Ordering number : ENN7923

SANYO Semiconductors
DATA SHEET

15GN01N — NPN Epitaxial Planar Silicon Transistor
VHF to UHF Band High-frequency Switching, High-frequency General-Purpose Amplifier Applications

Features

- Small ON-resistance [Ron=2Ω (I_B=3mA)].
- Small output capacitance [Cob=1.3pF (V_{CB}=10V)].

Specifications

Absolute Maximum Ratings at Ta=25°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	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Electrical Characteristics at Ta=25°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	Cob	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	Ron	I_B=3mA, f=10kHz		2.0		Ω

Marking : ZA

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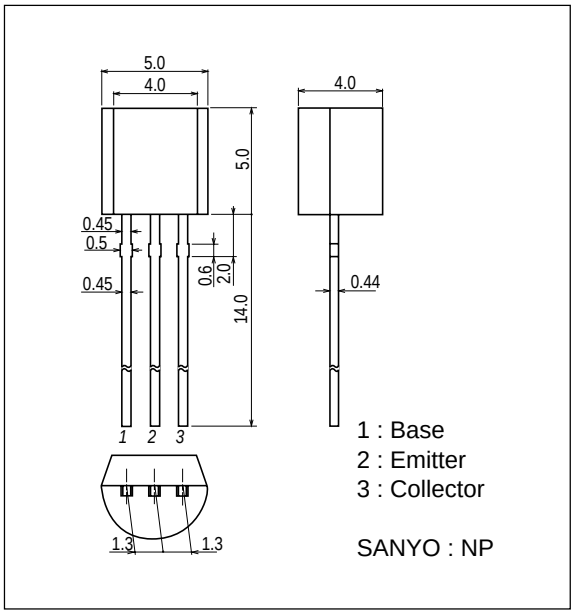
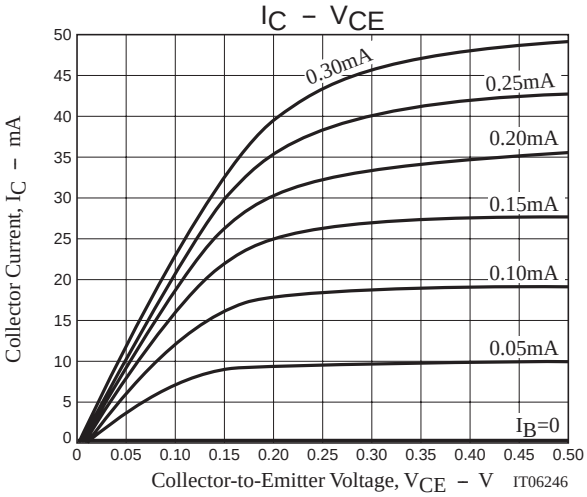
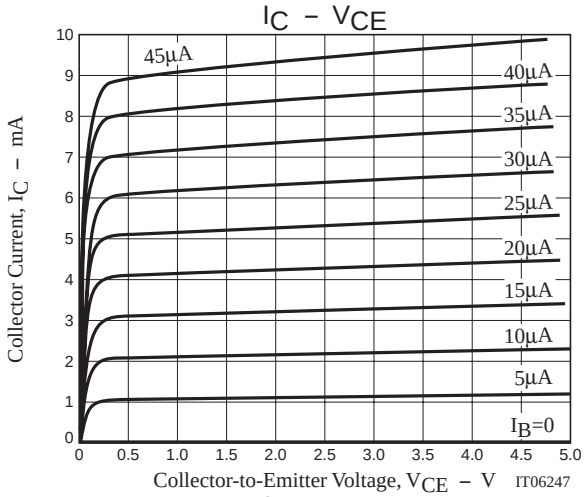
Package Dimensions

