



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	$\mu A$
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	$C_{ob}$	$V_{CB}=10V, f=1MHz$		1.0		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		$\Omega$

Marking : ZA

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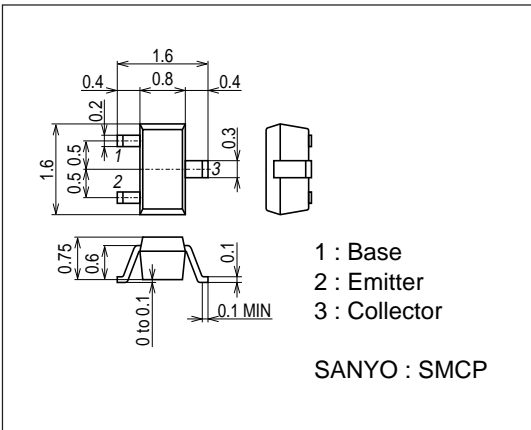
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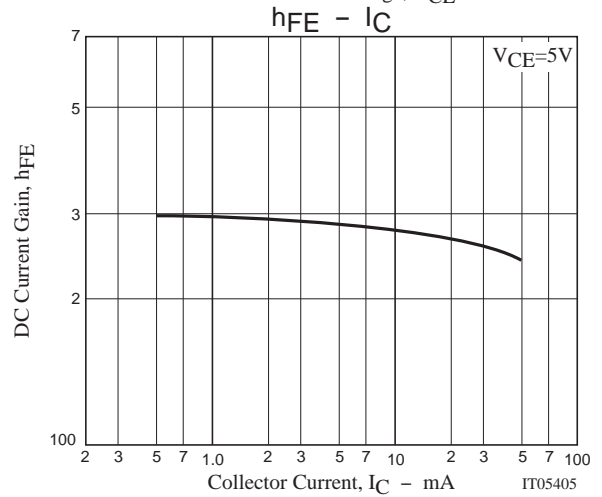
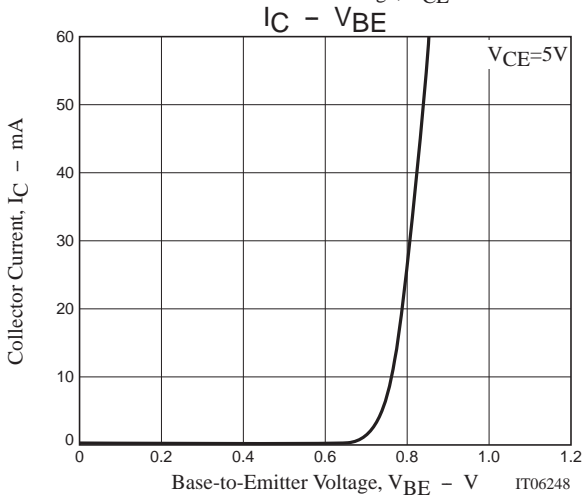
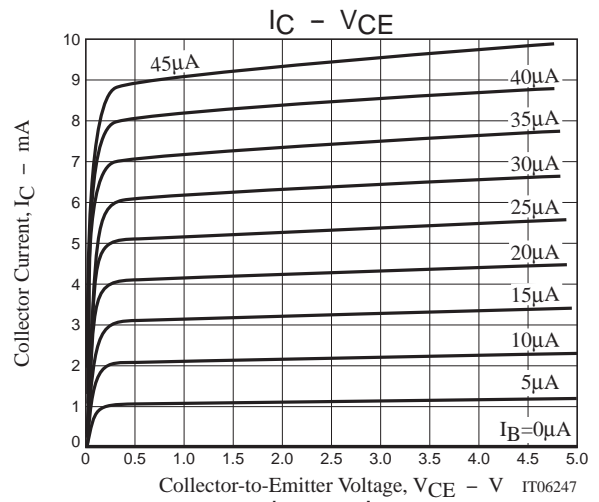
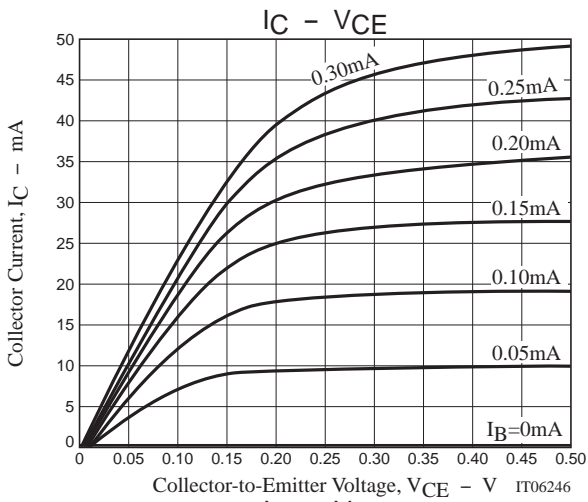
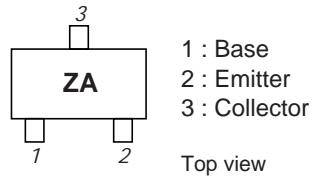
## Package Dimensions

