Ordering number : ENN7724

NPN Epitaxial Planar Silicon Transistor

15GN01C

VHF to UHF Band High-frequency Switching, High-frequency General-Purpose Amplifier Applications

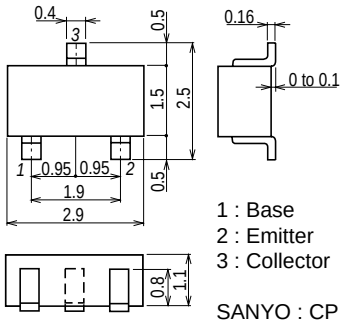
Features

- Small ON-resistance [Ron=2Ω (I_B=3mA)].
- Small output capacitance [Cob=1.2pF (V_{CB}=10V)].

Package Dimensions

unit : mm
2018B

[15GN01C]



1 : Base
2 : Emitter
3 : Collector

SANYO : CP

Specifications

Absolute Maximum Ratings at Ta=25°C

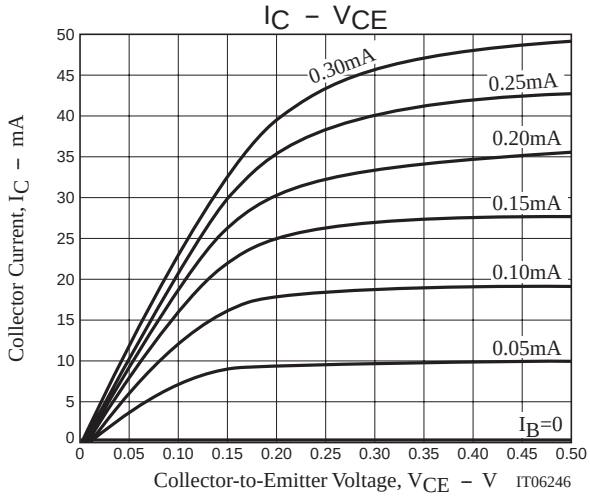
Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		15	V
Collector-to-Emitter Voltage	V_{CEO}		8	V
Emitter-to-Base Voltage	V_{EBO}		3	V
Collector Current	I_C		50	mA
Collector Dissipation	P_C		200	mW
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

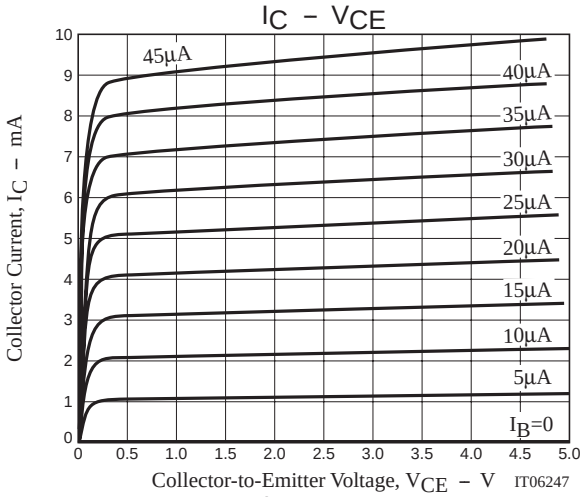
Electrical Characteristics at Ta=25°C

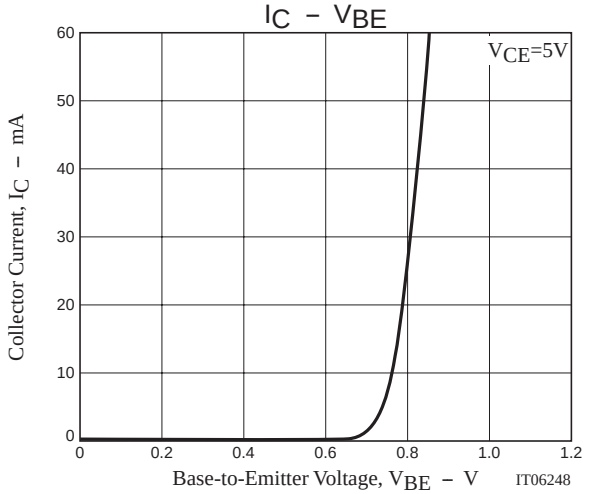
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=10V, I_E=0			0.5	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=2V, I_C=0			0.5	μA
DC Current Gain	h_{FE}	V_{CE}=5V, I_C=10mA	200		400	
Gain-Bandwidth Product	f_T	V_{CE}=5V, I_C=10mA	1.0	1.5		GHz
Output Capacitance	Cob	V_{CB}=10V, f=1MHz		1.2	1.6	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

