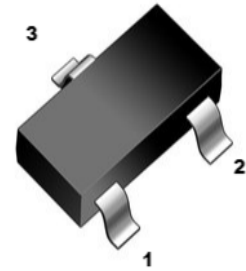




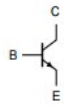
1. Features

- for switching and AF amplifier applications.
- On special request, these transistors can be manufactured in different pin configurations.

SOT-23



1 base
2 emitter
3 collector



2. Mechanical Data

- Case:Molded Plastic,SOT-23 .
- Epoxy:UL 94V-0 rate flame retardant.
- Terminals:Plated Leads Solderable per MIL-STD-750,Method-2026.
- Marking: 3D
- Mounting Position : Any.

3. Maximum Ratings

Electrical Characteristics Rating at 25℃ ambient temperature unless otherwise specified.

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	350	V
Collector-Emitter Voltage	V_{CEO}	350	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current	I_C	500	mA
Power Dissipation	P_{tot}	625	mW
Junction Temperature	T_j	150	℃
Storage Temperature	T_{stg}	-55~+150	℃



4. Electrical Characteristics ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Characteristics	Symbol	Condition	Min	TYP	Max	Unit
Collector Base Breakdown Voltage	BV_{CBO}	$I_C=100\mu\text{A}$	350	-	-	V
Collector Emitter Breakdown Voltage	BV_{CEO}	$I_C=1\text{mA}$	350	-	-	V
Emitter Base Breakdown Voltage	BV_{EBO}	$I_E=10\mu\text{A}$	6	-	-	V
Collector cut-off current	I_{CBO}	$V_{CB}=250\text{V}$	-	-	50	nA
Emitter cut-off current	I_{EBO}	$V_{EB}=5\text{V}$	-	-	50	nA
DC current gain	h_{FE}	$V_{CE}=10\text{V}, I_C=1\text{mA}$	20	-	-	-
		$V_{CE}=10\text{V}, I_C=10\text{mA}$	30	-	-	-
		$V_{CE}=10\text{V}, I_C=30\text{mA}$	30	-	200	-
		$V_{CE}=10\text{V}, I_C=50\text{mA}$	20	-	200	-
		$V_{CE}=10\text{V}, I_C=100\text{mA}$	15	-	-	-
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=10\text{mA}, I_B=1\text{mA}$	-	-	300	mV
		$I_C=20\text{mA}, I_B=2\text{mA}$			350	
		$I_C=30\text{mA}, I_B=3\text{mA}$			500	
		$I_C=50\text{mA}, I_B=5\text{mA}$			1000	
Base -emitter saturation voltage	$V_{BE(sat)}$	$I_C=10\text{mA}, I_B=1\text{mA}$	-	-	750	mV
		$I_C=20\text{mA}, I_B=2\text{mA}$			850	
		$I_C=30\text{mA}, I_B=3\text{mA}$			900	
Base -emitter voltage	V_{BE}	$V_{CE}=10\text{V}, I_C=100\text{mA}$	-	-	2	V
Current Gain - Bandwidth Product	f_T	$V_{CE}=20\text{V}, I_C=10\text{mA}, f=20\text{MHz}$	40	-	200	MHz
Collector-Base Capacitance	C_{CBO}	$V_{CB}=20\text{V}, I_E=0, f=1.0\text{MHz}$	-	-	6	pF



