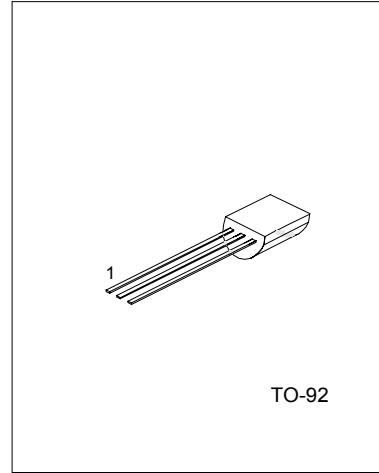


UTC PN2222A NPN EPITAXIAL SILICON TRANSISTOR

NPN GENERAL PURPOSE AMPLIFIER

FEATURES

*This device is for use as a medium power amplifier and switch requiring collector currents up to 500mA. Sourced from Process 19.



1:EMITTER 2:BASE 3:COLLECTOR

ABSOLUTE MAXIMUM RATINGS (Ta=25°C, unless otherwise specified)

PARAMETER	SYMBOL	RATING	UNIT
Collector-base voltage	V _{CB0}	75	V
Collector-emitter voltage	V _{CEO}	40	V
Emitter-base voltage	V _{EBO}	6	V
Collector current	I _c	1	A
Collector dissipation	P _c	625	mW
Junction Temperature	T _j	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

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

ELECTRICAL CHARACTERISTICS (Ta=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Collector-base breakdown voltage	V _{(BR)CBO}	I _c =10μA, I _E =0	75			V
Collector-emitter breakdown voltage	V _{(BR)CEO}	I _c =10mA, I _B =0	40			V
Emitter-base breakdown voltage	V _{(BR)EBO}	I _E =10μA, I _c =0	6			V
Collector cutoff current	I _{CEx}	V _{CE} =60V, V _{EB(OFF)} =3.0V			10	nA
Collector cutoff current	I _{CB0}	V _{CB} =60V, I _E =0			0.01	μA
		V _{CB} =60V, I _E =0, T _A =150°C			10	μA
Emitter cutoff current	I _{EBO}	V _{EB} =3.0V, I _c =0			10	nA
Base cutoff current	I _{BL}	V _{CE} =60V, V _{EB(OFF)} =3.0V			20	nA

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PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
ON CHARACTERISTICS						
DC current gain	hFE	Ic=0.1mA, VCE=10V Ic=1.0mA, VCE=10V Ic=10mA, VCE=10V Ic=10mA, VCE=10V, TA=-55°C Ic=150mA, VCE=10V* Ic=150mA, VCE=1.0V* Ic=500mA, VCE=10V*	35 50 75 35 100 50 40		300	
Collector-emitter saturation voltage*	VCE(sat)	Ic=150mA, IB=15mA Ic=500mA, IB=50mA			0.3 1.0	V V
Base-emitter saturation voltage*	VBE(sat)	Ic=150mA, IB=15mA Ic=500mA, IB=50mA	0.6		1.2 2.0	V V
SMALL SIGNAL CHARACTERISTICS						
Current gain-Bandwidth product	fT	Ic=20mA, VCE=20V, f=100MHz	300			MHz
Output capacitance	Cobo	VCB=10V, IE=0, f=100kHz			8.0	pF
Input capacitance	Cibo	VEB=0.5V, IC=0, f=100kHz			25	pF
Collector base time constant	rb'Cc	Ic=20mA, VCB=20V, f=31.8MHz			150	pS
Noise figure	NF	Ic=100μA, VCE=10V, Rs=1.0kΩ, f=1.0kHz			4.0	dB
Real part of common-emitter high frequency input impedance	Re(hje)	Ic=20mA, VCB=20V, f=300MHz			60	Ω
SWITCHING CHARACTERISTICS						
Delay time	td	Vcc=30V, VBE(OFF)=0.5V, Ic=150mA, IB1=15mA			10	ns
Rise time	tr				25	ns
Storage time	ts	Vcc=30V, Ic=150mA, IB1= IB2=15mA			225	ns
Fall time	tf				60	ns
THERMAL CHARACTERISTICS (TA=25°C, unless otherwise noted)						
Total Device Dissipation Derate above 25°C	PD				625 5.0	mW mW/°C
Thermal resistance, junction to Case	RθJC				83.3	°C/W
Thermal resistance, junction to Ambient	RθJA				200	°C/W

