



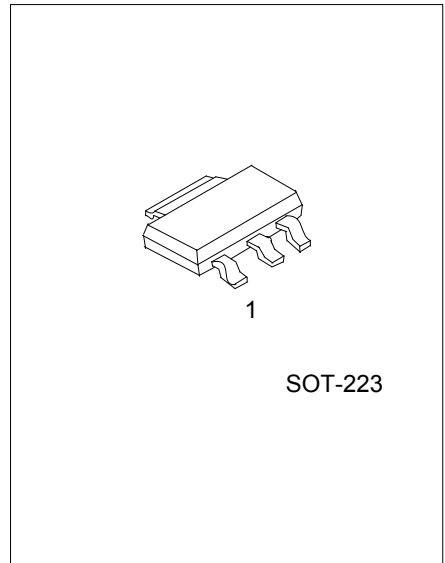
PZT2222A

NPN SILICON TRANSISTOR

NPN GENERAL PURPOSE AMPLIFIER

FEATURES

* This device is for use as a medium power amplifier and switch requiring collector currents up to 500mA.



ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
PZT2222AL-AA3-R	PZT2222AG-AA3-R	SOT-223	B	C	E	Tape Reel

PZT2222AL-AA3-R <ul style="list-style-type: none"> (1)Packing Type (2)Package Type (3)Lead Free 	<ul style="list-style-type: none"> (1) R: Tape Reel (2) AA3: SOT-223 (3) G: Halogen Free, L: Lead Free
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■ ABSOLUTE MAXIMUM RATING ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Base Voltage	V_{CBO}	75	V
Collector-Emitter Voltage	V_{CEO}	40	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current	I_C	0.6	A
Total Device Dissipation	P_C	1	W
Junction Temperature	T_J	+150	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^{\circ}\text{C}$

Note: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

■ THERMAL DATA ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	125	$^{\circ}\text{C}/\text{W}$

■ ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	$I_C=10\mu\text{A}, I_E=0$	75			V
Collector-Emitter Breakdown Voltage	BV_{CEO}	$I_C=10\text{mA}, I_B=0$	40			V
Emitter-Base Breakdown Voltage	BV_{EBO}	$I_E=10\mu\text{A}, I_C=0$	6			V
Collector Cut-off Current	I_{CEO}	$V_{CE}=60\text{V}, V_{EB(OFF)}=3.0\text{V}$			10	nA
Collector Cut-Off Current	I_{CBO}	$V_{CB}=60\text{V}, I_E=0$			0.01	μA
		$V_{CB}=60\text{V}, I_E=0, T_A=150^{\circ}\text{C}$			10	
Emitter Cut-Off Current	I_{EBO}	$V_{EB}=3.0\text{V}, I_C=0$			10	nA
Base Cut-Off Current	I_{BL}	$V_{CE}=60\text{V}, V_{EB(OFF)}=3.0\text{V}$			20	nA
ON CHARACTERISTICS						
DC Current Gain	h_{FE}	$I_C=0.1\text{mA}, V_{CE}=10\text{V}$	35			
		$I_C=1.0\text{mA}, V_{CE}=10\text{V}$	50			
		$I_C=10\text{mA}, V_{CE}=10\text{V}$	75			
		$I_C=10\text{mA}, V_{CE}=10\text{V}, T_A=-55^{\circ}\text{C}$	35			
		$I_C=150\text{mA}, V_{CE}=10\text{V}$ (Note)	100			
		$I_C=150\text{mA}, V_{CE}=1.0\text{V}$ (Note)	50		300	
		$I_C=500\text{mA}, V_{CE}=10\text{V}$ (Note)	40			
Collector-Emitter Saturation Voltage (Note)	$V_{CE(SAT)}$	$I_C=150\text{mA}, I_B=15\text{mA}$			0.3	V
		$I_C=500\text{mA}, I_B=50\text{mA}$			1.0	
Base-Emitter Saturation Voltage (Note)	$V_{BE(SAT)}$	$I_C=150\text{mA}, I_B=15\text{mA}$	0.6		1.2	V
		$I_C=500\text{mA}, I_B=50\text{mA}$			2.0	
SMALL SIGNAL CHARACTERISTICS						
Transition Frequency	f_T	$I_C=20\text{mA}, V_{CE}=20\text{V}, f=100\text{MHz}$	300			MHz
Output Capacitance	C_{OBO}	$V_{CB}=10\text{V}, I_E=0, f=100\text{kHz}$			8.0	pF
Input Capacitance	C_{IBO}	$V_{EB}=0.5\text{V}, I_C=0, f=100\text{kHz}$			25	pF
Collector Base Time Constant	$r_B' C_C$	$I_C=20\text{mA}, V_{CB}=20\text{V}, f=31.8\text{MHz}$			150	pS
Noise Figure	NF	$I_C=100\mu\text{A}, V_{CE}=10\text{V}, R_S=1.0\text{k}\Omega, f=1.0\text{kHz}$			4.0	dB
Real Part of Common-Emitter High Frequency Input Impedance	$R_{E(HJE)}$	$I_C=20\text{mA}, V_{CB}=20\text{V}, f=300\text{MHz}$			60	Ω

