



SSCPN01GN2

High Frequency High Gain Power Management PNP-NPN Transistor

➤ Features

PNP Transistor:

VCB	VCE	VEB	VCESAT Typ.	IC
-40V	-40V	-6V	-200mV	-1A

NPN Transistor:

VCB	VCE	VEB	VCESAT Typ.	IC
60V	40V	6V	110mV	0.2A

➤ Description

The SSCPN01GN2 combination of -40V -1A PNP low VCESAT Breakthrough in Small Signal (BISS) transistor and 60V 0.2A NPN BJT. The device is housed in a small and ultra-thin DFN2020-6L Surface mounted device (SMD) plastic package.

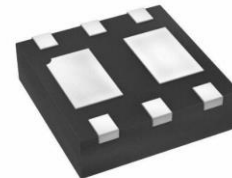
➤ Applications

- Power management
- Charging circuits
- Li-Battery Charging
- Power switches

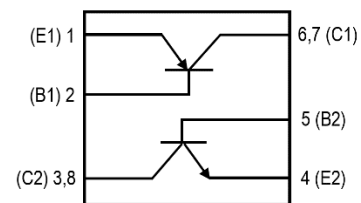
➤ Ordering Information

Device	Package	Shipping
SSCPN01GN2	DFN2020-6L	3000/Reel

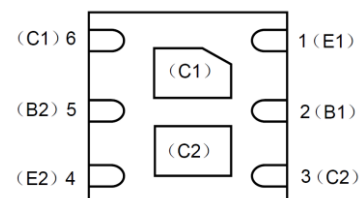
➤ Pin configuration



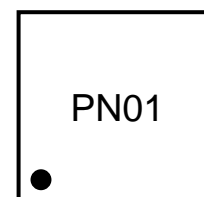
DFN2020-6L



Circuit Diagram



Bottom View



Marking (Top View)



➤ **Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)**

Parameter	Symbol	Value	Unit
PNP Transistor			
Collector-Base Voltage	V_{CBO}	-40	V
Collector- Emitter Voltage	V_{CEO}	-40	V
Emitter-Base Voltage	V_{EBO}	-6	V
Collector Current-Continuous	I_C	-1	A
Pulsed Collector Current	I_{CM}	-2	A
NPN Transistor			
Collector-Base Voltage	V_{CBO}	60	V
Collector- Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current-Continuous	I_C	0.2	A
Power Dissipation and Temperature			
Power Dissipation ^a	P_D	2.1	W
Operation Temperature Range	T_A	-40 to 85	$^\circ\text{C}$
Lead Temperature	T_L	260	$^\circ\text{C}$
Junction Temperature	T_J	-55 to 150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 to 150	$^\circ\text{C}$

➤ **Thermal Resistance Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)**

Parameter	Symbol	Value	Unit
Junction-to-Ambient Thermal Resistance ^a	$R_{\theta JA}$	57	$^\circ\text{C/W}$

Note:

- a. The value of $R_{\theta JA}$ is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The Power dissipation P_D is based on $R_{\theta JA}$ and the maximum allowed junction temperature of 150°C . The value in any given application depends on the user's specific board design, and the maximum temperature of 175°C may be used if the PCB allows it.



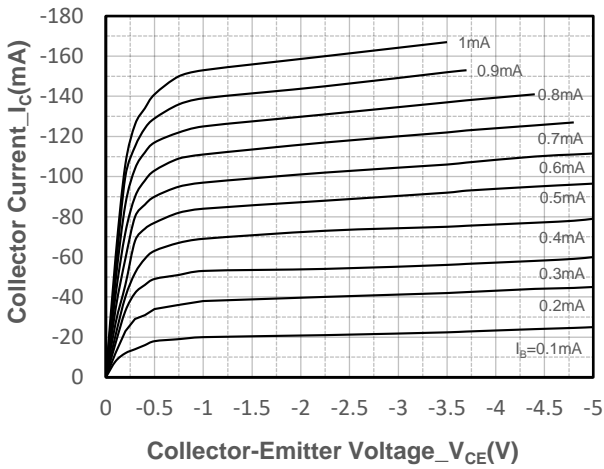
➤ **Electrical Characteristics (T_A=25°C unless otherwise noted)**

