



SANYO Semiconductors

DATA SHEET

15GN01NA

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 [$C_{ob}=1.3pF$ ($V_{CB}=10V$)].

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		400	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}	$V_{CB}=10V, f=1MHz$		1.3		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=20mA, I_B=2mA$		0.06	0.12	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=20mA, I_B=2mA$		0.85	1.0	V
Output ON resistance	R_{on}	$I_B=3mA, f=10kHz$		2.0		Ω

Marking : ZA

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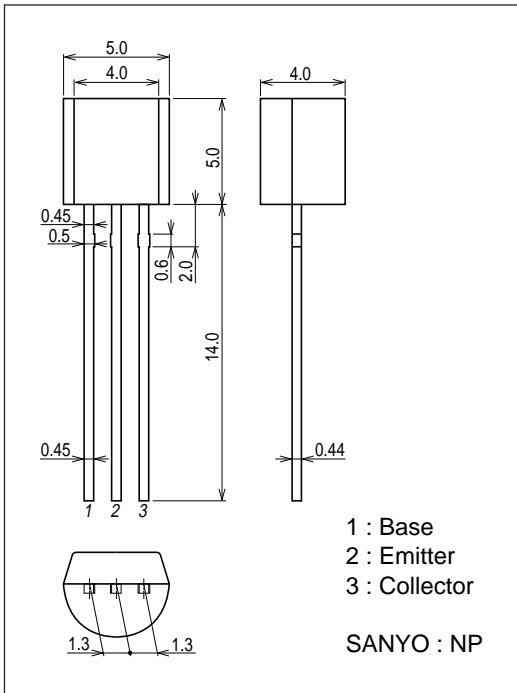
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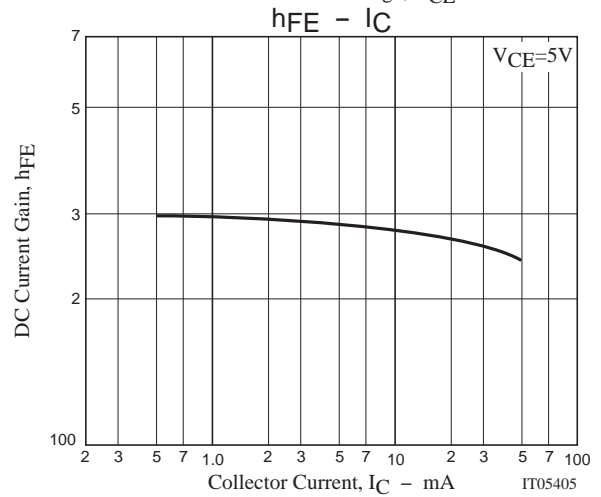
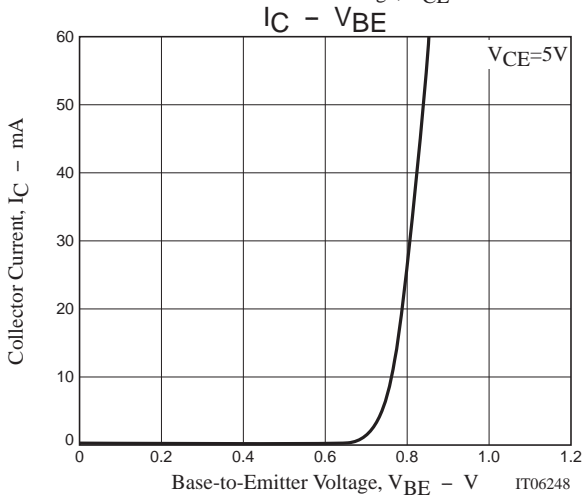
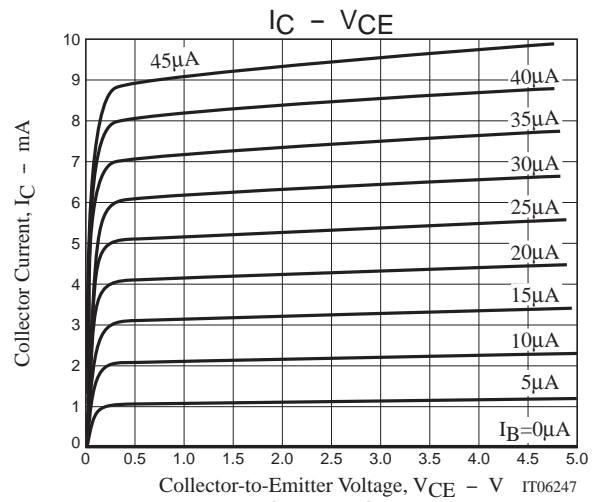
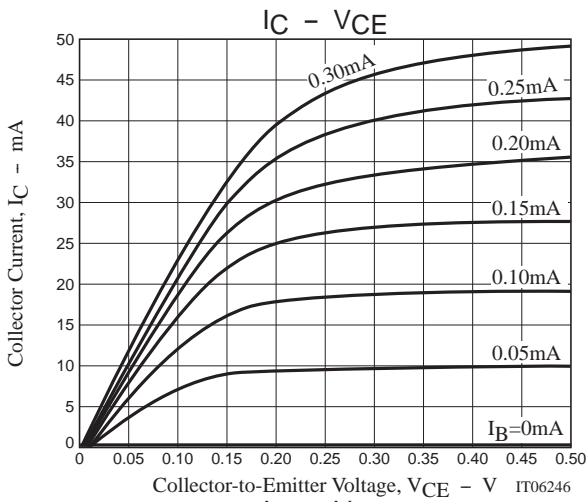
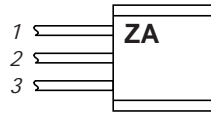
Package Dimensions

unit : mm (typ)

