



SPM3212

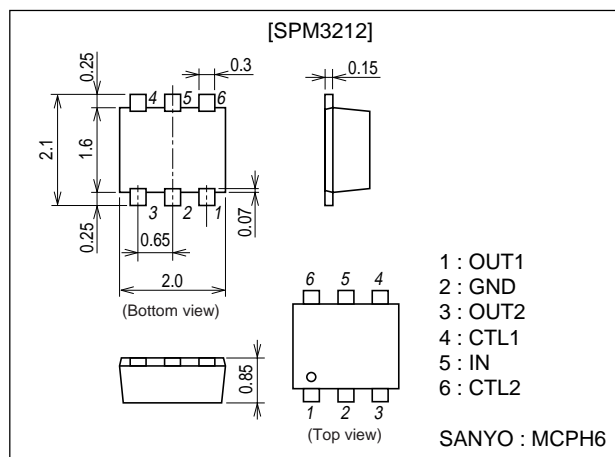
Wide-band Switch MMIC Operating with Single Power Supply

Features

- Control voltage : +3 / 0V.
- Small package (MCPH6).
- High isolation.
- Low Insertion loss.
- High surge breakdown voltage.

Package Dimensions

unit : mm
1323



Specifications

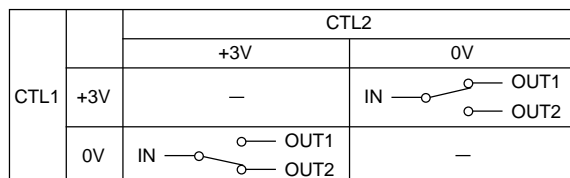
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Control Voltage	V _{CTL}		5.0	V
Power Dissipation	P _D		150	mW
Storage Temperature	T _{stg}		-55 to +150	°C
Operating Temperature	T _{opr}		-40 to +85	°C

Electrical Characteristics at Ta=25°C Control Voltage 1, 2 : 0 / +3V

Parameter	Conditions	Ratings			Unit
		min	typ	max	
Insertion Loss	IN-OUT1, IN-OUT2	f=1GHz	0.45	0.75	dB
		f=2GHz	0.5	0.8	dB
		f=2.5GHz	0.55	0.85	dB
Isolation	IN-OUT1, IN-OUT2	f=1GHz	19	22	dB
		f=2GHz	15	18	dB
		f=2.5GHz	13	16	dB

Continued on next page.



Marking : RE

■ Any and all SANYO products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your SANYO representative nearest you before using any SANYO products described or contained herein in such applications.

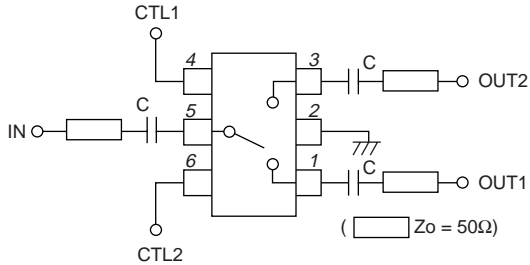
■ SANYO assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all SANYO products described or contained herein.