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
PNP Transistor						
Collector-Base Breakdown Voltage	BV _{CBO}	I _C =-50μA, I _E =0	-40			V
Collector-emitter Breakdown Voltage	BV _{CEO}	I _C =-1mA, I _B =0	-40			V
Emitter -Base Breakdown Voltage	BV _{EBO}	I _E =-50μA, I _C =0	-6			V
Collector Cutoff Current	I _{CBO}	V _{CB} =-20V, I _E =0			-0.1	μA
Emitter Cutoff Current	I _{EBO}	V _{EB} =-4V, I _C =0			-0.1	μA
DC Current Gain	h _{FE}	V _{CE} =-2V, I _C =-0.5A	100		360	
Collector-Emitter Saturation Voltage	V _{CE (sat)}	I _C =-0.8A, I _B =-80mA		-0.2	-0.5	V
Base-Emitter Saturation Voltage	V _{BE (sat)}	I _C =-0.8A, I _B =-80mA			-1.2	V
Transition frequency	f _T	V _{CE} =-6V, I _C =-20mA f=30MHz	150			MHz
NPN Transistor						
Collector-Base Breakdown Voltage	BV _{CBO}	I _C =10uA, I _E =0	60			V
Collector-emitter Breakdown Voltage	BV _{CEO}	I _C =1mA, I _B =0	40			V
Emitter -Base Breakdown Voltage	BV _{EBO}	I _E =10uA, I _C =0	6			V
Collector Cutoff Current	I _{CEX}	V _{CE} =30V, V _{EB} =3V			50	nA
Collector Cutoff Current	I _{CBO}	V _{CB} =30V, I _E =0			100	nA
Emitter Cutoff Current	I _{EBO}	V _{EB} =3V, I _C =0			100	nA
DC Current Gain	h _{FE}	V _{CE} =1V, I _C =10mA	100		300	
		V _{CE} =1V, I _C =50mA	60			
		V _{CE} =1V, I _C =100mA	30			
Collector-Emitter Saturation Voltage	V _{CE (sat)}	I _C =50mA, I _B =5mA		0.11	0.3	V
Base-Emitter Saturation Voltage	V _{BE (sat)}	I _C =50mA, I _B =5mA			0.95	V
Transition frequency	f _T	V _{CE} =20V, I _C =10mA f=100MHz	250			MHz
Delay Time	t _d	V _{CC} =3V, V _{BE (off)} =-0.5V I _C =10mA, I _{B1} =1mA			35	ns
Rise Time	t _r	V _{CC} =3V, V _{BE (off)} =-0.5V I _C =10mA, I _{B1} =1mA			35	ns
Storage Time	t _s	V _{CC} =3V, I _C =10mA I _{B1} = I _{B2} =1mA			200	ns
Fall Time	t _f	V _{CC} =3V, I _C =10mA I _{B1} = I _{B2} =1mA			50	ns