5. Rating And Characteristic Curves

Fig.1 DC Current Gain

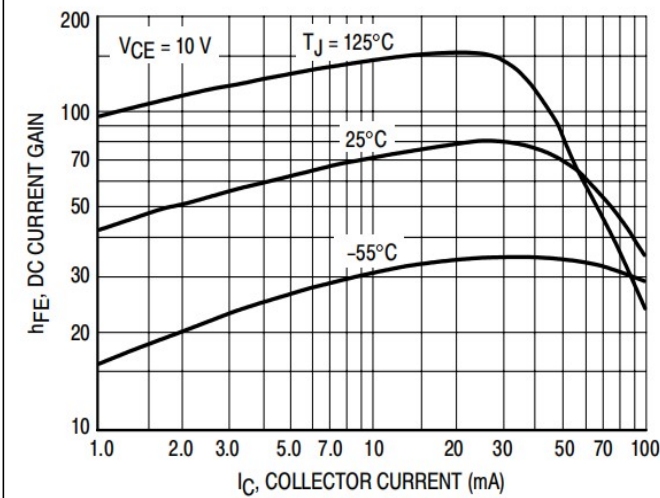


Fig.2 Current-Gain-Bandwidth Product

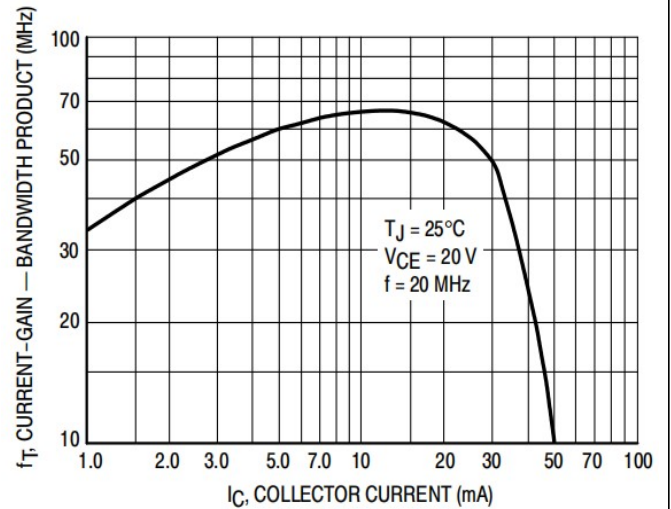


Fig.3 "On" Voltages