■ ELECTRICAL CHARACTERISTICS ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
SWITCHING CHARACTERISTICS						
Delay time	t_D	$V_{CC}=30\text{V}$, $V_{BE(OFF)}=0.5\text{V}$,			10	ns
Rise time	t_R	$I_C=150\text{mA}$, $I_{B1}=15\text{mA}$			25	ns
Storage time	t_S	$V_{CC}=30\text{V}$, $I_C=150\text{mA}$,			225	ns
Fall time	t_F	$I_{B1}=I_{B2}=15\text{mA}$			60	ns

Note: Pulse test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2.0\%$

■ TEST CIRCUIT

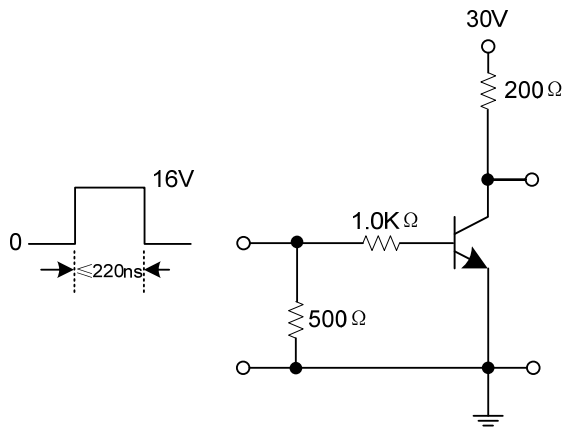


Fig 1. Saturated Turn-On Switching Time

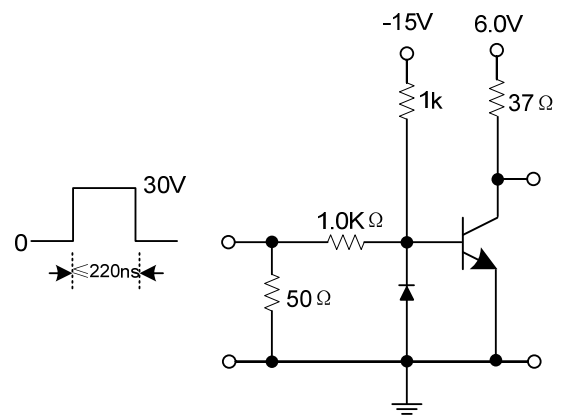
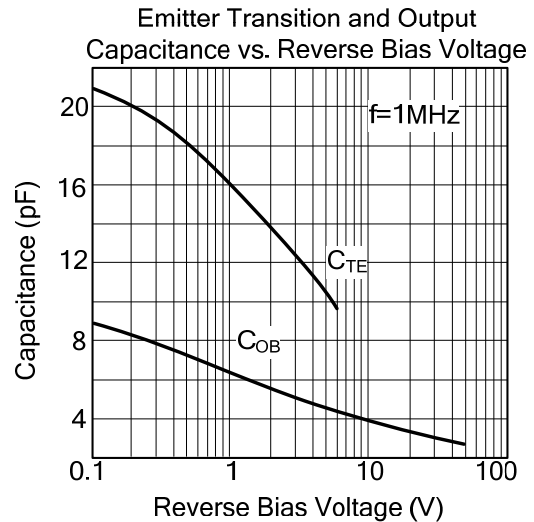
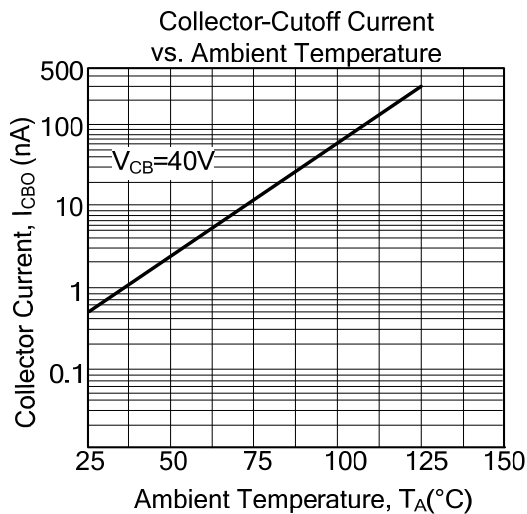
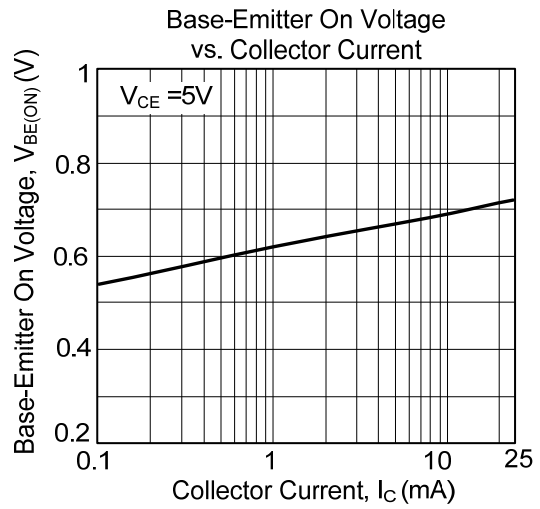
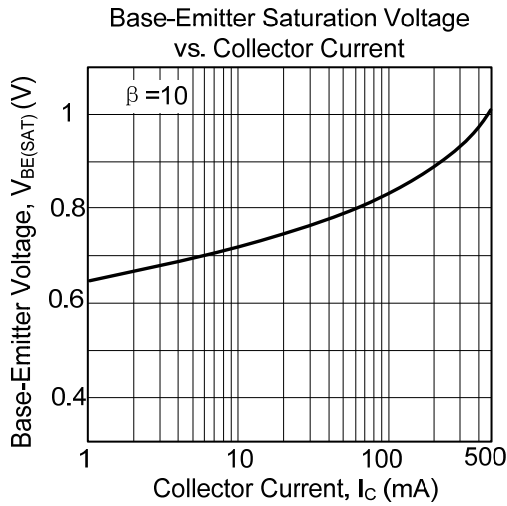
