



SANYO Semiconductors

DATA SHEET

15GN01S — NPN Epitaxial Planar Silicon Transistor

VHF to UHF Band High-frequency Switching, High-frequency General-Purpose Amplifier Applications

Features

- Small ON-resistance [$R_{on}=2\Omega$ ($I_B=3mA$)].
- Small output capacitance [$C_{ob}=1.0pF$ ($V_{CB}=10V$)].
- Ultrasmall package permitting applied sets to be small and slim.

Specifications

Absolute Maximum Ratings at $T_a=25^\circ C$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		15	V
Collector-to-Emitter Voltage	V_{CEO}		8	V
Emitter-to-Base Voltage	V_{EBO}		3	V
Collector Current	I_C		50	mA
Collector Dissipation	P_C		100	mW
Junction Temperature	T_J		150	$^\circ C$
Storage Temperature	T_{stg}		-55 to +150	$^\circ C$

Electrical Characteristics at $T_a=25^\circ C$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=10V, I_E=0$			0.5	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=2V, I_C=0$			0.5	μA
DC Current Gain	h_{FE}	$V_{CE}=5V, I_C=10mA$	200		400	
Gain-Bandwidth Product	f_T	$V_{CE}=5V, I_C=10mA$	1.0	1.5		GHz
Output Capacitance	C_{ob}	$V_{CB}=10V, f=1MHz$		1.0		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=20mA, I_B=2mA$		0.06	0.12	V
Output ON resistance	R_{on}	$I_B=3mA, f=10kHz$		2.0		Ω

Marking : ZA

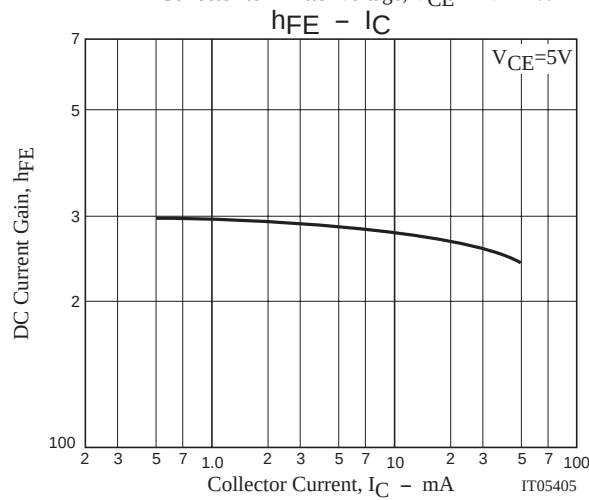
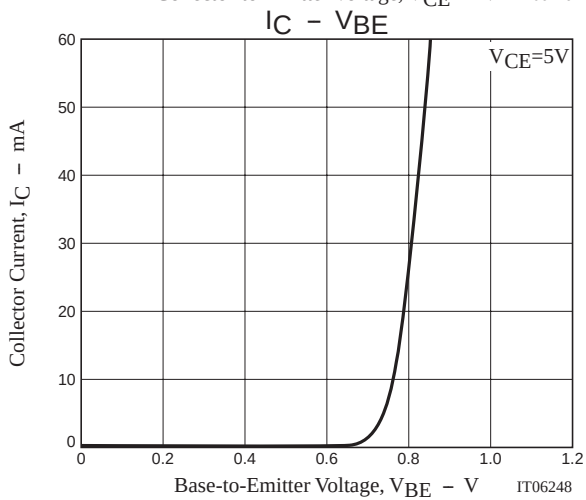
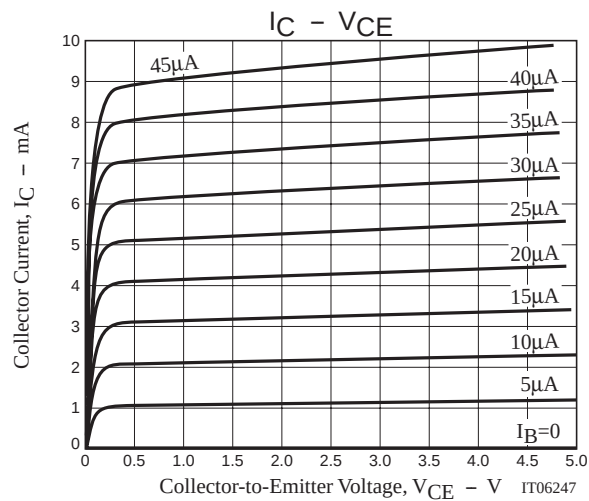
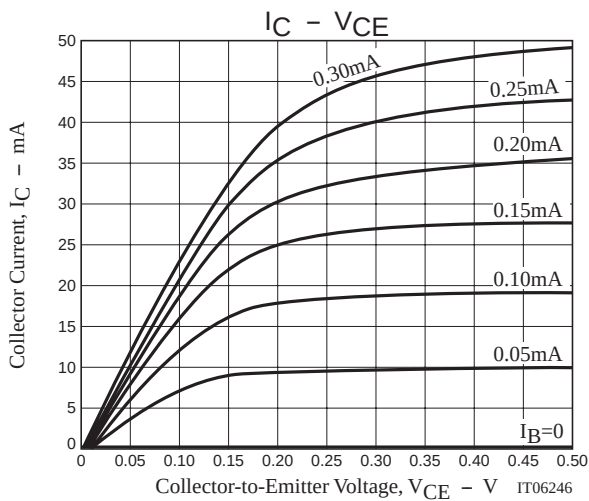
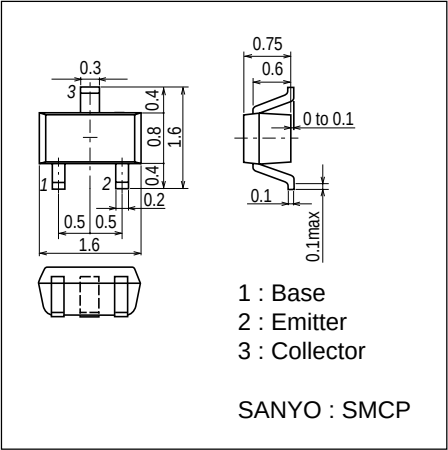
- Any and all SANYO products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious 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.

