



SOT-23 Plastic-Encapsulate Transistors

3DK2222A TRANSISTOR (NPN)

FEATURES

- Epitaxial planar die construction
- Complementary PNP Type available(MMBT2907ALT1)

MARKING: 1P1

SOT-23



1. BASE
2. EMITTER
3. COLLECTOR

MAXIMUM RATINGS* $T_A=25^{\circ}\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V_{CBO}	Collector-Base Voltage	75	V
V_{CEO}	Collector-Emitter Voltage	40	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current -Continuous	600	mA
P_C	Collector Dissipation	300	mW
T_J, T_{stg}	Junction and Storage Temperature	-55to+150	$^{\circ}\text{C}$

ELECTRICAL CHARACTERISTICS ($T_{amb}=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=10\mu\text{A}, I_E=0$	75			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=10\text{mA}, I_B=0$	40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu\text{A}, I_C=0$	6			V
Collector cut-off current	I_{CBO}	$V_{CB}=70\text{V}, I_E=0$			0.1	μA
Collector cut-off current	I_{CEX}	$V_{CE}=60\text{V}, V_{BE(off)}=3\text{V}$			0.1	μA
Emitter cut-off current	I_{EBO}	$V_{EB}=3\text{V}, I_C=0$			0.1	μA
DC current gain	$H_{FE(1)}$	$V_{CE}=10\text{V}, I_C=150\text{mA}$	100		300	
	$H_{FE(2)}$	$V_{CE}=10\text{V}, I_C=0.1\text{mA}$	40			
	$H_{FE(3)}$	$V_{CE}=10\text{V}, I_C=500\text{mA}$	42			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=500\text{mA}, I_B=50\text{mA}$ $I_C=150\text{mA}, I_B=15\text{mA}$			0.6 0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C=500\text{mA}, I_B=50\text{mA}$			1.2	V
Transition frequency	f_T	$V_{CE}=20\text{V}, I_C=20\text{mA}$ $f=100\text{MHz}$	300			MHz
Delay time	t_d	$V_{CC}=30\text{V}, V_{BE(off)}=-0.5\text{V}$ $I_C=150\text{mA}, I_{B1}=15\text{mA}$			10	nS
Rise time	t_r				25	nS
Storage time	t_s	$V_{CC}=30\text{V}, I_C=150\text{mA}$ $I_{B1}=-I_{B2}=15\text{mA}$			225	nS
Fall time	t_f				60	nS

