

# RQA0001DNS

## Silicon N-Channel MOS FET

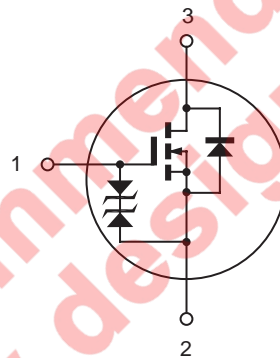
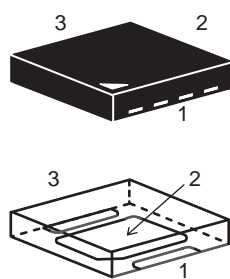
REJ03G0582-0300  
Rev.3.00  
Oct 11, 2006

### Features

- High Output Power, High Gain, High Efficiency  
Pout = +33 dBm, Linear Gain = 21 dB, PAE = 68% (f = 520 MHz)
- Small Outline Package (WSON0303-2: 3.0 × 3.0 × 0.8mm)

### Outline

RENESAS Package code: PWSN0002ZA-A  
(Package name: HWSN-2 <WSON0303-2>)



1. Gate
2. Source
3. Drain

Note: Marking is "A0001".

### Absolute Maximum Ratings

(Ta = 25°C)

Item	Symbol	Ratings	Unit
Drain to source voltage	V <sub>DSS</sub>	16	V
Gate to source voltage	V <sub>GSS</sub>	±5	V
Drain current	I <sub>D</sub>	0.8	A
Channel dissipation	P <sub>ch</sub> <sup>note</sup>	5	W
Channel temperature	T <sub>ch</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-50 to +150	°C

Note: Value at T<sub>c</sub> = 25°C

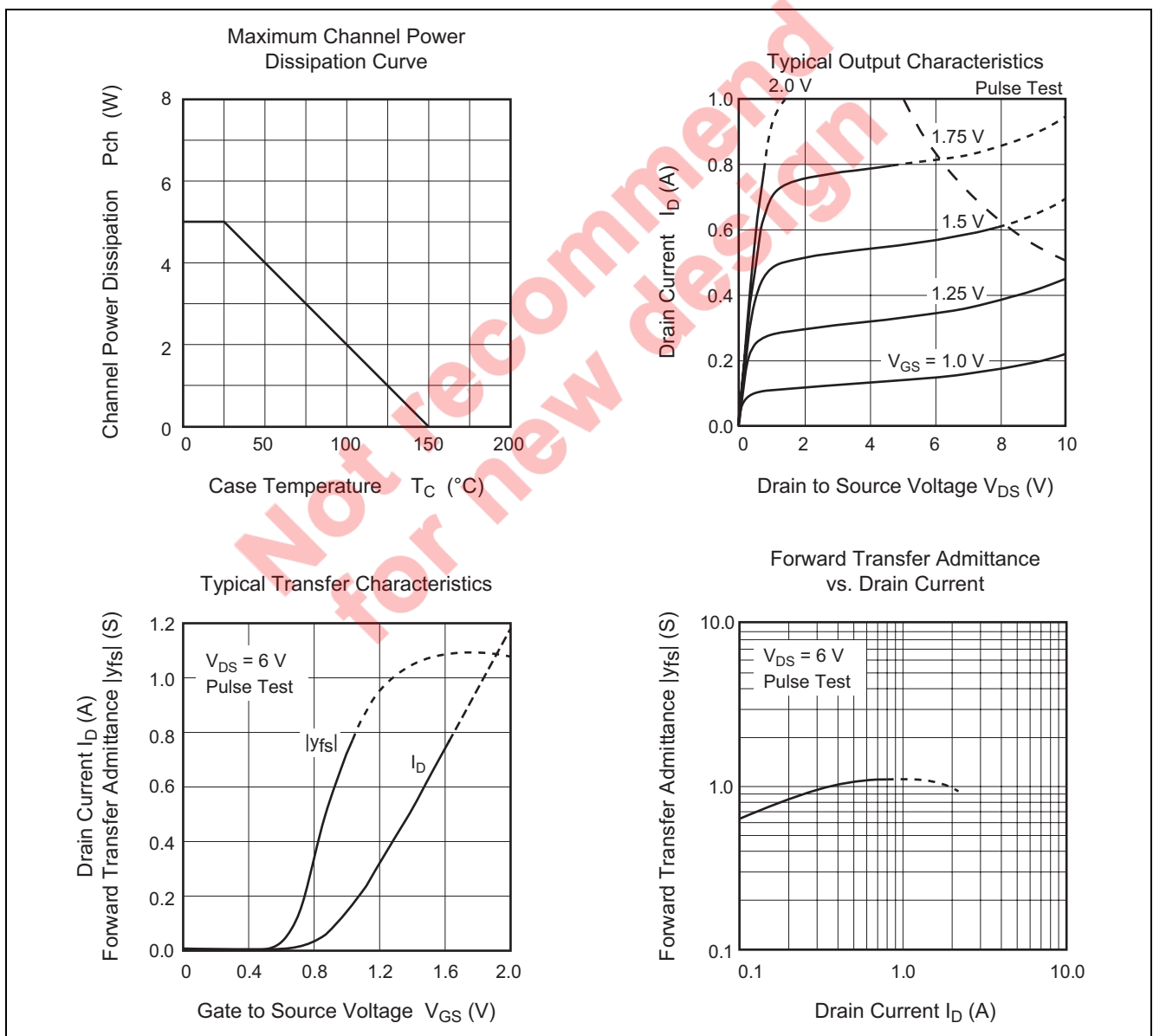
This Device is sensitive to Electro Static Discharge. An Adequate careful handling procedure is requested.

