

GSTMMBT5401

High Voltage PNP Transistors


Product Description

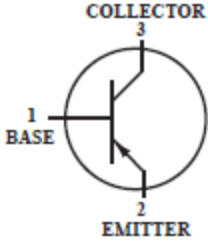
This device is designed as a general purpose amplifier and switch.

Features

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

Packages & Pin Assignments

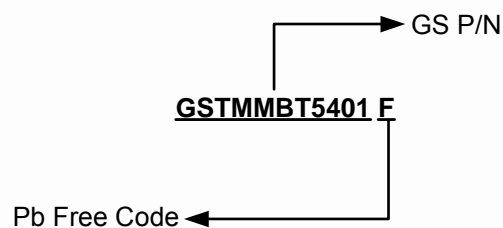
GSTMMBT5401F(SOT-23)	
	
Pin	Description
1	Base
2	Emitter
3	Collector



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 _{θJA}	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 _{θJA}	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)	-	-0.2	V
	(I _C =-50mA, I _B =-5.0mA)	-	-0.5	
V _{BE(sat)}	Base-Emitter Saturation Voltage (I _C =-10mA, I _B =-1.0mA)	-	-1.0	V
	(I _C =-50mA, I _B =-5.0mA)	-	-1.0	
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 =-200uA, V _{CE} =-5V, R _S =10Ω, f=1.0kHz)	-	8.0	dB

