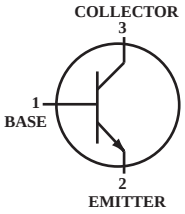
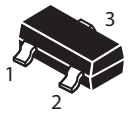
WEITRON

MMBT5550
MMBT5551

High Voltage NPN Transistors

Lead(Pb)-Free





SOT-23

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	140	Vdc
Collector-Base Voltage	V_{CBO}	160	Vdc
Emitter-Base Voltage	V_{EBO}	6.0	Vdc
Collector Current-Continuous	I_C	600	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

MMBT5550 = M1F ; MMBT5551 = G1

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

Characteristics		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (3) (I_C=1.0 mAdc, I_B=0)	MMBT5550 MMBT5551	$V_{(BR)CEO}$	 140 160	 - -	Vdc
Collector-Base Breakdown Voltage (I_C=-100μAdc, I_E=0)	MMBT5550 MMBT5551	$V_{(BR)CBO}$	 160 180	 - -	Vdc
Emitter-Base Breakdown Voltage (I_E=10μAdc, I_C=0)		$V_{(BR)EBO}$	6.0	-	Vdc

ELECTRICAL CHARACTERISTICS (T_A=25℃ unless otherwise noted) (Countinued)

Characteristics		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector Cutoff Current		I_{CBO}			
(V_{CB}=100 V_{dc}, I_E= o)	MMBT5550		-	100	nAdc
(V_{CB}=120 V_{dc}, I_E= o)	MMBT5551		-	50	
(V_{CB}=100 V_{dc}, I_E= o, T_A= 100°C)	MMBT5550		-	100	uAdc
(V_{CB}=100 V_{dc}, I_E= o, T_A= 100°C)	MMBT5551		-	50	
Emitter Cutoff Current (V_{EB}=4.0 V_{dc}, I_C=0)		I_{EBO}	-	50	nAdc
ON CHARACTERISTICS					
DC Current Gain		h_{FE}			-
(I_C=1.0 mAdc, V_{CE}=5.0 Vdc)	MMBT5550		60	-	
	MMBT5551		80	-	
(I_C=10 mAdc, V_{CE}=5.0 Vdc)	MMBT5550		60	250	
	MMBT5551		80	250	
(I_C=50 mAdc, V_{CE}=5.0 Vdc)	MMBT5550		20	-	
	MMBT5551		30	-	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$			Vdc
(I_C=10 mAdc, I_B=1.0mAdc)	Both Types		-	0.15	
(I_C=50 mAdc, I_B=5.0mAdc)	MMBT5550		-	0.25	
	MMBT5551		-	0.20	
Base-Emitter Saturation Voltage		$V_{BE(sat)}$			Vdc
(I_C=10 mAdc, I_B=1.0mAdc)	Both Types		-	1.0	
(I_C=50 mAdc, I_B=5.0mAdc)	MMBT5550		-	1.2	
	MMBT5551		-	1.0	

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
3. Pulse Test: Pulse Width = 300 μs, Duty Cycle = 2.0%