*Pulse test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%

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TEST CIRCUITS

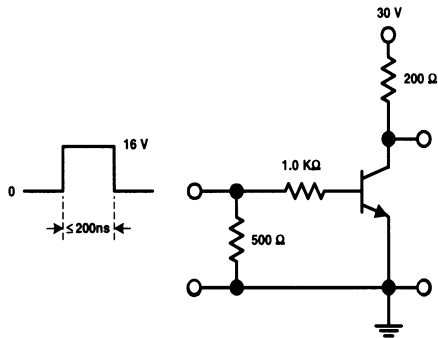


FIG.1 Saturated Turn-On Switching Time

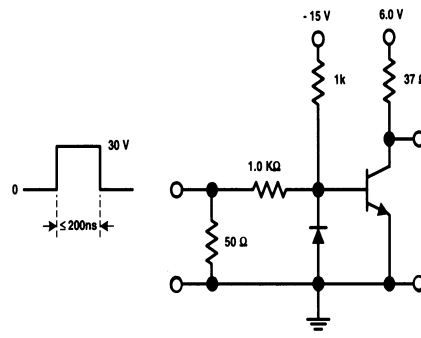
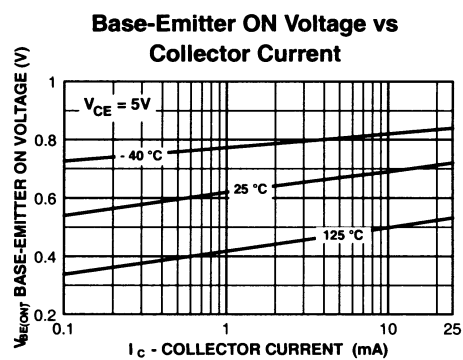
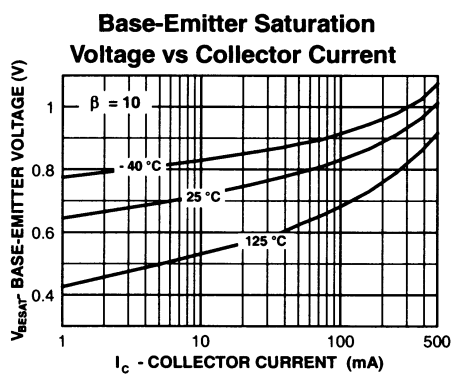
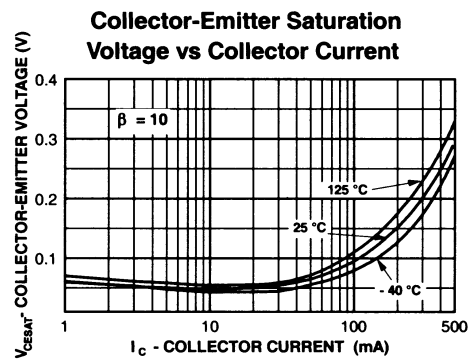
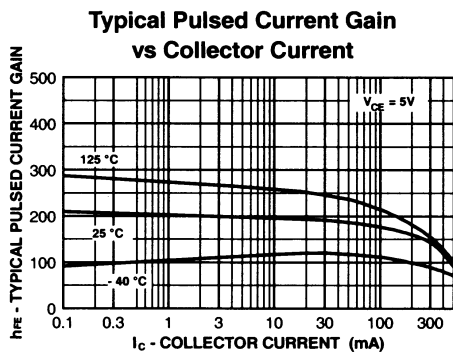


FIG.2 Saturated Turn-Off Switching Time

TYPICAL CHARACTERISTICS



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