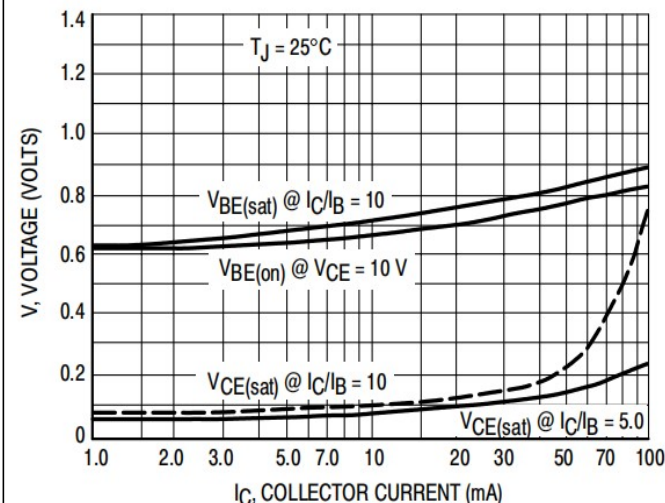


Fig.4 Temperature Coefficients

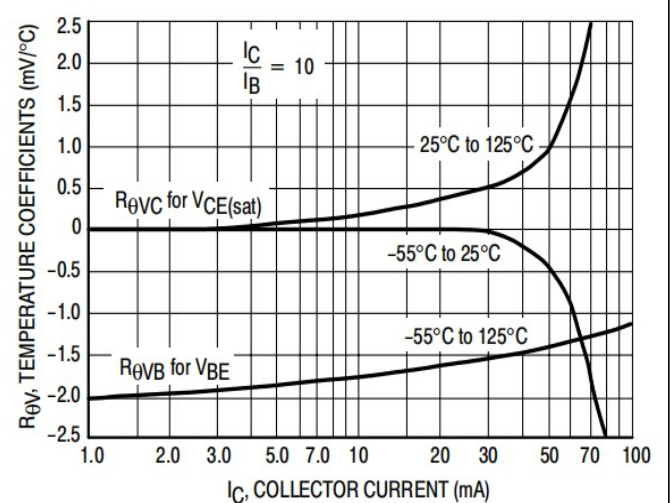


Fig.5 Capacitance

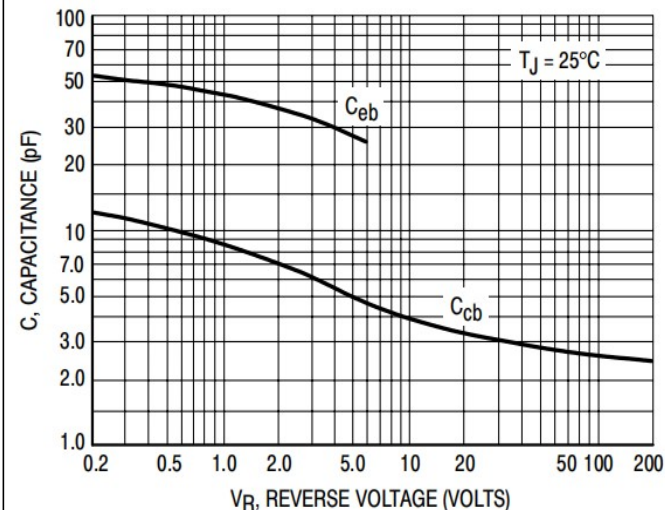
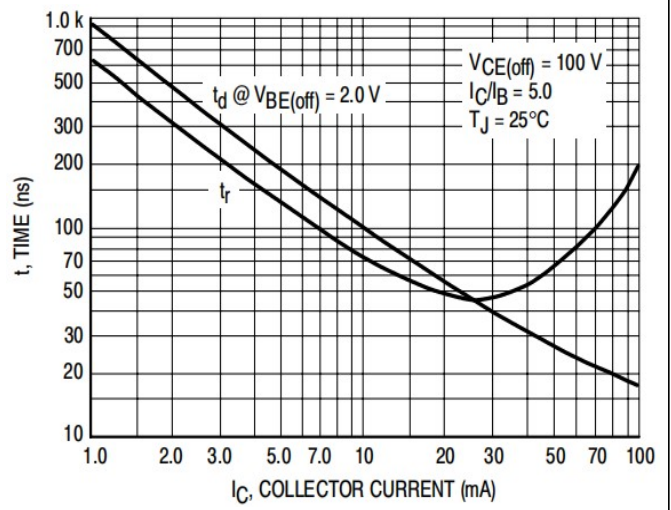


