



SANYO Semiconductors

DATA SHEET

15GN01SA

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}	$V_{CB}=10V, I_E=0A$			0.5	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=2V, I_C=0A$			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 Semiconductor Co.,Ltd. products described or contained herein are, with regard to "standard application", intended for the use as general electronics equipment (home appliances, AV equipment, communication device, office equipment, industrial equipment etc.). The products mentioned herein shall not be intended for use for any "special application" (medical equipment whose purpose is to sustain life, aerospace instrument, nuclear control device, burning appliances, transportation machine, traffic signal system, safety equipment etc.) that shall require extremely high level of reliability and can directly threaten human lives in case of failure or malfunction of the product or may cause harm to human bodies, nor shall they grant any guarantee thereof. If you should intend to use our products for applications outside the standard applications of our customer who is considering such use and/or outside the scope of our intended standard applications, please consult with us prior to the intended use. If there is no consultation or inquiry before the intended use, our customer shall be solely responsible for the use.

■ Specifications of any and all SANYO Semiconductor Co.,Ltd. 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.

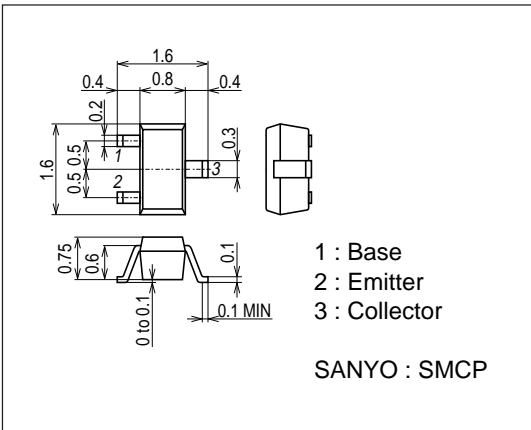
SANYO Semiconductor Co., Ltd.

www.semiconductor-sanyo.com/network

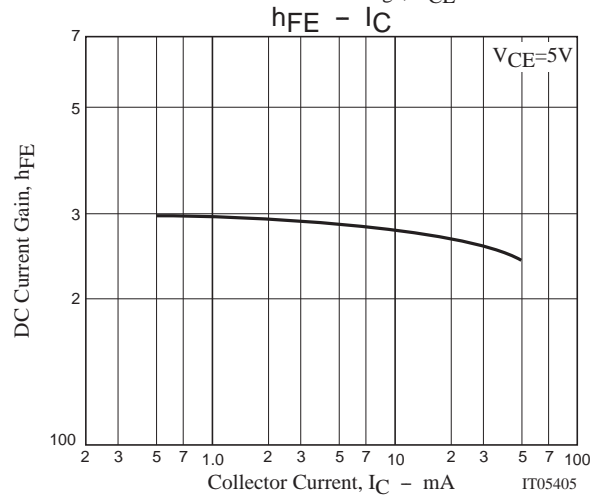
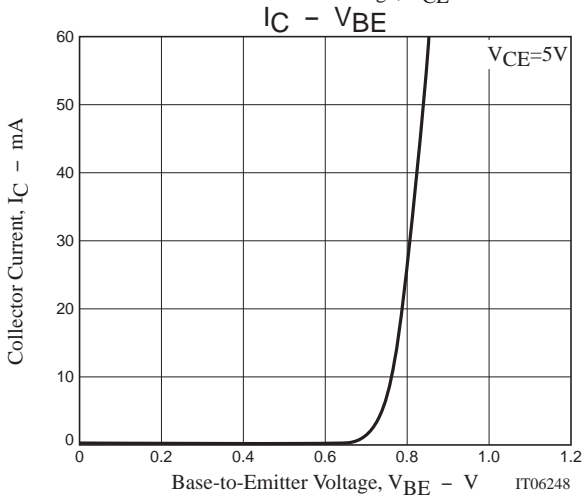
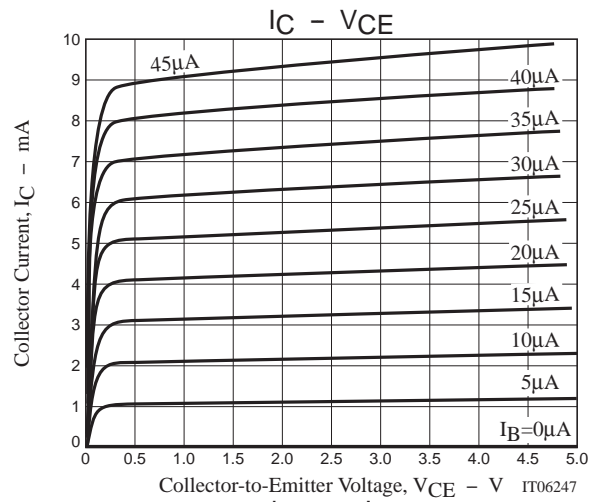
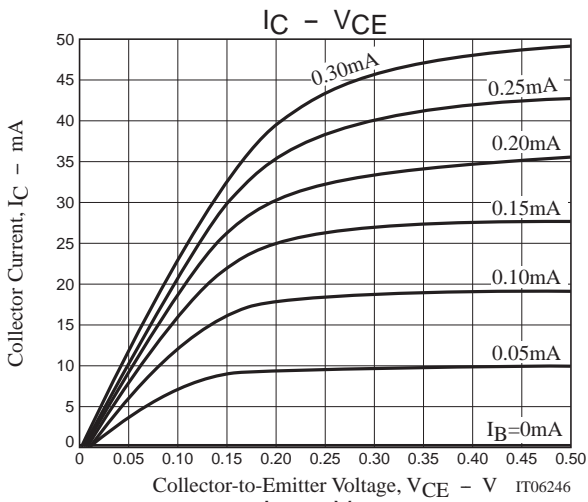
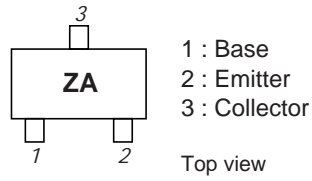
15GN01SA

