



SANYO Semiconductors

DATA SHEET

15GN01F

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 [$C_{ob}=1.05pF$ ($V_{CB}=10V$)].
- 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}	$V_{CB}=10V, f=1MHz$		1.05		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

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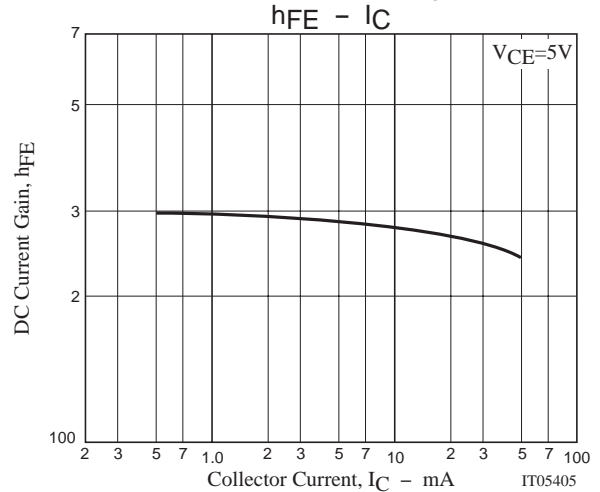
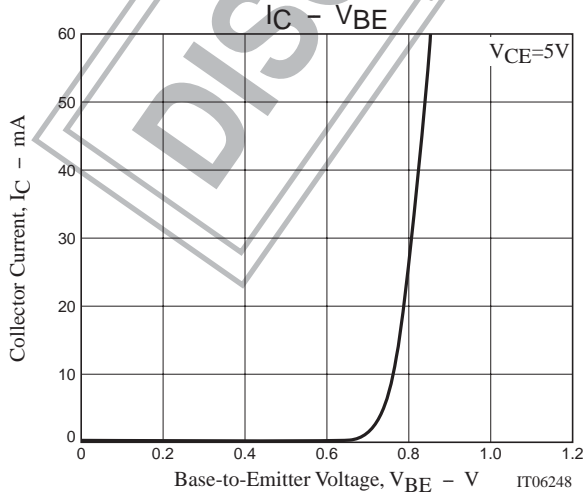
