

SOT-23 Plastic-Encapsulate Transistors

MMBTA13,14 TRANSISTOR (NPN)

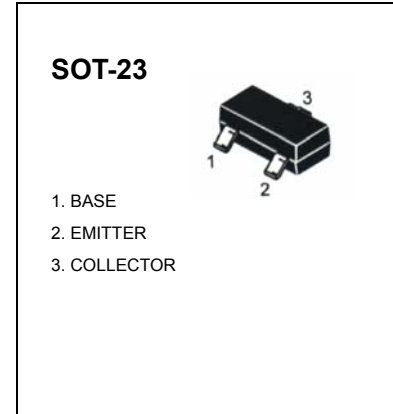
FEATURES

Darlington Amplifier

Marking : MMBTA13:K2D; MMBTA14:K3D

MAXIMUM RATINGS (T_A=25°C unless otherwise noted)

Symbol	Parameter	Value	Units
V _{CBO}	Collector-Base Voltage	30	V
V _{CEO}	Collector-Emitter Voltage	30	V
V _{EBO}	Emitter-Base Voltage	10	V
I _C	Collector Current -Continuous	0.3	A
P _C	Collector Power Dissipation	350	mW
R _{θJA}	Thermal Resistance Junction to Ambient	417	°C/W
T _J	Junction Temperature	150	°C
T _{stg}	Storage Temperature	-55 to +150	°C



ELECTRICAL CHARACTERISTICS (T_{amb}=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	MAX	UNIT
Collector-base breakdown voltage	V _{(BR)CBO}	I _C = 100μA, I _E =0	30		V
Collector-emitter breakdown voltage	V _{(BR)CEO}	I _C = 100uA, I _B =0	30		V
Collector-emitter breakdown voltage	V _{(BR)EBO}	I _E = 100μA, I _C =0	10		V
Collector cut-off current	I _{CBO} *	V _{CB} =30 V , I _E =0		0.1	μA
Emitter cut-off current	I _{EBO} *	V _{EB} = 10V , I _C =0		0.1	μA
DC current gain	h _{FE(1)} *	V _{CE} =5V, I _C = 10mA	MMBTA13	5000	
			MMBTA14	10000	
	h _{FE(2)} *	V _{CE} =5V, I _C = 100mA	MMBTA13	10000	
			MMBTA14	20000	
Collector-emitter saturation voltage	V _{CE (sat)} *	I _C =100mA, I _B =0.1mA		1.5	V
Base-emitter saturation voltage	V _{BE (sat)} *	I _C =100mA, I _B =0.1mA		2	V
Base-emitter voltage	V _{BE} *	V _{CE} =5V, I _C = 100mA		2.0	V
Transition frequency	f _T	V _{CE} =5V, I _C = 10mA f=100MHz	125		MHz
Collector output capacitance	C _{ob}	V _{CB} =10V, I _E =0, f=1MHz		12	pF

* Pulse Test : pulse width≤300μs, duty cycle≤2%.

