

Approved by:
Checked by:
Issued by:

SPECIFICATION

PRODUCT: NPN 4.5GHz wideband transistor

MODEL: MAT5006 SOT523

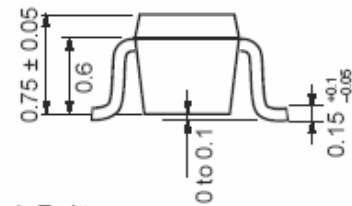
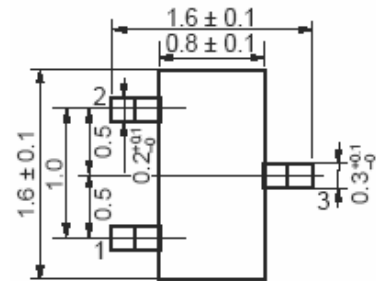
HOPE MICROELECTRONICS CO.,LIMITED

M A T5006

The item can replace **2SC5006**

FEATURES

- Low Voltage Use.
- High f_T : 4.5 GHz TYP. (@ $V_{CE} = 3\text{ V}$, $I_C = 7\text{ mA}$, $f = 1\text{ GHz}$)
- Low C_{re} : 0.7 pF TYP. (@ $V_{CE} = 3\text{ V}$, $I_E = 0$, $f = 1\text{ MHz}$)
- Low NF: 1.2 dB TYP. (@ $V_{CE} = 3\text{ V}$, $I_C = 7\text{ mA}$, $f = 1\text{ GHz}$)
- High $|S_{21e}|^2$: 9 dB TYP. (@ $V_{CE} = 3\text{ V}$, $I_C = 7\text{ mA}$, $f = 1\text{ GHz}$)
- SOT-523 / SC-75 package



1. Emitter
2. Base
3. Collector

DESCREPTION

The MAS5006 is an NPN epitaxial silicon transistor designed for use in low noise and small signal amplifiers from VHF band to UHF band. Low noise figure, high gain, and high current capability achieve a very wide dynamic range and excellent linearity. This is achieved by direct nitride passivated base surface, process (NEST2 process) which is an MAR proprietary fabrication technique

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	TYP.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter		20	V
V_{CEO}	collector-emitter voltage	open base		12	V
I_C	collector current (DC)			100	mA
P_{tot}	total power dissipation	$T_s \leq 95^\circ\text{C}$		125	mW
C_{re}	Feedback capacitance	$I_C=0$; $V_{CE}=3\text{V}$; $f=1\text{MHz}$	0.7	1.5	pF
f_T	Transition frequency	$I_C=7\text{mA}$; $V_{CE}=3\text{V}$	4.5	-	GHz
G_{UM}	maximum unilateral power gain	$I_C=7\text{mA}$; $V_{CE}=3\text{V}$; $f=1\text{GHz}$; $T_{amb}=25^\circ\text{C}$	9	-	dB
F	noise figure	$I_C=7\text{mA}$; $V_{CE}=3\text{V}$; $f=1\text{GHz}$; $s=opt$; $T_{amb}=25^\circ\text{C}$	1.2	2.5	dB

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LIMITING VALUES

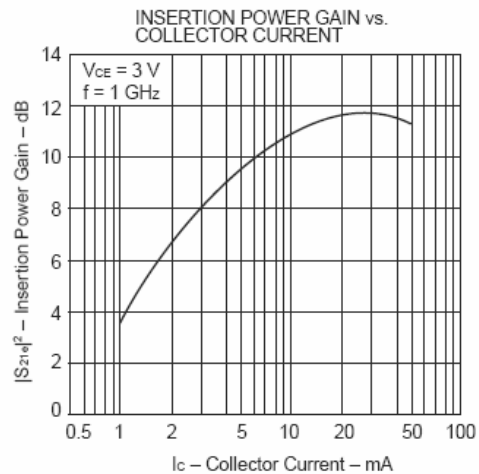
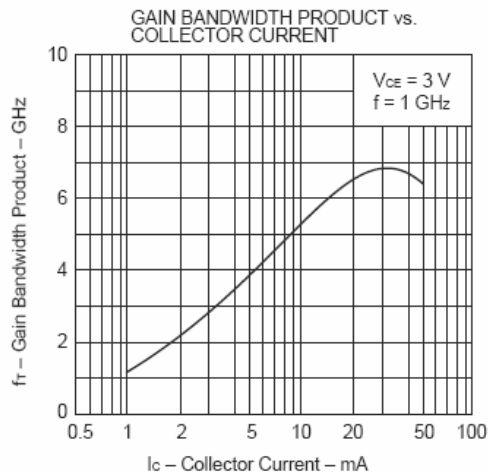
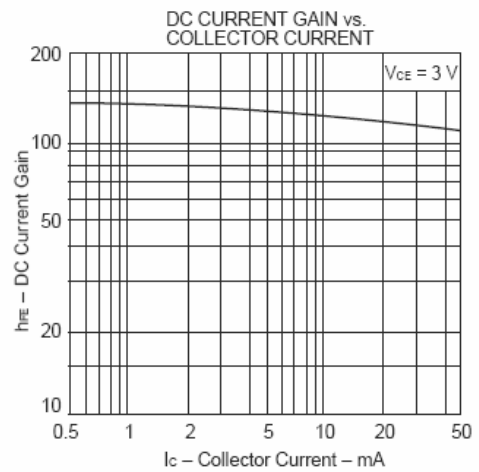
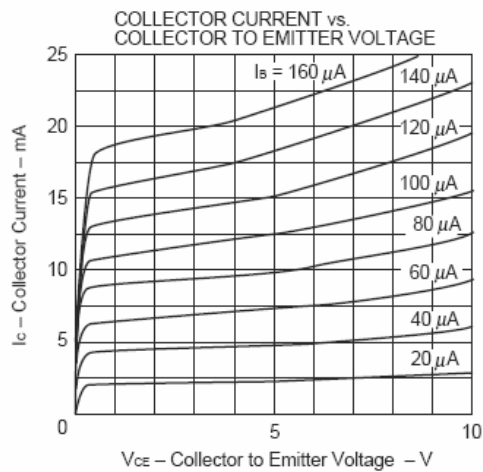
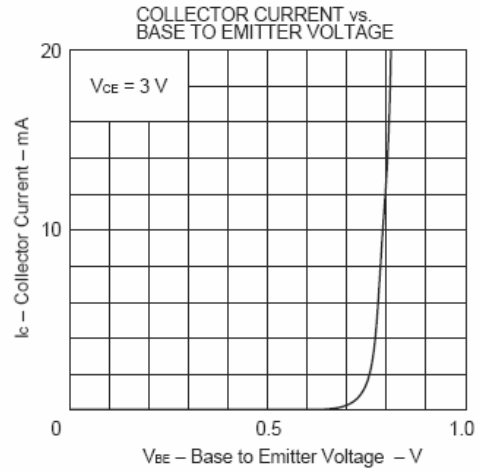
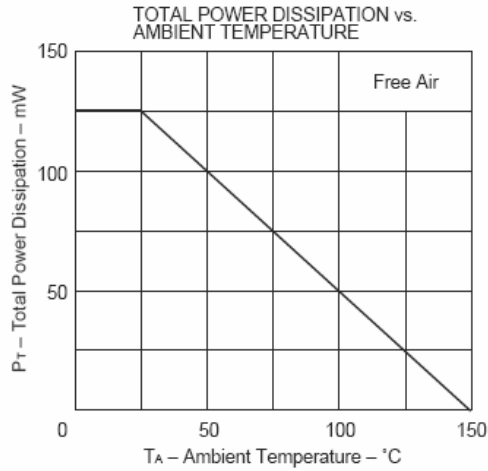
In accordance with the Absolute Maximum Rating System

