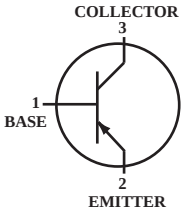
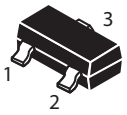
WEITRON

MMBT5401

High Voltage PNP Transistors

Lead(Pb)-Free





SOT-23

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	-150	Vdc
Collector-Base Voltage	V_{CBO}	-160	Vdc
Emitter-Base Voltage	V_{EBO}	-5.0	Vdc
Collector Current-Continuous	I_C	-500	mAdc

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Total Device Dissipation FR-5 Board (1) TA=25°C Derate above 25°C	P_D	225 1.8	mW mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	°C/W
Total Device Dissipation Alumina Substrate, (2) TA=25°C Derate above 25°C	P_D	300 2.4	mW mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	°C/W
Junction and Storage, Temperature	$T_{J,Tstg}$	-55 to +150	°C

DEVICE MARKING

MMBT5401=2L

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

Characteristics	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage (I_C= -1.0 mAdc, I_B=0)	$V_{(BR)CEO}$	-150	-	Vdc
Collector-Base Breakdown Voltage (I_C=-100μAdc, I_E=0)	$V_{(BR)CBO}$	-160	-	Vdc
Emitter-Base Breakdown Voltage (I_E=-10 μAdc, I_C=0)	$V_{(BR)EBO}$	-5.0	-	Vdc
Collector Cutoff Current (V_{CE} =-120Vdc, I_E=0) (V_{CE} =-120Vdc, I_E=0, T_A=100°C)	I_{CES}	-	-50	uAdc

1.FR-5=1.0 x 0.75 x 0.062 in.
2.Alumina=0.4 x 0.3 x 0.024 in. 99.5% alumina.

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted) (Countinued)

Characteristics	Symbol	Min	Max	Unit
ON CHARACTERISTICS				
DC Current Gain (I_C=-1.0mAdc, V_{CE}=-5.0Vdc) (I_C=-10mAdc, V_{CE}=-5.0Vdc) (I_C=-50mAdc, V_{CE}=-5.0Vdc)	h_{FE}	50 60 50	- 240 -	-
Collector-Emitter Saturation Voltage (I_C=-10mAdc, I_B=-1.0mAdc) (I_C=-50mAdc, I_B=-5.0mAdc)	$V_{CE(sat)}$	-	-0.2 -0.5	Vdc
Base-Emitter Saturation Voltage (I_C=-10mAdc, I_B=-1.0mAdc) (I_C=-50mAdc, I_B=-5.0mAdc)	$V_{BE(sat)}$	-	-1.0 -1.0	Vdc
SMALL-SIGNAL CHARACTERISTICS				
Collector-Gain-Bandwidth Product (I_C=-10mVdc, V_{CE}=-10Vdc, f=100MHz)	f_T	100	300	MHz
Output Capacitance (V_{CB}=-10Vdc, I_E=0, f=1.0MHz)	C_{obo}	-	6.0	P_F
Small Signal Current Gain (I_C=-1.0mVdc, V_{CE}=-10Vdc, f=1.0kHz)	h_{fe}	40	200	-
Noise Figure (I_C=-200uAdc, V_{CE}=-5.0Vdc, Rs=10Ω, f=1.0kHz)	NF	-	8.0	dB

