GSTMMBT5401

High Voltage PNP Transistors

Product Description

This device is designed as a general purpose amplifier and switch.

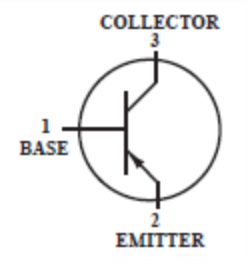
Features

- Collector-Emitter Voltage : -150V
- Collector-Base Voltage : -160V
- Collector Current-Continuous : -500mA
- Lead(Pb)-Free

Packages & Pin Assignments

GSTMMBT5401F(SOT-23)

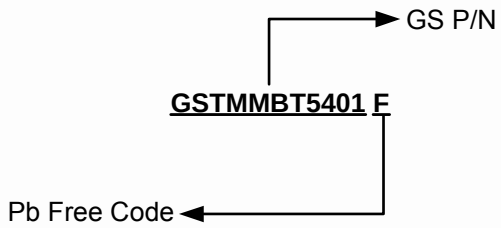
Pin	Description
1	Base
2	Emitter
3	Collector



Marking Information

P/N	Package	Part Marking
GSTMMBT5401F	SOT-23	2L

Ordering Information



Part Number	Package	Quantity
GSTMMBT5401F	SOT-23	3000 PCS

Absolute Maximum Ratings

T_A=25°C

Symbol	Conditions	Value	Unit
V_{CEO}	Collector-Emitter Voltage	-150	V
V_{CBO}	Collector-Base Voltage	-160	V
V_{EBO}	Emitter-Base Voltage	-5.0	V
$I_{C(DC)}$	Collector Current (DC)	-500	mA
P_D	Total Device Dissipation FR-5 Board [1] T_A=25°C	225	mW
	Derate above 25°C	1.8	mW/°C
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	556	°C/W
P_D	Total Device Dissipation Alumina Substrate[2] T_A=25°C	300	mW
	Derate above 25°C	2.4	mW/°C
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	417	°C/W
T_J	Junction Temperature Range	-55 to +150	°C
T_{STG}	Storage Temperature Range	-55 to +150	°C

Note 1: FR-5=1.0 x 0.75 x 0.062 in

Note 2: Alumina=0.4 x 0.3 x 0.024 in. 99.5% alumina.

Electrical Characteristics

(T_A=25°C unless otherwise noted)

Symbol	Conditions	Min	Max	Unit
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage [3] (I_C=-1.0mA, I_B=0mA)	-150	-	V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage (I_C=-100uA, I_E=0mA)	-160	-	V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage (I_E=-10uA, I_C=0mA)	-5.0	-	V
I_{CES}	Collector Cutoff Current (V_{CE}=-120V, I_E=0mA)	-	-50	uA
h_{FE}	DC Current Gain (I_C=-1.0mA, V_{CE}=-5.0V)	50	-	-
	DC Current Gain (I_C=-10mA, V_{CE}=-5.0V)	60	240	-
	DC Current Gain (I_C=-50mA, V_{CE}=-5.0V)	50	-	-
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage (I_C=-10mA, I_B=-1.0mA) (I_C=-50mA, I_B=-5.0mA)	- -	-0.2 -0.5	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage (I_C=-10mA, I_B=-1.0mA) (I_C=-50mA, I_B=-5.0mA)	- -	-1.0 -1.0	V
f_T	Current-Gain-Bandwidth Product [4] (I_C=-10mA, V_{CE}=-10V, f=100MHz)	100	300	MHz
C_{obo}	Output Capacitance (V_{CB}=-10V, I_E=0mA, f=1.0MHz)	-	6.0	pF
h_{fe}	Small-Signal Current Gain (I_C=-1.0mA, V_{CE}=-10V, f=1.0 kHz)	40	200	-
NF	Noise Figure (I_C=-200μA, V_{CE}=-5V, R_S=10Ω, f=1.0kHz)	-	8.0	dB