Package Dimensions

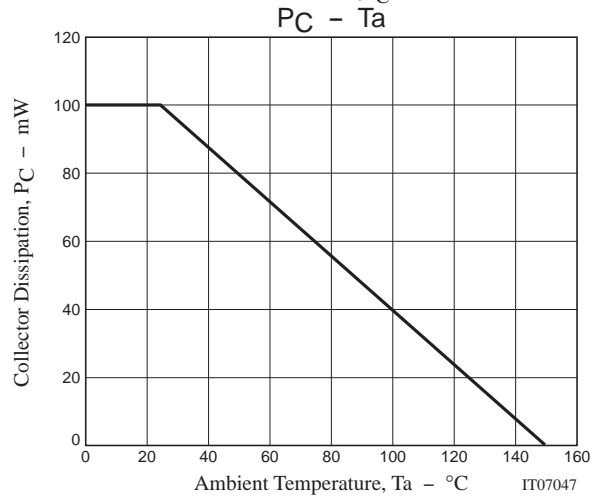
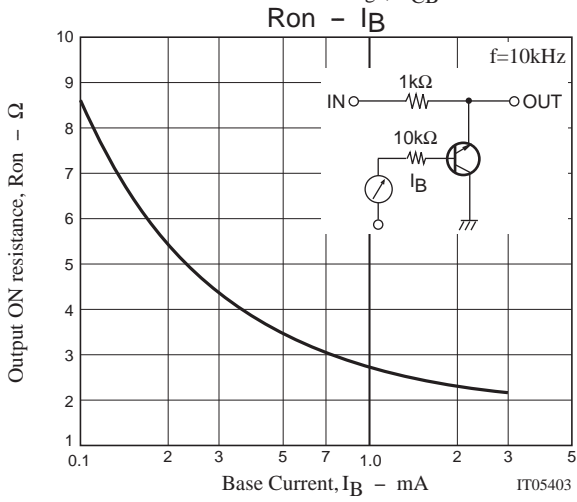
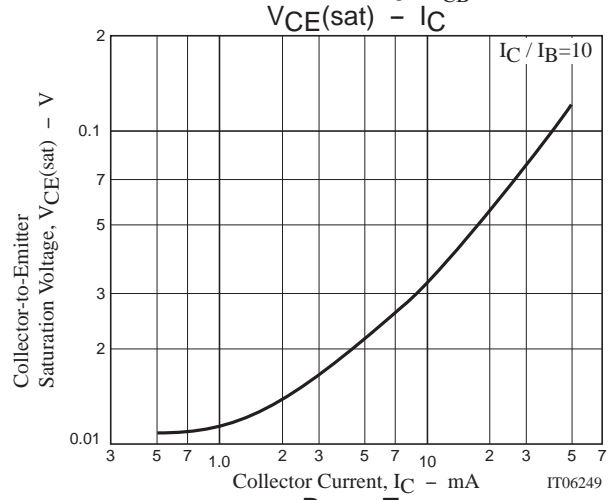
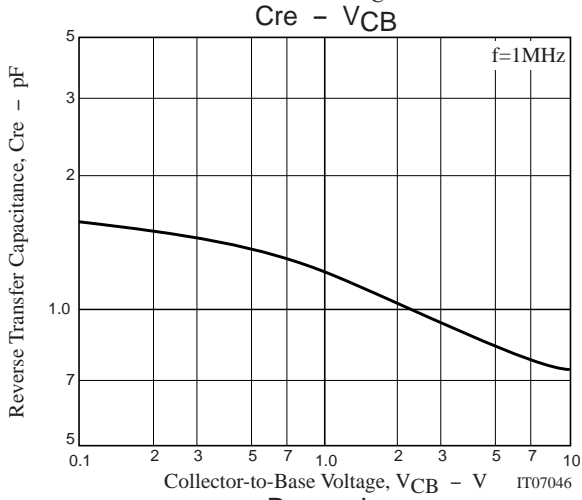
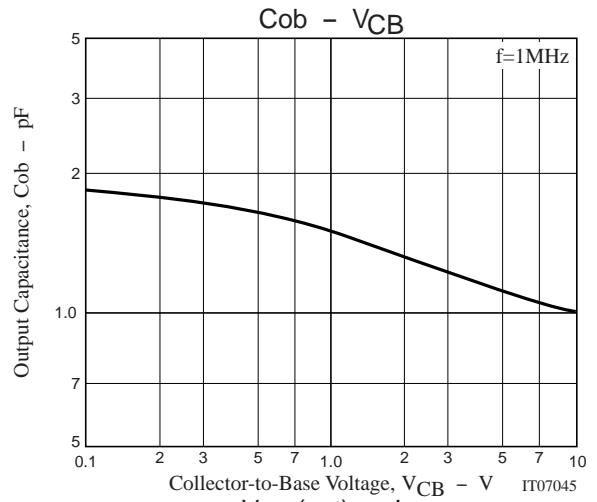
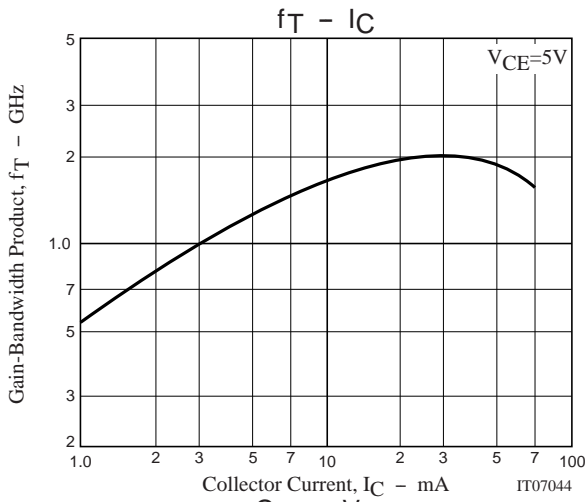
unit : mm (typ)
7027-002



Marking



15GN01SA



15GN01SA

S Parameters (Common emitter)

$V_{CE}=5V, I_C=5mA, Z_O=50\Omega$

Freq(MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
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

$V_{CE}=5V, I_C=10mA, Z_O=50\Omega$

Freq(MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
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

$V_{CE}=5V, I_C=20mA, Z_O=50\Omega$

Freq(MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
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

$V_{CE}=5V, I_C=30mA, Z_O=50\Omega$

Freq(MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
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

- SANYO Semiconductor Co.,Ltd. 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 Semiconductor Co.,Ltd. products described or contained herein.
- SANYO Semiconductor Co.,Ltd. strives to supply high-quality high-reliability products, however, any and all semiconductor products fail or malfunction with some probability. It is possible that these probabilistic failures or malfunction could give rise to accidents or events that could endanger human lives, trouble that could give rise to smoke or fire, or accidents 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 Semiconductor Co.,Ltd. products described or contained herein are controlled under any of applicable local export control laws and regulations, such products may require 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 consent of SANYO Semiconductor 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 Semiconductor Co.,Ltd. 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.
- Upon using the technical information or products described herein, neither warranty nor license shall be granted with regard to intellectual property rights or any other rights of SANYO Semiconductor Co.,Ltd. or any third party. SANYO Semiconductor Co.,Ltd. shall not be liable for any claim or suits with regard to a third party's intellectual property rights which has resulted from the use of the technical information and products mentioned above.

This catalog provides information as of October, 2009. Specifications and information herein are subject to change without notice.