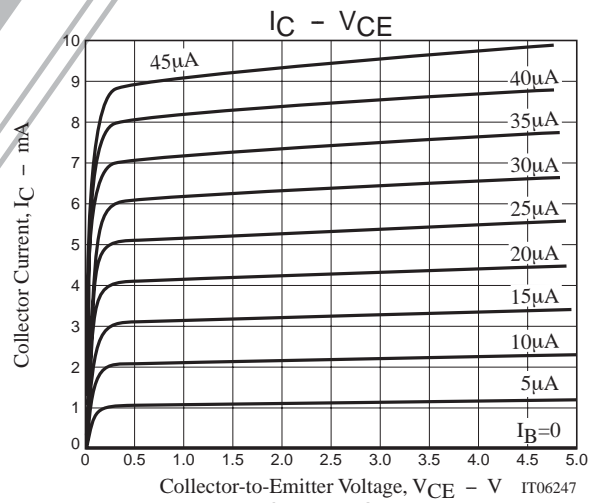
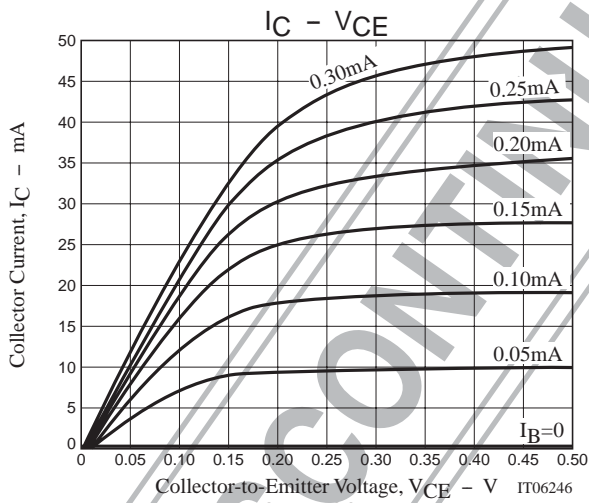
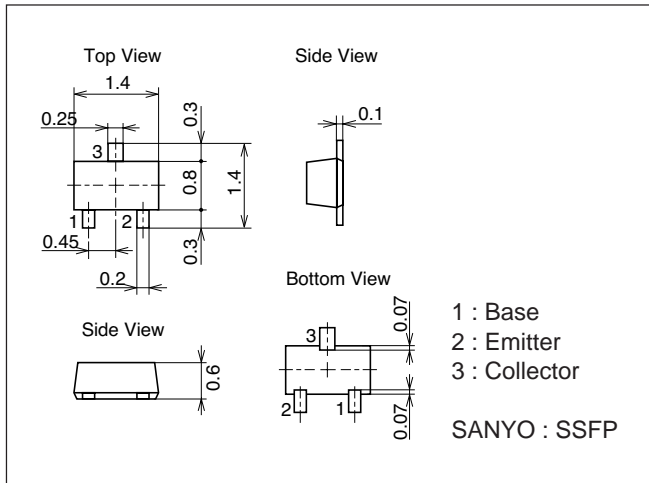
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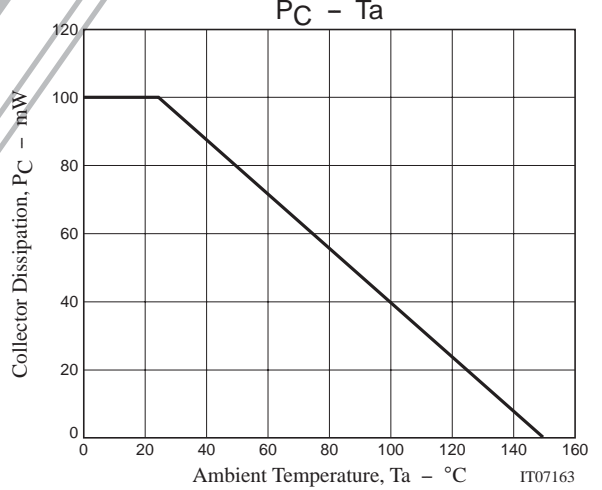
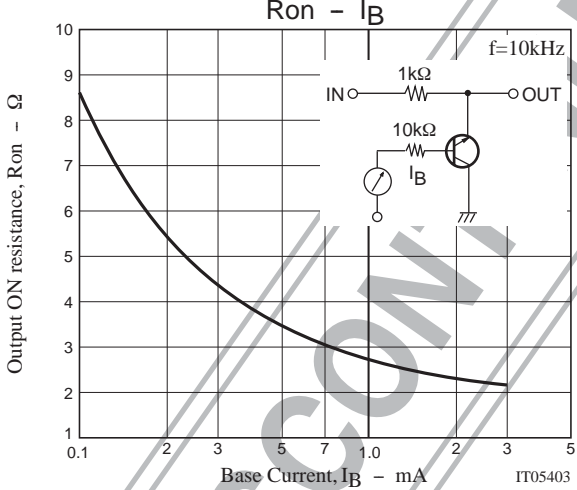
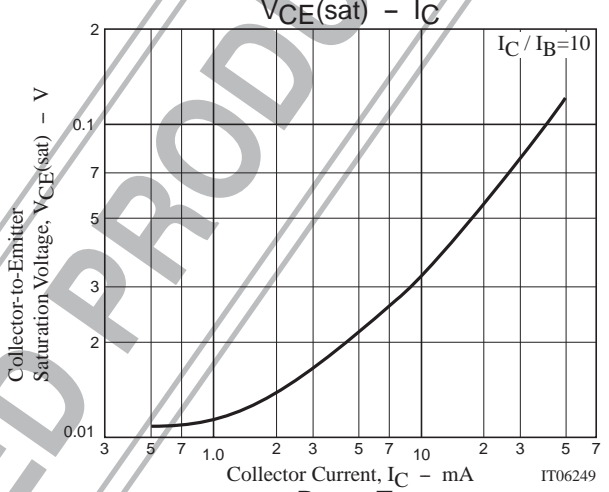
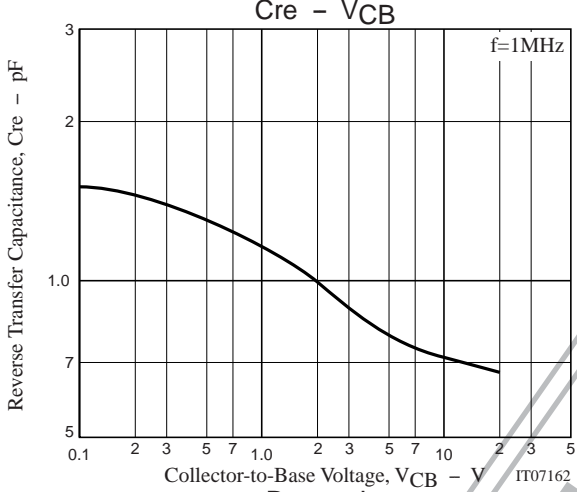
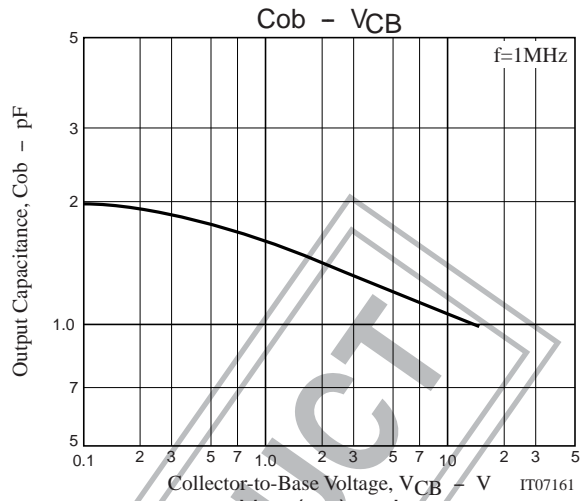
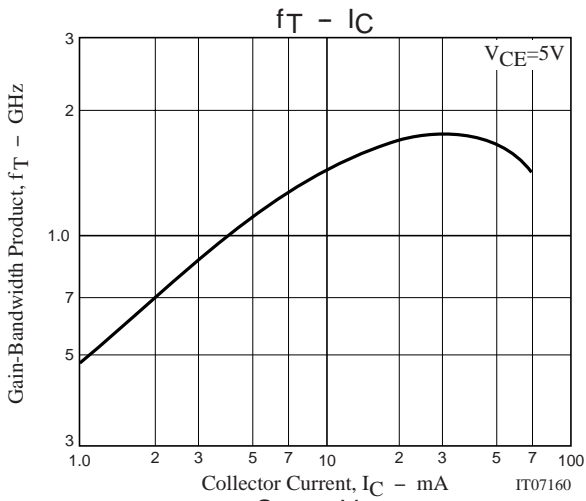
Package Dimensions