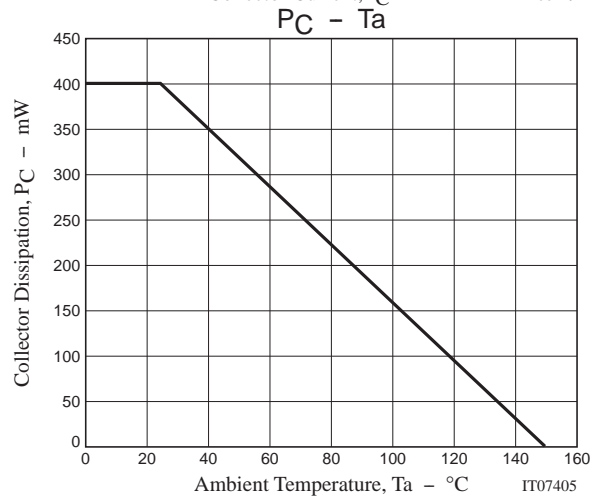
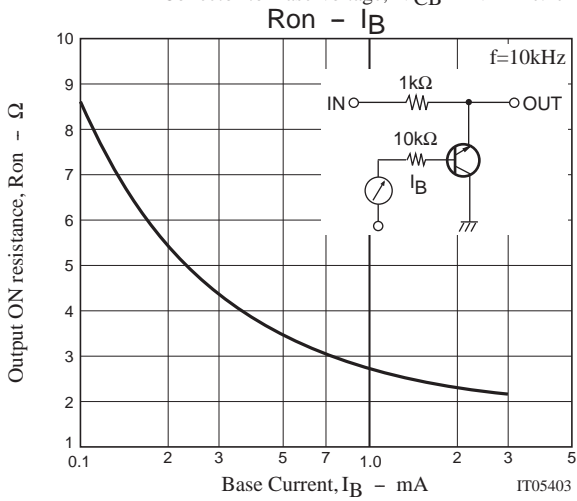
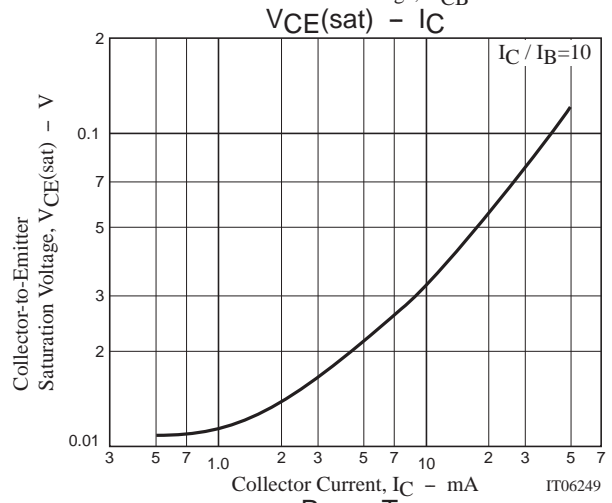
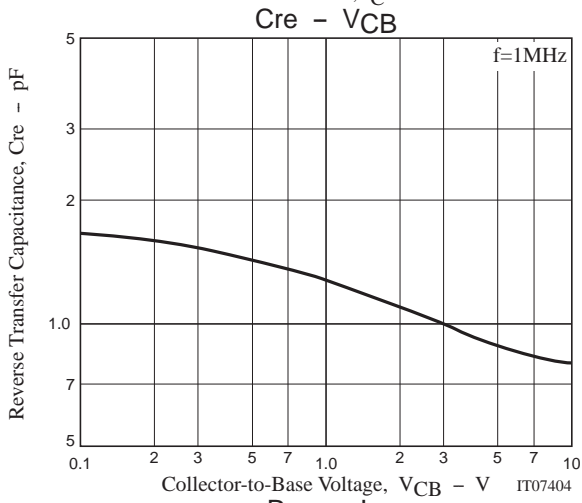
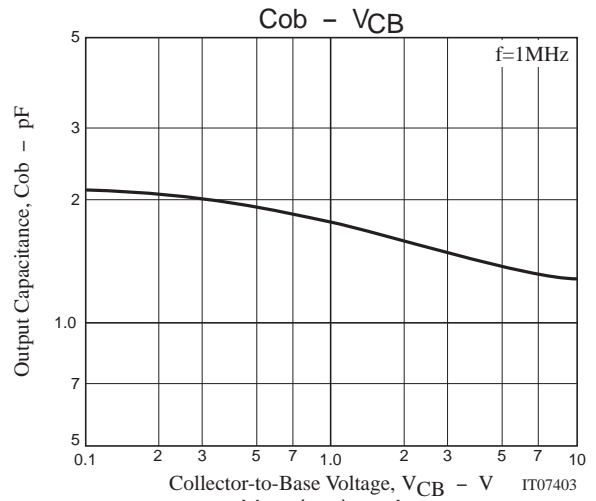
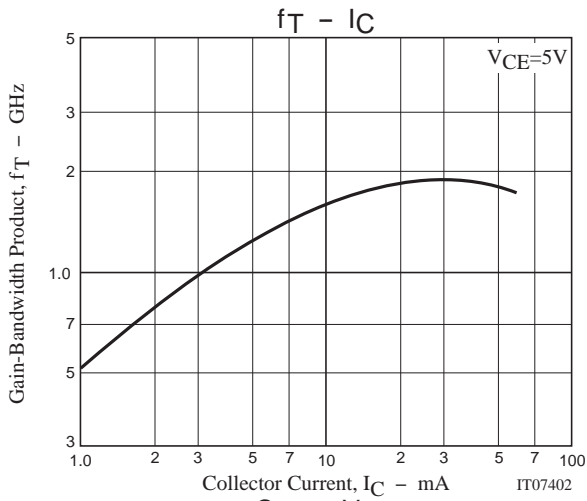
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Marking