SPM3212

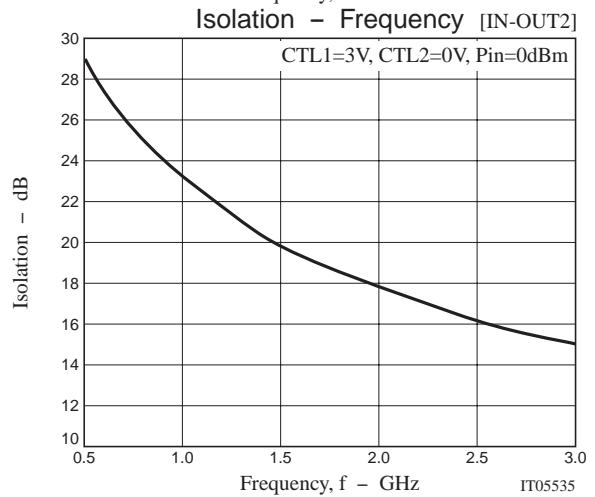
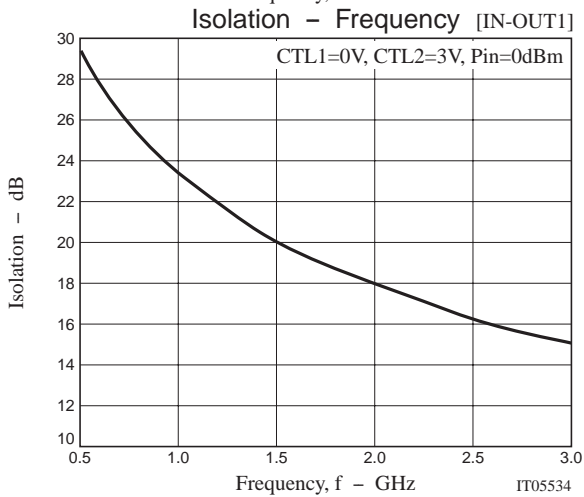
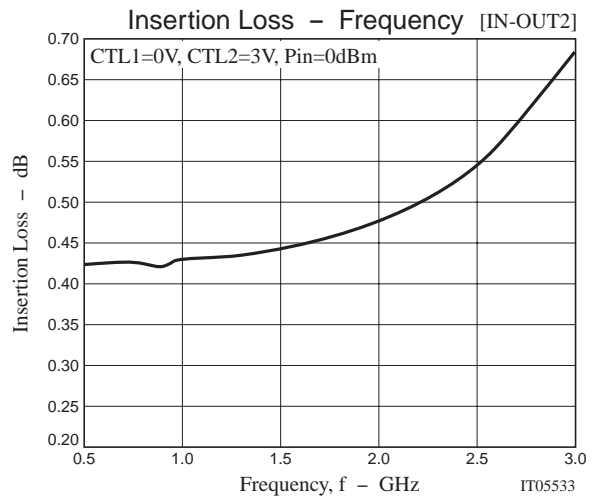
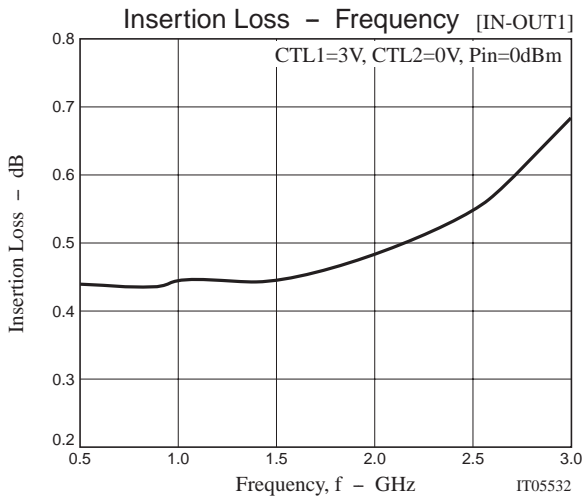
Continued from preceding page.

Parameter	Conditions	Ratings			Unit
		min	typ	max	
VSWR	IN-OUT1, IN-OUT2	f=1GHz to 2.5GHz			
Switching Time		f=1GHz to 2.5GHz			ns
P _{IN} 1dB	IN-OUT1, IN-OUT2	24	28		dBm