## Electrical Characteristics

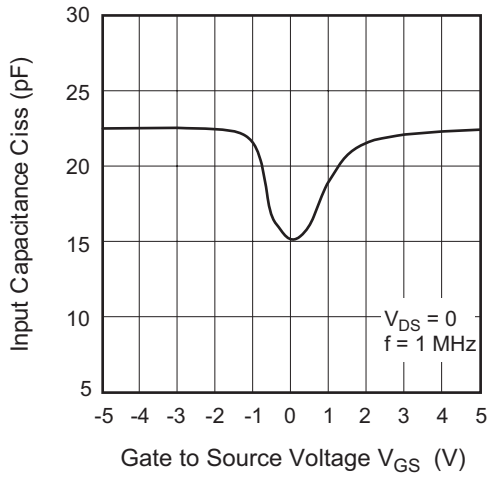
(Ta = 25°C)

Item	Symbol	Min.	Typ	Max.	Unit	Test Conditions
Zero gate voltage drain current	$I_{DSS}$	—	—	10	$\mu\text{A}$	$V_{DS} = 16\text{ V}$ , $V_{GS} = 0$
Gate to source leakage current	$I_{GSS}$	—	—	$\pm 2$	$\mu\text{A}$	$V_{GS} = \pm 5\text{ V}$ , $V_{DS} = 0$
Gate to source cutoff voltage	$V_{GS(off)}$	0.15	0.45	0.75	V	$V_{DS} = 6\text{ V}$ , $I_D = 1\text{ mA}$
Forward Transfer Admittance	$ y_{fs} $	0.6	1.1	1.6	S	$V_{DS} = 6\text{ V}$ , $I_D = 600\text{ mA}$
Input capacitance	$C_{iss}$	—	22	—	pF	$V_{GS} = 5\text{ V}$ , $V_{DS} = 0$ , $f = 1\text{ MHz}$
Output capacitance	$C_{oss}$	—	12	—	pF	$V_{DS} = 6\text{ V}$ , $V_{GS} = 0$ , $f = 1\text{ MHz}$
Reverse transfer capacitance	$C_{rss}$	—	2.6	—	pF	$V_{DG} = 6\text{ V}$ , $V_{GS} = 0$ , $f = 1\text{ MHz}$
Output Power	Pout	32	33	—	dBm	$V_{DS} = 6\text{ V}$ , $I_{DQ} = 200\text{ mA}$
		1.58	2	—	W	$f = 520\text{ MHz}$ ,
Power Added Efficiency	PAE	55	68	—	%	Pin = +20 dBm (100 mW)

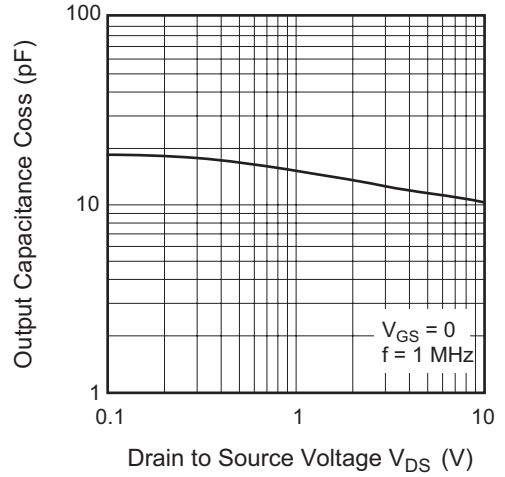
## Main Characteristics



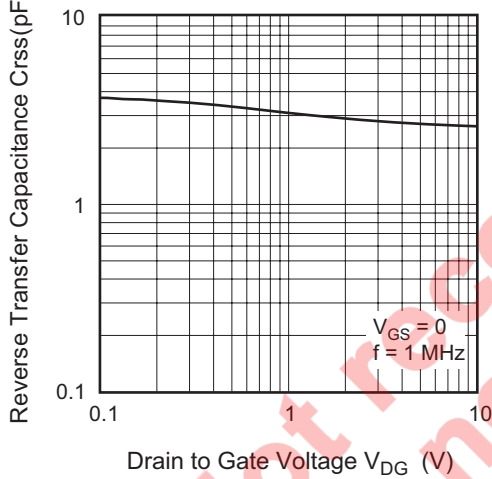
Input Capacitance vs. Gate to Source Voltage



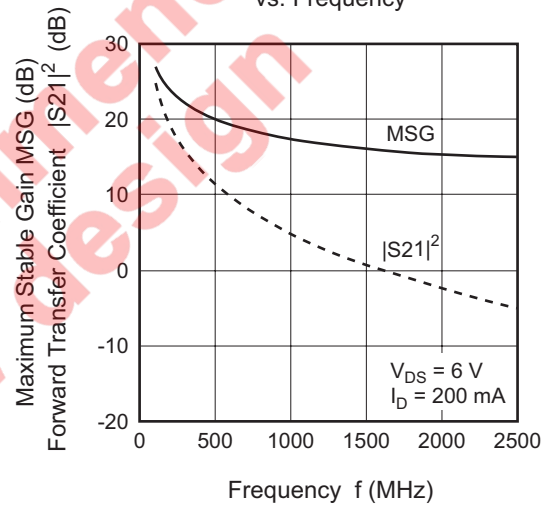
Output Capacitance vs. Drain to Source Voltage



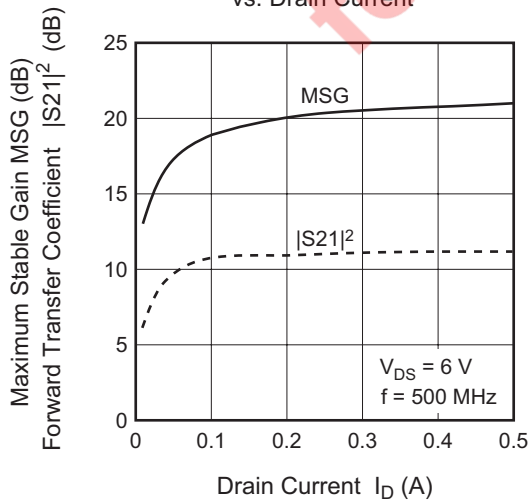
Reverse Transfer Capacitance vs. Drain to Gate Voltage



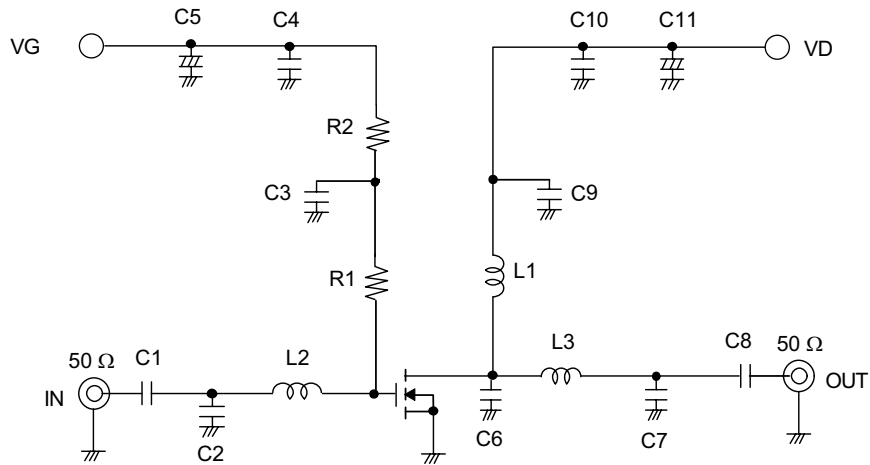
Maximum Stable Gain,  $|S_{21}|^2$  vs. Frequency