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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	0.679	-22.58	4.139	116.73	0.032	73.31	0.753	-12.33
200	0.580	-32.46	2.688	103.88	0.061	70.84	0.727	-16.89
300	0.499	-42.23	2.117	92.82	0.087	66.96	0.703	-22.87
400	0.424	-51.43	1.807	81.91	0.111	62.96	0.682	-28.63
500	0.349	-61.62	1.615	70.91	0.135	58.65	0.660	-35.63
600	0.262	-71.70	1.468	60.67	0.158	54.60	0.629	-42.07
700	0.192	-84.86	1.372	50.52	0.181	51.41	0.605	-48.82
800	0.118	-108.67	1.295	39.92	0.205	47.69	0.571	-57.87
900	0.073	-160.50	1.241	29.90	0.231	44.42	0.539	-66.04
1000	0.103	145.75	1.176	19.87	0.258	40.51	0.508	-76.99

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

Freq(MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.609	-25.35	5.809	112.60	0.031	75.01	0.685	-12.89
200	0.501	-36.26	3.667	99.43	0.058	72.48	0.659	-16.87
300	0.414	-46.23	2.800	87.86	0.084	69.11	0.635	-22.47
400	0.335	-55.33	2.316	76.81	0.109	65.86	0.615	-27.84
500	0.260	-65.69	2.015	66.02	0.134	61.84	0.595	-34.52
600	0.177	-76.44	1.787	56.16	0.159	57.57	0.564	-40.75
700	0.114	-92.81	1.635	46.31	0.184	54.11	0.540	-47.33
800	0.058	-140.97	1.517	36.10	0.212	49.91	0.505	-56.20
900	0.077	143.92	1.431	26.37	0.240	45.96	0.471	-64.20
1000	0.138	119.67	1.339	16.71	0.269	41.37	0.437	-75.11

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

Freq(MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.527	-29.52	7.559	108.11	0.030	76.02	0.623	-12.91
200	0.410	-41.38	4.581	93.88	0.057	74.93	0.600	-16.23
300	0.321	-51.81	3.369	81.99	0.083	71.96	0.580	-21.57
400	0.243	-61.31	2.711	70.96	0.109	68.01	0.563	-26.84
500	0.172	-73.24	2.304	60.45	0.135	63.89	0.545	-33.46
600	0.095	-90.10	2.005	50.91	0.162	59.42	0.515	-39.60
700	0.047	-132.96	1.802	41.36	0.189	55.50	0.491	-46.17
800	0.070	143.26	1.650	31.52	0.219	50.95	0.455	-55.15
900	0.135	116.79	1.535	22.05	0.249	46.42	0.418	-63.06
1000	0.198	106.08	1.422	12.75	0.279	41.29	0.382	-74.27

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

Freq(MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.472	-32.94	8.468	104.99	0.029	78.19	0.591	-12.70
200	0.352	-45.65	4.970	90.19	0.056	76.06	0.572	-15.72
300	0.263	-56.94	3.580	78.26	0.083	72.60	0.554	-21.08
400	0.187	-68.09	2.838	67.30	0.110	68.99	0.539	-26.31
500	0.119	-84.10	2.386	56.82	0.136	65.03	0.522	-32.99
600	0.053	-121.65	2.056	47.51	0.164	60.04	0.492	-39.20
700	0.053	160.07	1.832	38.08	0.193	55.97	0.467	-45.88
800	0.115	124.21	1.664	28.36	0.223	50.92	0.430	-54.94
900	0.182	109.00	1.537	19.11	0.254	46.26	0.391	-62.99
1000	0.244	100.79	1.417	9.97	0.284	40.99	0.354	-74.28

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