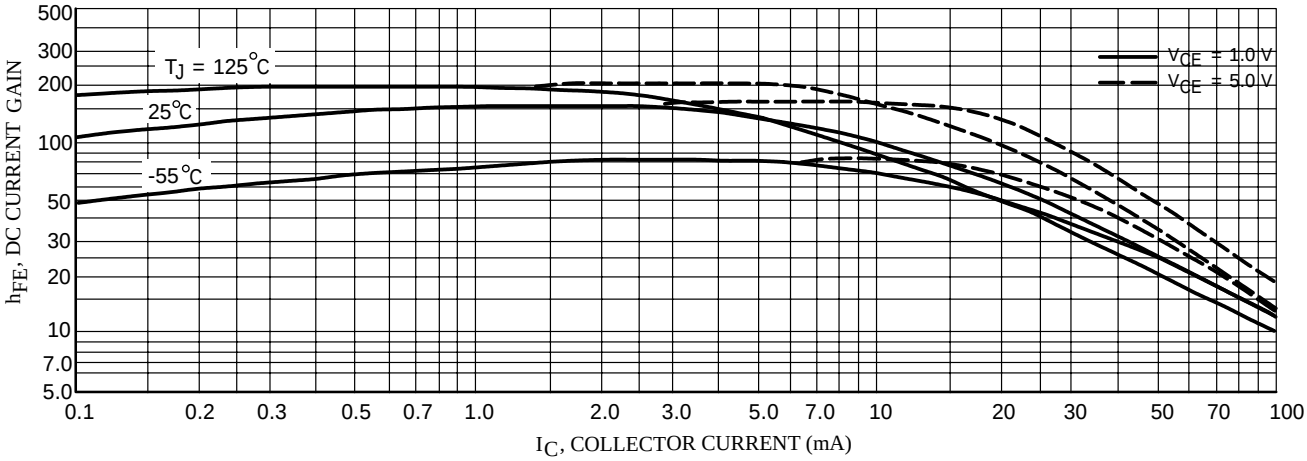


FIG.1 DC Current Gain

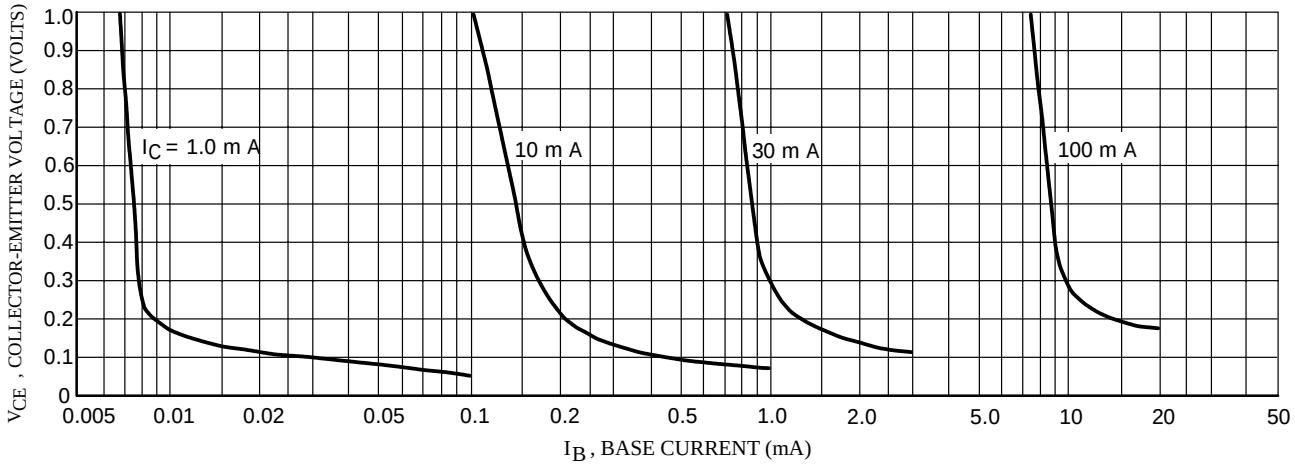


FIG. 2 Collector Saturation Region

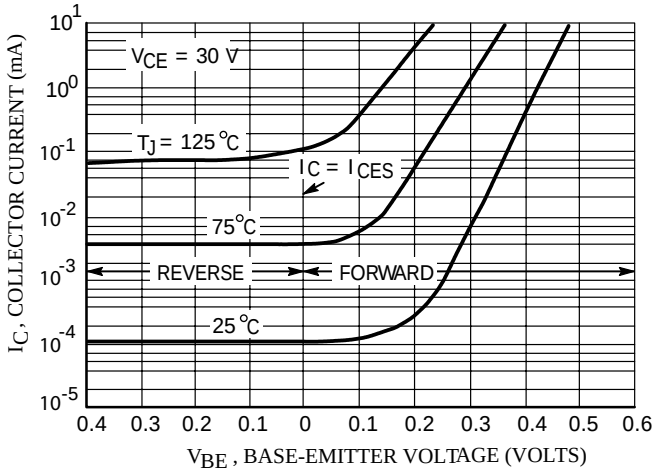


FIG. 3 Collector Cut-Off Region

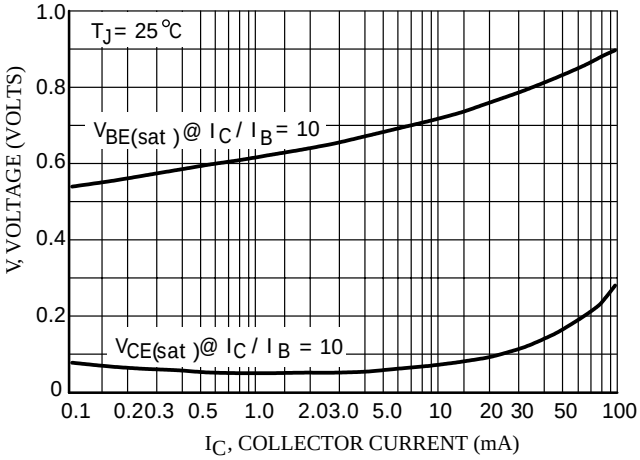


FIG. 4 "On" Voltages

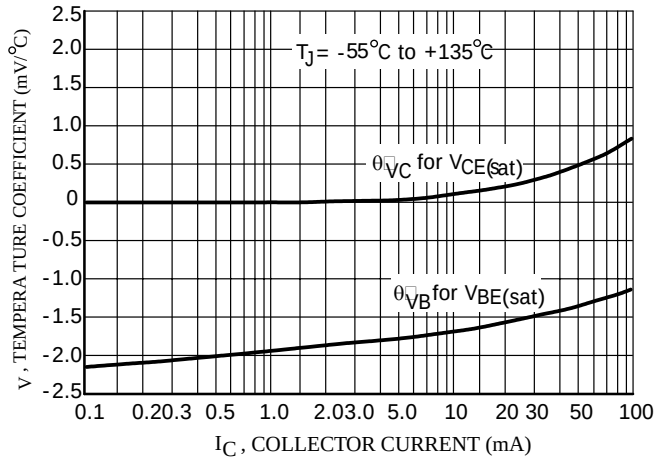
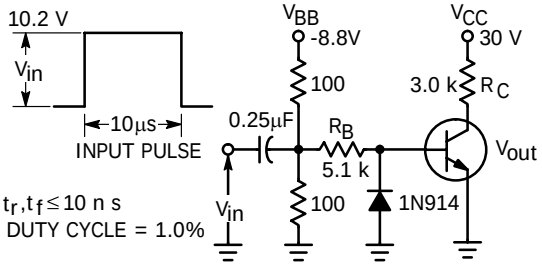