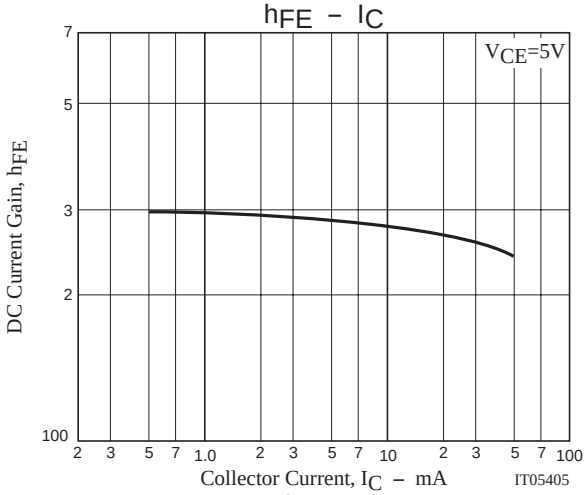
Marking : ZX

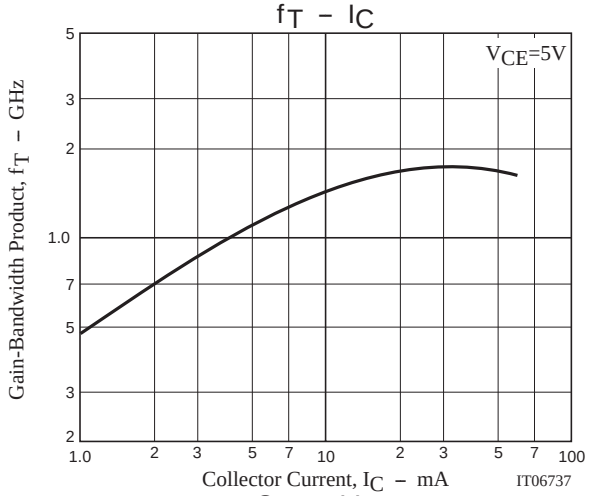
SANYO Electric Co.,Ltd. Semiconductor Company
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

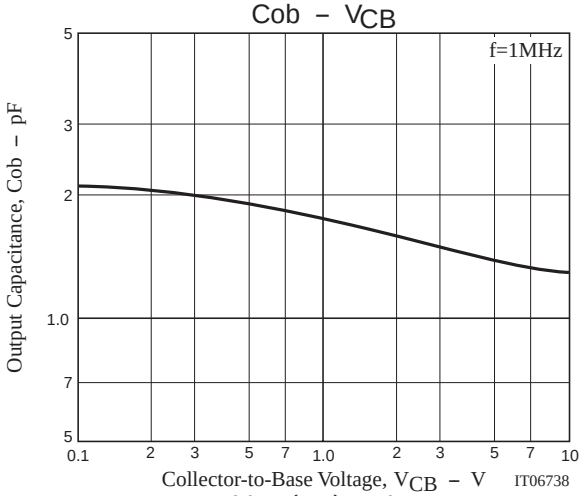

IC – VCE
0.30mA
0.25mA
0.20mA
0.15mA
0.10mA
0.05mA
IB=0
Collector Current, IC – mA
Collector-to-Emitter Voltage, VCE – V
IT06246