Typical Performance Characteristics

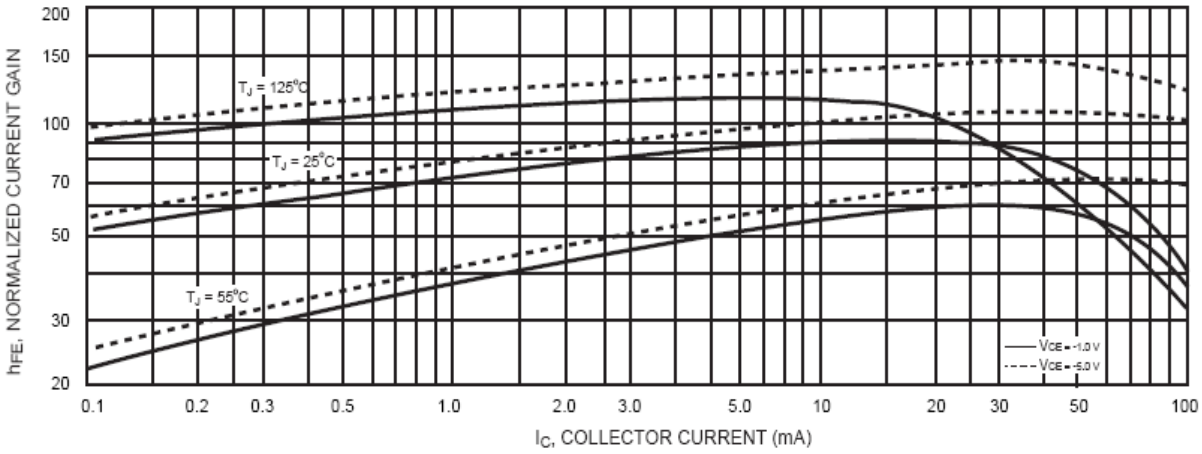


FIG.1 DC Current Gain

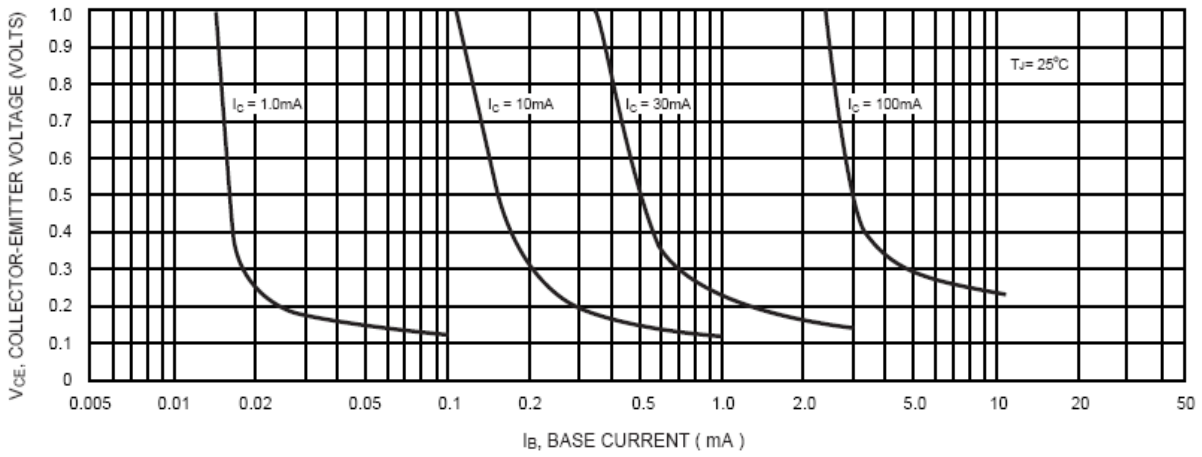


FIG.2 Collector Saturation Region

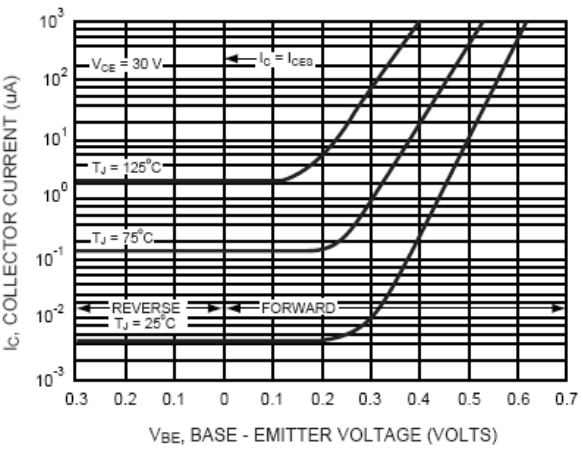