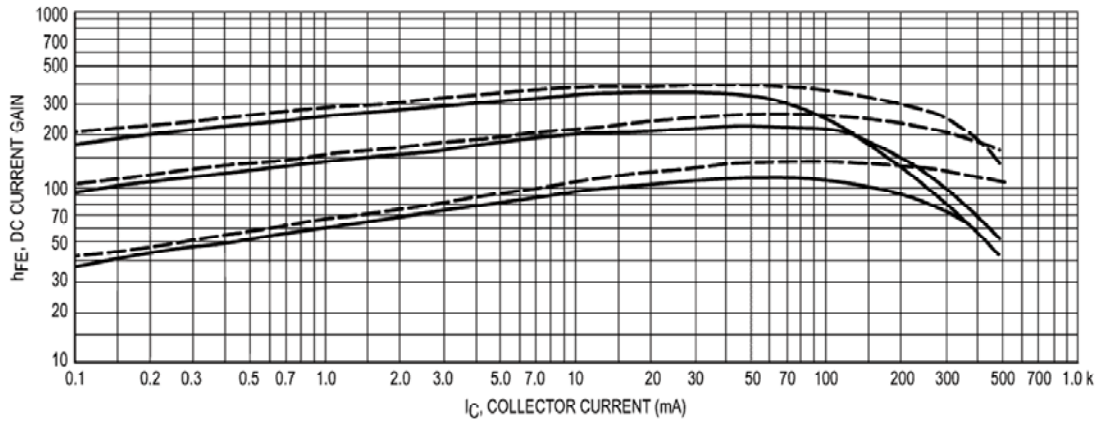


Figure 3. DC Current Gain

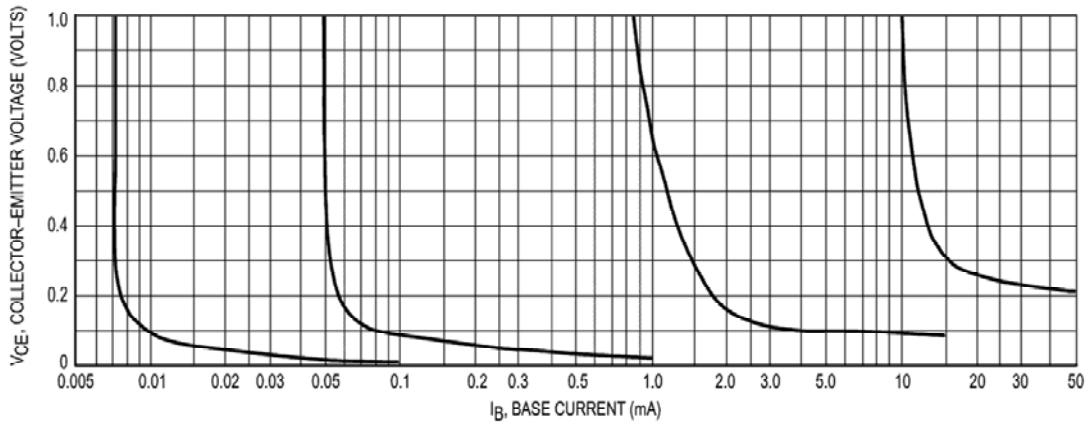


Figure 4. Collector Saturation Region

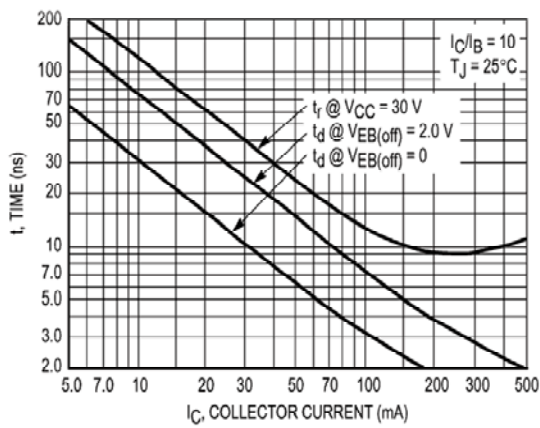


Figure 5. Turn-On Time

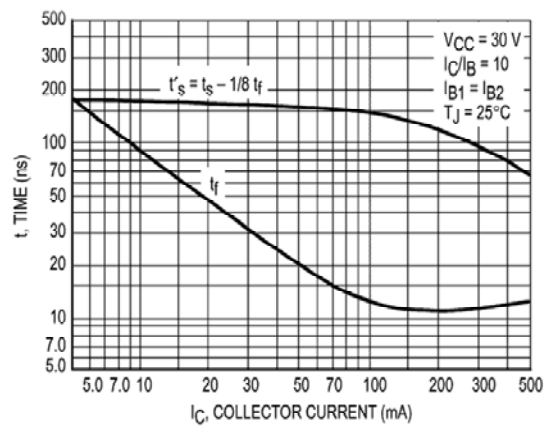


Figure 6. Turn-Off Time

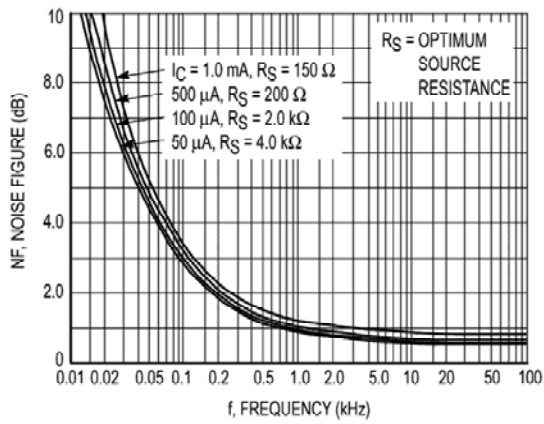


Figure 7. Frequency Effects