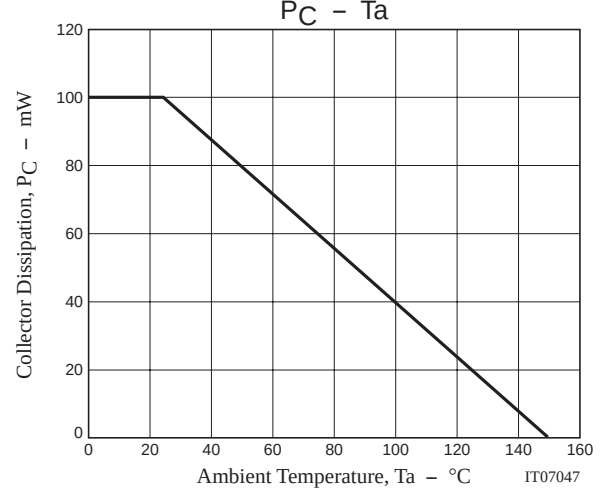
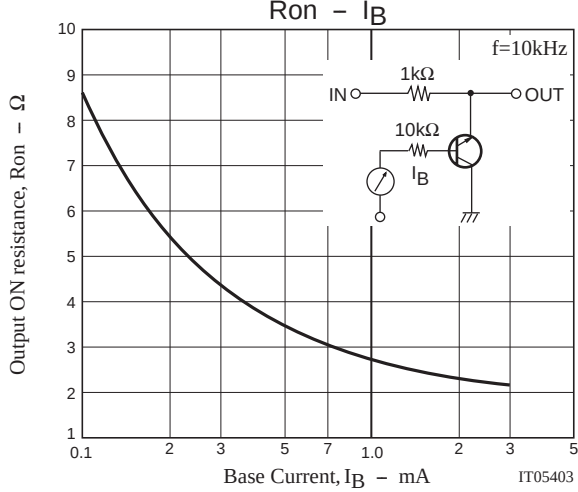
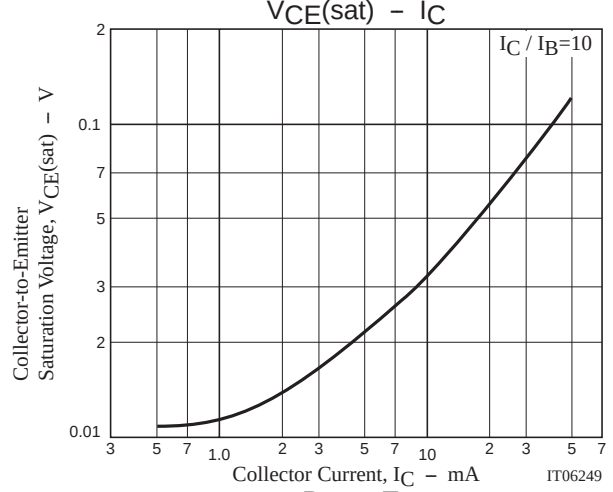
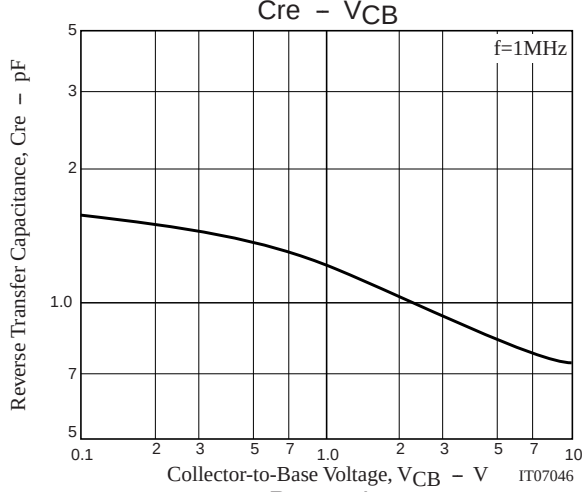
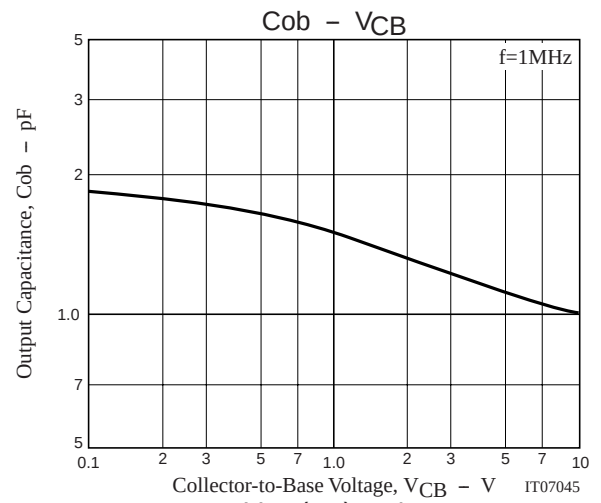
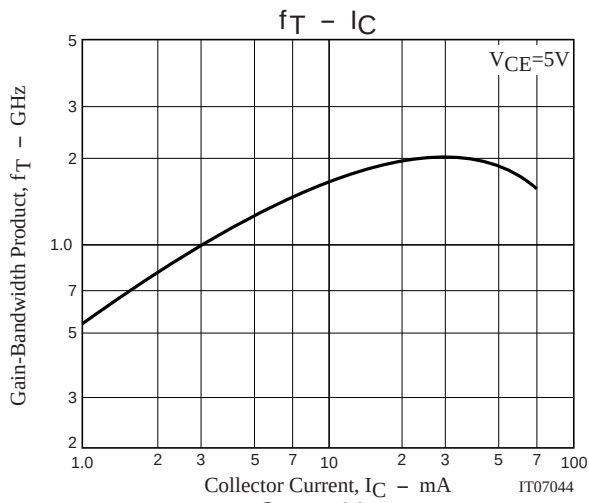
SANYO Electric Co.,Ltd. Semiconductor Company

