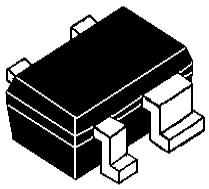
START499

NPN Silicon RF Transistor

PRELIMINARY DATA

- HIGH EFFICIENCY
- HIGH GAIN
- LINEAR AND NON LINEAR OPERATION
- TRANSITION FREQUENCY 42GHz
- ULTRA MINIATURE SOT343 (SC70) PACKAGE



SOT343 (SC70)

ORDER CODE	BRANDING
TBD	499

DESCRIPTION

START499 is a product of the START family that provide the market with a Si state-of-art RF process. Manufactured in St 3rd generation bipolar process, it offers the highest power, gain and efficiency in SOT343 for given breakdown voltage (BVceo). Suitable for a wide range of applications up to 5GHz, it shows a performance level achieved before with GaAs products only.

APPLICATIONS

- PA FOR DECT OR PHS
- PA STAGE FOR WIRELESS LAN AND BLUETOOTH @ 2.5GHz
- DRIVER FOR 1W AND MORE PA

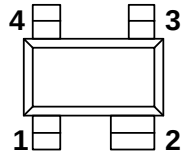
ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{ceo}	Collector emitter voltage	4.5	V
V_{cbo}	Collector base voltage	15	V
V_{ebo}	Emitter base voltage	1.5	V
I_c	Collector current	250	mA
I_b	Base current	32	mA
P_{tot}	Total dissipation at T_c = 25 ^oC	900	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	150	$^oC/W$

PINOUT



Top view

SOT343

PIN CONNECTION

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

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
BV_{ceo}	Collector emitter breackdown voltage	Ic = 1mA, Ib = 0A	4.5	5		V
I_{cbo}	Collector cutoff current	Vcb = 3V, Ie = 0A			1.2	µA
I_{ebo}	Emitter-base cutoff current	Veb = 1.5V, Ic = 0A			120	µA
Hfe	DC current gain	Ic = 160mA, Vce = 4V	50	90	150	
G	Power gain	Ic =200mA, Vce = 3V, f = 1.8GHz		14.5		dB
P_{-1dB}	1dB compression point	Ic = 200mA,Vce = 3V, f = 1.8GHz		24		dBm
IP3	Ouput third order intercept point	Ic = 200mA,Vce = 3V, f = 1.8GHz		33		dBm

QUICK REFERENCE DATA

MODE OF OPERATION	f (GHz)	V_{CE} (V)	P_L (dBm)	G_P (dB)	ηC (%)
Class-AB (Icq = 5mA)	1.9	3.6	26	≥11	typ. 63

COMMON EMITTER S-PARAMETERS (V_{CE} = 2V, I_C = 200mA)

f	S_{11}		S_{21}		S_{12}		S_{22}	
GHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.1	0.718	-168.7	53.19	124.7	0.004	70.2	0.654	-103.1
0.5	0.821	175.1	13.59	88.1	0.014	56.4	0.648	-167.9
1	0.834	164.3	6.82	73.4	0.025	59.3	0.625	176.2
1.5	0.838	154.9	4.53	61.3	0.036	57.1	0.664	166.7
1.8	0.844	149.6	3.72	54.6	0.042	53.4	0.671	161.6
2	0.847	146.3	3.29	50.2	0.046	50.2	0.678	158.3
2.5	0.855	138.2	2.54	40.2	0.054	44.6	0.693	150.9
3	0.863	131.9	2.03	31.7	0.060	39.8	0.714	144.5
3.5	0.871	125.4	1.67	22.7	0.066	34.5	0.727	138.8
4	0.873	119.6	1.43	14.6	0.075	29.7	0.741	133.6

PACKAGE DIMENSIONS SOT343 (SC-70 4 leads)