unit : mm (typ)  
7027-002

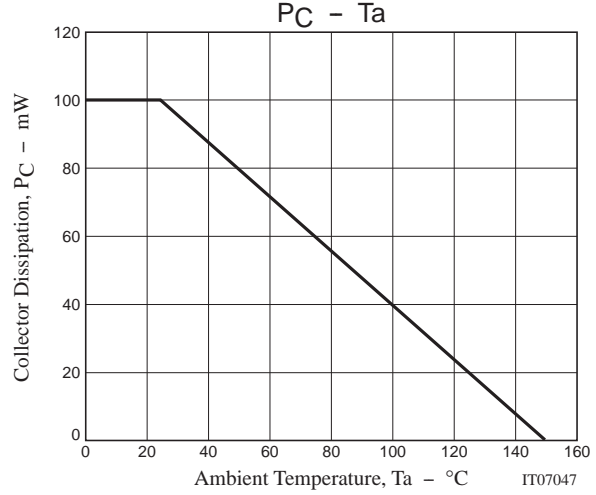
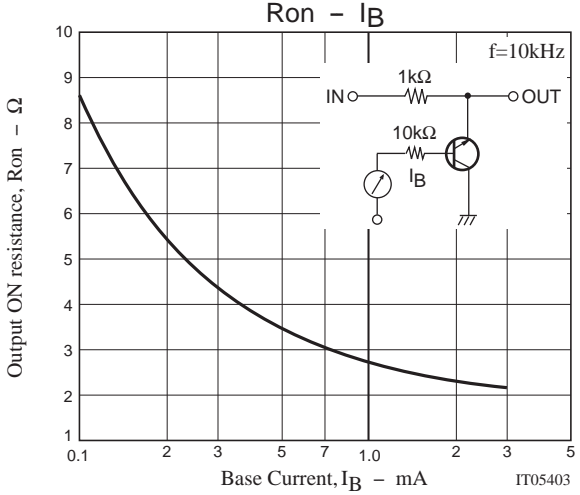
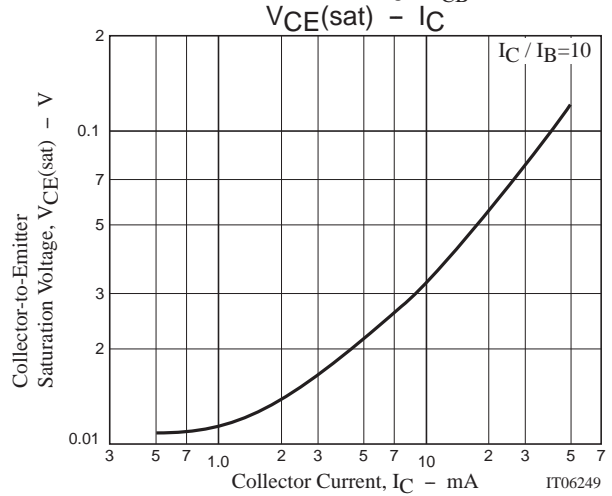
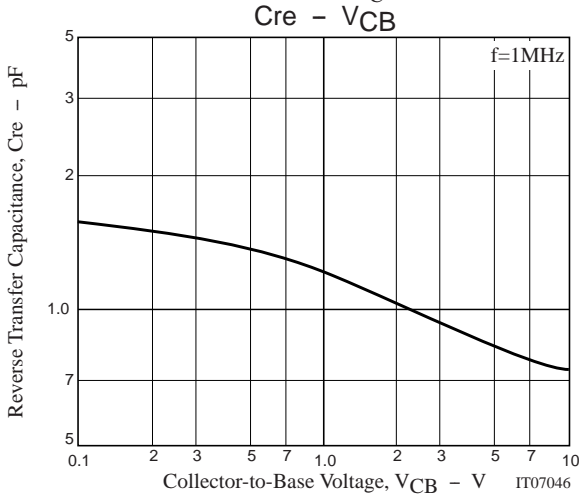
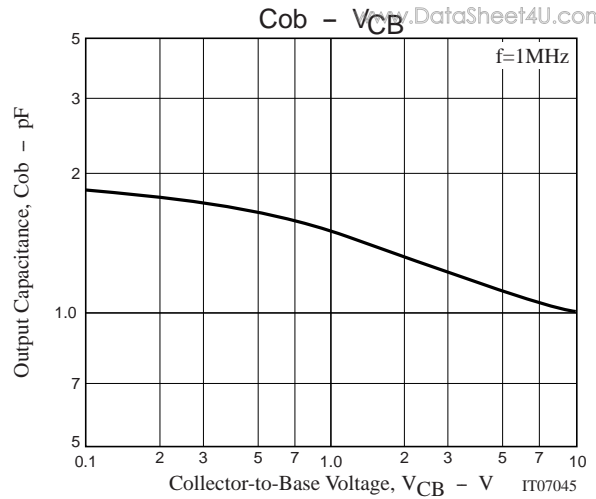
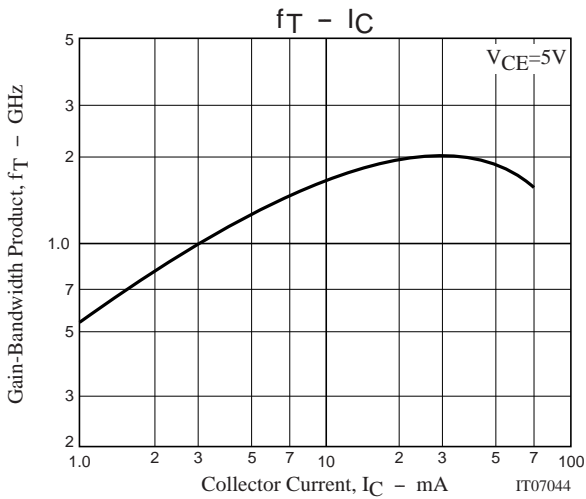


## Marking

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## S Parameters (Common emitter)

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

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

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