	177.6
800	0.892	166.8	1.06	56.1	0.019	-8.0	0.866	177.0
850	0.895	165.4	1.00	53.8	0.019	-8.4	0.866	176.9
900	0.902	164.5	0.94	51.8	0.018	-8.2	0.870	176.5
950	0.906	163.7	0.88	49.9	0.018	-7.9	0.874	176.2
1000	0.908	163.1	0.83	48.1	0.018	-8.0	0.873	176.1
1050	0.908	162.3	0.78	46.2	0.017	-7.8	0.876	175.5
1100	0.912	161.7	0.75	44.1	0.017	-7.7	0.878	175.3
1150	0.914	160.7	0.71	42.3	0.017	-7.3	0.881	174.9
1200	0.913	159.8	0.68	40.7	0.017	-7.0	0.879	174.5
1250	0.911	158.6	0.64	38.7	0.016	-6.6	0.881	174.1
1300	0.907	157.4	0.61	36.8	0.016	-6.1	0.884	173.9
1350	0.905	156.1	0.58	35.1	0.016	-5.8	0.885	173.5
1400	0.911	154.4	0.55	33.1	0.016	-4.8	0.885	173.4
1450	0.923	153.0	0.53	31.0	0.015	-3.9	0.887	172.8
1500	0.934	151.7	0.51	29.1	0.015	-2.8	0.887	172.2
1550	0.950	151.0	0.49	27.6	0.015	-1.9	0.888	171.8
1600	0.963	150.3	0.47	26.4	0.015	-1.2	0.891	171.4
1650	0.969	149.6	0.46	24.9	0.015	-0.5	0.891	171.0
1700	0.966	149.1	0.44	23.2	0.015	1.1	0.895	170.5
1750	0.959	147.8	0.42	21.5	0.014	1.9	0.893	169.9
1800	0.950	146.2	0.40	19.3	0.014	3.6	0.898	169.3
1850	0.942	144.8	0.39	17.9	0.014	4.0	0.898	168.8
1900	0.938	143.2	0.38	16.4	0.014	5.3	0.900	168.4
1950	0.937	141.4	0.37	15.2	0.014	7.1	0.902	167.8
2000	0.941	139.8	0.35	14.2	0.014	8.7	0.906	167.4
2050	0.950	138.4	0.34	12.8	0.014	9.5	0.908	166.8
2100	0.957	136.9	0.32	11.5	0.014	10.8	0.911	166.2
2150	0.966	135.2	0.31	9.6	0.015	11.9	0.913	165.8
2200	0.971	133.8	0.30	7.6	0.015	13.3	0.914	165.4
2250	0.973	132.4	0.29	5.8	0.015	14.0	0.912	164.7
2300	0.978	131.5	0.28	4.4	0.015	15.1	0.918	164.1
2350	0.981	130.7	0.28	2.6	0.015	16.2	0.923	163.9
2400	0.980	130.0	0.27	1.2	0.015	17.2	0.920	163.4
2450	0.975	129.4	0.26	0.1	0.016	17.7	0.920	162.8
2500	0.968	128.4	0.25	-1.1	0.016	18.4	0.920	162.2