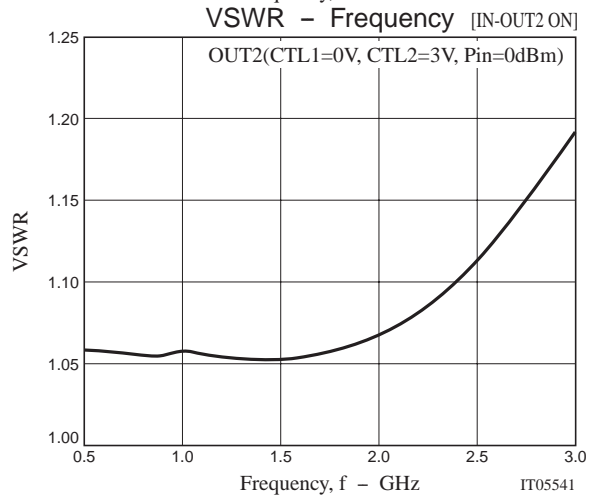
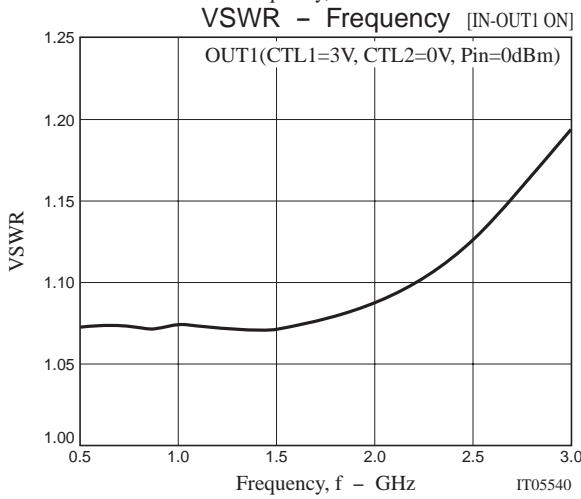
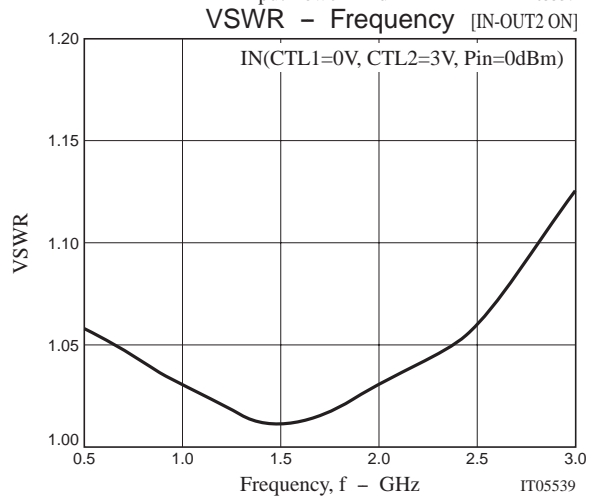
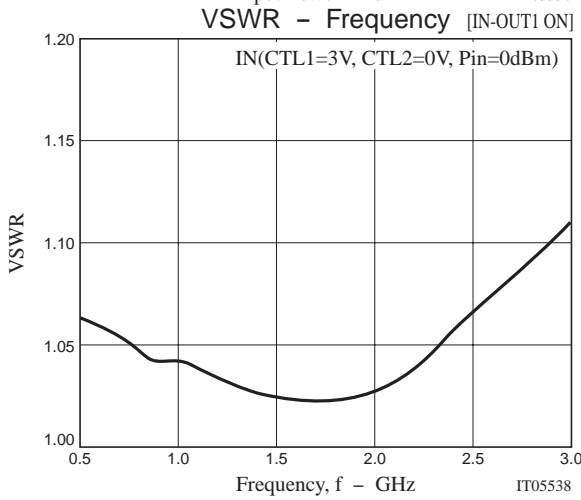
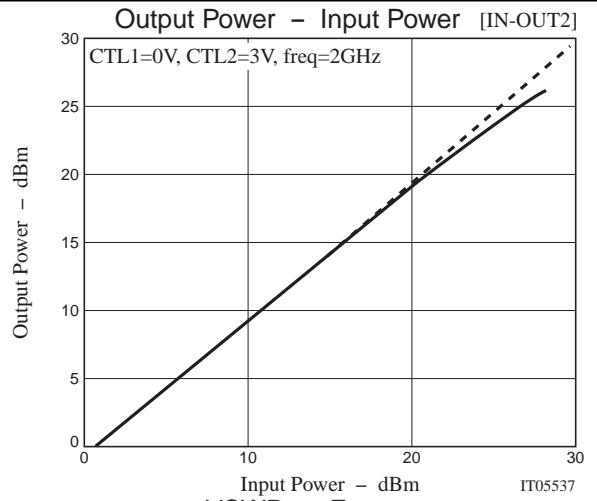
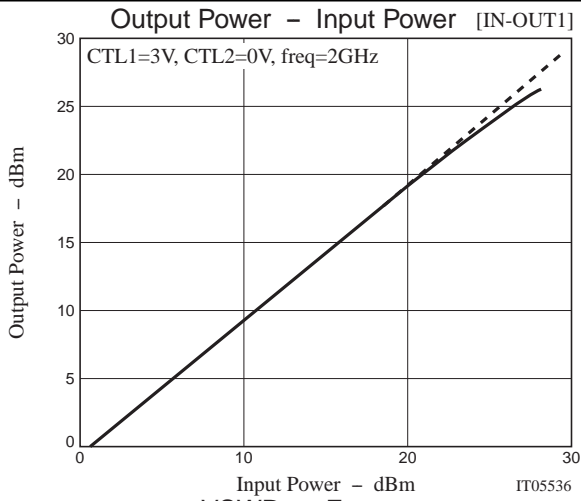
Application Circuit