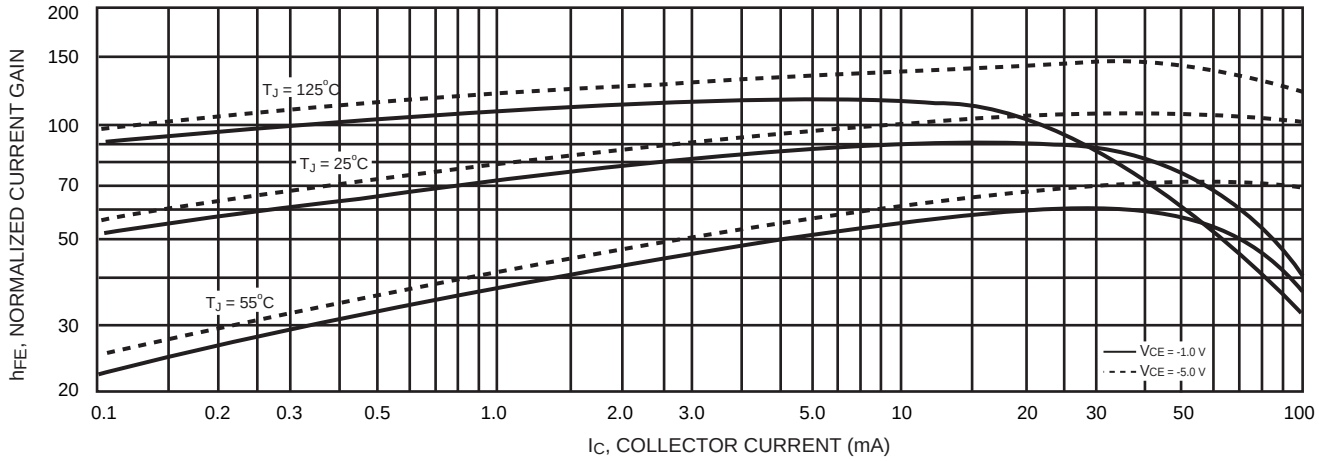


FIG.1 DC Current Gain

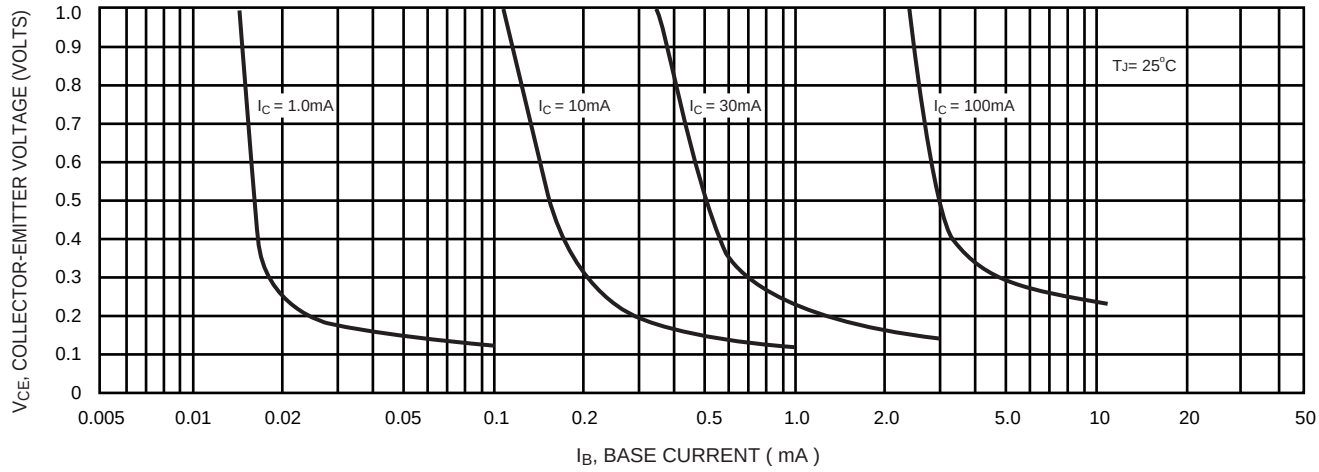


FIG.2 Collector Saturation Region

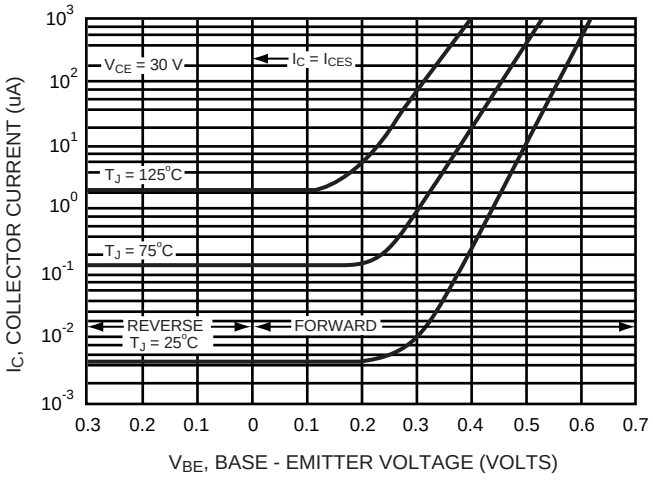