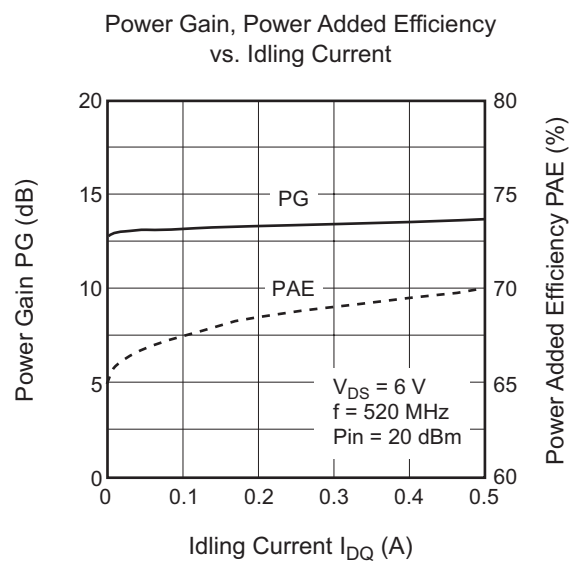
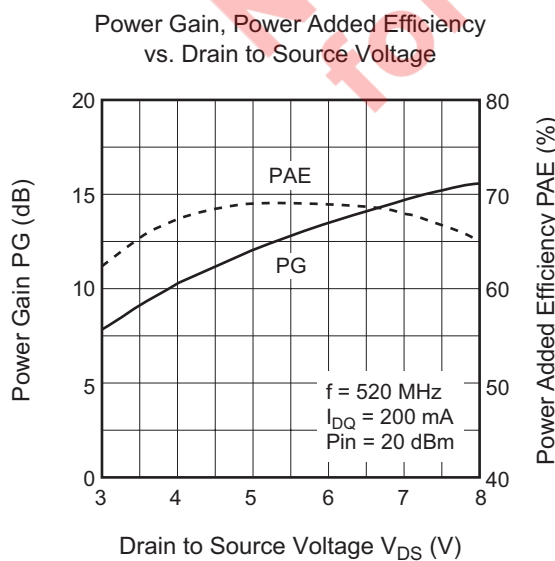
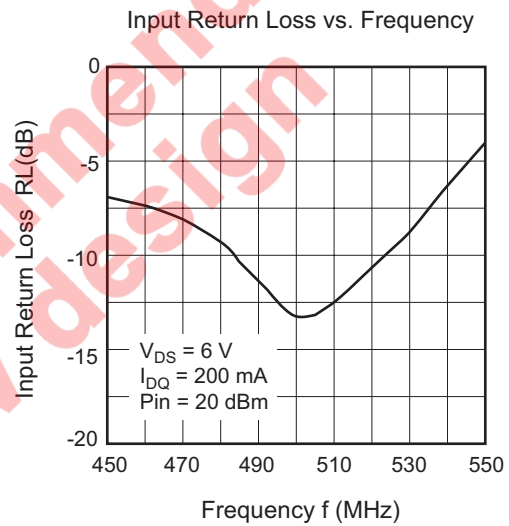
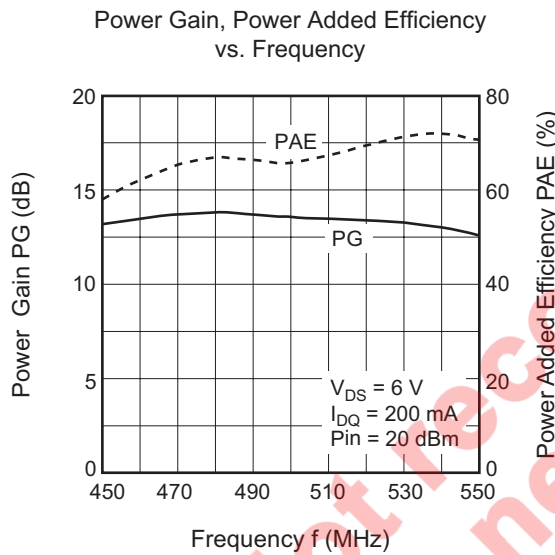
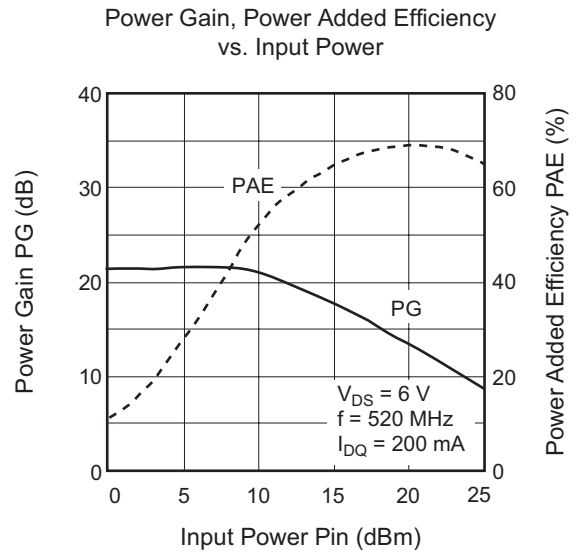
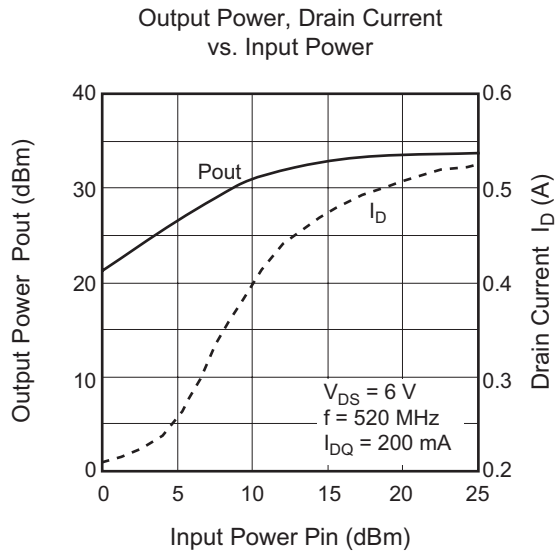
Maximum Stable Gain,  $|S_{21}|^2$  vs. Drain Current



