



TEST REPORT FOR ELECTROSTATIC DISCHARGE IMMUNITY

Report No.: 09-08-MAS-082

Client: **RF Monolithics, Inc**
Product: **SAW Filter**
Model No.: **TB0249S (SF1115A)**
Date test item received: 2009/08/13
Date test campaign completed: 2009/08/15
Date of issue: 2009/09/01

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Total number of pages of this test report: 05 pages

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- ⑤ FCC Registration Number: 90588, 91094, 91095



ELECTROSTATIC DISCHARGE IMMUNITY TEST

1. HUMAN BODY MODEL(HBM):

Test Date: Aug. 15, 2009

Test Equipment:	ESD Simulator\ ETS \ 910	
Climatic Condition	Ambient Temperature: <u>20</u> °C	Relative Humidity: <u>45</u> %RH
	Atmospheric Pressure: <u>986</u> mbar	
Test Set-up	Table-top Equipment	
Operating Conditions of The Device	static	

Energy-Storage Capacitor : <u>100</u> pF Discharge Resistor : <u>1.5k</u> Ω Discharge Times : <u>1</u> times/each condition																
Times between each pulse: >0.1 sec <u>5</u> pcs :samples / ESD test apply																
Discharge Mode	Pulse output terminal: port 1 (pin 5/6) GND terminal: All Other Ground Pins															
	Pulse output terminal: port 2 (pin1/10) GND terminal: All Other Ground Pins															
	Pulse output terminal : port 1 (pin 5/6) GND terminal: port 2 (pin1/10)															
\ESD Voltage	<u>250</u> V		<u>500</u> V		<u>1.0</u> kV		<u>2.0</u> kV		<u>4.0</u> kV		<u>6.0</u> kV		<u>8.0</u> kV		<u> </u> kV	
\Polarity	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-
\Result	Show in Table 1 .(conformed by manufacturer)															

Test condition of Energy-Storage Capacitor/ Discharge Resistor and discharge times are according in standard AEC-Q100-002-REV-D

Table 1. EUT performance parameter(measured after test)