FIG.3 Temperature Coefficients

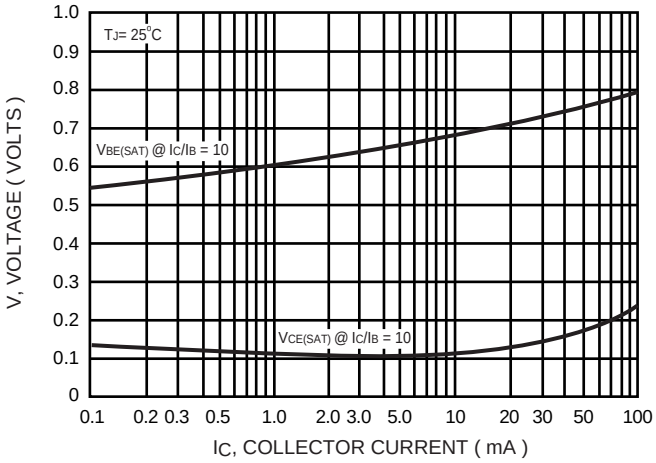


FIG.4 " On " Voltages

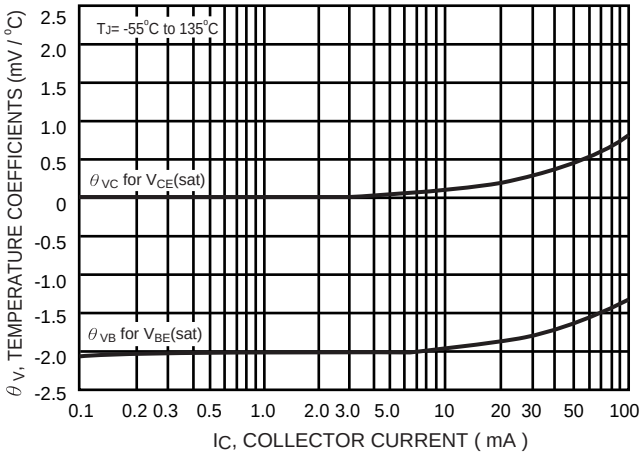
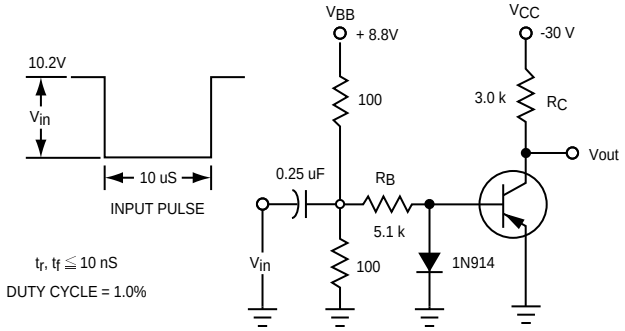