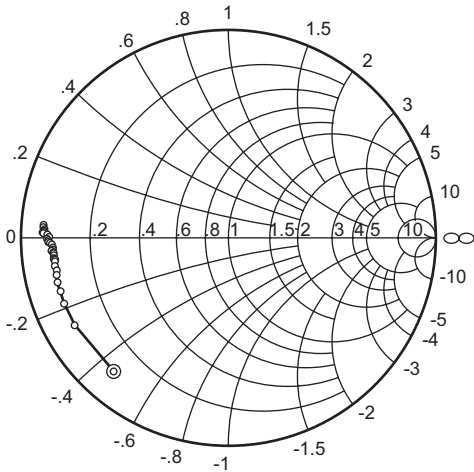
## Evaluation Circuit (f = 520 MHz)



- C1, C8: 68 pF Chip Capacitor  
 C2: 15 pF Chip Capacitor  
 C3, C9: 100 pF Chip Capacitor  
 C4, C10: 1000 pF Chip Capacitor  
 C5, C11 : 2.2  $\mu$ F Electrolysis Capacitor  
 C6: 4 pF Chip Capacitor  
 C7: 12 pF Chip Capacitor  
 L1: 8 Turns D: 0.5 mm,  $\phi$  2.4 mm Enamel Wire  
 L2: 4.7 nH Chip Inductor  
 L3: 3.6 nH Chip Inductor  
 R1: 33  $\Omega$  Chip Resistor  
 R2: 2.7 k $\Omega$  Chip Resistor

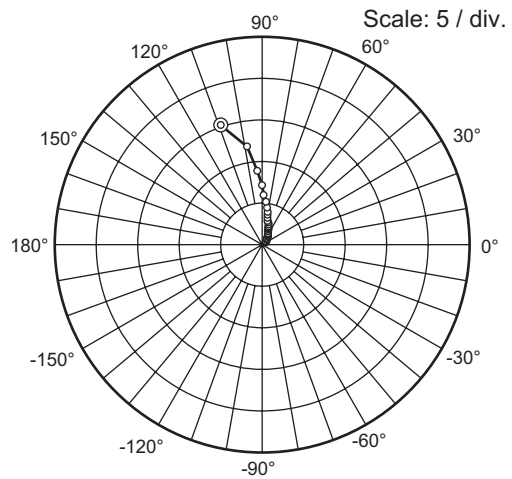


S<sub>11</sub> Parameter vs. Frequency



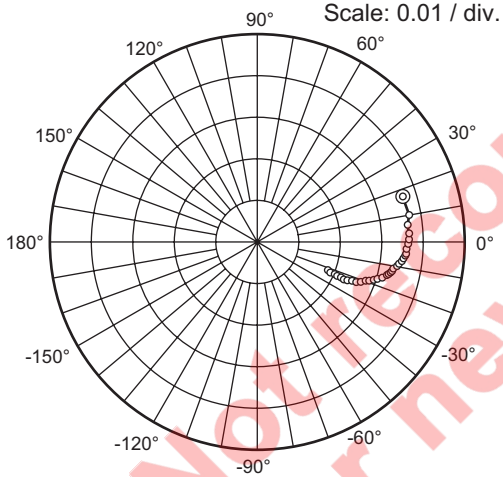
Condition:  $V_{DS} = 6V$ ,  $I_{DQ} = 200\text{ mA}$ ,  $Z_o = 50\ \Omega$   
 100 to 1000 MHz (50 MHz Step)  
 1000 to 2500 MHz (200 MHz Step)

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



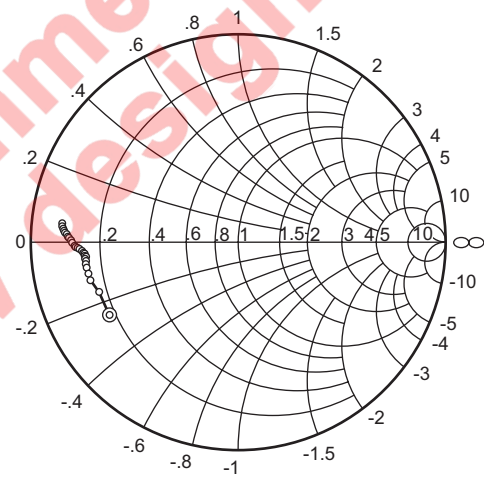
Condition:  $V_{DS} = 6V$ ,  $I_{DQ} = 200\text{ mA}$ ,  $Z_o = 50\ \Omega$   
 100 to 1000 MHz (50 MHz Step)  
 1000 to 2500 MHz (200 MHz Step)

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



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

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



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

## S parameter

(V<sub>DS</sub> = 6 V, I<sub>DQ</sub> = 50 mA, Z<sub>o</sub> = 50 Ω)

