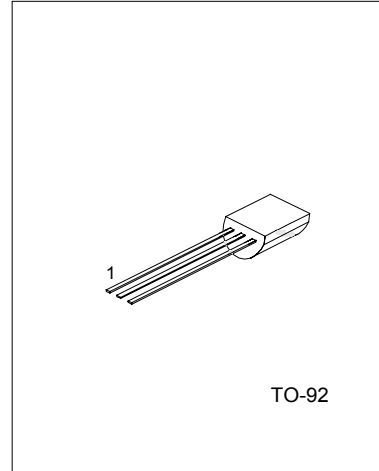


UTC 2N5088/2N5089 NPN EPITAXIAL SILICON TRANSISTOR

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 _{EB0}	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

UTC 2N5088/2N5089 NPN EPITAXIAL SILICON TRANSISTOR

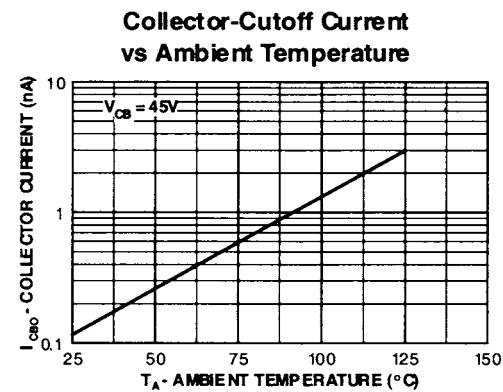
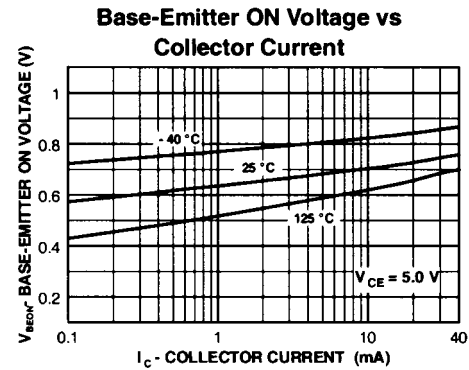
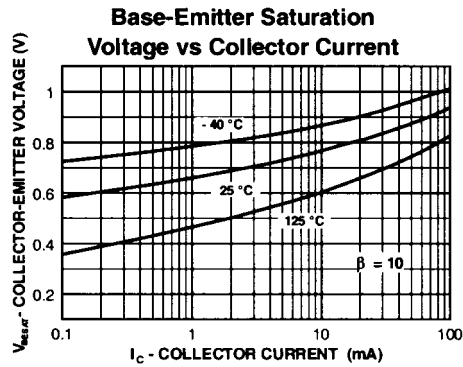
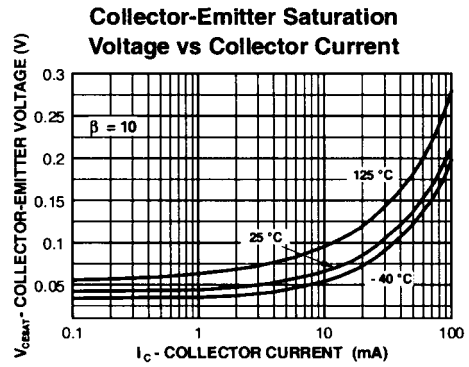
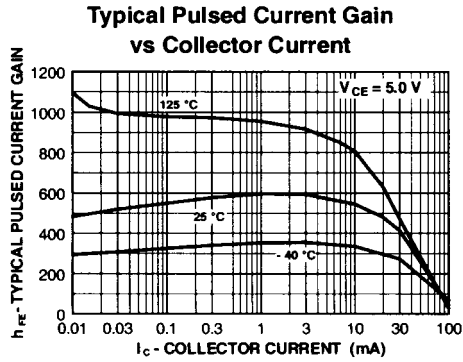
ELECTRICAL CHARACTERISTICS (Ta=25°C, unless otherwise noted)

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 (NOTE) 2N5089	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%.

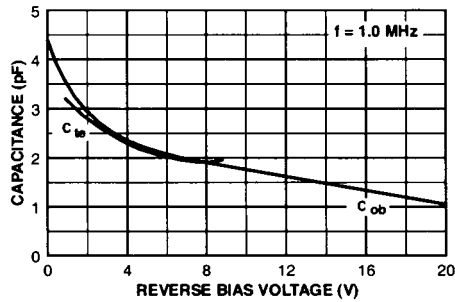
UTC 2N5088/2N5089 NPN EPITAXIAL SILICON TRANSISTOR

TYPICAL CHARACTERISTICS

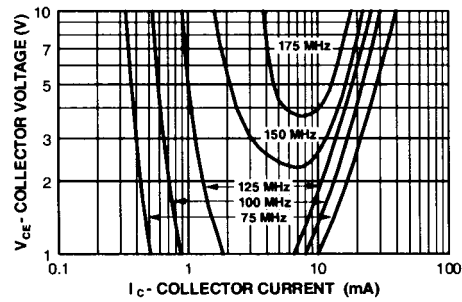


UTC 2N5088/2N5089 NPN EPITAXIAL SILICON TRANSISTOR

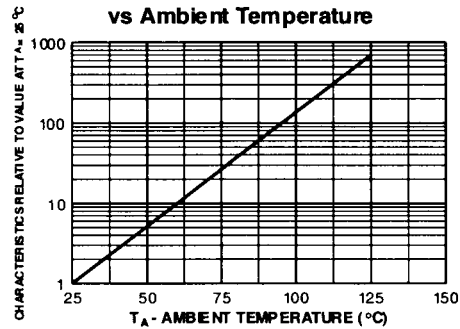
**Input and Output Capacitance
vs Reverse Bias Voltage**