Typical Characteristics

MMBTA13/14

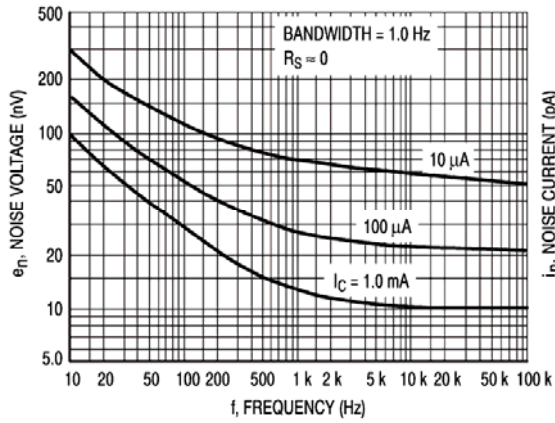


Figure 2. Noise Voltage

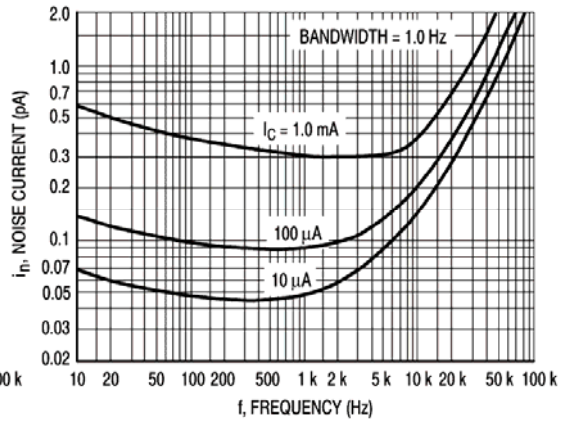


Figure 3. Noise Current

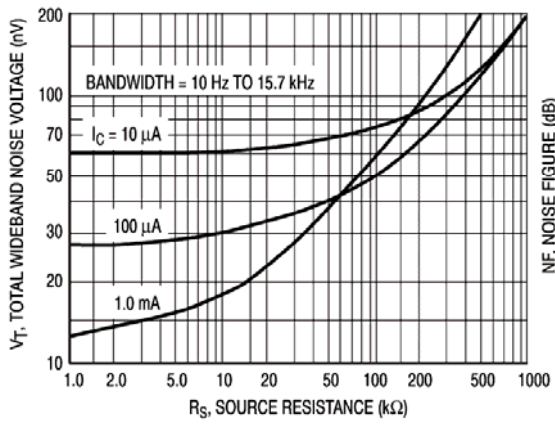


Figure 4. Total Wideband Noise Voltage

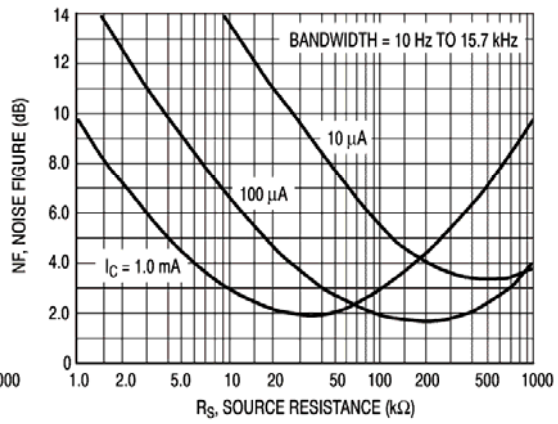


Figure 5. Wideband Noise Figure

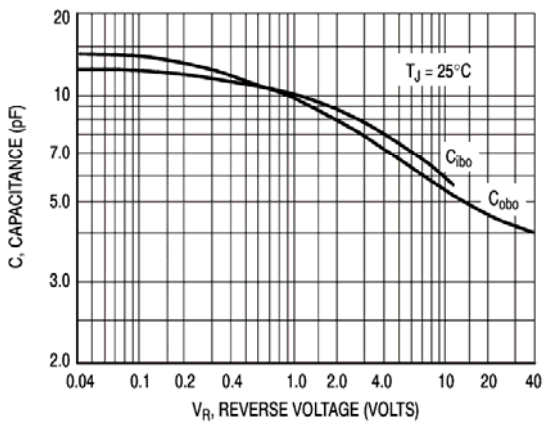


Figure 6. Capacitance

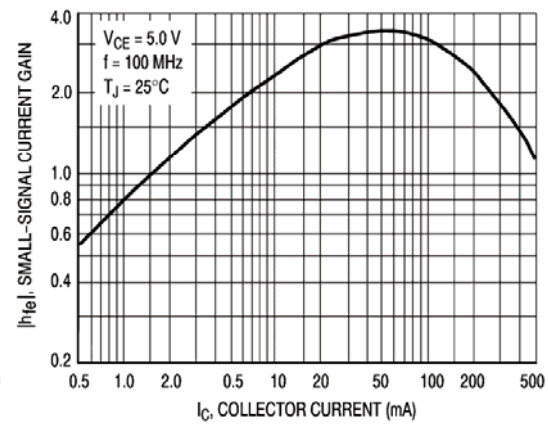