C : at 0.8 to 1.5GHz 33pF
at 1.9 to 2.5GHz 10pF



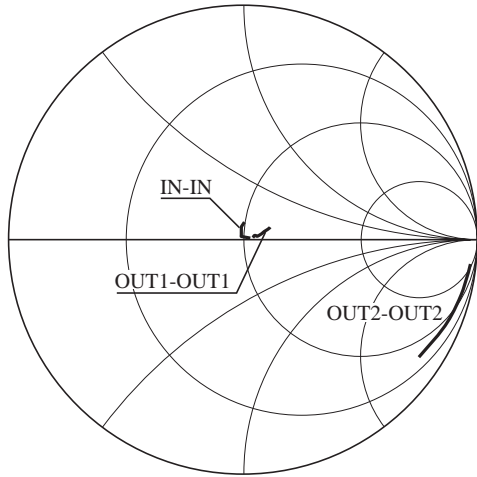
SPM3212



SPM3212

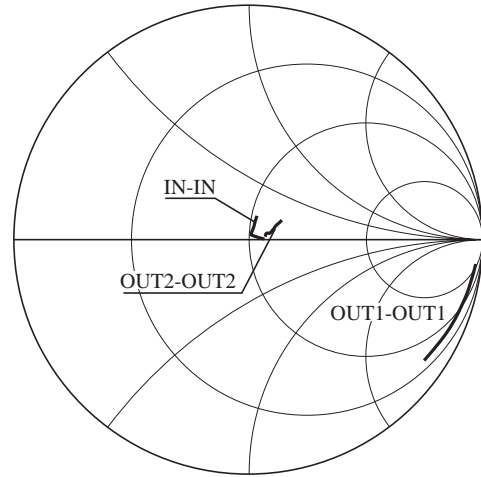
S-parameter

(CTL1=3V, CTL2=0V, Pin=0dBm, f=0.5 to 3GHz)



S-parameter

(CTL1=0V, CTL2=3V, Pin=0dBm, f=0.5 to 3GHz)



IN-OUT1 ON

(CTL1=3V, CTL2=0V, 0dBm)

