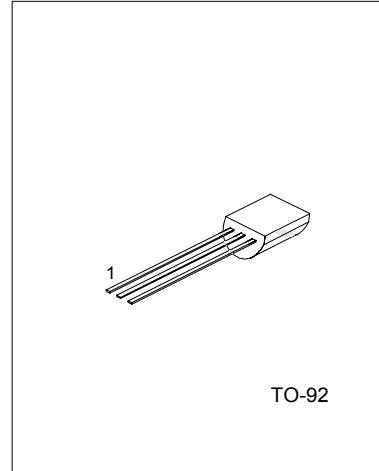


UTC 2N5088/2N5089 NPN EPITAXIAL SILICON TRANSISTOR

NPN GENERAL PURPOSE AMPLIFIER

DESCRIPTION

The device is designed for low noise, high gain, general purpose amplifier applications at collector currents from 1 μ A to 50mA.



1:EMITTER 2:BASE 3:COLLECTOR

MAXIMUM RATINGS (TA=25°C, unless otherwise noted)

RATING	SYMBOL	2N5088	2N5089	UNIT
Collector-Emitter voltage	V _{CEO}	30	25	V
Collector-Base voltage	V _{CBO}	35	30	V
Emitter-base voltage	V _{EBO}	4.5		V
Collector current-continuous	I _c	100		mA
Operating and Storage Junction Temperature Range	T _j , T _{stg}	-55 ~ +150		°C

Note 1: These ratings are based on a maximum junction temperature of 150 degrees C.

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

THERMAL CHARACTERISTICS (TA=25°C, unless otherwise noted)

PARAMETER	SYMBOL	MAX	UNIT
Total Device Dissipation Derate above 25°C	P _D	625 5	mW mW/°C
Thermal Resistance, Junction to Case	R _{θJC}	83.3	°C/W
Thermal Resistance, Junction to Ambient	R _{θJA}	200	°C/W

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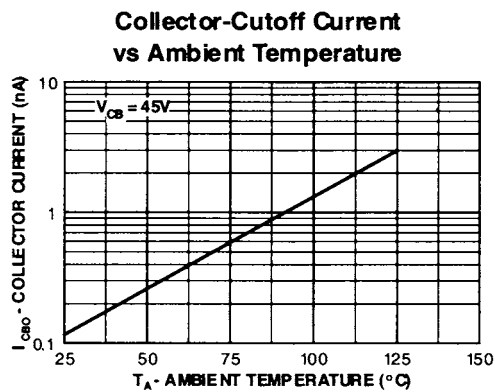
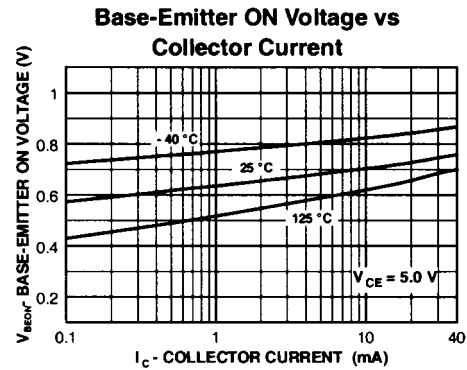
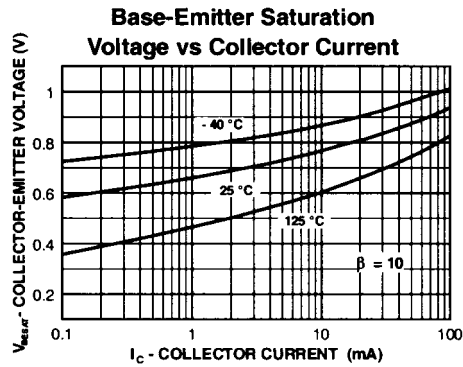
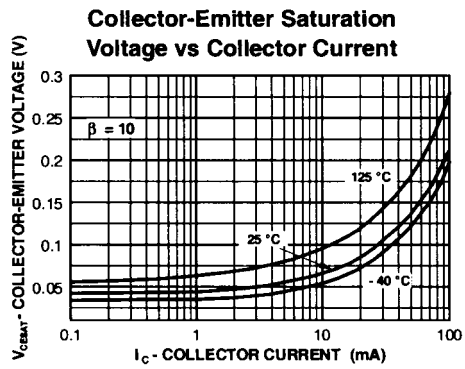
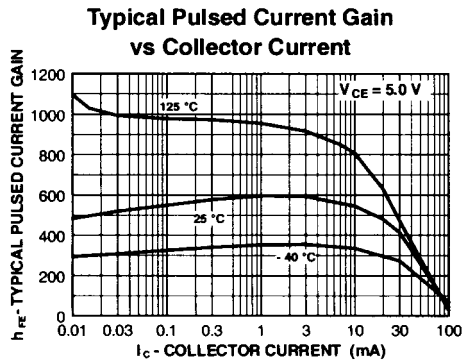
ELECTRICAL CHARACTERISTICS (Ta=25°C, unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	MAX	UNIT
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (note) 2N5088 2N5089	V _{(BR)CEO}	I _C =1.0mA, I _B =0	30 25		V V
Collector-Base Breakdown Voltage 2N5088 2N5089	V _{(BR)CBO}	I _C =100μA, I _E =0	35 30		V V
Collector Cut-Off Current 2N5088 2N5089	I _{CBO}	V _{CB} =20V, I _E =0 V _{CB} =15V, I _E =0		50 50	nA nA
Emitter Cutoff Current	I _{EBO}	V _{EB} =3.0V, I _C =0 V _{EB} =4.5V, I _C =0		50 100	nA nA
ON CHARACTERISTICS					
DC Current Gain	h _{FE}	V _{CE} =5.0V, I _C =100μA 2N5088 2N5089 V _{CE} =5.0V, I _C =1.0mA 2N5088 2N5089 V _{CE} =5.0V, I _C =10mA 2N5088 2N5089 (NOTE)	300 400 350 450 300 400	900 1200	
Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _C =10mA, I _B =1.0mA		0.5	V
Base-Emitter On Voltage	V _{BE(on)}	I _C =10mA, V _{CE} =5.0V		0.8	V
SMALL SIGNAL CHARACTERISTICS					
Current Gain-Bandwidth Product	f _T	V _{CE} =5.0mA, I _C =500μA, f=20MHz	50		MHz
Collector-Base Capacitance	C _{cb}	V _{CB} =5.0V, I _E =0, f=100kHz		4	pF
Emitter-Base Capacitance	C _{eb}	V _{EB} =0.5V, I _C =0, f=100kHz		10	pF
Small-Signal Current Gain 2N5088 2N5089	h _{FE}	V _{CE} =5.0V, I _C =1.0mA, f=1.0kHz	350 450	1400 1800	
Noise Figure 2N5088 2N5089	NF	V _{CE} =5.0V, I _C =100μA, R _s =10kΩ, f=10KHz to 15.7kHz		3.0 2.0	dB dB