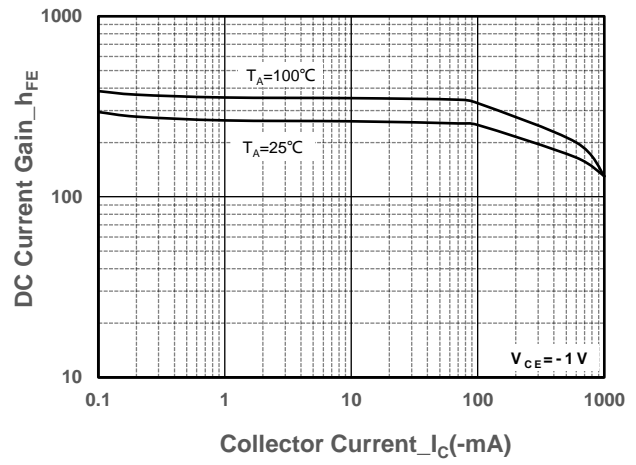


➤ Typical Performance Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

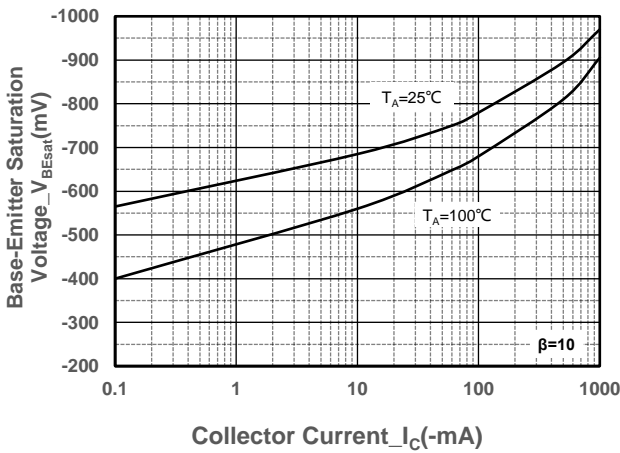
PNP Transistor:



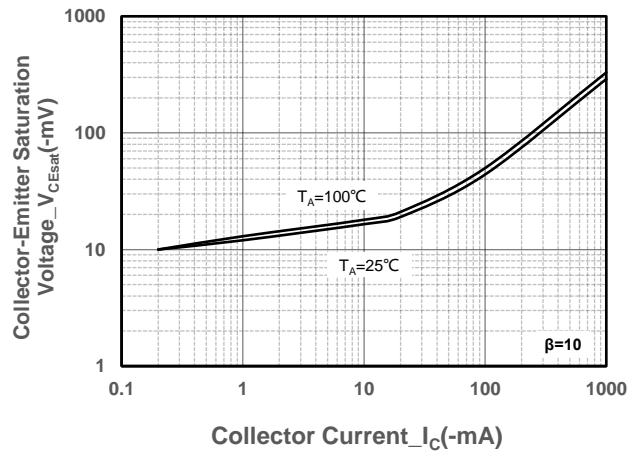
Collector Current vs. Collector-Emitter Voltage