FIG.5 Temperature Coefficients



Values Shown are for I_C@ 10 mA

FIG. 6 Switching Time Test Circuit

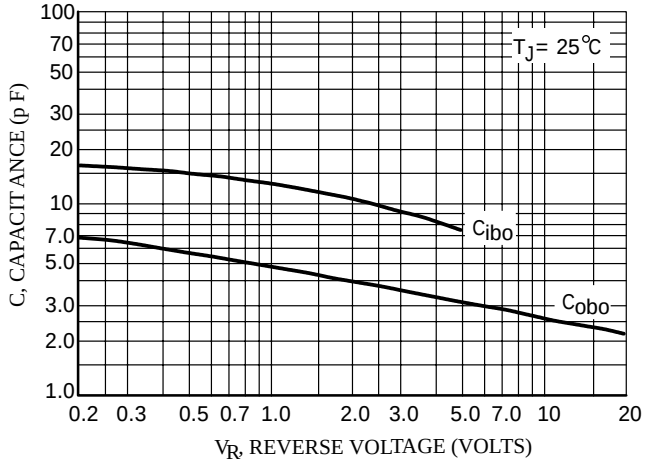


FIG. 7 Capacitances

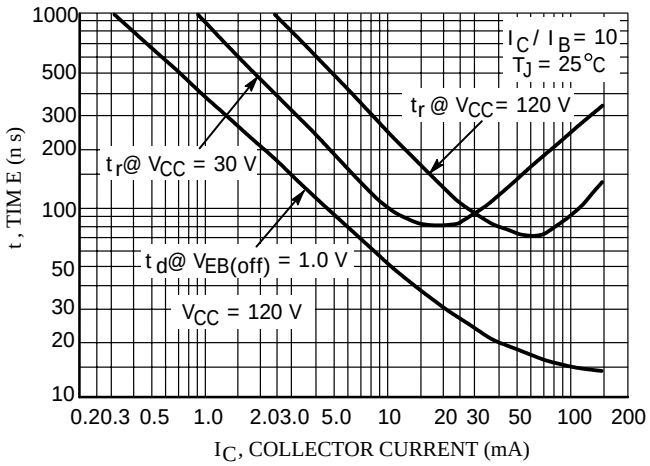


FIG. 8 Turn-On Time

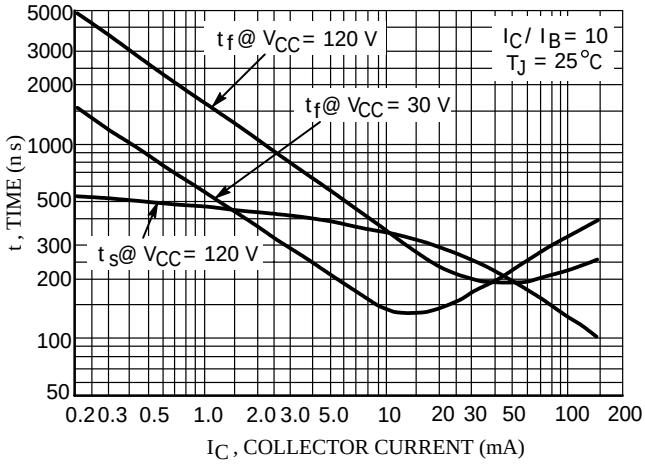
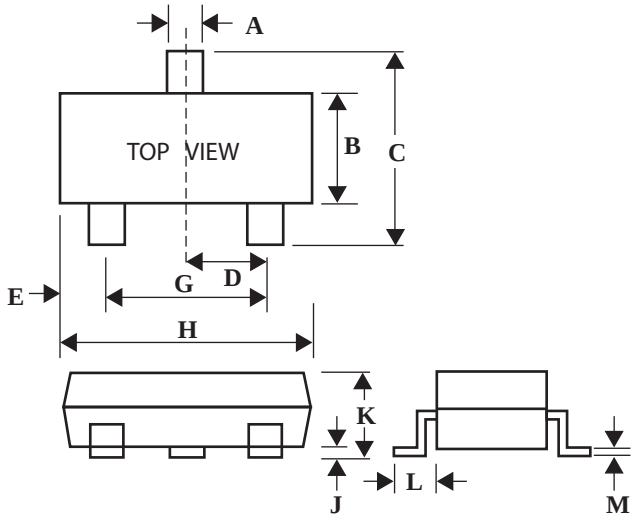


FIG.9 Turn-Off Time

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