f (MHz)	S11		S21		S12		S22	
	MAG	ANG (deg.)	MAG	ANG (deg.)	MAG	ANG (deg.)	MAG	ANG (deg.)
100	0.823	-115.4	12.90	113.1	0.056	20.6	0.664	-128.9
150	0.809	-136.7	10.15	102.5	0.058	11.1	0.648	-144.3
200	0.805	-148.3	7.75	94.5	0.058	5.8	0.662	-152.3
250	0.798	-154.5	6.30	89.3	0.058	1.2	0.665	-156.8
300	0.797	-158.5	5.28	85.2	0.058	-2.0	0.666	-159.8
350	0.796	-161.4	4.51	81.6	0.058	-4.9	0.668	-162.1
400	0.795	-163.5	3.93	78.6	0.057	-7.6	0.671	-163.7
450	0.797	-165.0	3.47	75.7	0.057	-10.0	0.676	-164.8
500	0.800	-166.5	3.11	73.0	0.056	-12.3	0.678	-165.7
550	0.803	-167.5	2.79	70.6	0.055	-14.3	0.682	-166.5
600	0.808	-168.3	2.53	68.2	0.054	-16.1	0.688	-166.9
650	0.809	-169.0	2.31	66.0	0.053	-17.8	0.691	-167.5
700	0.813	-169.6	2.11	63.8	0.053	-19.4	0.694	-167.9
750	0.815	-170.1	1.94	61.7	0.052	-21.0	0.702	-168.1
800	0.817	-170.5	1.80	59.8	0.051	-22.5	0.707	-168.4
850	0.822	-170.9	1.67	57.8	0.050	-23.7	0.713	-168.6
900	0.826	-171.5	1.56	55.8	0.049	-24.9	0.720	-169.0
950	0.828	-171.8	1.46	54.1	0.048	-26.3	0.727	-169.2
1000	0.828	-172.1	1.37	52.4	0.047	-27.5	0.734	-169.5
1050	0.831	-172.8	1.29	50.4	0.046	-28.7	0.741	-169.9
1100	0.834	-173.4	1.22	48.9	0.045	-29.9	0.750	-170.2
1150	0.839	-173.9	1.16	47.2	0.044	-31.1	0.758	-170.6
1200	0.847	-174.1	1.10	45.9	0.043	-32.1	0.765	-171.0
1250	0.856	-174.2	1.05	44.5	0.042	-33.1	0.773	-171.4
1300	0.857	-174.4	0.99	42.9	0.041	-33.9	0.780	-171.8
1350	0.859	-174.6	0.94	41.3	0.041	-35.0	0.787	-172.2
1400	0.859	-175.0	0.90	39.9	0.039	-35.9	0.793	-172.6
1450	0.863	-175.3	0.85	38.1	0.039	-36.7	0.799	-173.0
1500	0.867	-175.7	0.82	36.7	0.038	-37.5	0.804	-173.5
1550	0.868	-175.8	0.78	35.3	0.037	-38.3	0.809	-174.0
1600	0.871	-176.1	0.74	34.0	0.036	-39.1	0.814	-174.4
1650	0.870	-176.5	0.71	32.5	0.035	-39.8	0.819	-175.0
1700	0.868	-176.9	0.68	31.1	0.034	-40.6	0.823	-175.5
1750	0.869	-177.4	0.65	29.6	0.033	-41.3	0.827	-176.1
1800	0.876	-178.0	0.63	28.3	0.032	-41.6	0.832	-176.6
1850	0.884	-178.5	0.60	27.1	0.032	-42.2	0.836	-177.0
1900	0.892	-178.8	0.58	26.1	0.031	-42.8	0.839	-177.5
1950	0.898	-178.7	0.56	25.2	0.030	-43.4	0.844	-178.1
2000	0.903	-178.7	0.54	24.1	0.029	-43.7	0.850	-178.5
2050	0.903	-178.5	0.52	23.3	0.028	-44.0	0.852	-178.8
2100	0.900	-178.7	0.50	22.2	0.027	-44.4	0.856	-179.3
2150	0.899	-178.9	0.48	21.3	0.027	-44.7	0.862	-179.7
2200	0.897	-179.4	0.46	20.2	0.026	-44.8	0.865	180.0
2250	0.897	-179.8	0.45	19.3	0.025	-45.3	0.867	179.5
2300	0.897	179.7	0.43	18.4	0.024	-45.3	0.871	178.9
2350	0.901	179.5	0.42	17.2	0.024	-45.5	0.877	178.6
2400	0.904	179.1	0.41	16.3	0.023	-45.4	0.877	178.2
2450	0.903	178.9	0.39	15.5	0.022	-45.6	0.878	177.7
2500	0.906	178.4	0.38	14.4	0.022	-45.8	0.881	177.2

## S parameter

(V<sub>DS</sub> = 6 V, I<sub>DQ</sub> = 100 mA, Z<sub>o</sub> = 50 Ω)

f (MHz)	S11		S21		S12		S22	
	MAG	ANG (deg.)	MAG	ANG (deg.)	MAG	ANG (deg.)	MAG	ANG (deg.)
100	0.850	-121.5	14.14	112.6	0.044	17.8	0.690	-142.4
150	0.835	-146.3	11.33	99.7	0.045	10.0	0.687	-154.5
200	0.830	-154.9	8.50	93.6	0.045	5.7	0.705	-160.7
250	0.831	-160.2	6.88	89.5	0.045	2.0	0.709	-164.2
300	0.827	-163.4	5.76	86.0	0.045	-0.6	0.710	-166.5
350	0.823	-165.8	4.91	83.1	0.045	-2.7	0.712	-168.3
400	0.822	-167.5	4.28	80.7	0.044	-4.9	0.713	-169.5
450	0.823	-169.0	3.79	78.2	0.044	-6.9	0.715	-170.5
500	0.825	-170.2	3.40	75.9	0.044	-8.5	0.714	-171.2
550	0.827	-171.0	3.07	74.1	0.043	-10.1	0.716	-171.9
600	0.826	-171.6	2.78	72.1	0.043	-11.3	0.719	-172.2
650	0.834	-172.3	2.56	70.1	0.042	-12.6	0.720	-172.6
700	0.829	-173.0	2.35	68.2	0.041	-13.9	0.721	-173.0
750	0.830	-173.4	2.17	66.5	0.041	-15.1	0.726	-173.2
800	0.832	-173.7	2.02	64.7	0.040	-16.1	0.729	-173.3
850	0.836	-174.0	1.88	62.9	0.040	-17.0	0.731	-173.5
900	0.837	-174.5	1.76	61.2	0.039	-18.0	0.737	-173.8
950	0.836	-174.8	1.66	59.6	0.039	-19.2	0.742	-173.9
1000	0.838	-175.0	1.57	58.1	0.038	-20.1	0.745	-174.1
1050	0.839	-175.5	1.48	56.3	0.038	-21.0	0.750	-174.4
1100	0.841	-176.2	1.41	54.8	0.037	-22.0	0.756	-174.6
1150	0.846	-176.5	1.34	53.5	0.037	-22.9	0.762	-174.8
1200	0.851	-176.6	1.27	52.1	0.036	-23.6	0.766	-175.1
1250	0.856	-176.7	1.21	51.0	0.035	-24.4	0.773	-175.5
1300	0.858	-176.9	1.15	49.4	0.035	-25.1	0.777	-175.6
1350	0.859	-176.8	1.10	48.1	0.034	-25.9	0.782	-176.0
1400	0.860	-177.3	1.05	46.6	0.033	-26.7	0.787	-176.2
1450	0.864	-177.5	1.00	45.0	0.033	-27.3	0.790	-176.4
1500	0.866	-177.8	0.96	43.7	0.032	-27.9	0.795	-176.8
1550	0.868	-178.0	0.92	42.4	0.031	-28.5	0.799	-177.2
1600	0.867	-178.1	0.88	41.0	0.031	-29.0	0.803	-177.5
1650	0.867	-178.5	0.84	39.7	0.030	-29.7	0.808	-177.9
1700	0.863	-178.9	0.81	38.3	0.030	-30.2	0.810	-178.3
1750	0.865	-179.2	0.78	37.0	0.029	-30.8	0.815	-178.8
1800	0.871	-179.9	0.75	35.6	0.028	-30.8	0.818	-179.2
1850	0.880	179.7	0.73	34.4	0.028	-31.4	0.822	-179.5
1900	0.885	179.6	0.70	33.3	0.027	-31.8	0.824	-180.0
1950	0.893	179.6	0.68	32.4	0.026	-32.2	0.829	179.6
2000	0.900	179.7	0.66	31.4	0.026	-32.2	0.833	179.3
2050	0.897	179.8	0.63	30.5	0.025	-32.5	0.836	179.1
2100	0.893	179.7	0.61	29.5	0.024	-32.8	0.839	178.7
2150	0.893	179.6	0.59	28.5	0.024	-32.8	0.845	178.3
2200	0.891	179.2	0.57	27.7	0.023	-32.7	0.847	178.1
2250	0.890	178.9	0.55	26.6	0.023	-33.1	0.851	177.7
2300	0.890	178.5	0.53	25.5	0.022	-33.0	0.854	177.2
2350	0.894	178.2	0.52	24.5	0.022	-33.1	0.859	176.9
2400	0.895	177.8	0.50	23.4	0.021	-32.7	0.860	176.5
2450	0.895	177.7	0.49	22.6	0.021	-33.0	0.861	176.1
2500	0.896	177.2	0.47	21.7	0.020	-32.9	0.862	175.6