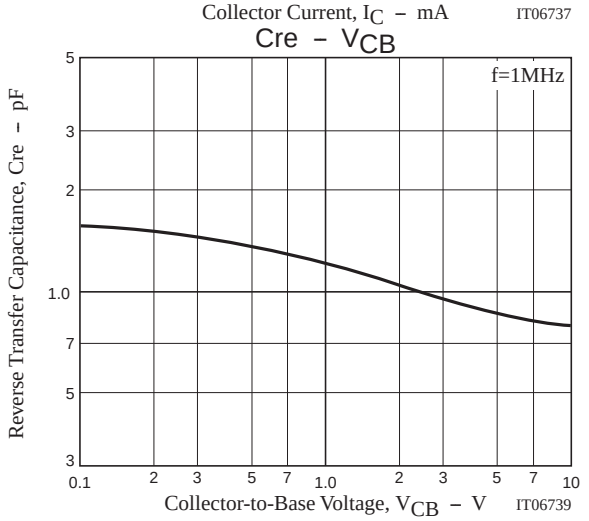

IC – VCE
45μA
40μA
35μA
30μA
25μA
20μA
15μA
10μA
5μA
IB=0
Collector Current, IC – mA
Collector-to-Emitter Voltage, VCE – V
IT06247

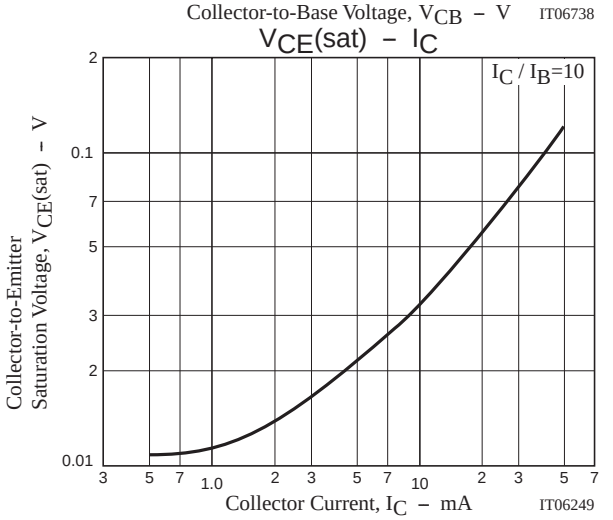

IC – VBE
VCE=5V
Collector Current, IC – mA
Base-to-Emitter Voltage, VBE – V
IT06248

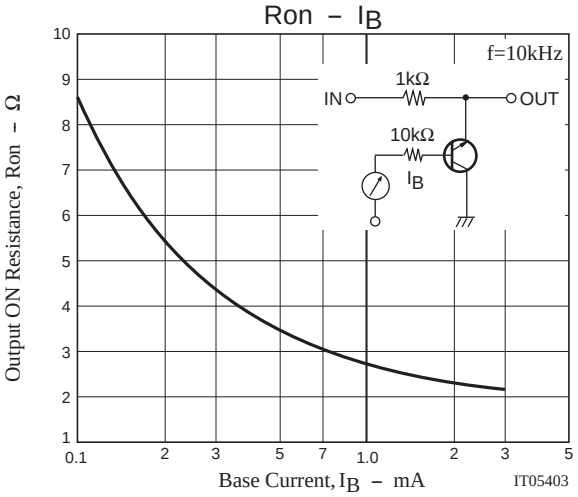

hFE – IC
VCE=5V
DC Current Gain, hFE
Collector Current, IC – mA
IT05405

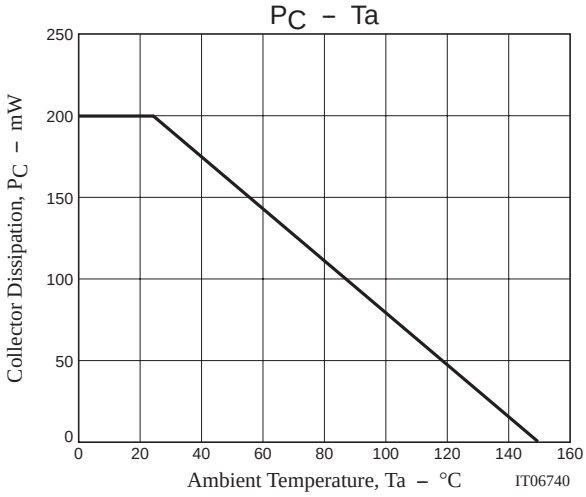

fT – IC
VCE=5V
Gain-Bandwidth Product, fT – GHz
Collector Current, IC – mA
IT06737