Fig.6 Turn-On Time





5. Rating And Characteristic Curves

Fig.7 Turn-Off Time

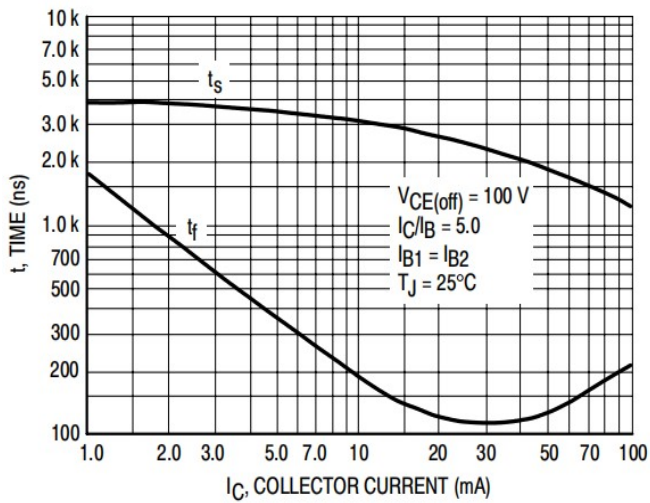


Fig.8 Switching Time Test Circuit

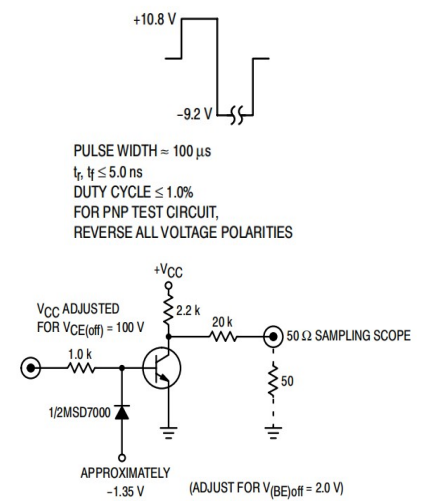
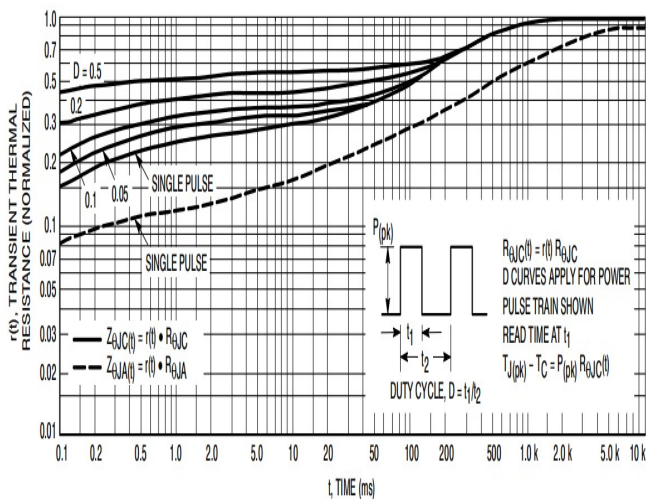
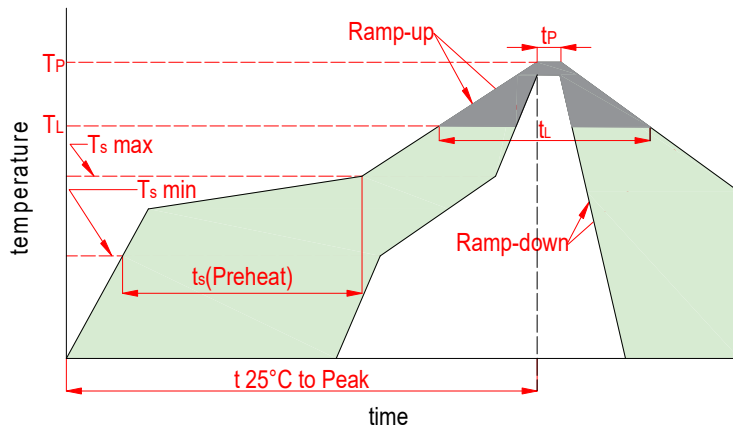


Fig.9 Thermal Response



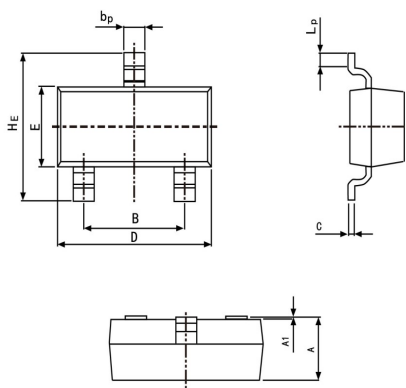


6. Soldering Parameters



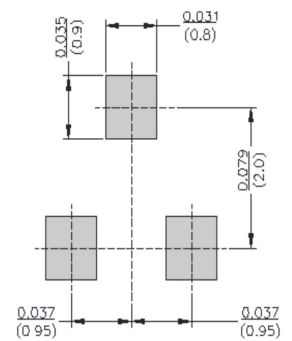
Reflow Condition		Lead-free
Pre Heat	Temp. min(T_s (min))	150℃
	Temp. max(T_s (min))	200℃
	Time(min to max)(t_s)	60~120s
Aver. ramp up rate(Liquidus Temp.)(T_L)to peak		3℃/s max
T_s (max) to T_L -Ramp-up Rate		3℃/s max
Reflow	Temp.(T_L)(Liquidus)	217℃
	Temp.(t_L)(Liquidus)	60~150s
Peak Temp.(T_P)		260 ^{+0/-5} ℃
Time within actual peak Temp.(t_p)		30s max
Ramp-down Rate		6℃/s max
Time 25℃ to peak Tempe.(T_p)		8 minutes max
Do not exceed		260℃

7. Dimensions

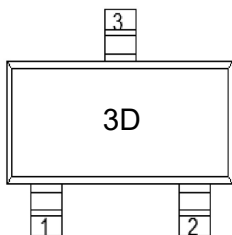


Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.035	0.045	0.90	1.15
B	0.070	0.081	1.78	2.05
bp	0.012	0.020	0.30	0.51
C	0.003	0.007	0.08	0.18
D	0.110	0.118	2.80	3.00
E	0.047	0.055	1.20	1.40
HE	0.087	0.110	2.20	2.80
A1	0.000	0.004	0.00	0.10
LP	0.008	0.020	0.20	0.50

Mounting PAD Layout



8. Part Marking System



9. Package Information

Package	Part Number	Tape Width(mm)	Quantity(pcs)
SOT-23	MMBT6517	8	3000



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