Typical Performance Characteristics

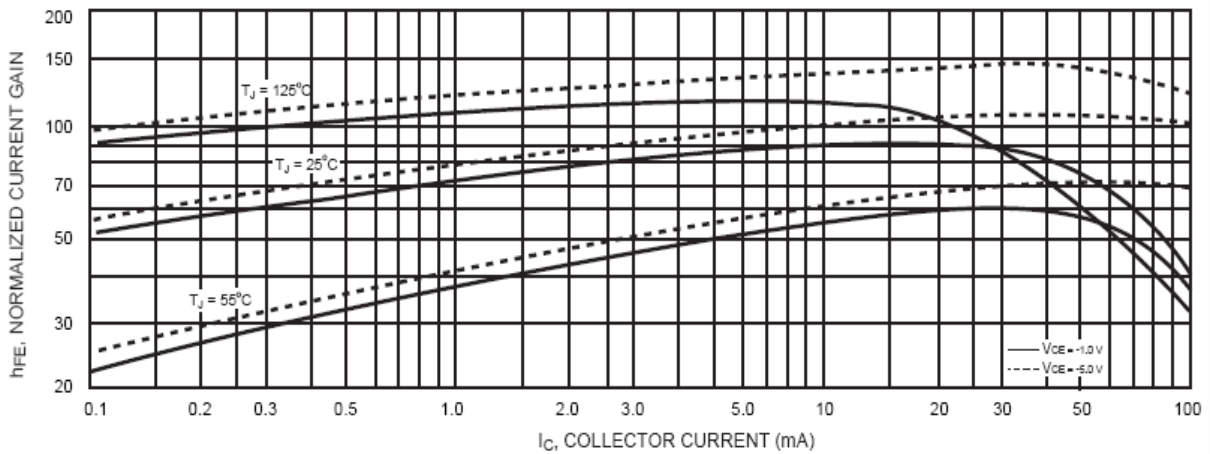


FIG.1 DC Current Gain

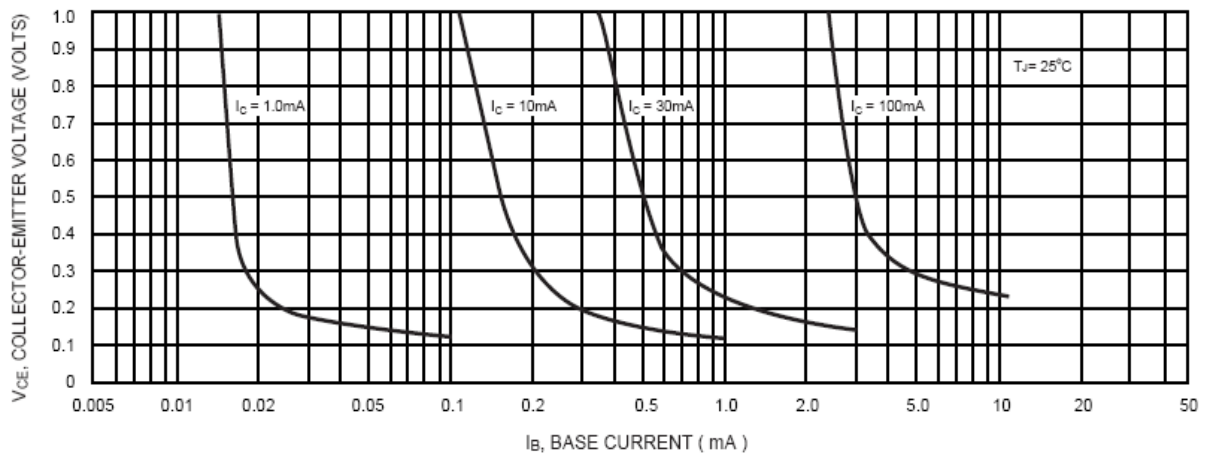


FIG.2 Collector Saturation Region

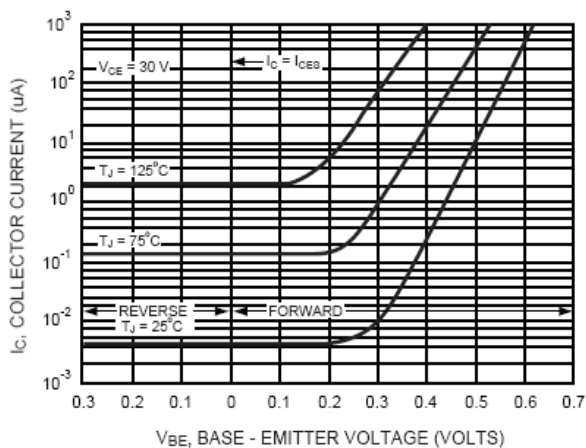


FIG.3 Temperature Coefficients

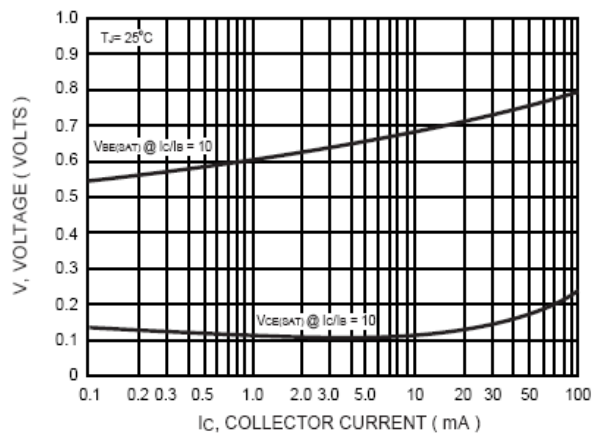


FIG.4 "On" Voltages

Typical Performance Characteristics (Continue)

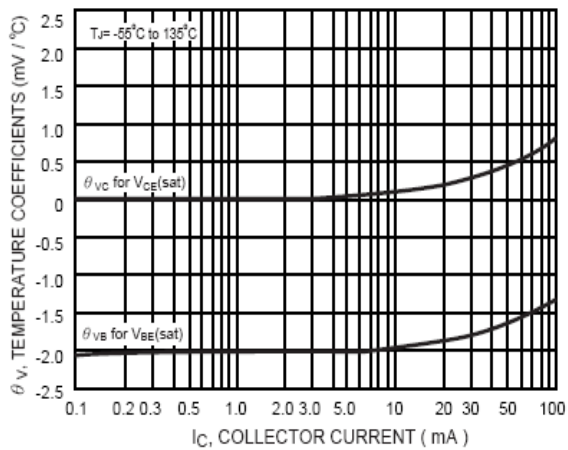
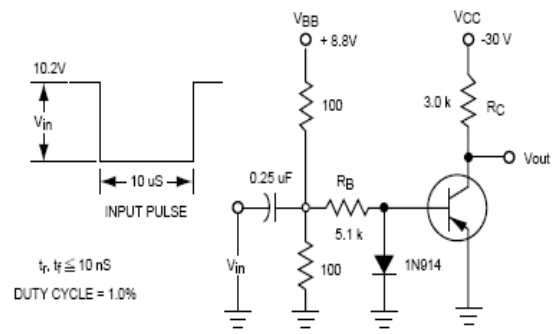