## S parameter

(V<sub>DS</sub> = 6 V, I<sub>DQ</sub> = 200 mA, Z<sub>o</sub> = 50 Ω)

f (MHz)	S11		S21		S12		S22	
	MAG	ANG (deg.)	MAG	ANG (deg.)	MAG	ANG (deg.)	MAG	ANG (deg.)
100	0.847	-130.3	15.20	108.9	0.037	17.2	0.713	-150.4
150	0.856	-150.5	11.84	98.7	0.037	10.0	0.714	-160.3
200	0.855	-158.2	8.83	93.3	0.037	6.2	0.734	-165.2
250	0.850	-162.5	7.13	89.9	0.037	3.0	0.738	-168.1
300	0.850	-165.4	5.97	86.8	0.037	0.6	0.740	-170.1
350	0.848	-167.8	5.12	84.1	0.037	-1.2	0.741	-171.8
400	0.845	-169.5	4.45	82.0	0.036	-3.0	0.741	-172.6
450	0.849	-170.9	3.95	79.8	0.036	-4.6	0.742	-173.5
500	0.846	-172.2	3.55	77.6	0.036	-5.7	0.740	-174.2
550	0.846	-172.9	3.20	76.0	0.035	-6.9	0.742	-174.8
600	0.847	-173.3	2.92	74.4	0.035	-7.9	0.743	-175.0
650	0.849	-174.1	2.68	72.6	0.035	-9.1	0.743	-175.5
700	0.849	-174.7	2.47	70.9	0.034	-10.0	0.744	-175.8
750	0.848	-175.1	2.28	69.4	0.034	-11.0	0.746	-175.8
800	0.850	-175.2	2.13	68.1	0.034	-11.7	0.749	-176.0
850	0.854	-175.7	2.00	66.3	0.033	-12.5	0.750	-176.2
900	0.851	-176.2	1.87	64.6	0.033	-13.1	0.754	-176.5
950	0.849	-176.6	1.76	63.2	0.033	-13.9	0.758	-176.6
1000	0.851	-176.7	1.67	61.7	0.032	-14.7	0.761	-176.8
1050	0.852	-177.2	1.58	60.1	0.032	-15.3	0.763	-177.0
1100	0.852	-177.8	1.50	58.7	0.031	-16.2	0.768	-177.3
1150	0.860	-177.9	1.44	57.6	0.031	-16.9	0.772	-177.5
1200	0.861	-178.2	1.37	56.4	0.030	-17.3	0.775	-177.6
1250	0.868	-178.3	1.31	55.1	0.030	-18.0	0.780	-178.0
1300	0.867	-178.5	1.25	53.8	0.030	-18.4	0.783	-178.1
1350	0.867	-178.5	1.19	52.4	0.029	-19.0	0.787	-178.4
1400	0.870	-178.8	1.14	50.9	0.029	-19.6	0.790	-178.5
1450	0.868	-179.1	1.09	49.4	0.028	-20.1	0.793	-178.7
1500	0.872	-179.3	1.05	48.3	0.028	-20.2	0.797	-179.1
1550	0.872	-179.4	1.01	46.9	0.027	-20.8	0.799	-179.4
1600	0.873	-179.5	0.97	45.8	0.027	-21.2	0.803	-179.7
1650	0.869	-179.8	0.93	44.4	0.026	-21.7	0.807	180.0
1700	0.867	179.9	0.89	43.2	0.026	-22.0	0.809	179.6
1750	0.869	179.4	0.86	41.8	0.025	-22.4	0.812	179.2
1800	0.874	178.9	0.83	40.6	0.025	-22.4	0.815	178.8
1850	0.881	178.5	0.81	39.4	0.024	-22.6	0.817	178.6
1900	0.887	178.3	0.78	38.5	0.024	-22.8	0.819	178.3
1950	0.895	178.4	0.75	37.5	0.023	-22.9	0.823	177.9
2000	0.898	178.5	0.73	36.5	0.023	-23.1	0.828	177.6
2050	0.897	178.5	0.70	35.4	0.022	-22.8	0.830	177.4
2100	0.894	178.6	0.68	34.6	0.022	-23.2	0.833	177.0
2150	0.892	178.5	0.66	33.8	0.022	-23.0	0.838	176.7
2200	0.894	178.2	0.64	32.9	0.021	-23.1	0.840	176.6
2250	0.892	177.7	0.62	31.8	0.021	-23.1	0.844	176.2
2300	0.891	177.4	0.60	30.8	0.020	-22.7	0.846	175.8
2350	0.892	177.1	0.58	29.7	0.020	-22.7	0.851	175.5
2400	0.895	176.7	0.57	28.4	0.019	-22.2	0.851	175.1
2450	0.895	176.5	0.55	27.7	0.019	-22.1	0.852	174.8
2500	0.895	176.2	0.54	26.8	0.019	-21.9	0.854	174.3