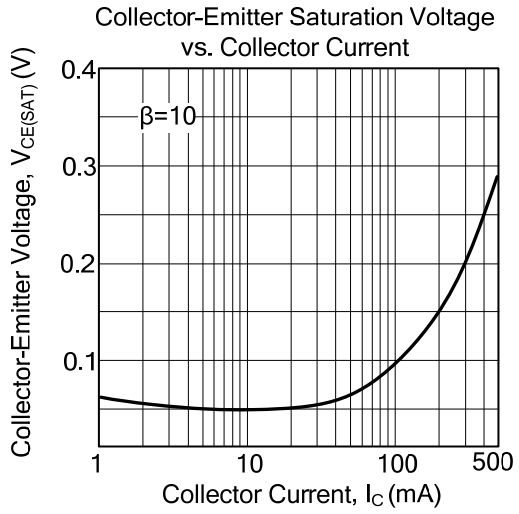
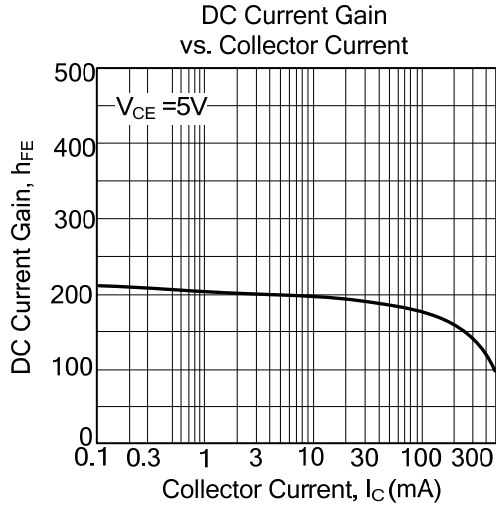
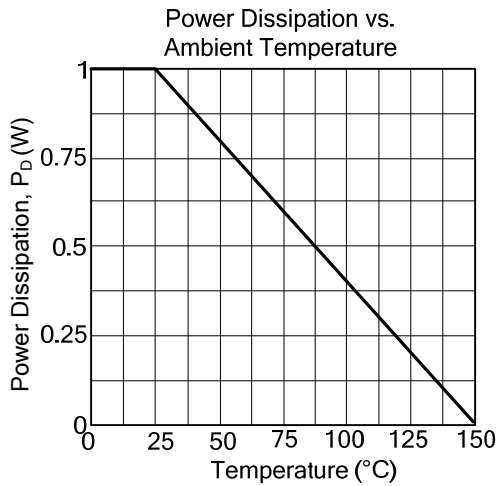
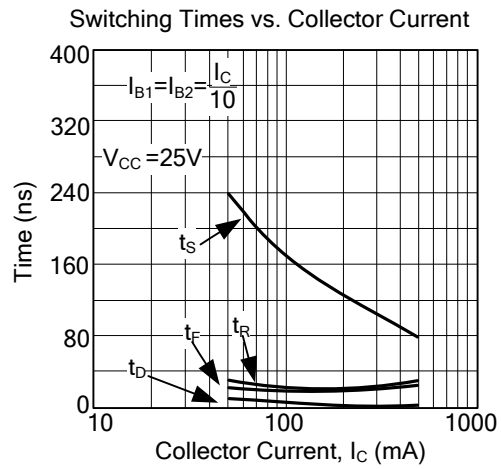
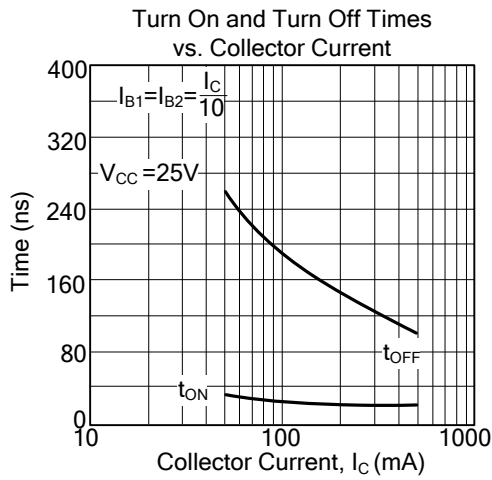


Fig 2. Saturated Turn-Off Switching Time

■ TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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