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.

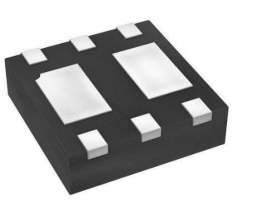
➢ Applications

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

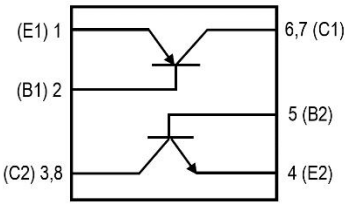
➢ Ordering Information

Device	Package	Shipping
SSCPN01GN2	DFN2020-6L	3000/Reel

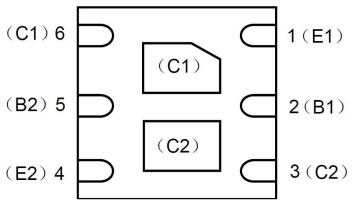
➢ Pin configuration



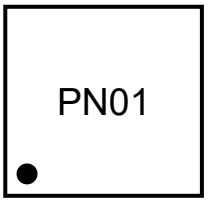
DFN2020-6L



Circuit Diagram



Bottom View



Marking (Top View)

➢ Absolute Maximum Ratings (T_A=25℃ 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	℃
Lead Temperature	T_L	260	℃
Junction Temperature	T_J	-55 to 150	℃
Storage Temperature	T_{STG}	-55 to 150	℃

➢ Thermal Resistance Ratings (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Junction-to-Ambient Thermal Resistance [a]	$R_{\theta JA}$	57	℃/W

Note:

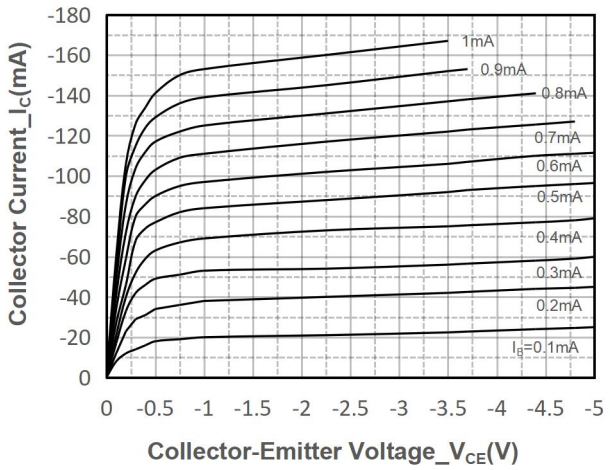
a. The value of $R_{\theta JA}$ is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The Power dissipation PD is based on $R_{\theta JA}$ and the maximum allowed junction temperature of 150°C. The value in any given application depends on 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℃ unless otherwise noted)

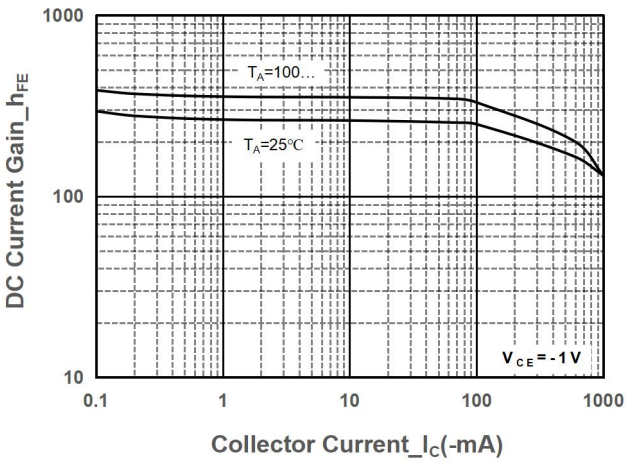
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
PNP Transistor						
Collector-Base Breakdown Voltage	BV_{CBO}	I_C=-50μA, I_E=0	-40			V
Collector-emitter Breakdown Voltage	BV_{CEO}	I_C=-1mA, I_B=0	-40			V
Emitter -Base Breakdown Voltage	BV_{EBO}	I_E=-50μA, I_C=0	-6			V
Collector Cutoff Current	I_{CBO}	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℃ unless otherwise noted)

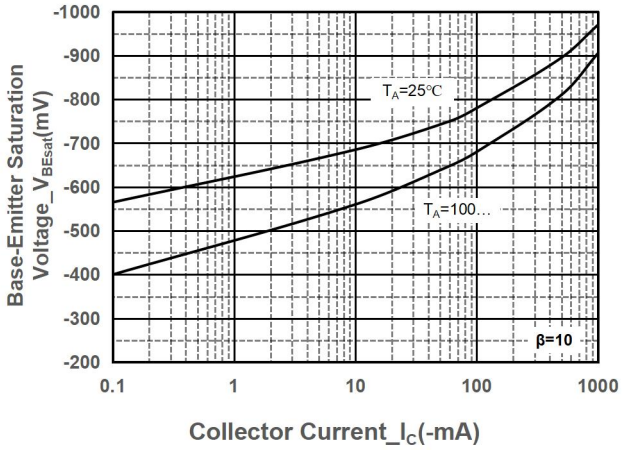
PNP Transistor:



