



DESCRIPTION

The MBT5550~MBT5551 are available in SOT-23 package.

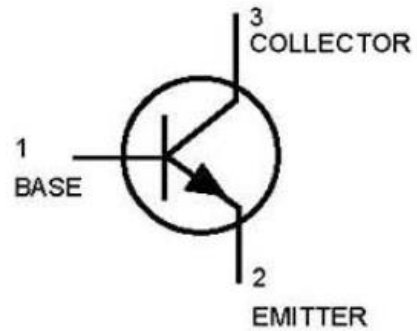
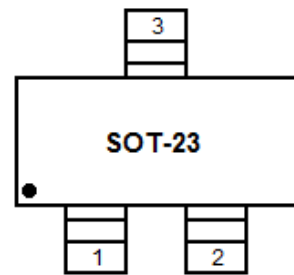
FEATURES

- Available in SOT-23 package

ORDERING INFORMATION

Package Type	Part Number
SOT-23	MBT5550
	MBT5551
Note	SPQ: 3,000pcs/Reel
AiT provides all RoHS Compliant Products	

PIN DESCRIPTION





ABSOLUTE MAXIMUM RATINGS

V _{CEO} , Collector-Emitter Voltage	140Vdc
V _{CBO} , Collector-Base Voltage	160Vdc
V _{EBO} , Emitter-Base Voltage	6.0Vdc
I _C , Collector Current-Continuous	600mAdc

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

THERMAL CHARACTERISTICS

Parameter	Symbol	Max	Unit
Total Device Dissipation FR-5 Board ^{NOTE1} T _A = 25°C Derate above 25°C	P _D	225 1.8	mW mW/°C
Thermal Resistance, Junction to Ambient	R _{θJA}	556	°C/W
Total Device Dissipation Alumina Substrate, ^{NOTE2} T _A = 25°C Derate above 25°C	P _D	300 2.4	mW mW/°C
Thermal Resistance, Junction to Ambient	R _{θJA}	417	°C/W
Junction and Storage Temperature	T _J , T _{stg}	-55 to +150	°C

NOTE1: FR-5 = 1.0 x 0.75 x 0.062 in.

NOTE2: Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.



ELECTRICAL CHARACTERISTICS

T_A = 25°C, unless otherwise noted

Parameter	Symbol	Conditions	Min	Max	Unit	
OFF CHARACTERISTICS						
Collector-Emitter Breakdown Voltage ^{NOTE3}	V _{(BR)CEO}	I _C = 1.0mA _{dc} , I _B = 0	MBT5550	140	-	V _{dc}
			MBT5551	160	-	
Collector-Base Breakdown Voltage	V _{(BR)CBO}	I _C = 100μA _{dc} , I _E = 0	MBT5550	160	-	V _{dc}
			MBT5551	180	-	
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	I _E = 10μA _{dc} , I _C = 0	6.0	-	V _{dc}	
Collector Cutoff Current	I _{CBO}	V _{CB} = 100V _{dc} , I _E = 0	MBT5550	-	100	nA _{dc}
		V _{CB} = 120V _{dc} , I _E = 0	MBT5551	-	50	
		V _{CB} = 100V _{dc} , I _E = 0, T _A = 100°C	MBT5550	-	100	μA _{dc}
		V _{CB} = 120V _{dc} , I _E = 0, T _A = 100°C	MBT5551	-	50	
Emitter Cutoff Current	I _{EBO}	V _{EB} = 4.0V _{dc} , I _C = 0	-	100	nA _{dc}	
ON CHARACTERISTICS						
DC Current Gain	h _{FE}	I _C = 1.0mA _{dc} , V _{CE} = 5.0V _{dc}	MBT5550	60	-	-
			MBT5551	80	-	
		I _C = 10mA _{dc} , V _{CE} = 5.0V _{dc}	MBT5550	60	250	
			MBT5551	80	250	
		I _C = 50mA _{dc} , V _{CE} = 5.0V _{dc}	MBT5550	20	-	
			MBT5551	30	-	
Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _C = 10mA _{dc} , I _B = 1.0mA _{dc}	Both Types	-	0.15	V _{dc}
		I _C = 50mA _{dc} , I _B = 5.0mA _{dc}	MBT5550	-	0.25	
			MBT5551	-	0.20	
Base-Emitter Saturation Voltage	V _{BE(sat)}	I _C = 10mA _{dc} , I _B = 1.0mA _{dc}	Both Types	-	1.0	V _{dc}
		I _C = 50mA _{dc} , I _B = 5.0mA _{dc}	MBT5550	-	1.2	
			MBT5551	-	1.0	

NOTE3: Pulse Test: Pulse Width <300 μs, Duty Cycle <2.0%.