Frequency (GHz)	IN-IN		IN-OUT2		IN-OUT1		OUT2-IN		OUT2-OUT2		OUT2-OUT1		OUT1-IN		OUT1-OUT2		OUT1-OUT1	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.5	0.027	-2.1	0.036	69.2	0.945	-3.2	0.036	74.5	0.970	-6.2	0.034	75.5	0.947	-3.3	0.033	72.7	0.028	10.7
0.6	0.025	-1.9	0.043	69.6	0.945	-3.8	0.043	75.4	0.966	-7.4	0.040	76.2	0.944	-3.8	0.040	72.4	0.029	11.1
0.7	0.022	-2.0	0.049	72.4	0.942	-4.4	0.050	75.5	0.966	-8.7	0.047	76.4	0.943	-4.4	0.046	75.4	0.027	14.3
0.8	0.019	-2.0	0.056	70.9	0.940	-5.0	0.057	75.9	0.961	-9.8	0.053	77.6	0.941	-4.9	0.052	74.9	0.027	14.9
0.9	0.015	-1.5	0.062	73.2	0.937	-5.6	0.063	75.5	0.962	-11.2	0.059	77.3	0.939	-5.5	0.058	76.1	0.026	15.3
1.0	0.013	2.7	0.068	73.9	0.936	-6.1	0.069	75.0	0.961	-12.3	0.066	77.2	0.938	-6.0	0.065	76.8	0.027	16.4
1.1	0.010	4.8	0.075	72.2	0.933	-6.6	0.076	75.5	0.955	-13.7	0.071	78.3	0.934	-6.7	0.071	76.0	0.025	14.6
1.2	0.007	17.5	0.082	73.8	0.932	-7.2	0.082	74.6	0.957	-14.8	0.078	76.6	0.932	-7.2	0.077	77.1	0.026	17.4
1.3	0.005	52.0	0.088	71.9	0.931	-7.8	0.089	74.6	0.951	-16.2	0.085	78.0	0.929	-7.7	0.082	76.0	0.025	14.9
1.4	0.004	73.4	0.094	73.2	0.929	-8.3	0.094	73.9	0.952	-17.3	0.088	76.7	0.929	-8.2	0.089	76.7	0.026	17.1
1.5	0.004	108.1	0.100	73.2	0.926	-8.9	0.102	73.6	0.951	-18.8	0.097	76.7	0.927	-8.8	0.096	77.1	0.025	12.3
1.6	0.006	119.2	0.106	72.3	0.923	-9.3	0.106	72.9	0.946	-19.9	0.100	76.9	0.925	-9.4	0.100	77.1	0.027	13.1
1.7	0.009	128.8	0.112	72.2	0.921	-10.0	0.115	72.6	0.946	-21.3	0.109	76.1	0.924	-9.9	0.106	76.3	0.027	9.2
1.8	0.011	135.0	0.117	70.4	0.919	-10.5	0.118	72.3	0.937	-22.3	0.112	76.3	0.920	-10.4	0.112	74.5	0.029	10.5
1.9	0.013	132.9	0.124	70.1	0.917	-11.1	0.127	71.8	0.936	-23.6	0.120	75.7	0.919	-11.0	0.119	74.5	0.030	6.4
2.0	0.015	135.5	0.128	69.1	0.915	-11.6	0.128	71.8	0.931	-24.7	0.122	76.1	0.916	-11.6	0.121	74.3	0.032	7.3
2.1	0.017	130.5	0.134	69.7	0.912	-12.1	0.137	69.4	0.936	-25.8	0.132	74.2	0.914	-12.2	0.128	74.7	0.036	6.2
2.2	0.019	128.0	0.139	68.7	0.911	-12.8	0.142	70.4	0.931	-27.0	0.137	75.8	0.911	-12.7	0.134	74.0	0.037	8.6
2.3	0.022	121.6	0.145	69.4	0.908	-13.3	0.148	69.7	0.931	-27.9	0.141	73.6	0.909	-13.3	0.140	73.9	0.042	8.9
2.4	0.024	116.6	0.149	69.0	0.904	-13.9	0.153	69.8	0.930	-29.0	0.148	74.6	0.906	-13.8	0.144	74.6	0.045	11.6
2.5	0.028	108.6	0.155	69.2	0.903	-14.5	0.156	70.2	0.927	-29.7	0.148	75.5	0.904	-14.4	0.147	74.9	0.052	10.8
2.6	0.032	104.0	0.158	68.7	0.899	-15.0	0.160	67.1	0.928	-30.8	0.156	72.3	0.900	-15.0	0.154	73.8	0.057	16.0
2.7	0.037	98.7	0.166	67.9	0.897	-15.6	0.172	69.0	0.922	-31.4	0.166	75.4	0.899	-15.6	0.162	74.4	0.064	16.3
2.8	0.042	92.2	0.168	67.7	0.896	-16.3	0.167	67.9	0.919	-32.3	0.160	72.6	0.895	-16.3	0.160	73.3	0.071	19.7
2.9	0.049	86.3	0.174	66.6	0.891	-16.9	0.183	67.5	0.915	-32.8	0.177	74.5	0.892	-16.9	0.168	73.7	0.079	20.9
3.0	0.057	81.3	0.200	66.2	0.888	-17.7	0.176	69.1	0.905	-33.6	0.169	75.6	0.887	-17.6	0.169	72.6	0.087	22.9

*The characteristic contains evaluation system loss.

IN-OUT2 ON

(CTL1=0V, CTL2=3V, 0dBm)