unit : mm

2159A



15GN01F



15GN01F

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	0.636	-29.26	4.627	121.79	0.031	70.82	0.771	-10.77
200	0.541	-41.53	2.957	111.08	0.055	69.54	0.736	-14.72
300	0.491	-52.12	2.246	103.82	0.077	64.75	0.716	-18.43
400	0.455	-62.14	1.850	97.45	0.095	62.63	0.702	-21.95
500	0.432	-70.66	1.589	91.57	0.111	60.39	0.696	-25.37
600	0.417	-78.45	1.409	86.16	0.124	58.19	0.691	-28.97
700	0.406	-85.71	1.265	80.93	0.137	56.87	0.686	-32.34
800	0.399	-92.36	1.160	76.30	0.147	54.99	0.684	-35.73
900	0.393	-98.33	1.077	71.81	0.157	53.99	0.689	-39.06
1000	0.391	-103.55	1.005	67.91	0.166	52.98	0.692	-42.43

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

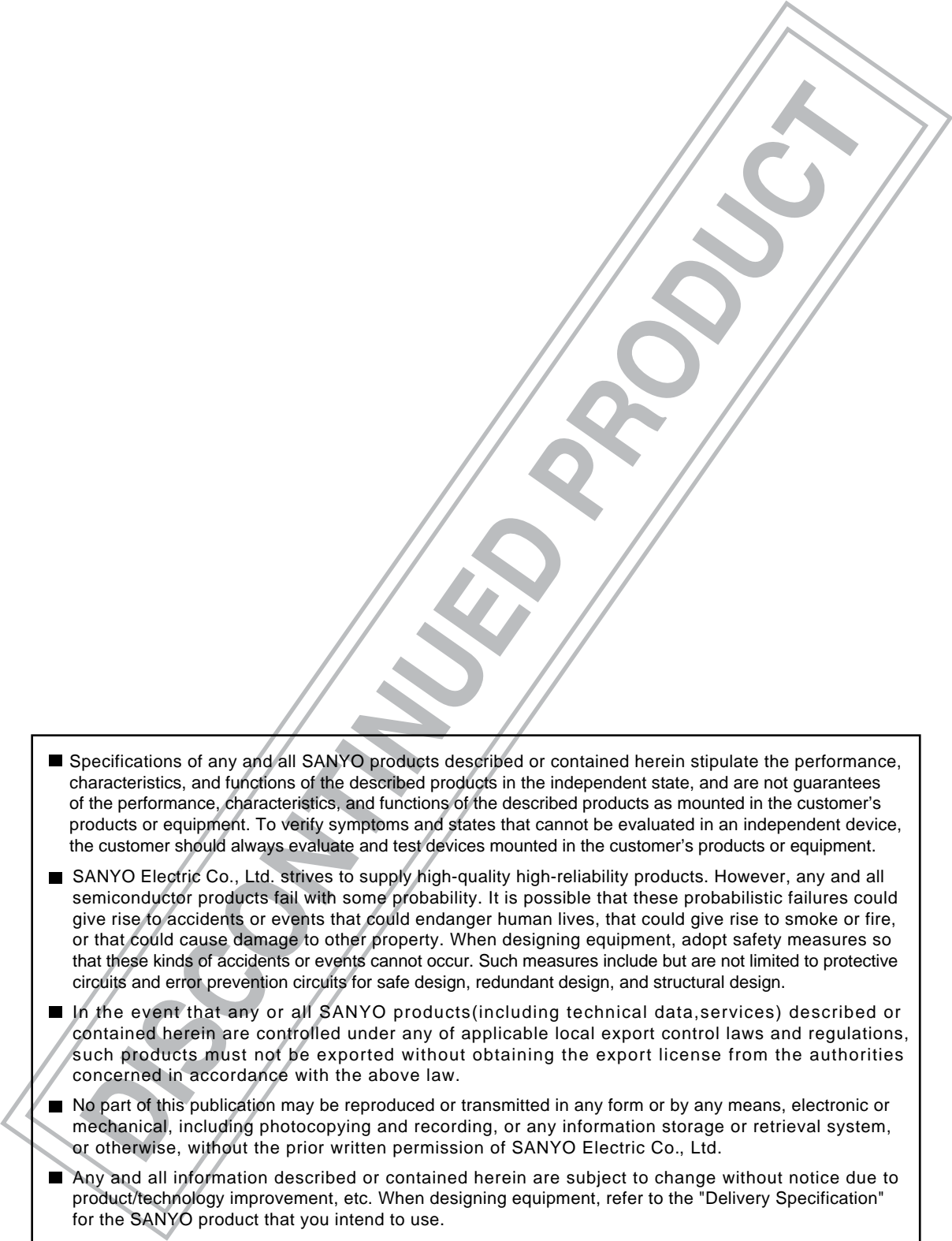
Freq(MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.557	-36.05	6.684	118.39	0.028	67.60	0.693	-12.72
200	0.466	-52.06	4.150	108.35	0.049	68.62	0.652	-16.48
300	0.419	-65.70	3.097	100.84	0.069	65.50	0.628	-20.06
400	0.389	-77.52	2.503	94.29	0.085	62.41	0.614	-23.06
500	0.374	-86.85	2.119	88.50	0.098	62.21	0.607	-26.37
600	0.365	-95.89	1.839	83.29	0.111	60.82	0.606	-29.67
700	0.361	-103.38	1.629	78.45	0.121	59.33	0.601	-32.85
800	0.360	-109.45	1.476	74.05	0.133	59.09	0.602	-36.16
900	0.361	-115.58	1.347	69.84	0.141	58.43	0.608	-39.48
1000	0.361	-120.47	1.247	66.01	0.149	57.85	0.613	-42.67

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

