Ordering number : ENA1104

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 [Ron=2Ω (I_B=3mA)].
- Small output capacitance [Cob=1.0pF (V_{CB}=10V)].
- Ultrasmall package permitting applied sets to be small and slim.

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		100	mW
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		–55 to +150	°C

Electrical Characteristics at Ta=25°C

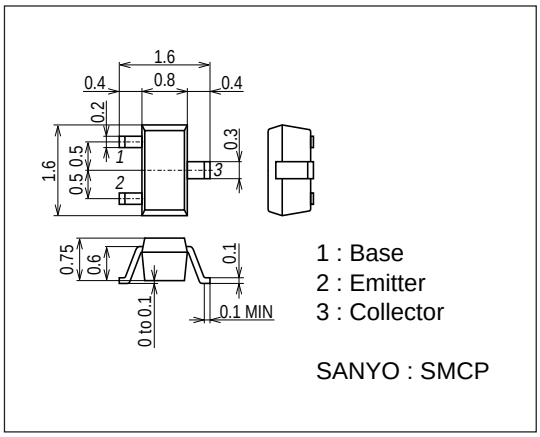
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=10V, I_E=0A			0.5	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=2V, I_C=0A			0.5	μA
DC Current Gain	h_{FE}	V_{CE}=5V, I_C=10mA	200		400	
Gain-Bandwidth Product	f_T	V_{CE}=5V, I_C=10mA	1.0	1.5		GHz
Output Capacitance	Cob	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	Ron	I_B=3mA, f=10kHz		2.0		Ω

Marking : ZA

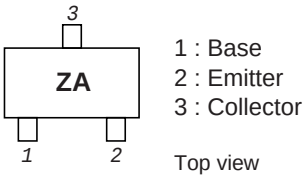
Package Dimensions

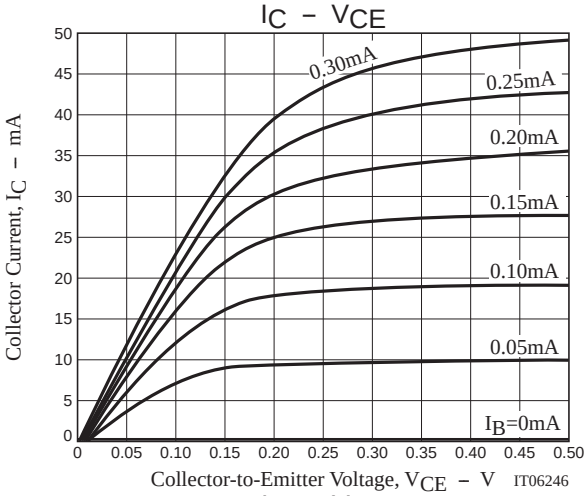
unit : mm (typ)