Note: Pulse Test: Pulse Width≤300μs, Duty Cycle≤2.0%.

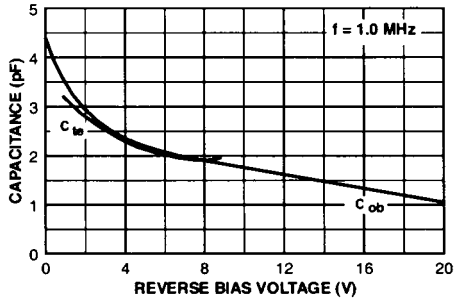
UTC 2N5088/2N5089 NPN EPITAXIAL SILICON TRANSISTOR

TYPICAL CHARACTERISTICS

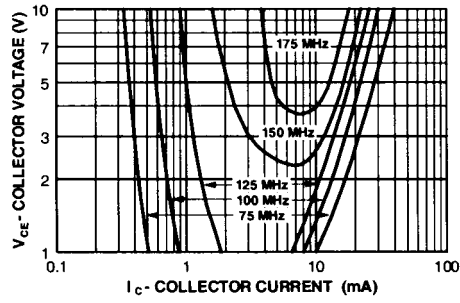


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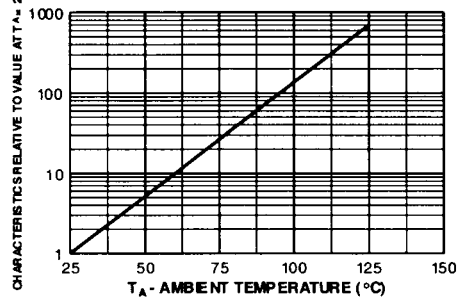
Input and Output Capacitance vs Reverse Bias Voltage



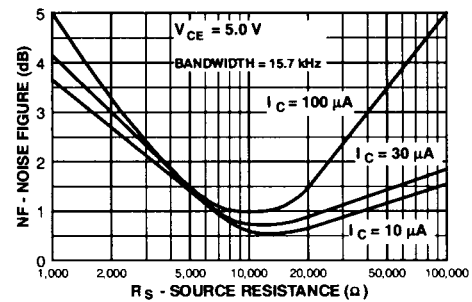
Contours of Constant Gain Bandwidth Product (f_T)



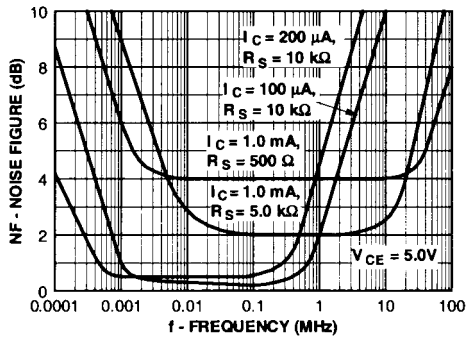
Normalized Collector-Cutoff Current vs Ambient Temperature