## S parameter

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

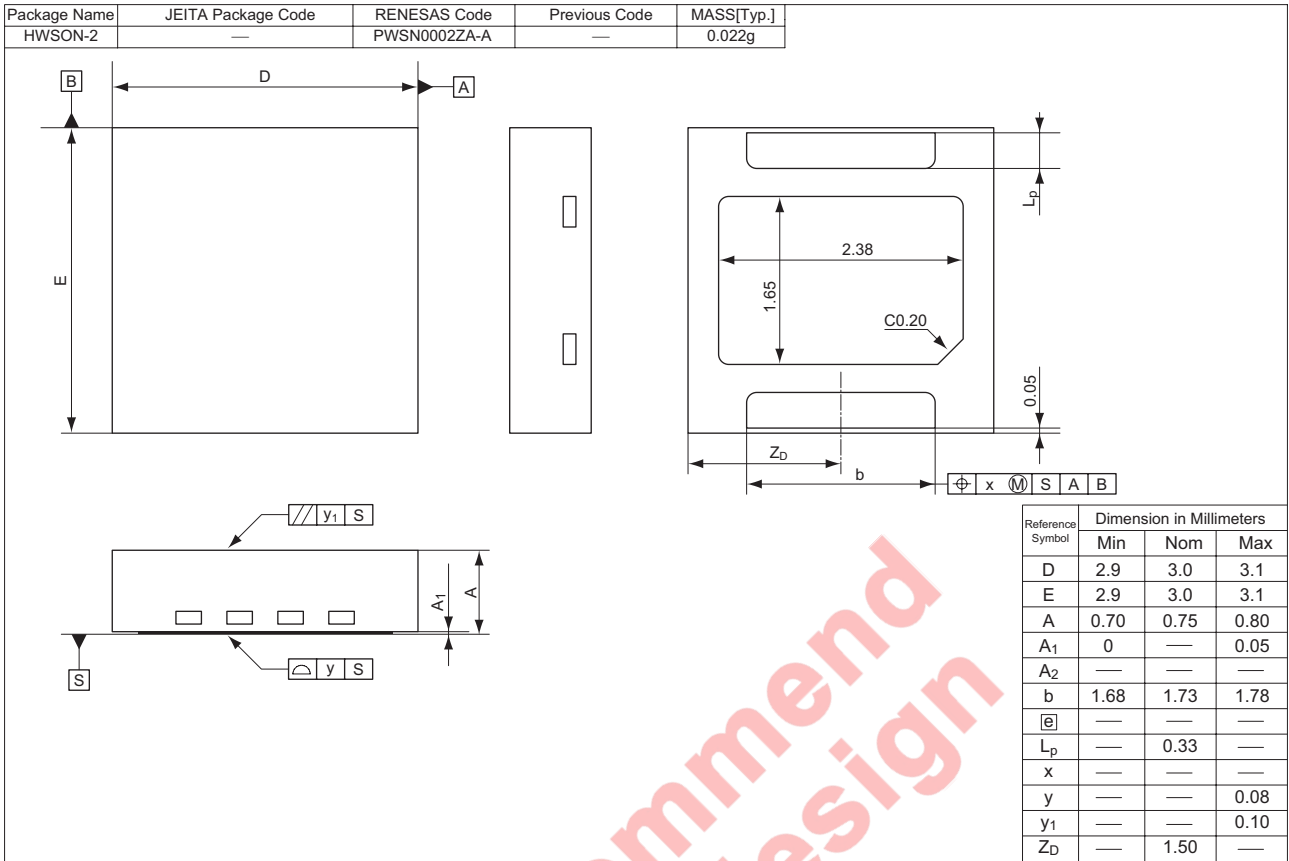
f (MHz)	S11		S21		S12		S22	
	MAG	ANG (deg.)	MAG	ANG (deg.)	MAG	ANG (deg.)	MAG	ANG (deg.)
100	0.864	-131.1	15.08	109.1	0.034	17.0	0.720	-153.1
150	0.869	-150.3	11.79	99.0	0.034	9.4	0.723	-162.2
200	0.868	-158.2	8.84	93.9	0.034	6.6	0.745	-166.8
250	0.865	-163.1	7.16	90.1	0.034	3.1	0.751	-169.3
300	0.862	-166.0	6.00	87.2	0.034	1.6	0.750	-171.1
350	0.857	-168.3	5.13	84.8	0.034	-0.9	0.749	-172.7
400	0.853	-169.7	4.47	82.6	0.034	-2.1	0.751	-173.6
450	0.854	-171.3	3.98	80.6	0.033	-3.7	0.751	-174.4
500	0.855	-172.4	3.58	78.5	0.033	-4.9	0.749	-175.1
550	0.853	-173.5	3.24	76.8	0.033	-6.1	0.748	-175.6
600	0.854	-173.9	2.95	75.3	0.033	-7.0	0.751	-175.8
650	0.857	-174.3	2.73	73.8	0.032	-7.8	0.750	-176.1
700	0.855	-175.1	2.51	71.9	0.032	-8.3	0.752	-176.5
750	0.853	-175.3	2.32	70.4	0.032	-9.6	0.754	-176.6
800	0.856	-175.7	2.17	68.8	0.031	-10.1	0.756	-176.8
850	0.857	-176.2	2.03	67.3	0.031	-10.7	0.758	-176.9
900	0.858	-176.6	1.91	65.7	0.031	-11.1	0.760	-177.2
950	0.856	-176.7	1.80	64.5	0.030	-12.2	0.764	-177.4
1000	0.857	-177.2	1.70	62.7	0.030	-12.6	0.766	-177.4
1050	0.857	-177.6	1.61	61.2	0.030	-13.1	0.769	-177.8
1100	0.858	-178.4	1.53	59.8	0.029	-14.1	0.773	-178.0
1150	0.864	-178.5	1.47	58.7	0.029	-14.8	0.778	-178.3
1200	0.868	-178.6	1.40	57.5	0.028	-14.9	0.780	-178.4
1250	0.871	-179.0	1.34	56.2	0.028	-15.6	0.784	-178.8
1300	0.872	-178.9	1.27	55.0	0.028	-15.8	0.787	-178.9
1350	0.872	-179.0	1.21	53.7	0.027	-16.4	0.790	-179.1
1400	0.872	-179.2	1.16	52.2	0.027	-16.8	0.793	-179.3
1450	0.875	-179.7	1.12	50.8	0.027	-17.3	0.796	-179.5
1500	0.876	-179.8	1.07	49.6	0.026	-17.4	0.799	-179.8
1550	0.876	-179.8	1.03	48.4	0.026	-17.9	0.802	179.9
1600	0.874	-179.9	0.99	47.4	0.025	-18.1	0.805	179.6
1650	0.875	179.8	0.95	45.9	0.025	-18.7	0.808	179.2
1700	0.872	179.4	0.91	44.5	0.025	-18.9	0.810	178.9
1750	0.873	179.0	0.88	43.3	0.024	-19.1	0.813	178.5
1800	0.878	178.3	0.85	42.0	0.024	-19.0	0.816	178.1
1850	0.884	178.1	0.83	40.9	0.023	-19.2	0.818	177.9
1900	0.890	177.9	0.80	39.9	0.023	-19.3	0.820	177.6
1950	0.898	178.0	0.78	38.9	0.022	-19.6	0.824	177.2
2000	0.903	178.0	0.75	38.0	0.022	-19.6	0.827	177.0
2050	0.897	178.3	0.73	37.3	0.021	-19.4	0.830	176.7
2100	0.896	178.2	0.70	36.1	0.021	-19.5	0.833	176.5
2150	0.894	178.0	0.68	35.3	0.021	-19.2	0.838	176.1
2200	0.896	177.7	0.66	34.3	0.020	-19.1	0.840	176.1
2250	0.891	177.3	0.64	33.2	0.020	-19.3	0.842	175.6
2300	0.892	177.0	0.62	32.3	0.020	-18.8	0.845	175.1
2350	0.894	176.7	0.60	31.2	0.019	-18.7	0.849	175.0
2400	0.896	176.3	0.59	30.3	0.019	-17.9	0.849	174.7
2450	0.897	176.4	0.57	29.2	0.018	-17.9	0.850	174.3
2500	0.897	175.9	0.55	28.4	0.018	-17.5	0.853	173.8