Figure 7. High Frequency Current Gain

Typical Characteristics

MMBTA13/14

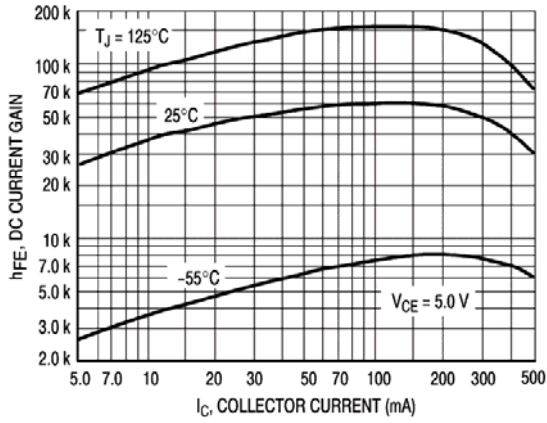


Figure 8. DC Current Gain

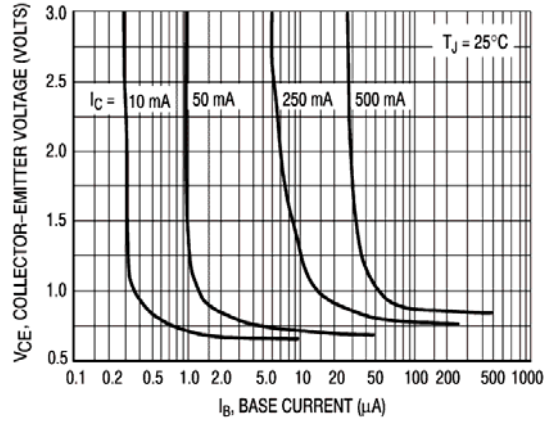


Figure 9. Collector Saturation Region

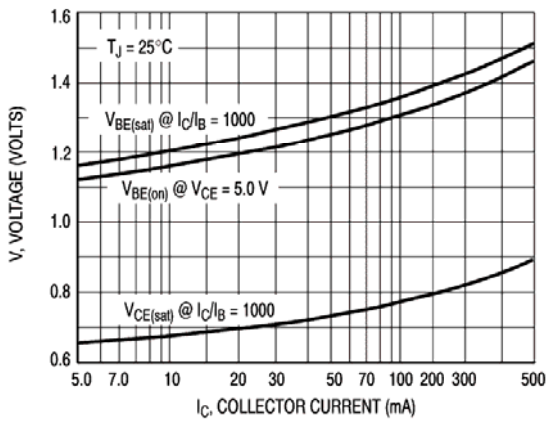


Figure 10. "On" Voltages

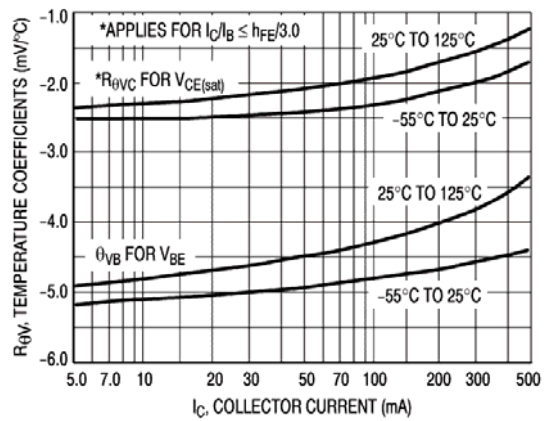


Figure 11. Temperature Coefficients

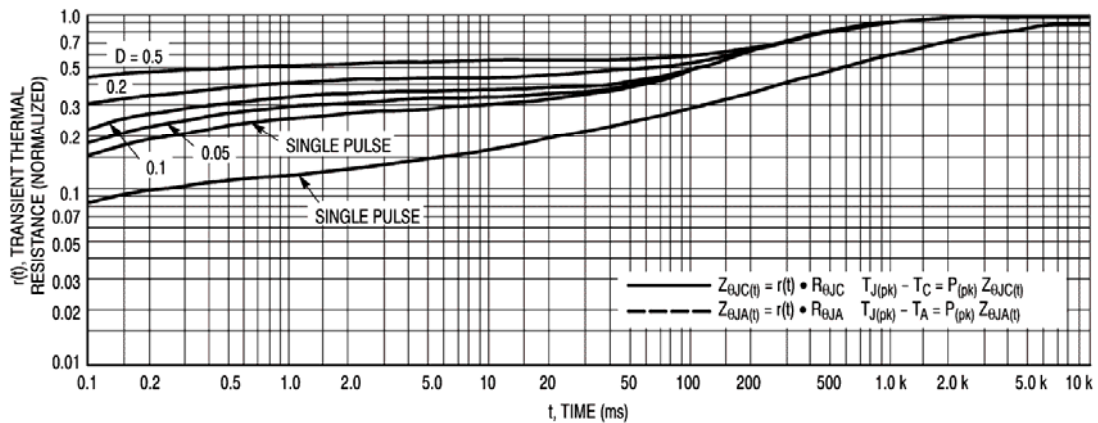


Figure 12. Thermal Response