FIG.3 Temperature Coefficients

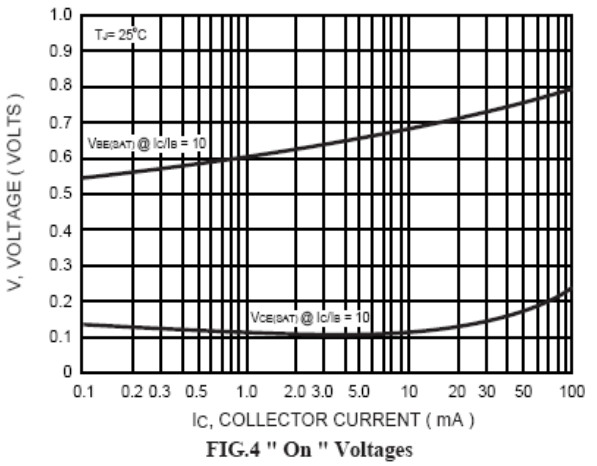


FIG.4 " On " Voltages

Typical Performance Characteristics (Continue)

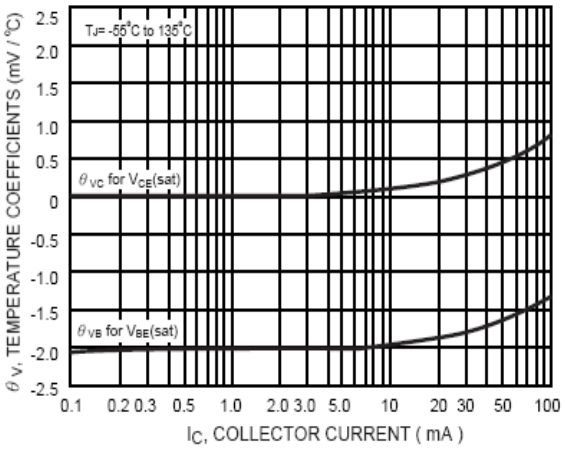
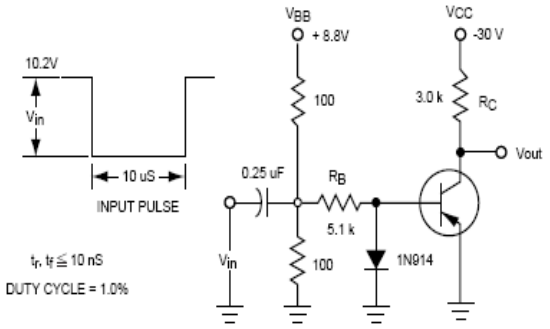