## 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	0.899	-128.3	14.60	110.0	0.033	16.5	0.721	-154.3
150	0.877	-149.7	11.59	99.4	0.033	9.7	0.726	-163.0
200	0.874	-157.9	8.76	94.3	0.033	6.7	0.749	-167.2
250	0.867	-162.7	7.11	90.4	0.033	3.7	0.753	-169.7
300	0.866	-166.0	5.97	87.4	0.033	1.4	0.754	-171.5
350	0.860	-168.2	5.11	85.0	0.032	-0.2	0.754	-172.9
400	0.859	-170.0	4.47	82.8	0.032	-1.9	0.755	-173.7
450	0.857	-171.3	3.97	80.8	0.032	-3.1	0.756	-174.4
500	0.861	-172.6	3.58	78.9	0.032	-4.3	0.754	-175.0
550	0.860	-173.4	3.24	77.2	0.032	-5.3	0.757	-175.4
600	0.860	-173.8	2.96	75.6	0.031	-6.2	0.757	-175.8
650	0.861	-174.5	2.72	74.1	0.031	-6.9	0.758	-176.1
700	0.862	-175.1	2.51	72.3	0.031	-7.7	0.761	-176.4
750	0.860	-175.5	2.33	70.7	0.031	-8.6	0.761	-176.6
800	0.860	-175.7	2.17	69.2	0.030	-9.3	0.764	-176.8
850	0.861	-176.2	2.03	67.6	0.030	-9.9	0.767	-177.1
900	0.862	-176.7	1.92	66.0	0.030	-10.4	0.769	-177.3
950	0.861	-177.2	1.80	64.5	0.029	-11.3	0.772	-177.5
1000	0.861	-177.3	1.71	62.9	0.029	-12.0	0.775	-177.6
1050	0.858	-177.8	1.62	61.4	0.029	-12.5	0.777	-178.0
1100	0.862	-178.4	1.54	60.0	0.028	-13.2	0.780	-178.4
1150	0.866	-178.8	1.47	58.7	0.028	-13.7	0.783	-178.5
1200	0.871	-178.8	1.40	57.6	0.028	-14.3	0.784	-178.8
1250	0.876	-178.9	1.34	56.5	0.027	-14.7	0.789	-179.1
1300	0.875	-179.1	1.28	55.2	0.027	-15.1	0.790	-179.2
1350	0.874	-179.1	1.22	53.8	0.027	-15.5	0.794	-179.4
1400	0.876	-179.5	1.17	52.5	0.026	-15.9	0.796	-179.6
1450	0.878	-179.7	1.12	51.1	0.026	-16.2	0.798	-179.8
1500	0.878	180.0	1.08	49.7	0.025	-16.6	0.801	179.9
1550	0.880	-179.9	1.03	48.6	0.025	-16.7	0.803	179.6
1600	0.879	179.9	0.99	47.4	0.024	-17.0	0.805	179.3
1650	0.878	179.7	0.95	46.1	0.024	-17.6	0.808	179.0
1700	0.873	179.2	0.91	44.9	0.024	-17.6	0.810	178.7
1750	0.875	178.8	0.88	43.4	0.023	-17.9	0.813	178.3
1800	0.885	178.3	0.86	42.4	0.023	-17.7	0.817	177.9
1850	0.888	177.8	0.83	41.1	0.022	-17.9	0.818	177.7
1900	0.895	177.8	0.80	40.2	0.022	-18.0	0.819	177.4
1950	0.900	177.9	0.78	39.2	0.022	-18.0	0.824	177.0
2000	0.901	177.8	0.75	38.2	0.021	-17.9	0.828	176.8
2050	0.903	178.1	0.73	37.3	0.021	-17.8	0.829	176.6
2100	0.899	178.0	0.70	36.4	0.020	-17.7	0.833	176.2
2150	0.896	177.7	0.68	35.5	0.020	-17.4	0.838	175.9
2200	0.895	177.5	0.66	34.6	0.020	-17.6	0.840	175.7
2250	0.893	177.3	0.64	33.6	0.019	-17.4	0.842	175.4
2300	0.893	176.7	0.62	32.4	0.019	-16.9	0.845	175.0
2350	0.896	176.7	0.61	31.6	0.019	-16.6	0.849	174.8
2400	0.899	176.2	0.59	30.7	0.018	-15.9	0.849	174.4
2450	0.899	176.2	0.57	29.7	0.018	-16.0	0.850	174.1
2500	0.899	175.7	0.56	28.6	0.018	-15.5	0.852	173.7

### Package Dimensions



### Ordering Information

Part Name	Quantity	Shipping Container
RQA0001DNSTR-E	2000 pcs.	φ178 mm Reel, 12 mm Emboss Taping

Not recommended for new design

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Kukje Center Bldg. 18th Fl., 191, 2-ka, Hangang-ro, Yongsan-ku, Seoul 140-702, Korea  
Tel: <82> (2) 796-3115, Fax: <82> (2) 796-2145

**Renesas Technology Malaysia Sdn. Bhd**  
Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No.18, Jalan Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia  
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