



SANYO Semiconductors

## DATA SHEET

15GN01CA

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 [ $C_{ob}=1.2pF$  ( $V_{CB}=10V$ )].

## 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	$P_C$		200	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	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=2V, I_C=0A$			0.5	$\mu A$
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	$C_{ob}$	$V_{CB}=10V, f=1MHz$		1.2	1.6	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		$\Omega$

Marking : ZX

- 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.

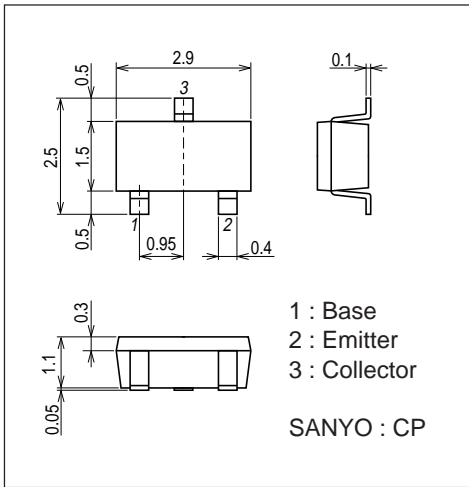
SANYO Semiconductor Co., Ltd.

www.semiconductor-sanyo.com/network

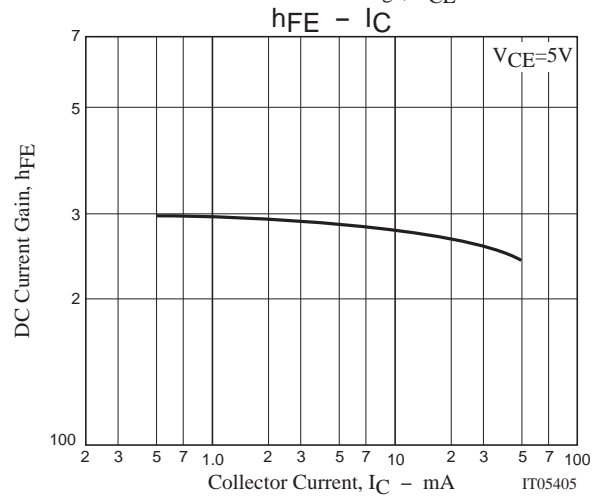
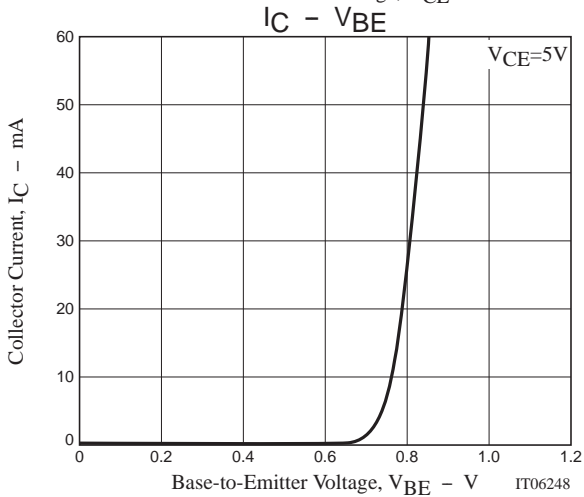
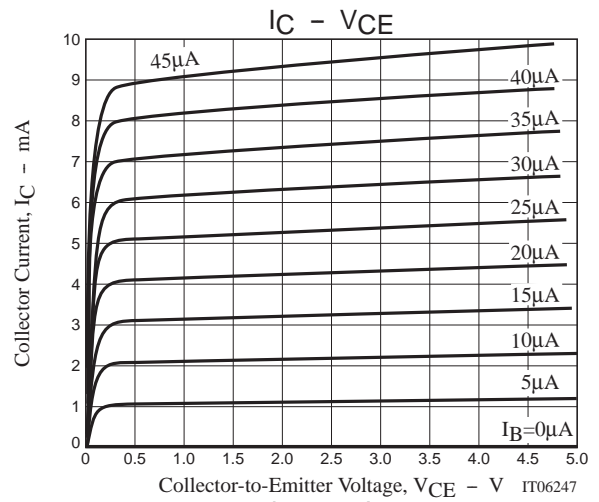
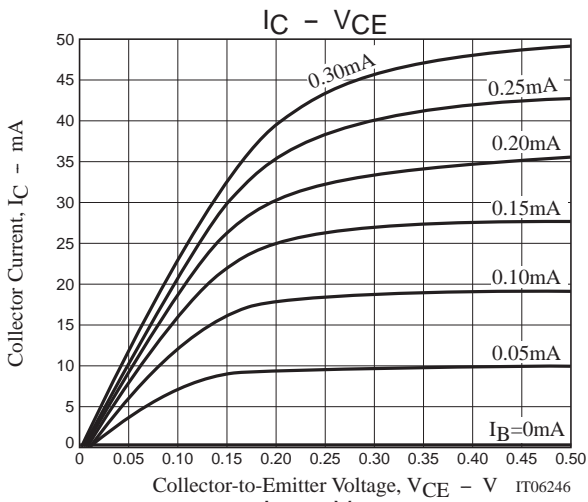
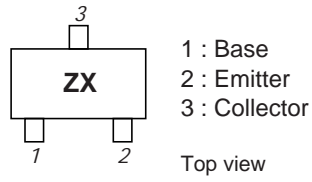
# 15GN01CA