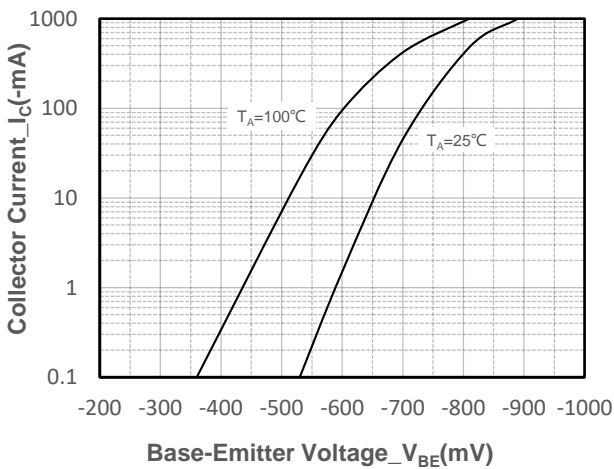
DC Current Gain vs. Collector Current



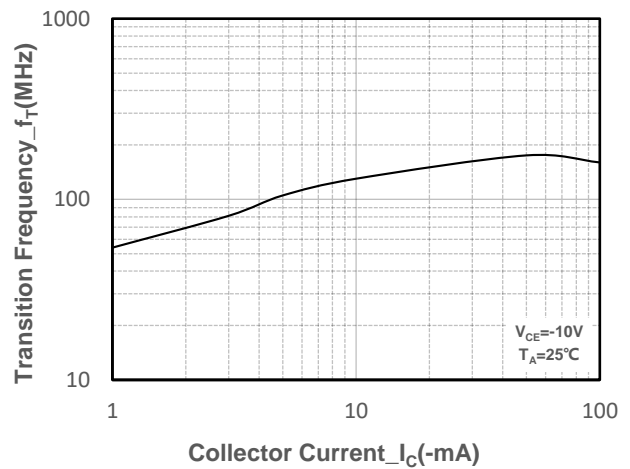
$V_{BE(sat)}$ vs. Collector Current



$V_{CE(sat)}$ vs. Collector Current



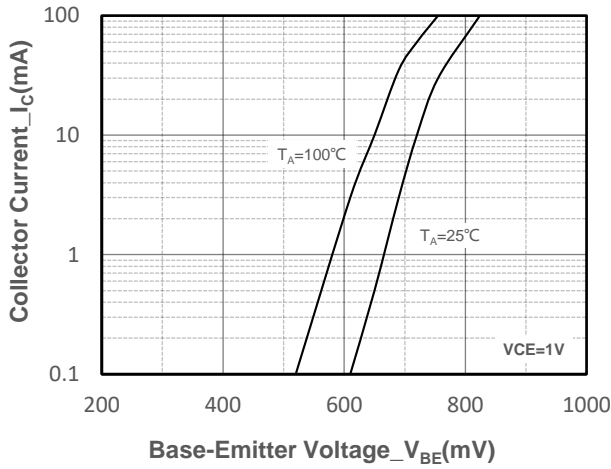
Collector Current vs. Base-Emitter Voltage



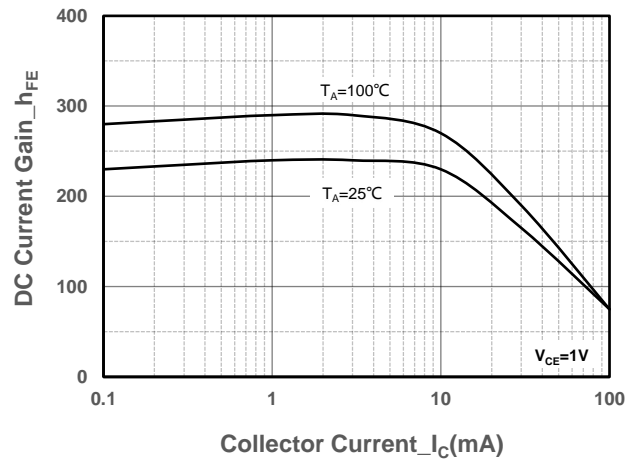
Transition Frequency vs. Collector Current



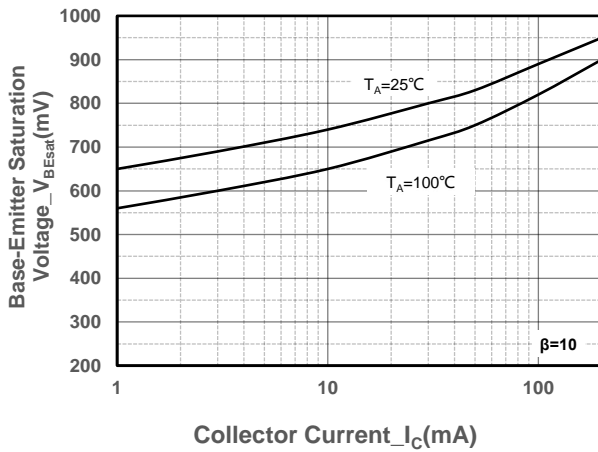
NPN Transistor:



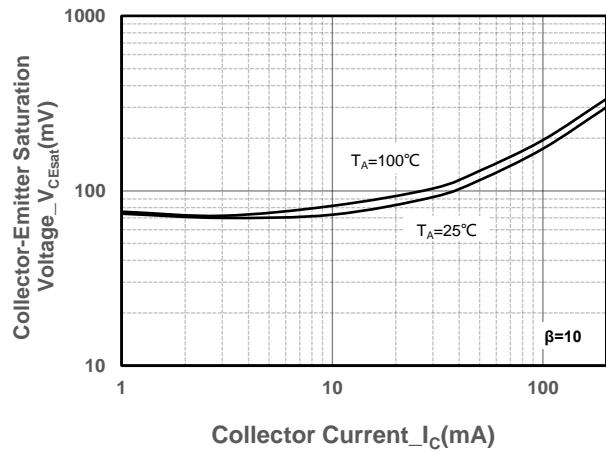
Collector Current vs. Base-Emitter Voltage