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	-	20	-	V
V_{CEO}	collector-emitter voltage	open base	-	12	-	V
V_{EBO}	emitter-base voltage	open collector	-	3	-	V
h_{FE}	DC current gain	$I_c=7mA$ $V_{ce}=3V$	80		160	-
f_T	transition frequency	$I_C=7mA$; $V_{CE}=3V$	-	4.5	-	GHz

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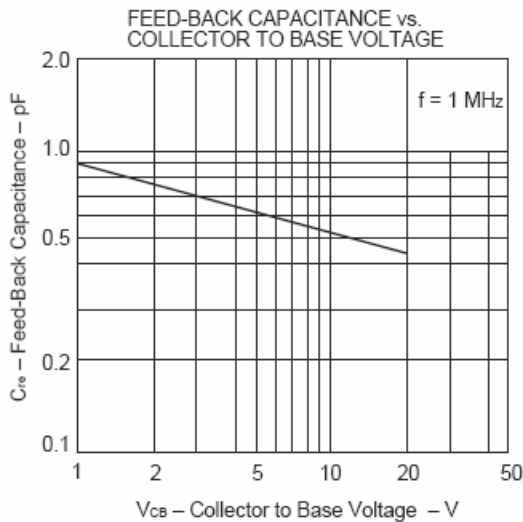
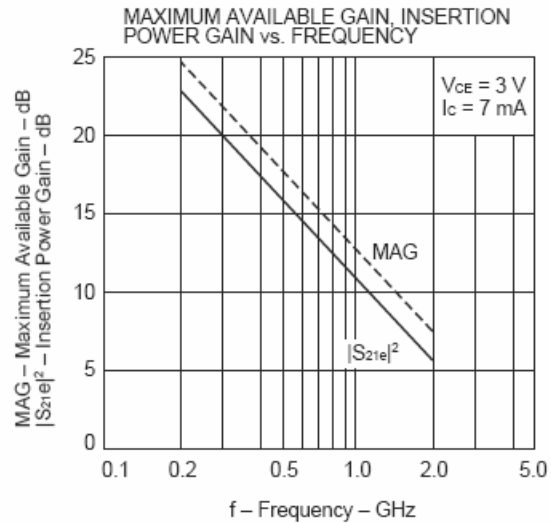
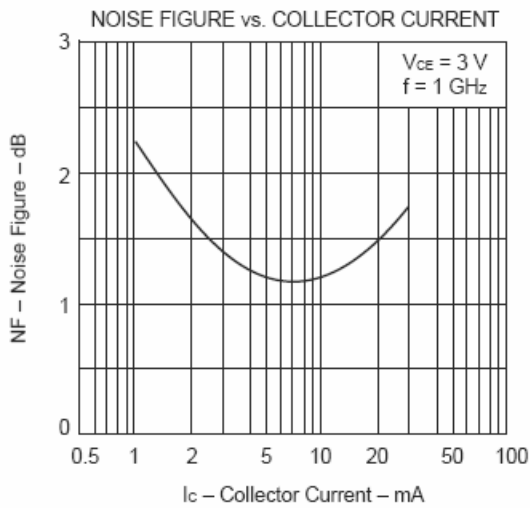
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TYPICAL CHARACTERISTICS (T_A = 25 °C)



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