TYPICAL CHARACTERISTICS

Figure 1. DC Current Gain

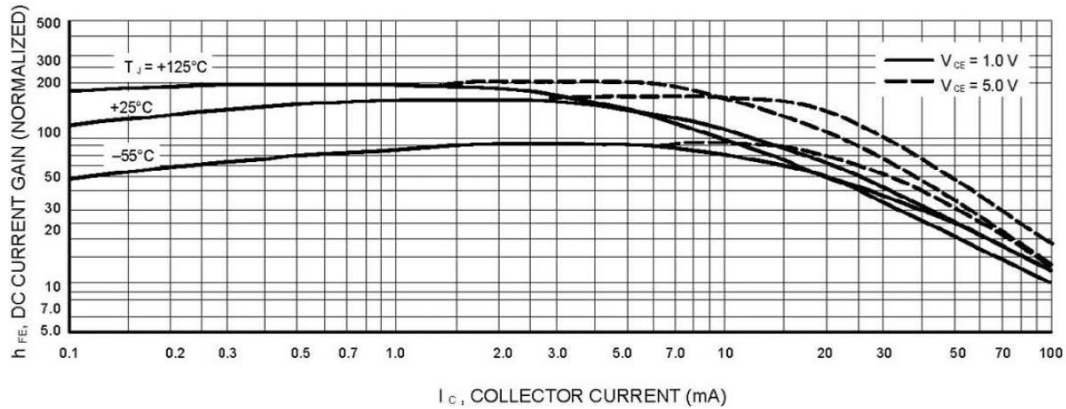


Figure 2. Collector Saturation Region

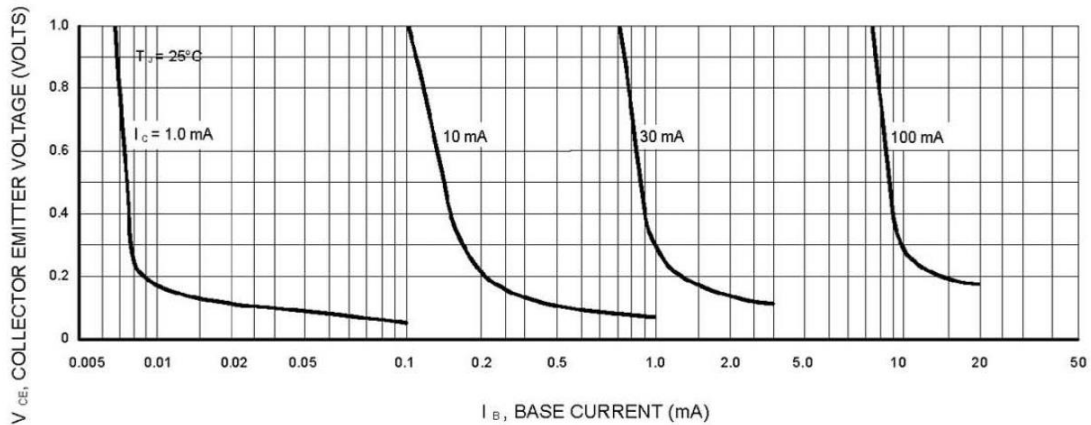


Figure 3. Collector Cut-Off Region

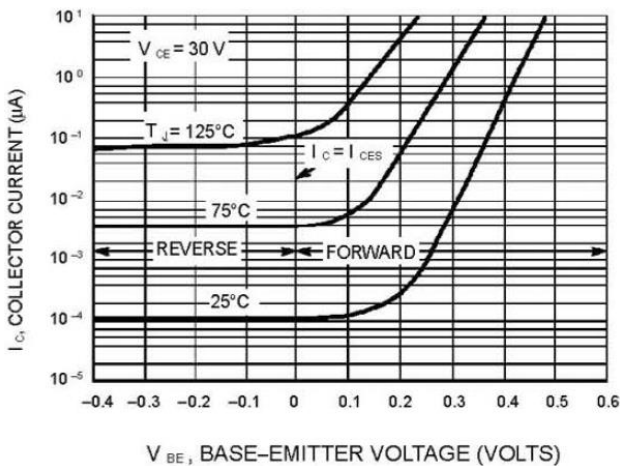


Figure 4. "On" Voltages

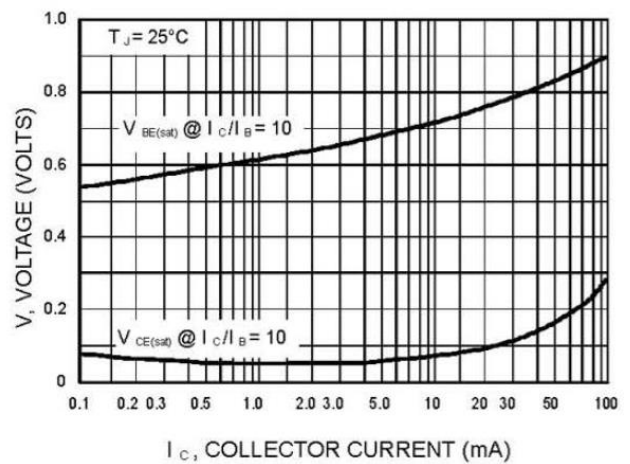