## Package Dimensions

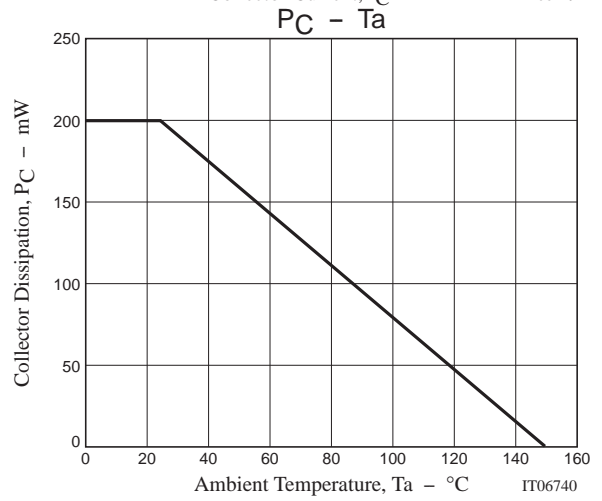
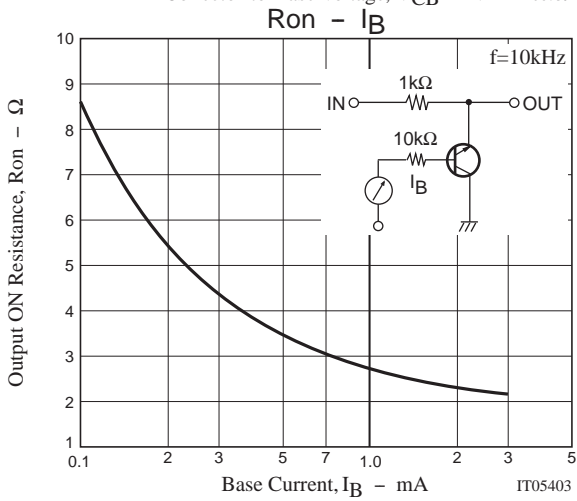
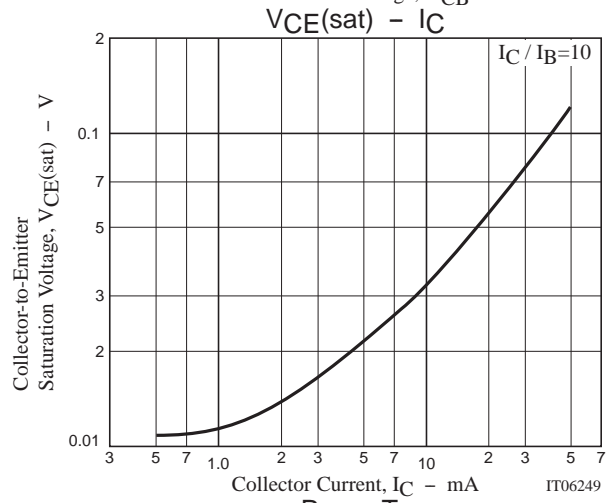
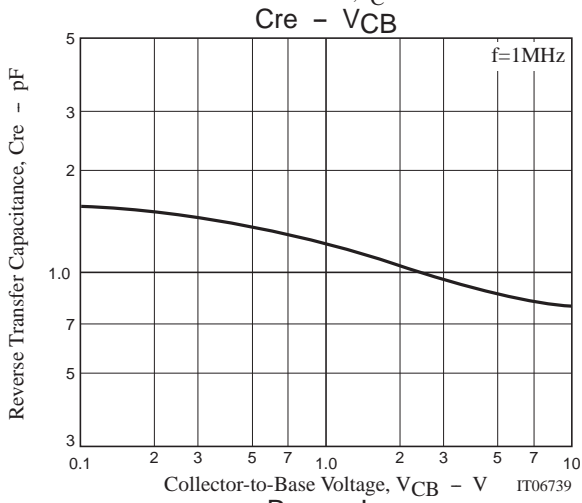
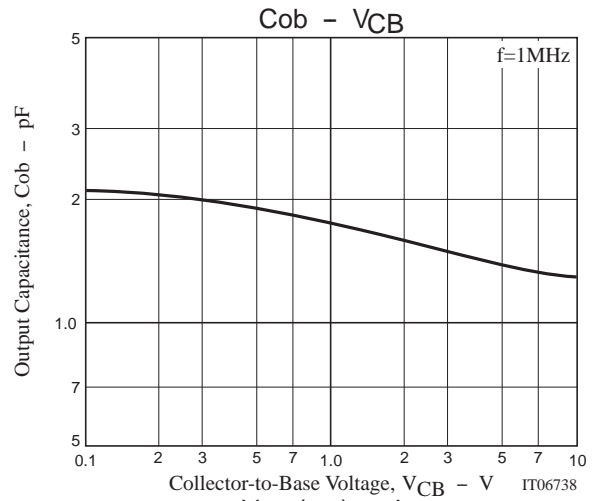
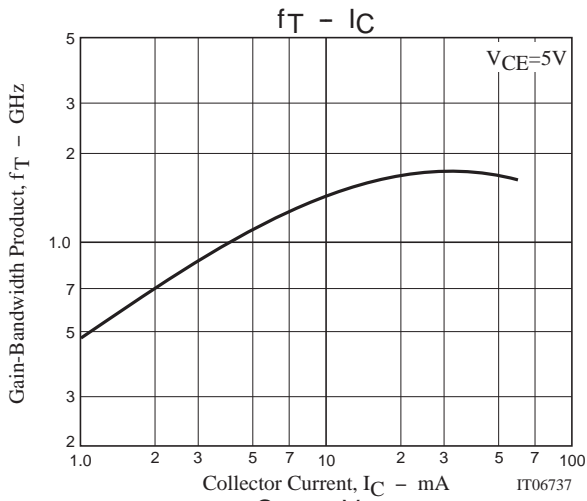
unit : mm (typ)  
7013A-009