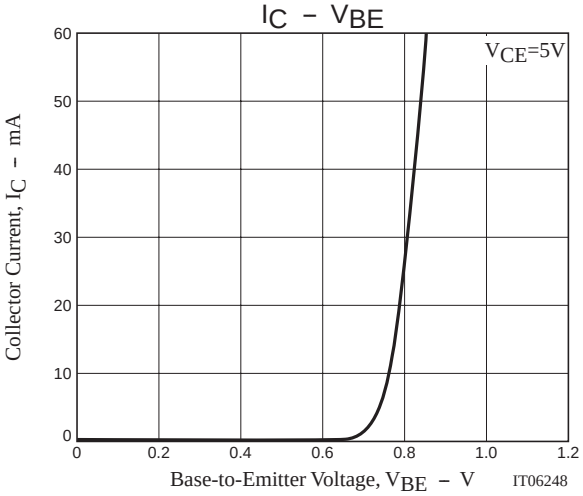
unit : mm

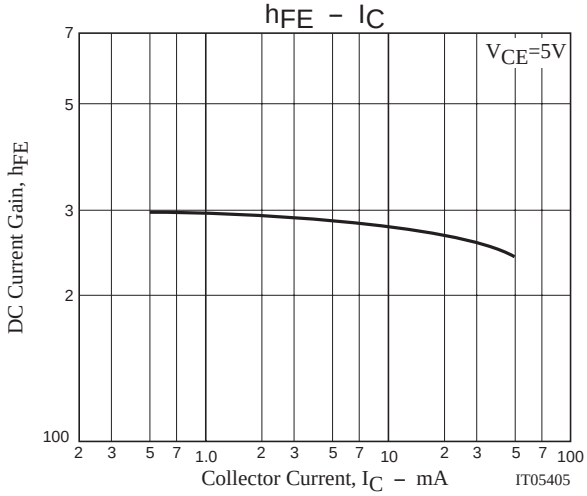
2004B

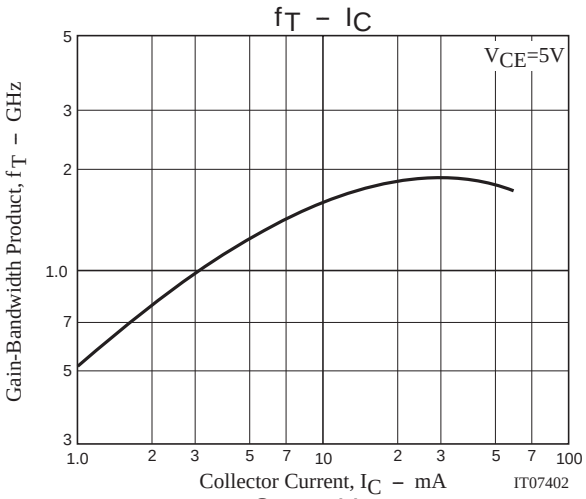


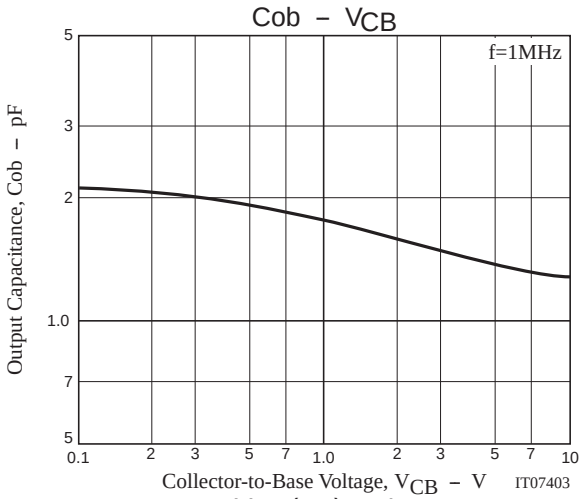


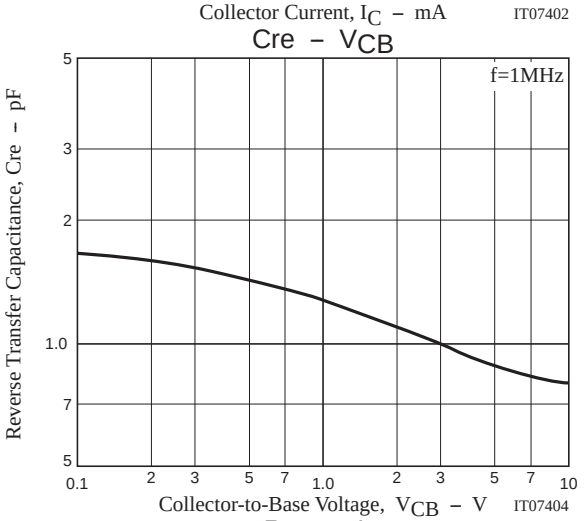


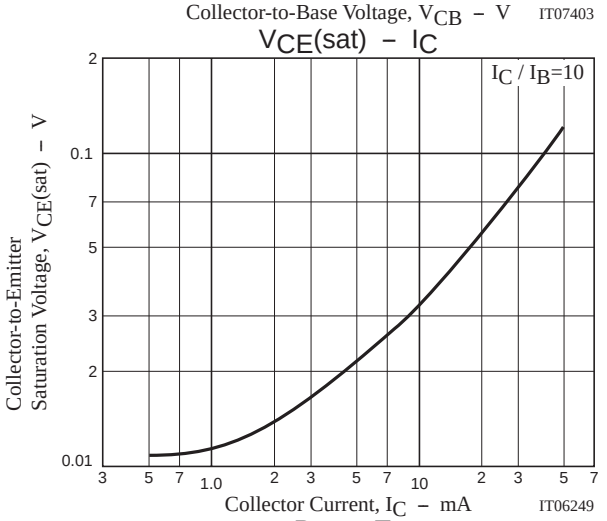


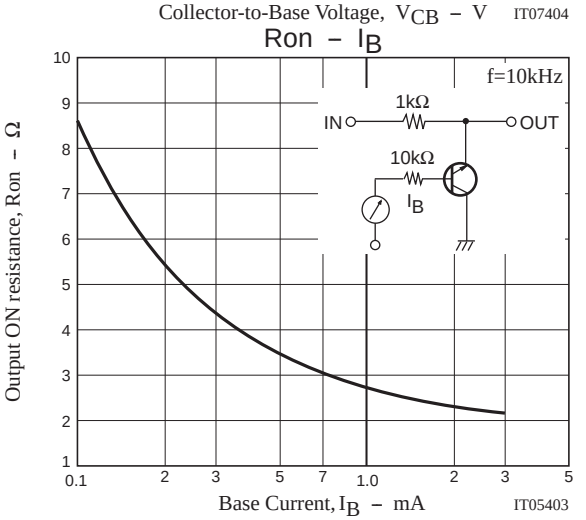


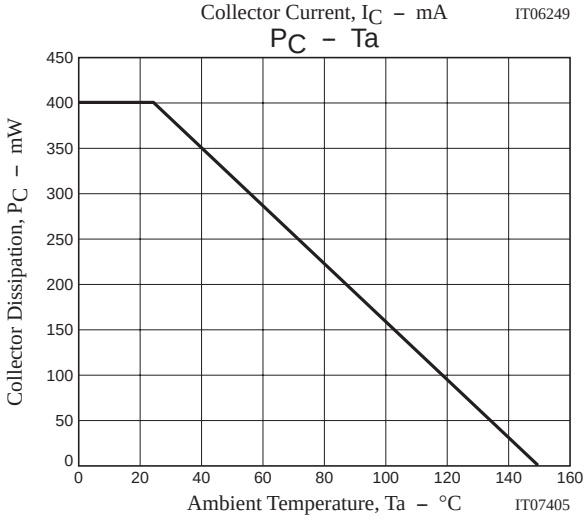

fT – IC
VCE=5V
Gain-Bandwidth Product, fT – GHz
Collector Current, IC – mA
IT07402


Cob – VCB
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT07403


Cre – VCB
f=1MHz
Reverse Transfer Capacitance, Cre – pF
Collector-to-Base Voltage, VCB – V
IT07404


VCE(sat) – IC
IC / IB=10
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – mA
IT06249


Ron – IB
f=10kHz
1kΩ
IN
OUT
10kΩ
IB
Output ON resistance, Ron – Ω
Base Current, IB – mA
IT05403


PC – Ta
Collector Dissipation, PC – mW
Ambient Temperature, Ta – °C
IT07405

S Parameters (Common emitter)

V_{CE}=5V, I_C=5mA, Z_O=50Ω

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=50Ω

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=50Ω

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=50Ω

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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