Frequency (GHz)	IN-IN		IN-OUT2		IN-OUT1		OUT2-IN		OUT2-OUT2		OUT2-OUT1		OUT1-IN		OUT1-OUT2		OUT1-OUT1	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.5	0.031	2.4	0.952	-3.2	0.034	76.1	0.952	-3.2	0.034	11.7	0.032	79.4	0.035	87.6	0.033	89.0	0.976	-6.4
0.6	0.029	7.0	0.950	-3.8	0.042	78.4	0.951	-3.8	0.035	11.5	0.039	81.2	0.041	86.2	0.038	87.5	0.976	-7.7
0.7	0.025	3.6	0.948	-4.4	0.048	80.2	0.949	-4.4	0.035	12.3	0.045	82.8	0.048	85.4	0.046	86.7	0.974	-8.9
0.8	0.025	9.2	0.947	-5.0	0.055	80.2	0.947	-5.0	0.034	14.3	0.052	82.8	0.054	85.0	0.051	86.7	0.972	-10.2
0.9	0.019	9.2	0.945	-5.6	0.061	80.4	0.945	-5.6	0.034	12.8	0.057	83.1	0.061	82.3	0.058	84.7	0.968	-11.5
1.0	0.020	13.7	0.943	-6.1	0.068	78.6	0.944	-6.1	0.035	14.6	0.064	81.2	0.068	83.2	0.064	85.4	0.964	-12.7
1.1	0.015	23.0	0.941	-6.7	0.074	79.5	0.942	-6.7	0.034	12.4	0.070	82.6	0.073	81.9	0.070	84.0	0.962	-14.0
1.2	0.015	22.3	0.939	-7.3	0.080	77.3	0.940	-7.2	0.035	16.0	0.075	80.1	0.080	81.8	0.077	84.0	0.955	-15.2
1.3	0.013	39.9	0.938	-7.8	0.088	77.5	0.938	-7.8	0.033	11.5	0.083	81.0	0.085	80.4	0.082	83.6	0.953	-16.4
1.4	0.011	39.1	0.935	-8.3	0.092	77.8	0.936	-8.3	0.036	16.4	0.087	81.2	0.093	78.8	0.089	82.1	0.952	-17.8
1.5	0.011	49.6	0.934	-9.0	0.100	76.8	0.934	-8.9	0.034	10.8	0.095	80.3	0.100	80.0	0.095	82.8	0.952	-19.0
1.6	0.009	64.0	0.932	-9.5	0.105	77.1	0.932	-9.5	0.036	14.4	0.100	81.0	0.103	77.6	0.099	81.0	0.948	-20.2
1.7	0.010	66.8	0.930	-10.1	0.111	74.5	0.931	-10.0	0.035	10.2	0.106	78.5	0.112	78.1	0.108	81.8	0.944	-21.4
1.8	0.010	86.3	0.928	-10.7	0.117	75.4	0.928	-10.6	0.038	12.4	0.112	79.4	0.115	76.2	0.110	80.1	0.942	-22.7
1.9	0.011	75.5	0.925	-11.2	0.122	74.9	0.927	-11.2	0.038	10.1	0.116	79.0	0.128	76.5	0.122	80.2	0.943	-23.8
2.0	0.013	96.5	0.924	-11.8	0.128	74.2	0.924	-11.7	0.041	11.0	0.122	78.4	0.125	76.4	0.121	80.1	0.941	-25.1
2.1	0.013	85.7	0.922	-12.4	0.133	73.5	0.923	-12.3	0.043	11.3	0.128	78.4	0.134	73.3	0.130	78.1	0.941	-26.1
2.2	0.017	90.9	0.920	-13.0	0.140	72.7	0.920	-12.9	0.045	12.5	0.134	77.4	0.138	74.4	0.133	79.1	0.937	-27.2
2.3	0.017	87.7	0.917	-13.6	0.145	72.9	0.918	-13.5	0.050	13.6	0.139	77.3	0.146	73.4	0.140	77.5	0.936	-28.2
2.4	0.022	83.4	0.915	-14.2	0.149	71.7	0.916	-14.0	0.051	15.3	0.144	76.5	0.149	75.1	0.144	79.1	0.935	-29.1
2.5	0.024	84.5	0.911	-14.8	0.155	71.5	0.912	-14.7	0.058	16.6	0.150	77.3	0.153	73.7	0.150	79.3	0.931	-29.9
2.6	0.028	75.4	0.911	-15.4	0.158	70.6	0.912	-15.4	0.061	19.2	0.152	76.4	0.158	71.5	0.153	77.4	0.929	-30.8
2.7	0.033	76.7	0.906	-15.9	0.167	71.6	0.907	-15.7	0.069	20.5	0.163	77.3	0.169	72.2	0.164	77.6	0.932	-31.5
2.8	0.038	70.3	0.906	-16.7	0.168	71.1	0.905	-16.7	0.073	23.1	0.159	76.3	0.166	71.7	0.159	76.5	0.927	-32.3
2.9	0.046	69.5	0.901	-17.2	0.176	70.1	0.903	-17.0	0.082	24.6	0.170	76.2	0.175	71.5	0.170	77.2	0.927	-32.9
3.0	0.051	65.7	0.900	-18.1	0.177	69.8	0.897	-18.0	0.087	26.9	0.170	76.9	0.175	72.0	0.170	79.1	0.919	-33.4

*The characteristic contains evaluation system loss.

- Specifications of any and all SANYO products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
- SANYO Electric Co., Ltd. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.
- In the event that any or all SANYO products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.
- No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of SANYO Electric Co., Ltd.
- Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the SANYO product that you intend to use.
- Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. SANYO believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

This catalog provides information as of October, 2003. Specifications and information herein are subject to change without notice.