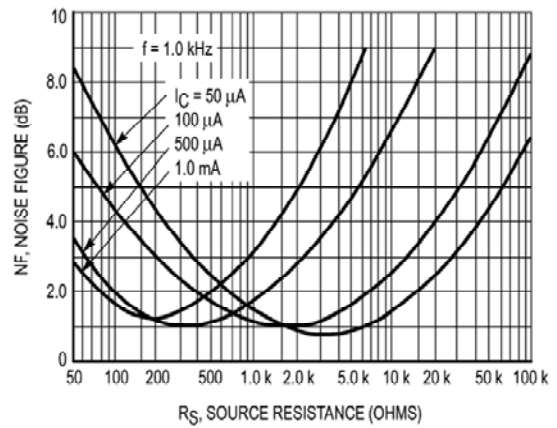


Figure 8. Source Resistance Effects

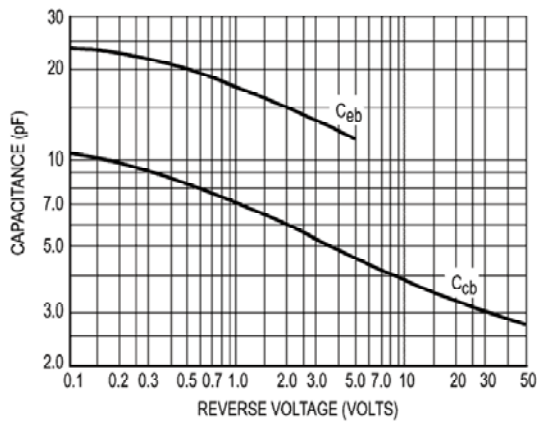


Figure 9. Capacitances

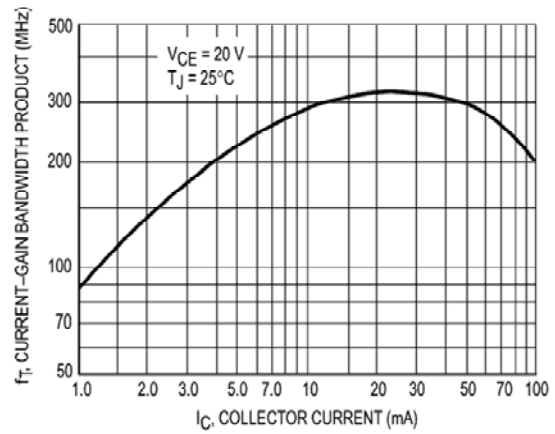


Figure 10. Current-Gain Bandwidth Product

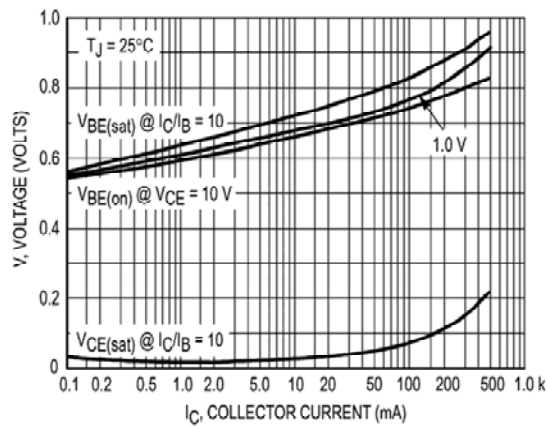


Figure 11. "On" Voltages

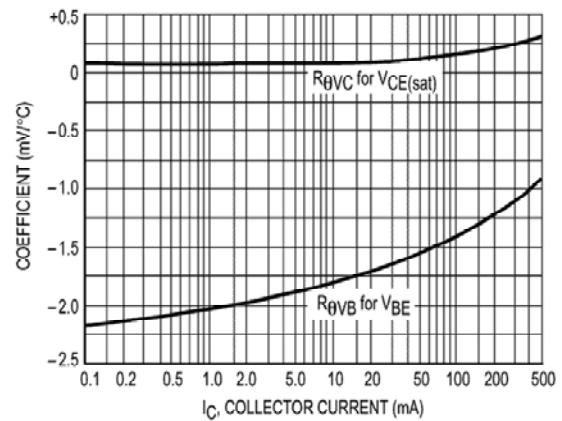


Figure 12. Temperature Coefficients