Freq(MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.477	-46.69	8.907	115.02	0.025	69.63	0.611	-14.74
200	0.395	-68.44	5.408	104.10	0.044	67.32	0.563	-17.93
300	0.358	-85.04	3.912	96.17	0.061	65.26	0.541	-20.73
400	0.347	-98.10	3.092	89.56	0.074	65.71	0.530	-23.48
500	0.340	-107.94	2.558	84.09	0.086	64.56	0.527	-26.42
600	0.343	-116.56	2.193	79.07	0.097	63.39	0.527	-29.48
700	0.344	-123.49	1.921	74.63	0.108	64.28	0.527	-32.79
800	0.349	-129.14	1.713	70.54	0.118	63.46	0.530	-36.03
900	0.354	-134.26	1.554	66.46	0.127	64.01	0.540	-39.19
1000	0.358	-138.57	1.426	62.92	0.137	63.76	0.545	-42.53

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

Freq(MHz)	$ S_{11} $	$\angle S_{11}$	$ S_{21} $	$\angle S_{21}$	$ S_{12} $	$\angle S_{12}$	$ S_{22} $	$\angle S_{22}$
100	0.437	-55.08	10.078	112.37	0.024	68.57	0.564	-15.83
200	0.363	-80.54	5.949	100.89	0.041	66.74	0.517	-18.38
300	0.339	-97.82	4.225	92.93	0.056	67.23	0.496	-20.76
400	0.335	-111.28	3.296	86.55	0.068	66.11	0.490	-23.07
500	0.338	-120.52	2.697	81.14	0.081	66.23	0.489	-26.02
600	0.342	-128.45	2.290	76.51	0.092	66.35	0.492	-29.18
700	0.348	-135.06	1.992	71.82	0.103	66.73	0.494	-32.32
800	0.356	-139.70	1.771	67.97	0.113	66.42	0.499	-35.67
900	0.362	-144.18	1.596	64.13	0.122	66.65	0.509	-39.09
1000	0.368	-147.83	1.463	60.83	0.133	67.62	0.517	-42.44

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