FIG.5 Temperature Coefficients



VALUES SHOWN ARE FOR $I_C @ 10 \text{ mA}$

FIG.6 Switching Time Test Circuit

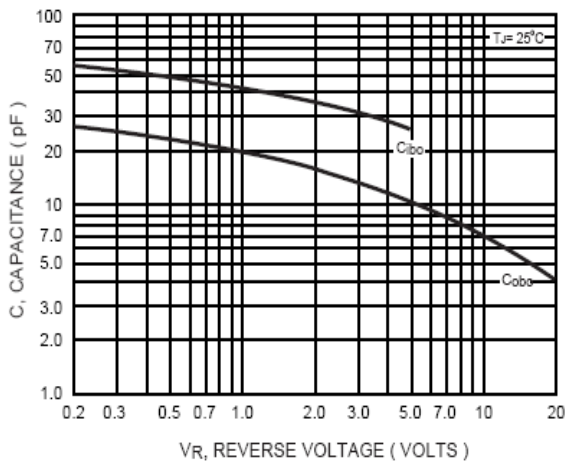


FIG.7 Capacitances

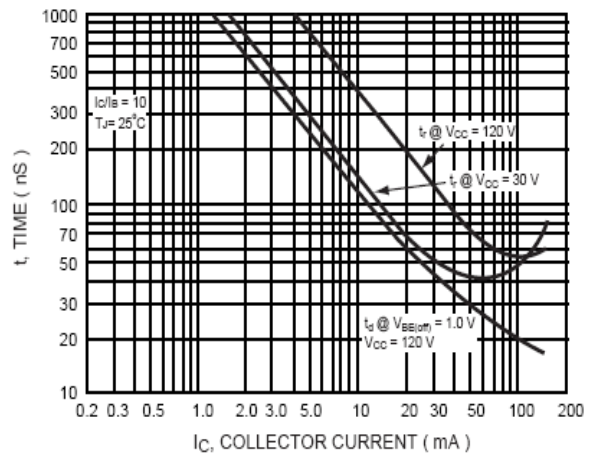


FIG.8 Turn - On Time

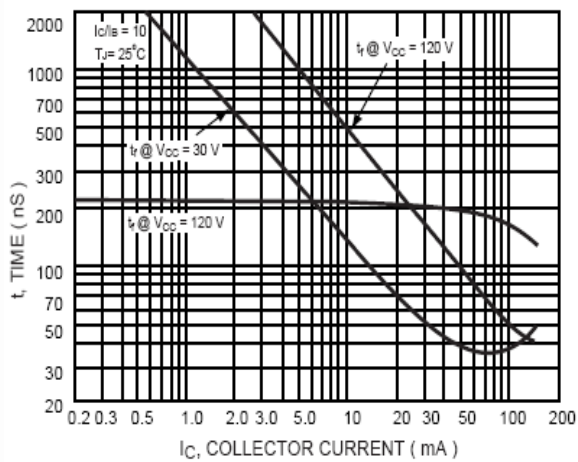
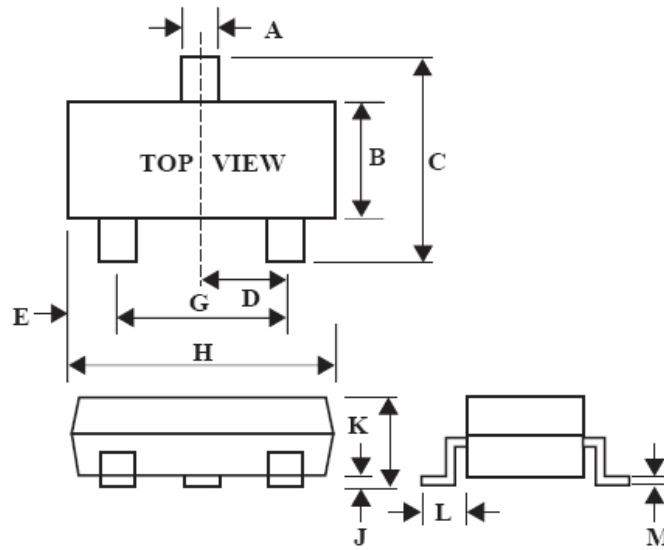


FIG.9 Turn - Off Time

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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