Cob – VCB
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT06738


Cre – VCB
f=1MHz
Reverse Transfer Capacitance, Cre – pF
Collector-to-Base Voltage, VCB – V
IT06739


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





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	0.650	–26.84	4.392	121.74	0.029	71.26	0.776	–10.73
200	0.554	–37.39	2.798	110.97	0.050	66.90	0.737	–14.52
300	0.494	–47.15	2.148	103.12	0.070	63.30	0.720	–18.26
400	0.444	–56.64	1.787	96.10	0.087	61.98	0.708	–22.11
500	0.406	–65.32	1.537	89.48	0.101	59.57	0.697	–25.85
600	0.377	–73.55	1.369	83.71	0.113	57.85	0.691	–29.52
700	0.348	–83.03	1.245	77.82	0.126	56.52	0.687	–33.29
800	0.325	–90.95	1.137	72.30	0.137	54.57	0.684	–37.14
900	0.306	–99.25	1.058	67.12	0.148	53.75	0.682	–40.75
1000	0.288	–107.53	0.990	62.37	0.153	52.46	0.682	–44.56

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	0.583	–32.15	6.240	118.82	0.026	70.44	0.703	–12.56
200	0.482	–45.75	3.926	108.10	0.046	66.49	0.659	–15.99
300	0.419	–57.88	2.944	99.96	0.063	65.05	0.637	–19.29
400	0.368	–69.02	2.390	92.67	0.078	62.34	0.624	–22.85
500	0.336	–79.50	2.027	86.17	0.092	61.46	0.615	–26.37
600	0.310	–89.29	1.769	80.51	0.103	60.64	0.610	–29.81
700	0.291	–99.92	1.586	74.79	0.114	59.47	0.606	–33.39
800	0.274	–108.75	1.441	69.42	0.125	58.90	0.605	–37.06
900	0.262	–118.49	1.317	64.61	0.135	57.84	0.605	–40.43
1000	0.251	–127.56	1.217	59.88	0.144	57.55	0.606	–44.25

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	0.513	–40.12	8.263	115.87	0.025	68.95	0.625	–14.43
200	0.407	–57.84	5.054	104.00	0.043	68.30	0.576	–17.14
300	0.347	–73.04	3.701	95.34	0.056	66.04	0.557	–19.89
400	0.303	–87.02	2.936	87.98	0.071	64.63	0.545	–22.91
500	0.281	–98.99	2.433	81.63	0.083	64.43	0.538	–26.26
600	0.266	–110.32	2.091	76.17	0.095	63.54	0.537	–29.36
700	0.257	–122.12	1.853	70.61	0.106	63.34	0.536	–33.02
800	0.248	–131.81	1.662	65.60	0.117	62.91	0.538	–36.53
900	0.244	–141.38	1.504	60.76	0.128	62.37	0.538	–39.95
1000	0.245	–150.77	1.376	56.40	0.137	62.62	0.540	–43.80

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	0.471	–46.44	9.316	113.49	0.025	70.19	0.582	–15.62
200	0.368	–67.17	5.557	100.99	0.040	68.06	0.532	–17.38
300	0.313	–84.43	3.987	92.10	0.053	66.90	0.516	–19.75
400	0.280	–100.24	3.124	84.66	0.067	65.61	0.506	–22.58
500	0.265	–112.71	2.570	78.56	0.080	66.29	0.504	–25.96
600	0.256	–124.16	2.191	73.18	0.092	65.10	0.502	–29.15
700	0.255	–135.95	1.921	67.77	0.103	66.41	0.502	–32.85
800	0.252	–145.81	1.714	62.74	0.113	65.20	0.506	–36.31
900	0.254	–154.35	1.544	58.35	0.125	65.56	0.508	–39.87
1000	0.255	–163.19	1.411	53.83	0.137	64.48	0.513	–43.71