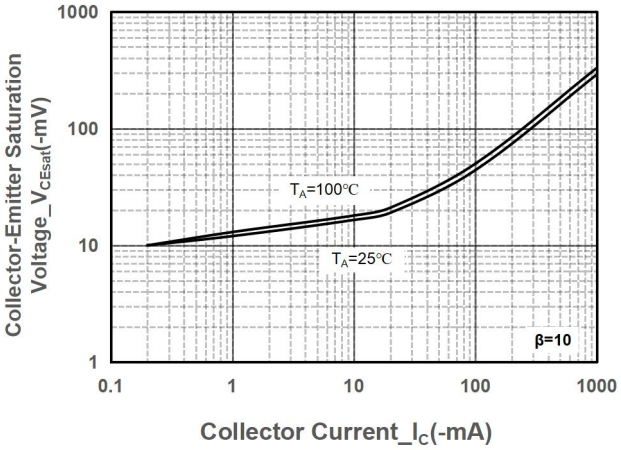
Collector Current vs. Collector-Emitter Voltage



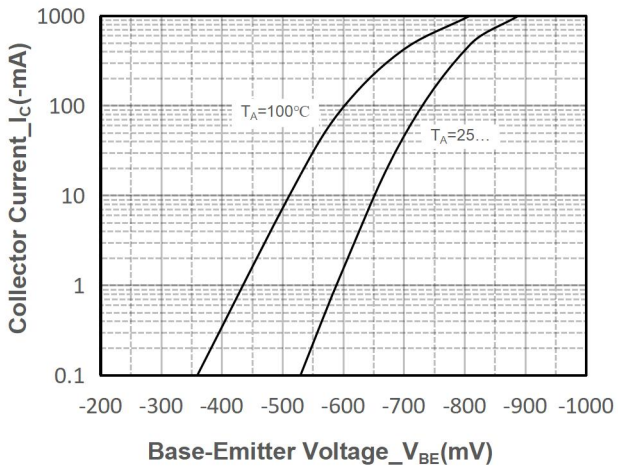
DC Current Gain vs. Collector Current



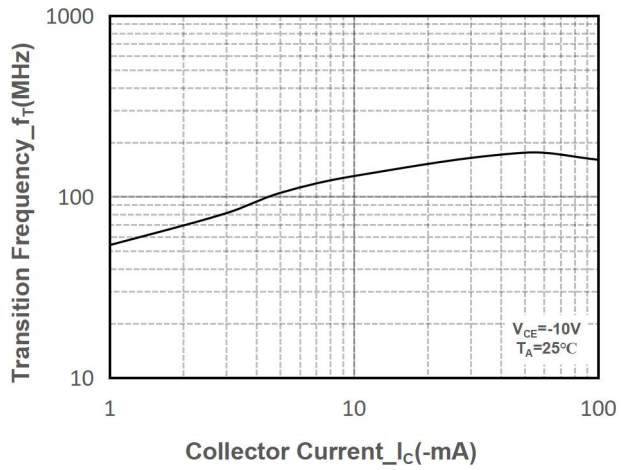
$V_{BE(sat)}$ vs. Collector Current



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

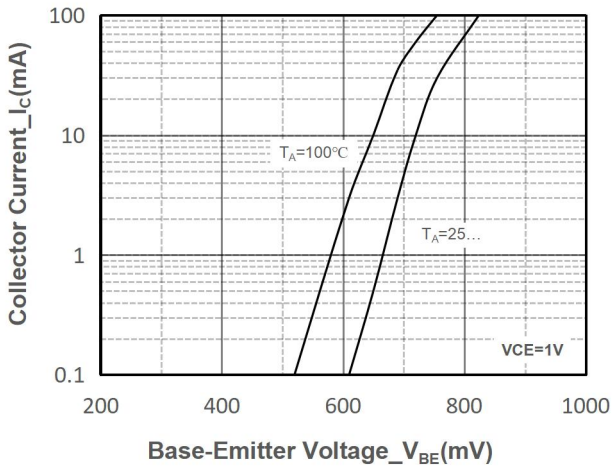


Collector Current vs. Base-Emitter Voltage

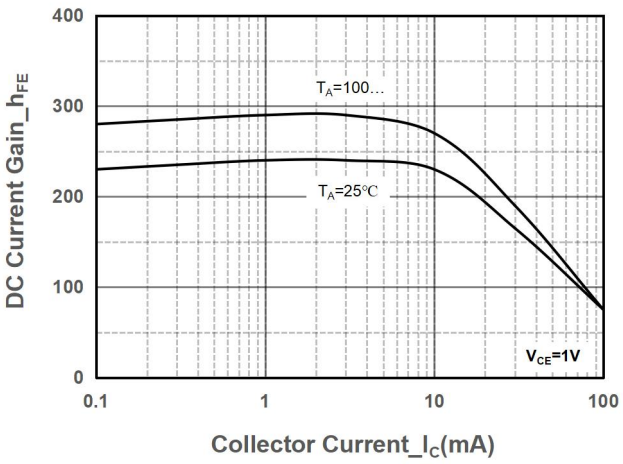


Transition Frequency vs. Collector Current