Figure 5. Temperature Coefficients

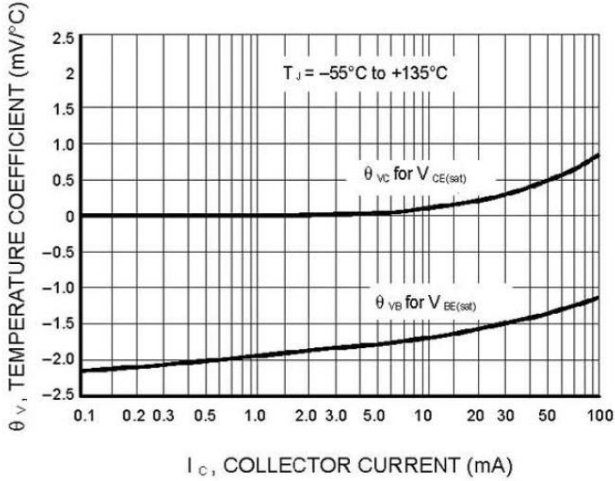


Figure 6. Switching Time Test Circuit

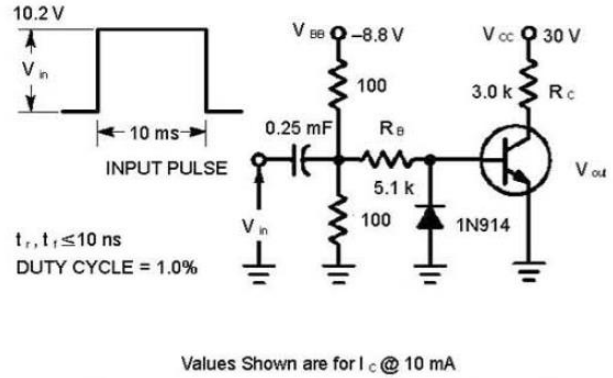


Figure 7. Capacitances

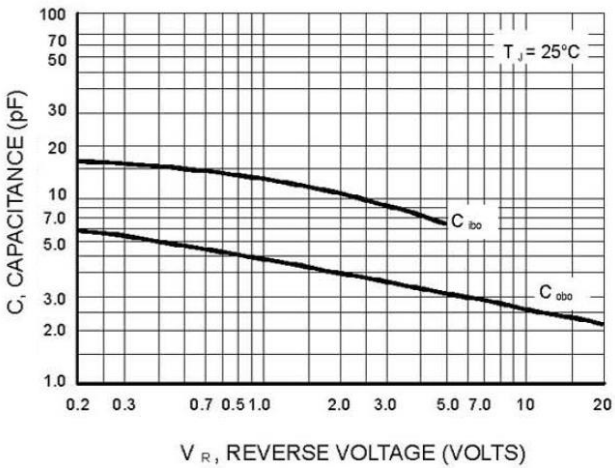


Figure 8. Turn-On Time

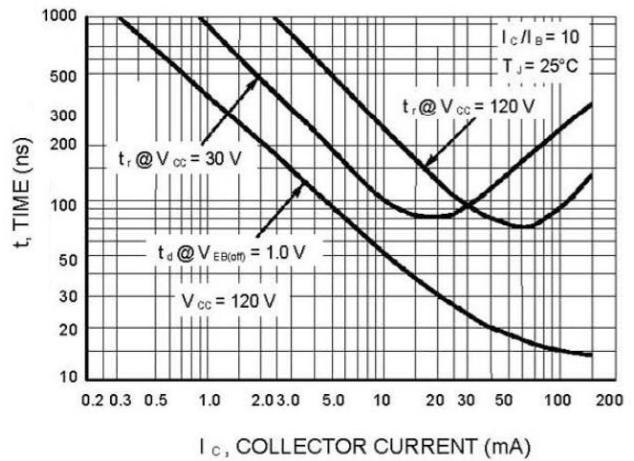
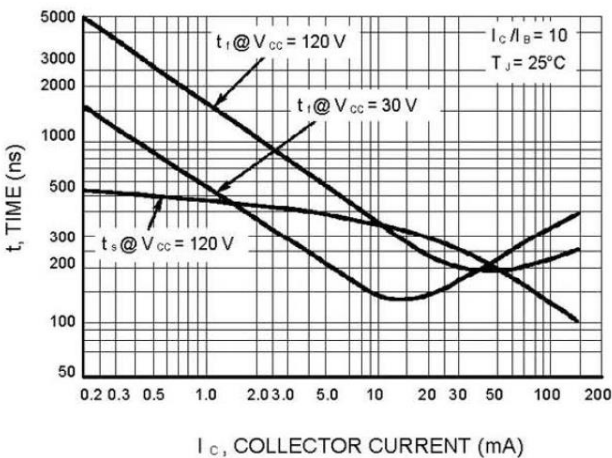