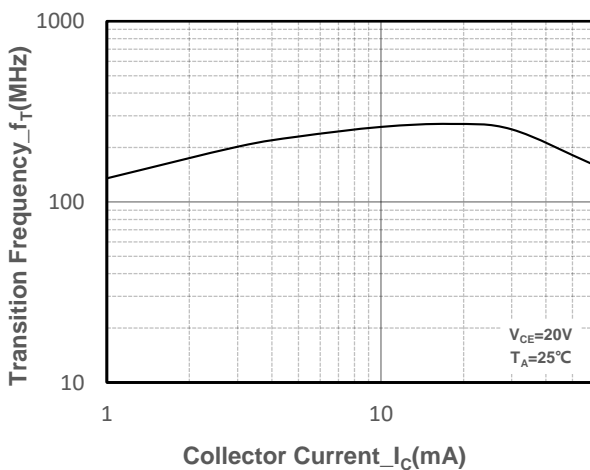
DC Current Gain vs. Collector Current



$V_{BE(sat)}$ vs. Collector Current

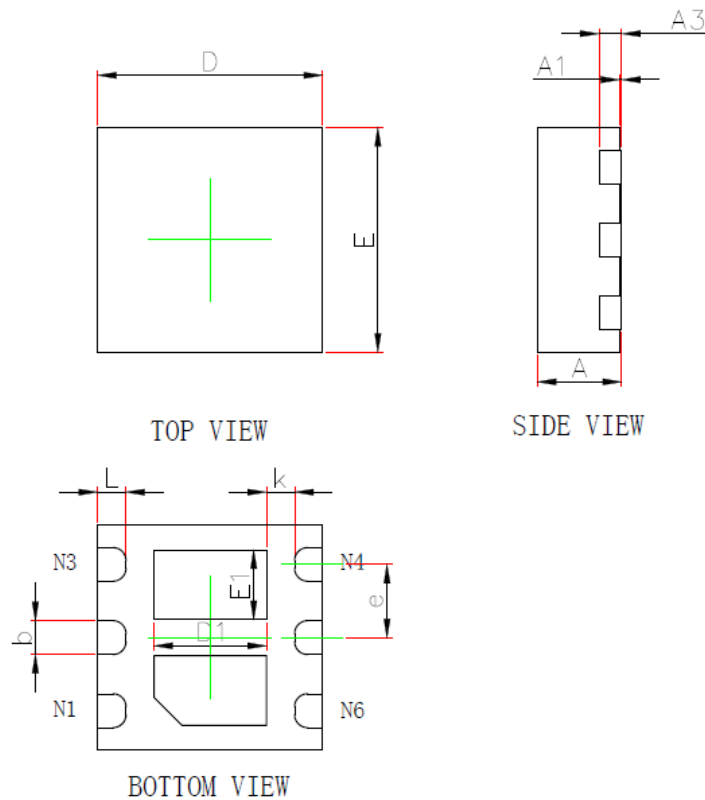


$V_{CE(sat)}$ vs. Collector Current



Transition Frequency vs. Collector Current

➤ Package Information



DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.203REF.		0.008REF.	
D	1.900	2.100	0.075	0.083
E	1.900	2.100	0.075	0.083
D1	0.900	1.100	0.035	0.043
E1	0.520	0.720	0.020	0.028
b	0.250	0.350	0.010	0.014
e	0.650TYP.		0.026TYP.	
k	0.200	-	0.008	-
L	0.200	0.300	0.008	0.012



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