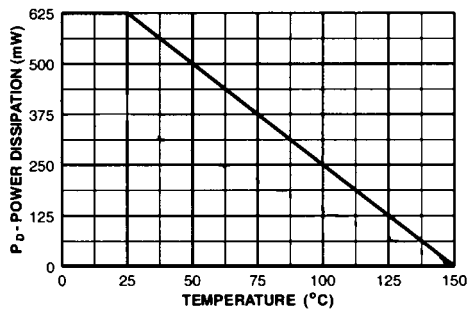
Wideband Noise Frequency vs Source Resistance



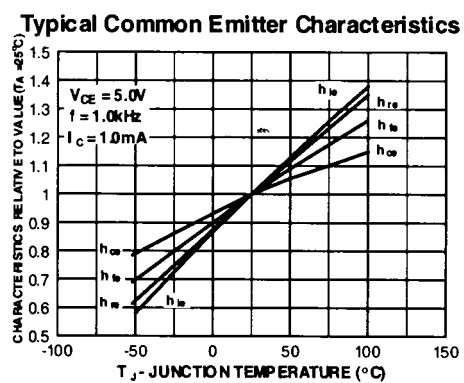
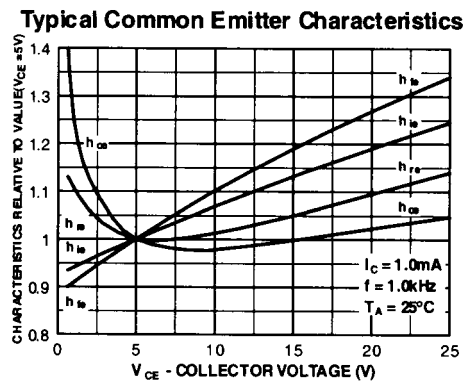
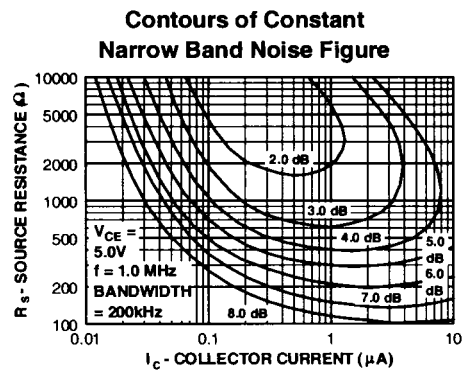
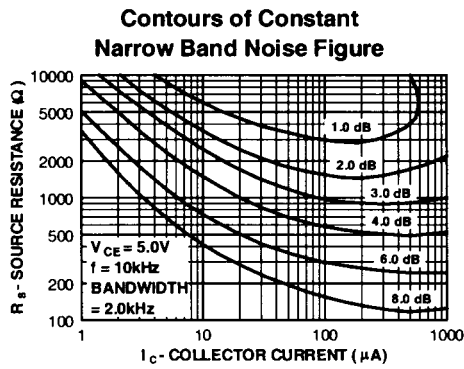
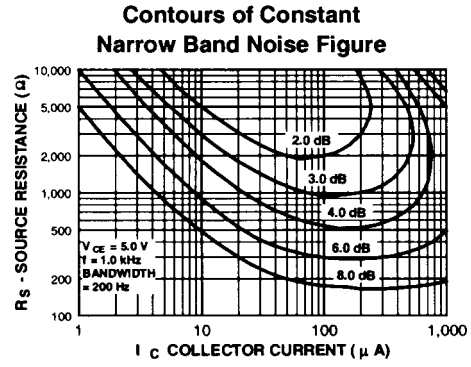
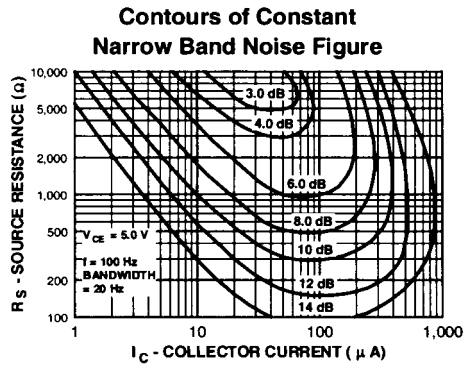
Noise Figure vs Frequency



Power Dissipation vs Ambient Temperature

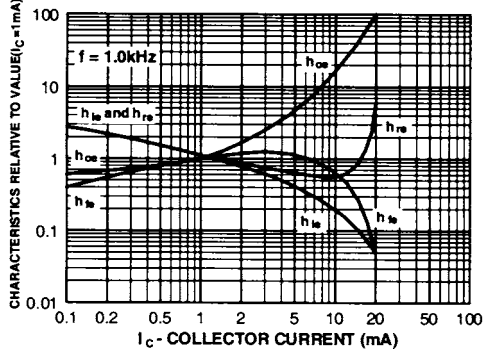


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UTC 2N5088/2N5089 NPN EPITAXIAL SILICON TRANSISTOR

Typical Common Emitter Characteristics



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