## Marking



# 15GN01CA



# 15GN01CA

## 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	0.650	-26.84	4.392	121.74	0.029	71.26	0.776	-10.73
200	0.554	-37.39	2.798	110.97	0.050	66.90	0.737	-14.52
300	0.494	-47.15	2.148	103.12	0.070	63.30	0.720	-18.26
400	0.444	-56.64	1.787	96.10	0.087	61.98	0.708	-22.11
500	0.406	-65.32	1.537	89.48	0.101	59.57	0.697	-25.85
600	0.377	-73.55	1.369	83.71	0.113	57.85	0.691	-29.52
700	0.348	-83.03	1.245	77.82	0.126	56.52	0.687	-33.29
800	0.325	-90.95	1.137	72.30	0.137	54.57	0.684	-37.14
900	0.306	-99.25	1.058	67.12	0.148	53.75	0.682	-40.75
1000	0.288	-107.53	0.990	62.37	0.153	52.46	0.682	-44.56

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

Freq(MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.583	-32.15	6.240	118.82	0.026	70.44	0.703	-12.56
200	0.482	-45.75	3.926	108.10	0.046	66.49	0.659	-15.99
300	0.419	-57.88	2.944	99.96	0.063	65.05	0.637	-19.29
400	0.368	-69.02	2.390	92.67	0.078	62.34	0.624	-22.85
500	0.336	-79.50	2.027	86.17	0.092	61.46	0.615	-26.37
600	0.310	-89.29	1.769	80.51	0.103	60.64	0.610	-29.81
700	0.291	-99.92	1.586	74.79	0.114	59.47	0.606	-33.39
800	0.274	-108.75	1.441	69.42	0.125	58.90	0.605	-37.06
900	0.262	-118.49	1.317	64.61	0.135	57.84	0.605	-40.43
1000	0.251	-127.56	1.217	59.88	0.144	57.55	0.606	-44.25

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

Freq(MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.513	-40.12	8.263	115.87	0.025	68.95	0.625	-14.43
200	0.407	-57.84	5.054	104.00	0.043	68.30	0.576	-17.14
300	0.347	-73.04	3.701	95.34	0.056	66.04	0.557	-19.89
400	0.303	-87.02	2.936	87.98	0.071	64.63	0.545	-22.91
500	0.281	-98.99	2.433	81.63	0.083	64.43	0.538	-26.26
600	0.266	-110.32	2.091	76.17	0.095	63.54	0.537	-29.36
700	0.257	-122.12	1.853	70.61	0.106	63.34	0.536	-33.02
800	0.248	-131.81	1.662	65.60	0.117	62.91	0.538	-36.53
900	0.244	-141.38	1.504	60.76	0.128	62.37	0.538	-39.95
1000	0.245	-150.77	1.376	56.40	0.137	62.62	0.540	-43.80

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

Freq(MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.471	-46.44	9.316	113.49	0.025	70.19	0.582	-15.62
200	0.368	-67.17	5.557	100.99	0.040	68.06	0.532	-17.38
300	0.313	-84.43	3.987	92.10	0.053	66.90	0.516	-19.75
400	0.280	-100.24	3.124	84.66	0.067	65.61	0.506	-22.58
500	0.265	-112.71	2.570	78.56	0.080	66.29	0.504	-25.96
600	0.256	-124.16	2.191	73.18	0.092	65.10	0.502	-29.15
700	0.255	-135.95	1.921	67.77	0.103	66.41	0.502	-32.85
800	0.252	-145.81	1.714	62.74	0.113	65.20	0.506	-36.31
900	0.254	-154.35	1.544	58.35	0.125	65.56	0.508	-39.87
1000	0.255	-163.19	1.411	53.83	0.137	64.48	0.513	-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.