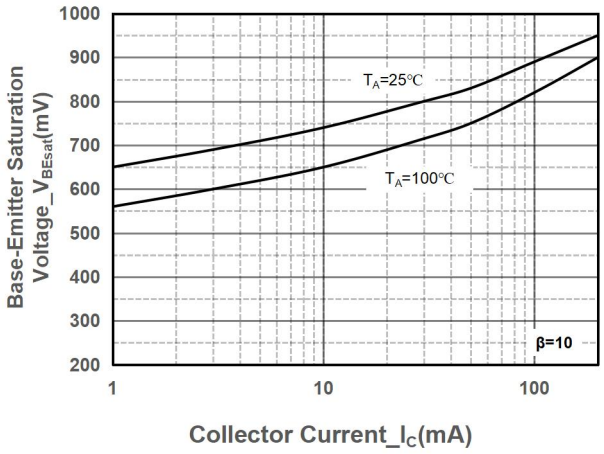
NPN Transistor:



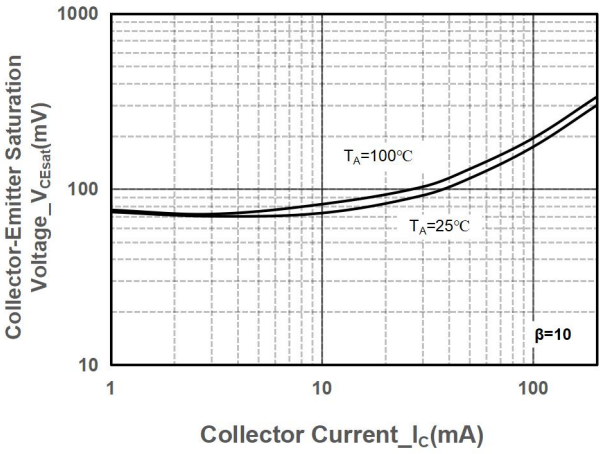
Collector Current vs. Base-Emitter Voltage



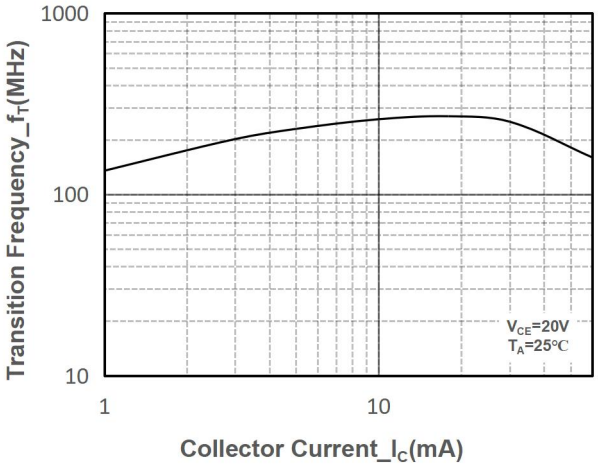
DC Current Gain vs. Collector Current



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

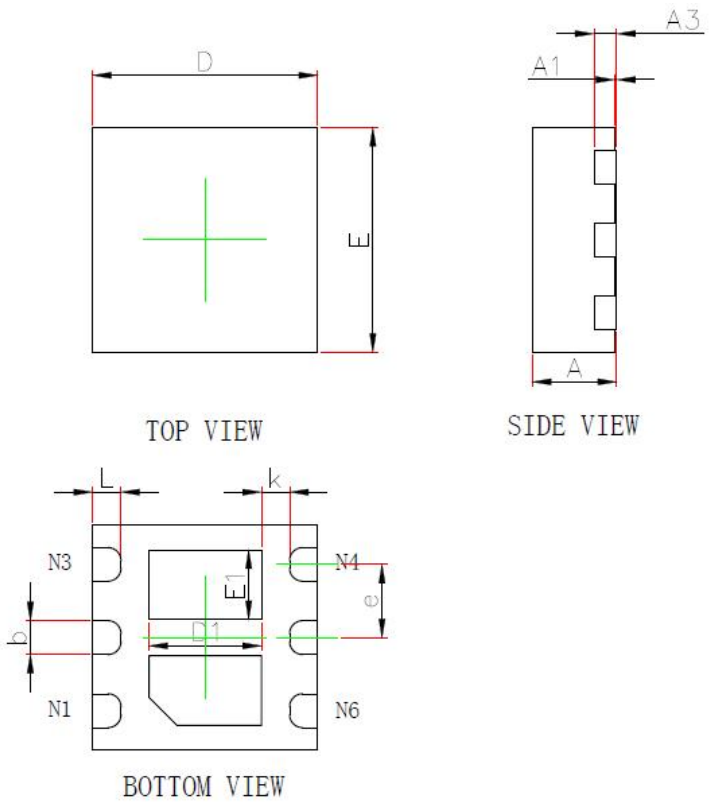


$V_{CE(sat)}$ vs. Collector Current



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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