FIG.5 Temperature Coefficients



VALUES SHOWN ARE FOR IC @ 10 mA

FIG.6 Switching Time Test Circuit

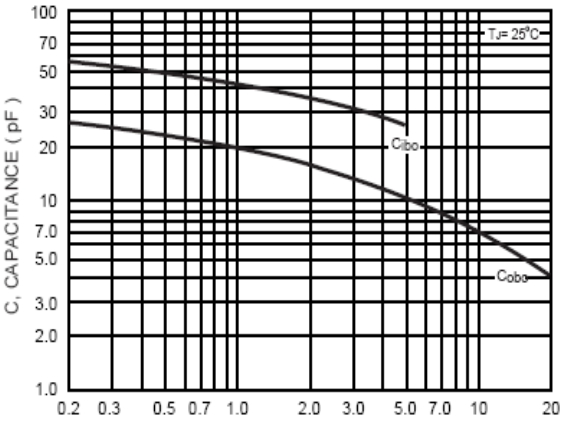


FIG.7 Capacitances

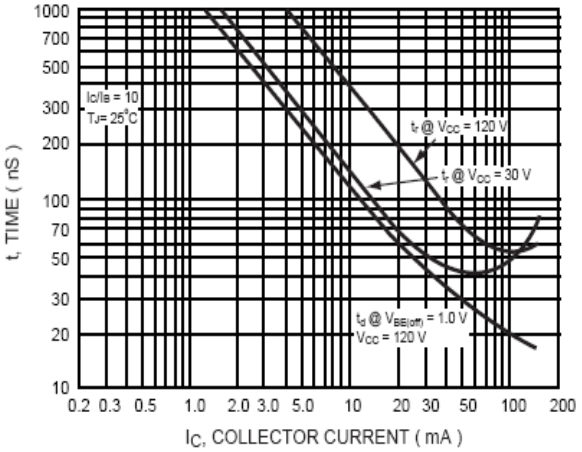


FIG.8 Turn - On Time

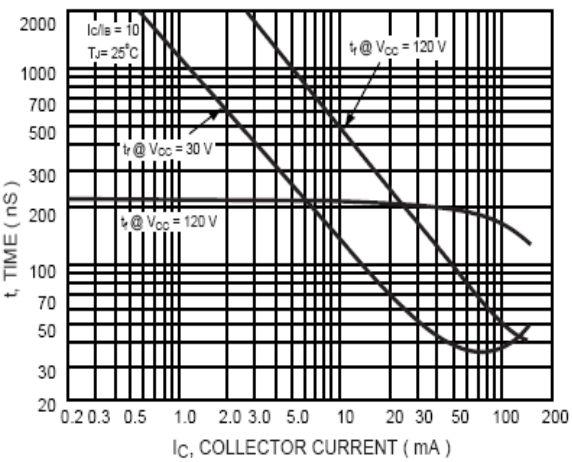
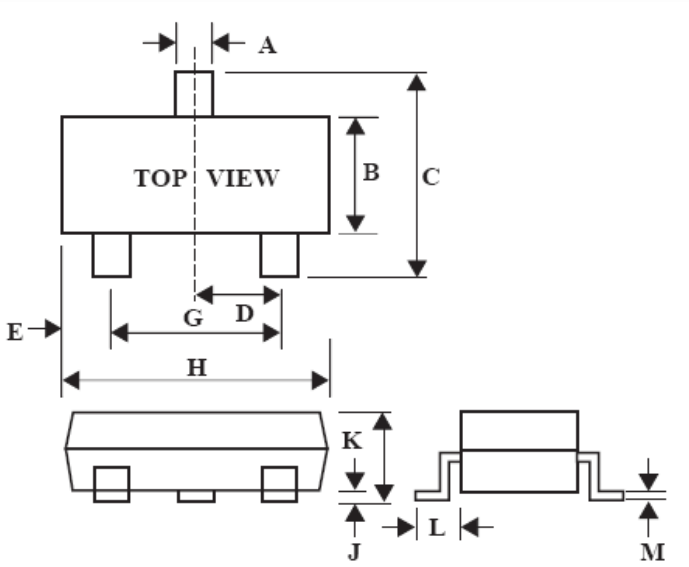


FIG.9 Turn - Off Time

Package Dimension

SOT-23



Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.35	0.51	0.014	0.020
B	1.19	1.40	0.047	0.055
C	2.10	3.00	0.083	0.118
D	0.85	1.05	0.033	0.041
E	0.46	1.00	0.018	0.039
G	1.70	2.10	0.067	0.083
H	2.70	3.10	0.106	0.122
J	0.01	0.13	0.000	0.005
K	0.89	1.10	0.035	0.043
L	0.30	0.61	0.011	0.024
M	0.076	0.25	0.002	0.010

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