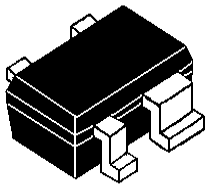
START620

NPN SiGe RF Transistor

PRELIMINARY DATA

- LOW NOISE FIGURE: NFmin = 0.8dB
  @ 1.8GHz, 5mA, 2V
- COMPRESSION P1dB = 13dBm
  @ 1.8GHz, 20mA, 2V
- ULTRA MINIATURE SOT343 PACKAGE



SOT343 (SC70)

ORDER CODE	BRANDING
START620TR	620

DESCRIPTION

The START620 is a member of the START family that provide market with the state of the art of RF silicon process. It uses ST's Silicon Germanium technology. This technology offers ft's of up to 45GHz and Fmax's of over 60GHz. The START620 offers the best mix of gain and NF for given breakdown voltage(BVceo = 3.3V).
It reaches performance level only achieved with GaAs products before.

APPLICATIONS

- LNA FOR GSM/DCS, CDMA, WCDMA, BLUETOOTH
- GENERAL PURPOSE 500MHz-5GHz

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{ceo}	Collector emitter voltage	3.3	V
V_{cbo}	Collector base voltage	10	V
V_{ebo}	Emitter base voltage	1.5	V
I_c	Collector current	40	mA
I_b	Base current	4	mA
P_{tot}	Total dissipation, T_s = 101	135	mW
T_{stg}	Storage temperature	-65 to 150	^oC
T_j	Max. operating junction temperature	150	^oC

ABSOLUTE MAXIMUM RATINGS

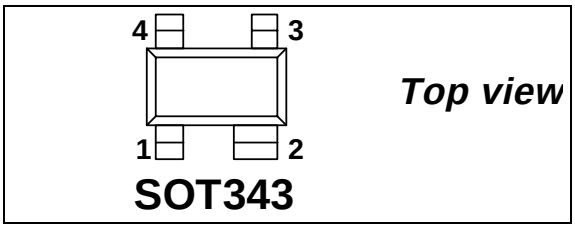
R_{thjs}	Thermal Resistance Junction soldering point	270	$^oC/W$

ELECTRICAL CHARACTERISTICS (T_j=25 ^oC,unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{cbo}	Collector cutoff current	Vcb = 8V, Ie = 0A			150	nA
I_{ebo}	Emitter-base cutoff current	Veb = 1.5V, Ic = 0A			15	µA
Hfe	DC current gain	Ic = 20mA, Vce = 2V		100		
NFmin	Minimim noise figure	Ic = 5mA, Vce = 2V, f = 1.8GHz, $Z_S = Z_S$opt		0.8		dB
Ga	NFmin associated gain	Ic = 5mA, Vce = 2V, f = 1.8GHz		14.5		dB
$\|S21\|^2$	Insertion power gain	Ic = 20mA, Vce = 2V, f = 1.8GHz		16.2		dB
Gms (1)	Maximum stable gain	Ic = 20mA, Vce = 2V, f = 1.8GHz		18.6		dB
P_{-1dB}	1dB compression point	Ic = 20mA,Vce = 2V, f = 1.8GHz		13		dBm
OIP3	Ouput third order intercept point	Ic = 20mA,Vce = 2V, f = 1.8GHz		23		dBm

Note(1): Gms = | S_{21} / S_{12} |

PINOUT



PIN CONNECTION

Pin No.	Description
1	BASE
3	COLLECTOR
2,4	EMITTER

COMMON EMITTER S-PARAMETERS (V_{CE} = 2V, I_C = 20mA)

FREQ (MHz)	$IS_{11}I$	$S_{11}\angle\Phi$	$IS_{21}I$	$S_{21}\angle\Phi$	$IS_{12}I$	$S_{12}\angle\Phi$	$IS_{22}I$	$S_{22}\angle\Phi$
0.1	0.505	-21	35.490	163	0.009	80	0.940	-14
0.5	0.322	-69	19.713	134	0.030	84	0.611	-38
0.9	0.245	-88	12.607	130	0.048	100	0.484	-43
1	0.237	-92	11.751	130	0.052	102	0.470	-44
1.5	0.193	-97	7.564	133	0.071	118	0.430	-46
1.8	0.188	-95	6.534	139	0.088	127	0.443	-48
2	0.190	-89	5.834	144	0.093	133	0.449	-49
2.5	0.218	-76	4.639	154	0.109	148	0.497	-55
3	0.219	-86	3.688	165	0.160	170	0.455	-66
3.5	0.209	-80	3.537	172	0.181	174	0.412	-73
4	0.195	-89	3.006	180	0.200	173	0.355	-80

PACKAGE DIMENSIONS SOT343 (SC-70 4 leads)