No	Voltage (V)	样品代號	INLOSS	DELAYPP	F0BW(1)	DBBW(1)	Rjff(1)	Rjamp(1)	Rjff(2)	INLOSS	DELAYPP	F0BW(1)	DBBW(1)	Rjff(1)	Rjamp(1)	Rjff(2)	deviate NLOSS	判定
1	250V	1	8.305	330.575	198.975	0.435	198.235	-34.91	198.435	6.819	195.818	199.015	0.395	198.235	-34.811	198.435	-1.49	OK
2	250V	2	6.832	231.157	199.013	0.398	198.235	-33.691	198.435	6.709	235.002	198.955	0.471	198.235	-33.347	198.435	-0.12	OK
3	250V	3	7.055	209.213	199.032	0.38	198.235	-34.432	198.435	6.835	212.708	199.001	0.405	198.235	-34.429	198.435	-0.22	OK
4	250V	4	6.954	179.875	198.031	0.368	198.235	-34.087	198.435	6.808	224.405	198.941	0.485	198.235	-33.28	198.435	-0.16	OK
5	250V	5	6.897	249.25	198.981	0.449	198.235	-33.366	198.435	6.651	202.871	198.953	0.507	198.235	-33.695	198.435	-0.24	OK
6	500V	6	7.003	185.057	198.027	0.403	198.235	-33.903	198.435	6.76	187.912	198.951	0.503	198.235	-33.923	198.435	-0.24	OK
7	500V	7	7.065	218.119	198.023	0.373	198.235	-33.652	198.435	7.057	204.152	199.001	0.405	198.235	-34.565	198.435	0.00	OK
8	500V	8	7.181	218.584	198.029	0.37	198.235	-34.329	198.435	6.907	212.481	198.995	0.392	198.235	-34.254	198.435	-0.27	OK
9	500V	9	7.325	151.299	199.052	0.302	198.235	-33.431	198.435	7.315	153.058	198.995	0.35	198.235	-34.118	198.435	-0.01	OK
10	500V	10	6.884	180.633	199.025	0.411	198.235	-33.833	198.435	6.711	205.48	198.95	0.51	198.235	-33.579	198.435	-0.17	OK
11	1kV	11	7.11	159.271	199.044	0.371	198.235	-34.855	198.435	6.801	167.074	198.968	0.497	198.235	-33.559	198.435	-0.31	OK
12	1kV	12	6.875	204.905	198.993	0.458	198.235	-33.828	198.435	6.599	207.958	198.947	0.51	198.235	-33.203	198.435	-0.29	OK
13	1kV	13	6.938	199.143	199.003	0.365	198.235	-33.693	198.435	6.658	195.69	198.957	0.485	198.235	-34.057	198.435	-0.25	OK
14	1kV	14	6.792	150.307	199.035	0.403	198.235	-34.515	198.435	6.59	153.511	198.954	0.502	198.235	-33.956	198.435	-0.20	OK
15	1kV	15	7.15	217.653	199.028	0.373	198.235	-34.405	198.435	6.955	212.65	198.995	0.395	198.235	-34.29	198.435	-0.20	OK
16	2kV	16	7.103	223.648	198.023	0.368	198.235	-34.305	198.435	6.743	227.202	198.945	0.512	198.235	-32.531	198.435	-0.35	OK
17	2kV	17	7.052	238.317	199.015	0.395	198.235	-33.955	198.435	6.654	241.638	198.939	0.516	198.235	-31.508	198.435	-0.37	OK
18	2kV	18	6.805	150.54	198.005	0.462	198.235	-33.958	198.435	6.54	129.054	198.958	0.52	198.235	-31.973	198.435	-0.27	OK
19	2kV	19	6.859	161.715	199.041	0.383	198.235	-34.256	198.435	6.524	141.288	198.955	0.525	198.235	-32.049	198.435	-0.24	OK
20	2kV	20	6.87	220.622	198.016	0.4	198.235	-33.938	198.435	6.61	223.419	198.942	0.515	198.235	-31.687	198.435	-0.25	OK
21	4kV	21	7.299	195.54	199.041	0.37	198.235	-34.677	198.435	6.772	198.215	198.953	0.515	198.235	-31.772	198.435	-0.53	OK
22	4kV	22	7.018	195.185	199.035	0.373	198.235	-34.335	198.435	6.571	193.209	198.948	0.517	198.235	-31.118	198.435	-0.45	OK
23	4kV	23	6.865	201.355	199.019	0.402	198.235	-34.242	198.435	6.528	192.338	198.951	0.508	198.235	-31.254	198.435	-0.34	OK
24	4kV	24	6.908	248.581	198.985	0.442	198.235	-33.532	198.435	6.615	260.904	198.932	0.519	198.235	-30.941	198.435	-0.29	OK
25	4kV	25	6.823	175.598	199.008	0.443	198.235	-34.179	198.435	6.508	179.646	198.954	0.507	198.235	-31.948	198.435	-0.32	OK
26	6kV	26	7.044	204.789	199.033	0.382	198.235	-34.231	198.435	6.855	195.828	198.95	0.522	198.235	-30.771	198.435	-0.39	OK
27	6kV	27	7.065	202.285	199.034	0.375	198.235	-34.706	198.435	6.658	202.755	198.95	0.51	198.235	-30.982	198.435	-0.41	OK
28	6kV	28	6.94	215.023	199.021	0.395	198.235	-34.128	198.435	6.542	205.898	198.944	0.516	198.235	-30.976	198.435	-0.40	OK
29	6kV	29	7.293	243.381	199.013	0.379	198.235	-33.74	198.435	6.794	253.046	198.927	0.51	198.235	-31.059	198.435	-0.50	OK
30	6kV	30	7.125	194.428	199.041	0.375	198.235	-34.495	198.435	6.655	185.234	198.957	0.518	198.235	-31.342	198.435	-0.45	OK
31	8kV	31	7.295	205.185	198.035	0.375	198.235	-34.654	198.435	6.676	204.618	198.949	0.516	198.235	-31.323	198.435	-0.52	OK
32	8kV	32	7.184	235.057	198.025	0.375	198.235	-34.23	198.435	6.6	225.223	198.938	0.513	198.235	-30.451	198.435	-0.55	OK
33	8kV	33	7.274	202.112	198.029	0.377	198.235	-33.98	198.435	6.76	191.055	198.951	0.505	198.235	-30.25	198.435	-0.49	OK
34	8kV	34	7.102	179.527	198.045	0.364	198.235	-34.773	198.435	7.115	182.265	198.95	0.543	198.235	-31.753	198.435	0.01	OK
35	8kV	35	7.185	212.295	199.003	0.365	198.235	-34.351	198.435	6.733	209.75	198.945	0.52	198.235	-31.188	198.435	-0.45	OK



2. Machine Model (MM):

Test Date: Aug. 15, 2009

Test Equipment: ESD Simulator\ ETS \ 910	
Climatic Condition	Ambient Temperature: <u>20</u> °C Relative Humidity: <u>43</u> %RH
	Atmospheric Pressure: <u>986</u> mbar
Test Set-up	Table-top Equipment
Operating Conditions of The Device	static

Energy-Storage Capacitor : <u>200</u> pF Discharge Resistor : <u>0</u> Ω Discharge Times : <u>1</u> times/each condition										
Times between each pulse: >0.5 sec					<u>5</u> pcs :samples / ESD test apply					
Discharge Mode	Pulse output terminal: port 1 (pin 5/6) GND terminal: All Other Ground Pins									
	Pulse output terminal: port 2 (pin1/10) GND terminal: All Other Ground Pins									
	Pulse output terminal : port 1 (pin 5/6)I GND terminal: port 2 (pin1/10)									
\ESD Voltage	<u>25</u> V		<u>50</u> V		<u>100</u> V		<u>200</u> V		<u>400</u> V	
\Polarity	+	-	+	-	+	-	+	-	+	-
\Result	Show in Table 2 .(<u>conformed by manufacturer</u>)									