## S Parameter

 $(V_{DS} = 6\text{ V}, I_{DQ} = 400\text{ mA}, Z_o = 50\ \Omega)$ 

f (MHz)	S11		S21		S12		S22	
	MAG	ANG (deg.)	MAG	ANG (deg.)	MAG	ANG (deg.)	MAG	ANG (deg.)
100	0.910	-168.0	9.14	92.9	0.020	5.5	0.857	-174.0
150	0.902	-174.2	6.17	88.1	0.020	4.5	0.864	-177.0
200	0.900	-177.3	4.62	84.7	0.020	0.8	0.847	-177.9
250	0.900	-179.5	3.64	81.9	0.020	0.1	0.866	-178.6
300	0.900	178.3	3.02	79.3	0.020	-1.6	0.865	-179.6
350	0.898	177.1	2.58	76.9	0.020	-1.7	0.866	180.0
400	0.900	175.8	2.24	74.4	0.020	-2.4	0.864	179.4
450	0.897	174.7	1.98	72.1	0.019	-2.7	0.867	179.1
500	0.895	173.5	1.78	69.6	0.019	-2.9	0.864	178.6
550	0.898	172.3	1.62	67.5	0.019	-3.6	0.869	178.2
600	0.898	171.4	1.48	65.5	0.019	-3.9	0.868	178.1
650	0.897	170.0	1.36	63.5	0.019	-4.0	0.869	177.7
700	0.892	168.8	1.25	61.4	0.018	-4.1	0.867	177.1
750	0.894	167.5	1.16	59.4	0.018	-4.6	0.873	177.1
800	0.896	166.4	1.07	57.2	0.018	-4.7	0.872	176.8
850	0.905	165.2	1.01	55.1	0.018	-5.0	0.873	176.5
900	0.905	164.2	0.95	53.1	0.017	-4.7	0.876	176.2
950	0.910	163.5	0.90	51.3	0.017	-4.5	0.880	175.9
1000	0.912	162.8	0.84	49.5	0.017	-4.5	0.878	175.5
1050	0.915	162.2	0.80	47.6	0.017	-3.8	0.878	175.4
1100	0.916	161.5	0.76	45.9	0.017	-3.9	0.882	174.7
1150	0.917	160.7	0.72	43.8	0.016	-3.1	0.882	174.6
1200	0.918	159.7	0.69	42.1	0.016	-3.0	0.882	173.9
1250	0.914	158.5	0.66	40.1	0.016	-2.2	0.885	173.7
1300	0.911	157.1	0.62	38.4	0.016	-1.6	0.886	173.5
1350	0.909	155.7	0.59	36.7	0.015	-1.1	0.886	173.1
1400	0.912	154.2	0.56	34.6	0.015	-0.1	0.888	173.0
1450	0.925	152.7	0.54	32.6	0.015	0.2	0.891	172.4
1500	0.938	151.6	0.52	30.9	0.015	1.4	0.890	172.1
1550	0.952	150.7	0.50	29.4	0.015	2.5	0.889	171.3
1600	0.965	150.1	0.49	28.2	0.015	3.4	0.891	171.0
1650	0.974	149.4	0.47	26.7	0.015	4.2	0.894	170.6
1700	0.971	148.7	0.45	25.0	0.015	5.0	0.893	170.2
1750	0.964	147.6	0.43	23.3	0.015	6.1	0.895	169.6
1800	0.955	146.2	0.42	21.1	0.015	7.2	0.898	169.2
1850	0.945	144.5	0.40	19.7	0.015	8.0	0.898	168.4
1900	0.940	142.9	0.39	18.4	0.015	8.9	0.900	168.0
1950	0.934	141.3	0.38	17.3	0.015	10.6	0.902	167.3
2000	0.946	139.5	0.36	16.2	0.015	12.0	0.905	167.0
2050	0.952	138.0	0.35	14.9	0.015	12.6	0.908	166.5
2100	0.960	136.7	0.33	13.3	0.015	14.1	0.910	165.9
2150	0.969	134.9	0.32	11.4	0.015	14.7	0.913	165.4
2200	0.973	133.2	0.31	9.3	0.015	15.6	0.913	165.1
2250	0.979	132.3	0.30	7.4	0.015	15.9	0.915	164.6
2300	0.982	131.2	0.29	6.0	0.016	17.4	0.917	163.9
2350	0.983	130.5	0.29	4.4	0.016	18.0	0.918	163.4
2400	0.981	129.8	0.28	3.1	0.016	19.0	0.920	163.1
2450	0.977	129.1	0.27	1.7	0.016	19.5	0.918	162.6
2500	0.967	128.1	0.27	0.5	0.016	19.9	0.921	162.0

## Package Dimensions



## Ordering Information

Part Name	Quantity	Shipping Container
RQA0008RXTL-E	1000 pcs.	$\phi 178$ mm Reel, 12 mm Emboss Taping

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