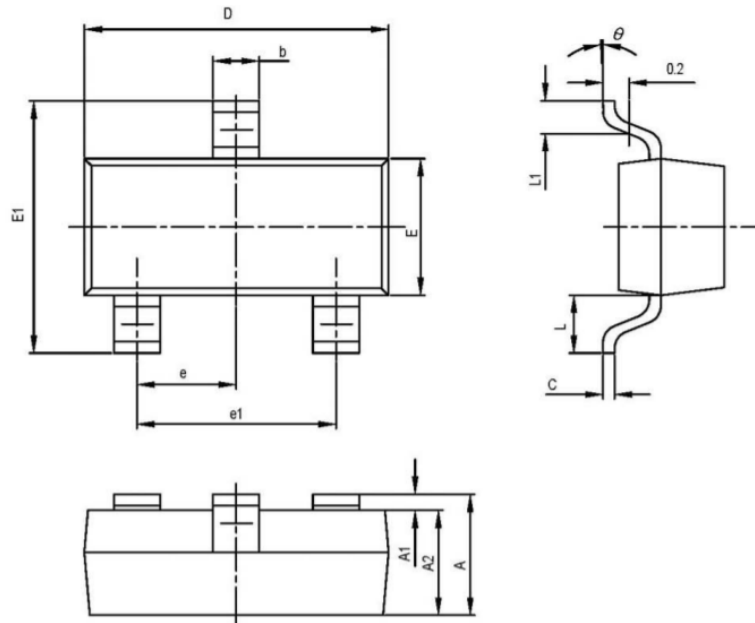
Figure 9. Turn - Off Time





PACKAGE INFORMATION

Dimension in SOT-23 Package (Unit: mm)



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.100	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°



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