Test condition of Energy-Storage Capacitor/ Discharge Resistor and discharge times are according in standard AEC-Q100-002-REV-E

Table 2. EUT performance parameter(measured after test)

No	Voltage (V)	样品代號	INLOSS	DELAYPP	FOBW(1)	DBBW(1)	Rf(1)	Rjamp(1)	Rf(2)	INLOSS	DELAYPP	FOBW(1)	DBBW(1)	Rf(1)	Rjamp(1)	Rf(2)	deviate INLOSS	判定
1	25V	35	7.005	184.3	199.039	0.379	198.235	-34.397	198.435	6.809	185.467	199.004	0.415	198.235	-34.524	198.435	-0.30	OK
2	25V	37	7.073	217.187	199.027	0.377	198.235	-34.493	198.435	6.894	219.229	198.995	0.403	198.235	-34.579	198.435	-0.19	OK
3	25V	38	7.221	233.65	199.019	0.374	198.235	-33.874	198.435	7.125	222.895	198.998	0.391	198.235	-34.003	198.435	-0.10	OK
4	25V	39	6.821	213.753	199.985	0.475	198.235	-33.544	198.435	6.809	215.153	198.947	0.512	198.235	-33.756	198.435	-0.01	OK
5	25V	40	7.086	177.839	199.047	0.369	198.235	-34.818	198.435	6.894	203.046	199.015	0.392	198.235	-34.928	198.435	-0.25	OK
6	50V	41	7.303	230.225	199.019	0.374	198.235	-34.176	198.435	6.956	223.684	198.987	0.388	198.235	-34.15	198.435	-0.35	OK
7	50V	42	6.849	192.391	199.995	0.469	198.235	-33.741	198.435	6.638	189.293	198.956	0.511	198.235	-33.742	198.435	-0.21	OK
8	50V	43	6.689	165.337	199.025	0.408	198.235	-34.029	198.435	6.836	185.002	198.964	0.494	198.235	-34.238	198.435	-0.05	OK
9	50V	44	7.025	210.901	199.018	0.389	198.235	-33.714	198.435	6.773	225.213	198.948	0.485	198.235	-33.685	198.435	-0.25	OK
10	50V	45	7.599	188.494	199.053	0.295	198.235	-34.501	198.435	7.247	180.927	198.994	0.362	198.235	-34.292	198.435	-0.35	OK
11	100V	46	7.117	198.735	199.037	0.372	198.235	-34.356	198.435	7.07	242.744	198.979	0.416	198.235	-34.079	198.435	-0.05	OK
12	100V	47	7.019	221.145	199.019	0.393	198.235	-33.485	198.435	6.801	227.202	198.943	0.504	198.235	-33.37	198.435	-0.22	OK
13	100V	48	7.136	224.754	199.035	0.381	198.235	-34.206	198.435	6.858	222.604	198.992	0.407	198.235	-34.242	198.435	-0.28	OK
14	100V	49	7.109	221.611	199.025	0.379	198.235	-34.247	198.435	8.815	212.767	198.994	0.399	198.235	-34.367	198.435	-0.29	OK
15	100V	50	7.085	184.533	199.043	0.368	198.235	-34.819	198.435	6.827	208.459	199.012	0.391	198.235	-34.91	198.435	-0.26	OK
16	200V	51	7.06	217.013	199.026	0.381	198.235	-34.414	198.435	8.872	217.365	198.995	0.402	198.235	-34.578	198.435	-0.19	OK
17	200V	52	7.056	220.796	199.035	0.377	198.235	-34.108	198.435	6.8	225.339	198.99	0.403	198.235	-34.046	198.435	-0.26	OK
18	200V	53	7.674	160.318	199.042	0.361	198.235	-34.906	198.435	7.403	138.086	199.014	0.37	198.235	-35.198	198.435	-0.27	OK
19	200V	54	7.019	233.485	199.983	0.469	198.235	-33.397	198.435	6.773	273.535	199.99	0.515	198.235	-32.621	198.435	-0.25	OK
20	200V	55	7.129	229.489	199.02	0.381	198.235	-34.149	198.435	6.858	222.429	198.991	0.399	198.235	-34.367	198.435	-0.27	OK
21	400V	36	6.829	192.915	199.995	0.46	198.235	-33.967	198.435	6.952	181.975	198.954	0.514	198.235	-33.156	198.435	-0.28	OK
22	400V	37	6.893	191.867	199.995	0.456	198.235	-33.746	198.435	6.645	177.667	198.954	0.508	198.235	-32.647	198.435	-0.25	OK
23	400V	38	6.995	206.943	199.034	0.373	198.235	-34.278	198.435	6.652	199.729	198.951	0.516	198.235	-32.202	198.435	-0.34	OK
24	400V	39	7.878	137.504	199.09	0.296	198.235	-34.74	198.435	7.375	207.529	199.029	0.369	198.235	-33.226	198.435	-0.50	OK
25	400V	60	7.235	239.714	199.014	0.384	198.235	-34.003	198.435	6.804	243.442	198.936	0.501	198.235	-32.933	198.435	-0.43	OK