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

Package Dimensions

unit : mm
2106A





15GN01S

S Parameters (Common emitter)

V_{CE}=5V, I_C=5mA, Z_O=50Ω

Freq(MHz)	S ₁₁	∠S ₁₁	S ₂₁	∠S ₂₁	S ₁₂	∠S ₁₂	S ₂₂	∠S ₂₂
100	0.688	-23.91	4.433	122.24	0.033	71.28	0.738	-11.19
200	0.606	-34.39	2.898	113.10	0.059	69.66	0.700	-15.18
300	0.553	-44.17	2.245	106.08	0.081	67.72	0.679	-18.87
400	0.514	-53.11	1.879	99.48	0.101	63.79	0.665	-22.42
500	0.485	-60.93	1.631	93.33	0.118	61.12	0.657	-26.03
600	0.462	-68.61	1.455	87.74	0.133	59.08	0.649	-29.51
700	0.443	-75.86	1.318	82.33	0.147	57.50	0.643	-33.15
800	0.429	-82.46	1.214	77.39	0.160	55.94	0.640	-36.54
900	0.418	-88.94	1.133	72.48	0.169	54.14	0.643	-39.90
1000	0.410	-94.43	1.060	68.34	0.178	53.32	0.640	-43.16

V_{CE}=5V, I_C=10mA, Z_O=50Ω

Freq(MHz)	S ₁₁	∠S ₁₁	S ₂₁	∠S ₂₁	S ₁₂	∠S ₁₂	S ₂₂	∠S ₂₂
100	0.624	-28.60	6.321	119.62	0.030	70.97	0.656	-13.31
200	0.535	-42.02	4.057	110.49	0.054	69.59	0.614	-17.19
300	0.481	-53.61	3.083	102.86	0.072	66.53	0.587	-20.64
400	0.442	-64.07	2.519	96.29	0.092	64.59	0.572	-23.84
500	0.414	-73.06	2.148	90.44	0.106	62.71	0.564	-27.22
600	0.397	-81.38	1.885	84.81	0.121	61.67	0.556	-30.65
700	0.383	-89.11	1.684	79.71	0.133	60.37	0.553	-33.84
800	0.374	-96.23	1.529	75.04	0.144	59.18	0.552	-37.34
900	0.366	-102.95	1.409	70.47	0.156	58.50	0.554	-40.42
1000	0.363	-108.43	1.309	66.67	0.166	57.98	0.555	-43.51

V_{CE}=5V, I_C=20mA, Z_O=50Ω

Freq(MHz)	S ₁₁	∠S ₁₁	S ₂₁	∠S ₂₁	S ₁₂	∠S ₁₂	S ₂₂	∠S ₂₂
100	0.560	-35.49	8.323	116.72	0.027	70.51	0.571	-15.20
200	0.463	-52.90	5.188	106.57	0.048	69.70	0.524	-18.82
300	0.411	-66.43	3.829	98.55	0.067	67.45	0.500	-21.81
400	0.376	-78.74	3.068	91.98	0.082	65.63	0.486	-24.83
500	0.358	-88.54	2.572	86.23	0.096	65.24	0.480	-27.62
600	0.344	-97.86	2.222	80.95	0.111	64.43	0.477	-30.77
700	0.338	-106.13	1.958	76.04	0.122	63.87	0.476	-33.89
800	0.334	-112.86	1.763	71.46	0.135	63.29	0.477	-37.49
900	0.334	-119.24	1.602	67.25	0.144	63.17	0.482	-40.74
1000	0.334	-125.26	1.475	63.44	0.155	63.13	0.484	-43.76

V_{CE}=5V, I_C=30mA, Z_O=50Ω

Freq(MHz)	S ₁₁	∠S ₁₁	S ₂₁	∠S ₂₁	S ₁₂	∠S ₁₂	S ₂₂	∠S ₂₂
100	0.521	-40.93	9.273	114.54	0.025	68.86	0.525	-16.16
200	0.424	-60.34	5.655	103.64	0.045	70.41	0.478	-19.27
300	0.375	-75.74	4.105	95.51	0.064	68.43	0.456	-21.97
400	0.348	-88.85	3.242	88.95	0.079	65.75	0.444	-24.61
500	0.334	-99.08	2.689	83.25	0.092	67.48	0.441	-27.34
600	0.327	-108.41	2.299	78.07	0.105	66.72	0.442	-30.58
700	0.323	-116.37	2.021	73.18	0.118	66.32	0.442	-34.04
800	0.325	-123.27	1.806	69.03	0.130	65.67	0.443	-37.36
900	0.326	-129.29	1.636	64.92	0.142	65.97	0.451	-40.47
1000	0.327	-134.75	1.501	61.32	0.151	65.87	0.453	-43.71

- 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 July, 2004. Specifications and information herein are subject to change without notice.