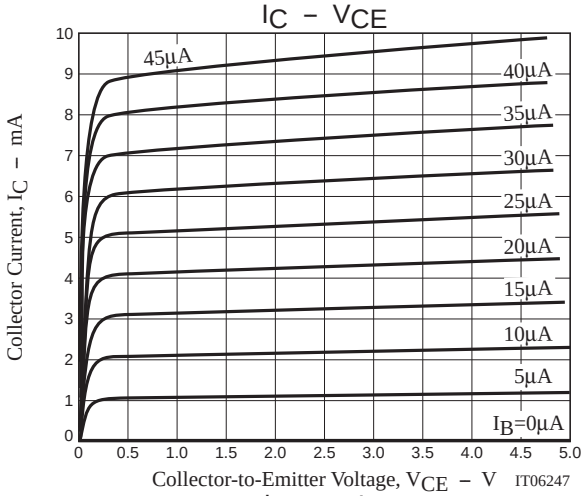
7027-002

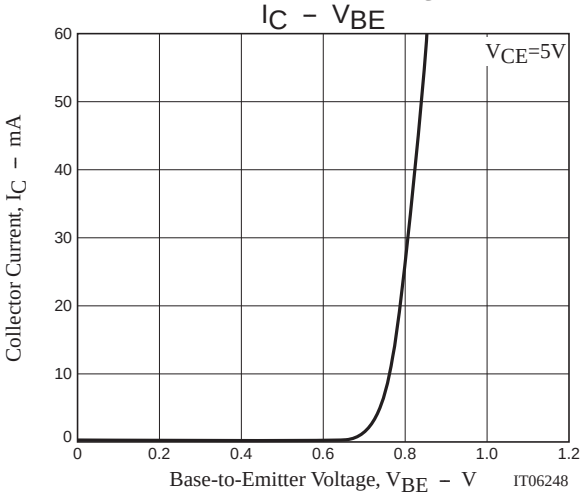


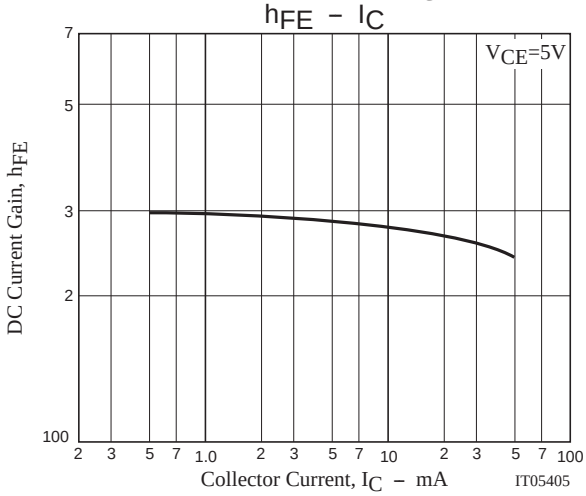
Marking



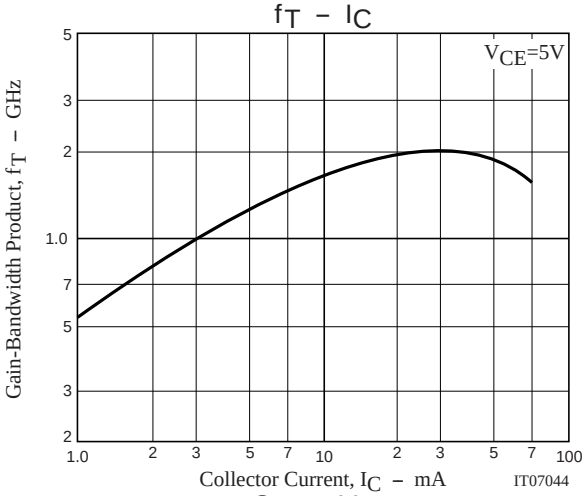




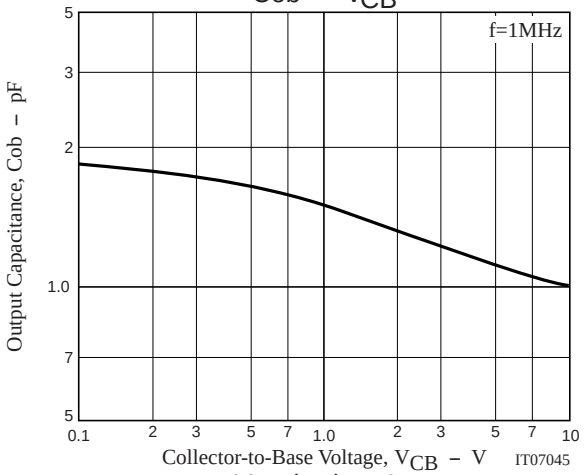




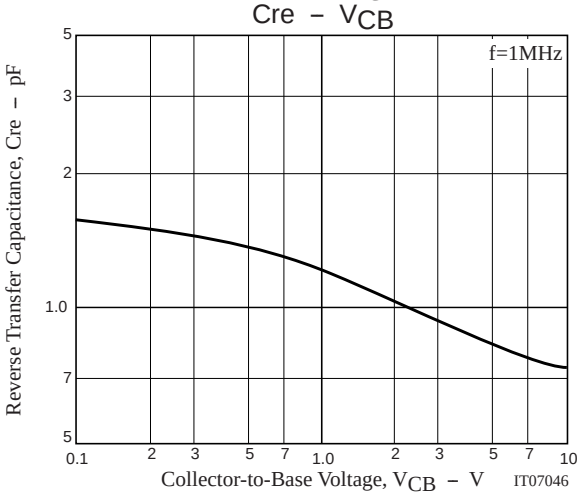
f_T – I_C



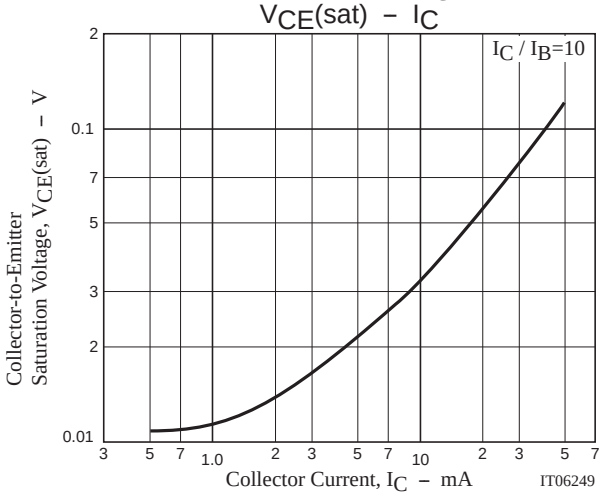
Cob – V_{CB}



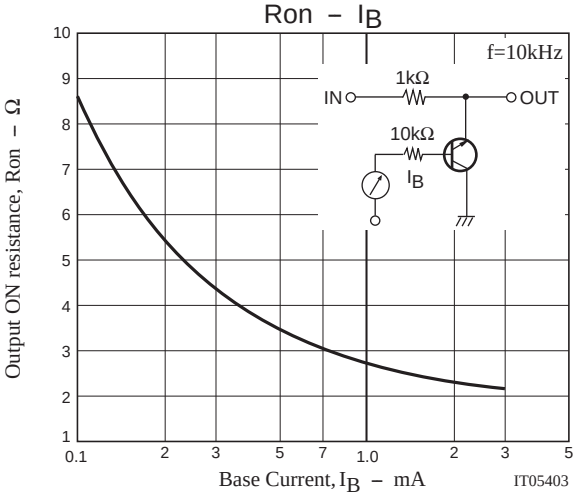
Cre – V_{CB}



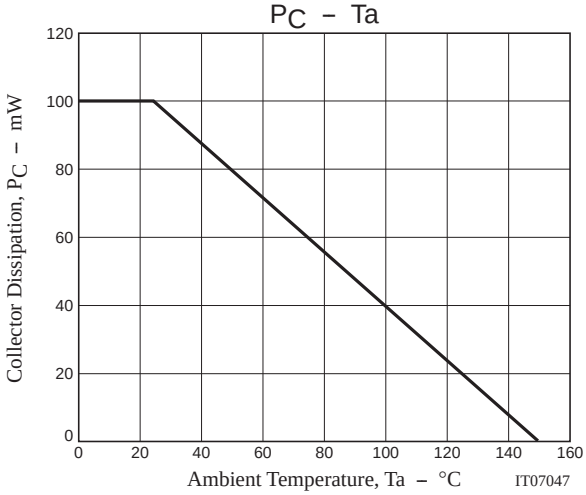
V_{CE}(sat) – I_C



Ron – I_B



P_C – Ta



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	0.688	–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=50Ω

Freq(MHz)	$\|S_{11}\|$	$\angle S_{11}$	$\|S_{21}\|$	$\angle S_{21}$	$\|S_{12}\|$	$\angle S_{12}$	$\|S_{22}\|$	$\angle S_{22}$
100	0.624	–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=50Ω

Freq(MHz)	$\|S_{11}\|$	$\angle S_{11}$	$\|S_{21}\|$	$\angle S_{21}$	$\|S_{12}\|$	$\angle S_{12}$	$\|S_{22}\|$	$\angle S_{22}$
100	0.560	–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=50Ω

Freq(MHz)	$\|S_{11}\|$	$\angle S_{11}$	$\|S_{21}\|$	$\angle S_{21}$	$\|S_{12}\|$	$\angle S_{12}$	$\|S_{22}\|$	$\angle S_{22}$
100	0.521	–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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