FIG.5 Temperature Coefficients



VALUES SHOWN ARE FOR IC @ 10 mA

FIG.6 Switching Time Test Circuit

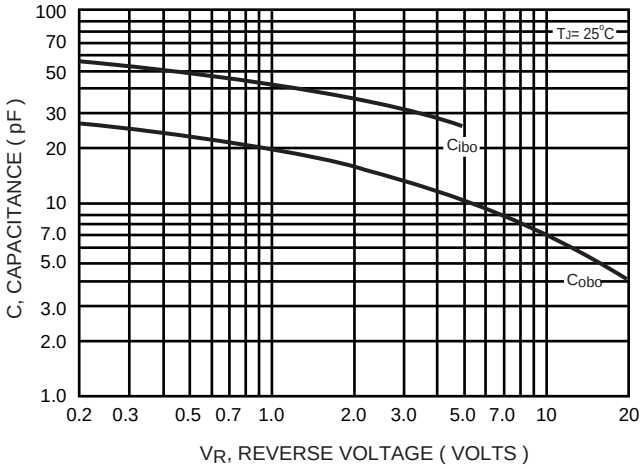


FIG.7 Capacitances

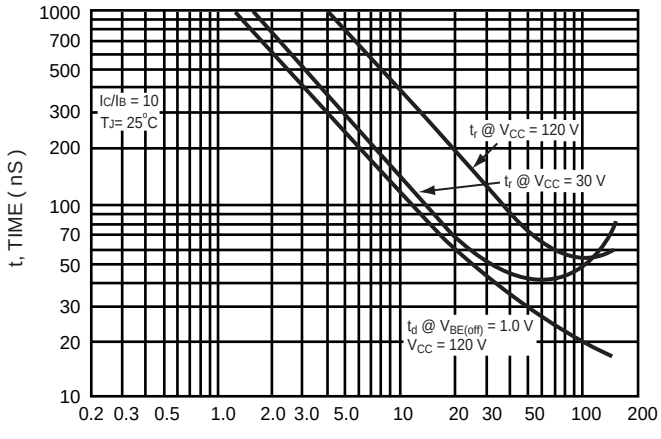


FIG.8 Turn - On Time

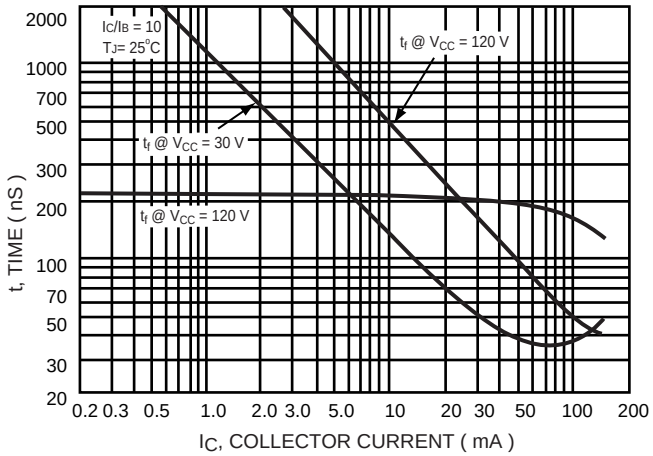
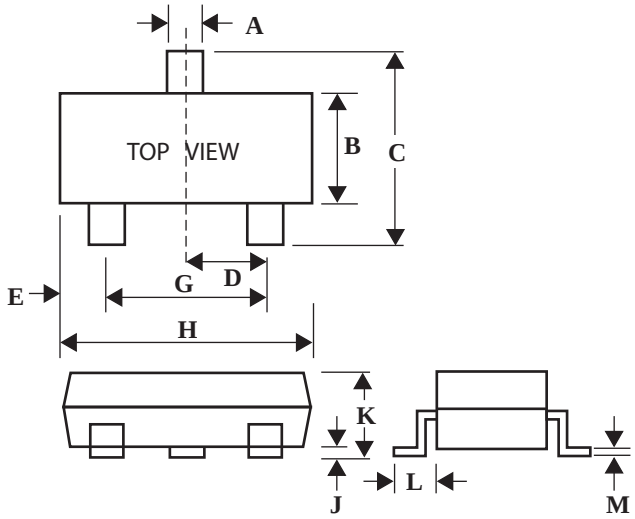


FIG.9 Turn - Off Time

SOT-23 Package Outline Dimensions

Unit:mm



Dim	Min	Max
A	0.35	0.51
B	1.19	1.80
C	2.10	3.00
D	0.85	1.05
E	0.46	1.00
G	1.70	2.10
H	2.70	3.10
J	0.01	0.13
K	0.89	1.60
L	0.30	0.61
M	0.076	0.25