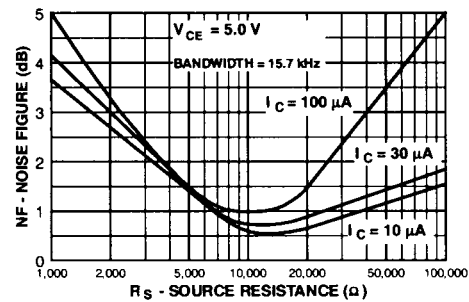
**Contours of Constant Gain
Bandwidth Product (f_T)**



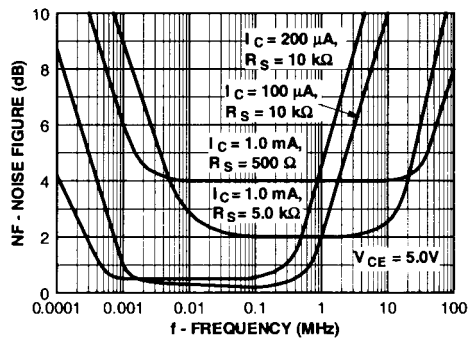
**Normalized Collector-Cutoff Current
vs Ambient Temperature**



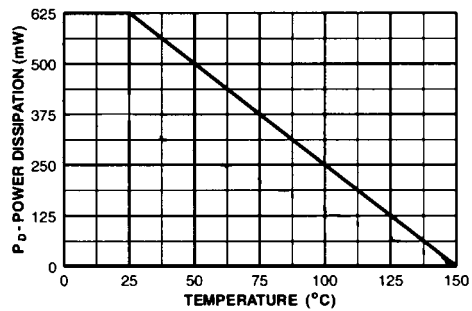
**Wideband Noise Frequency
vs Source Resistance**



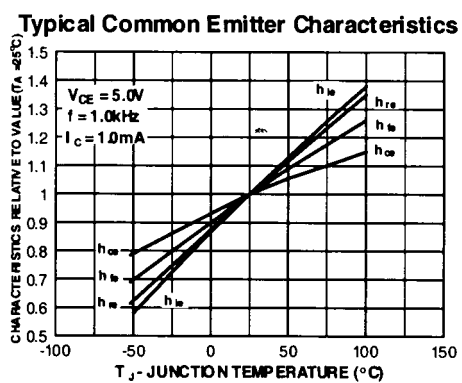
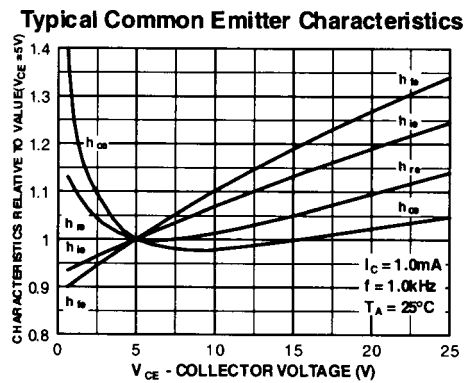
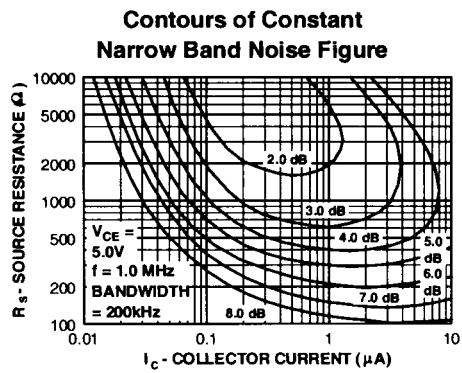
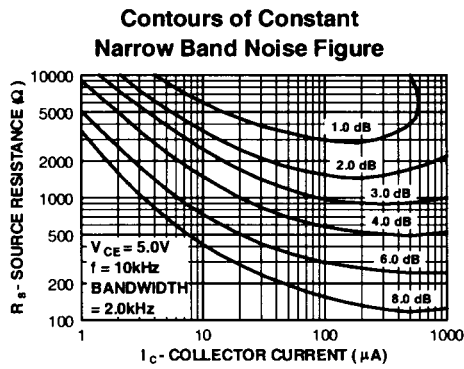
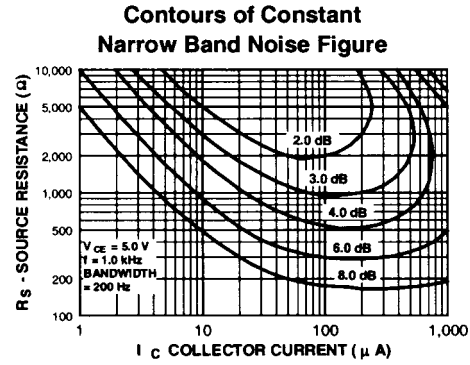
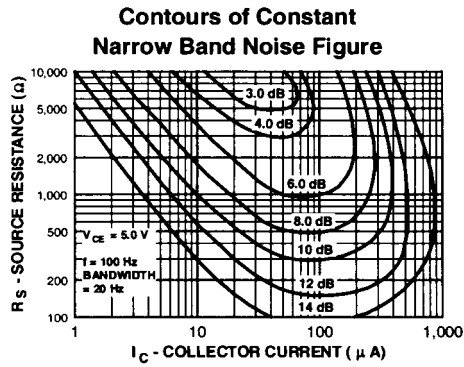
Noise Figure vs Frequency



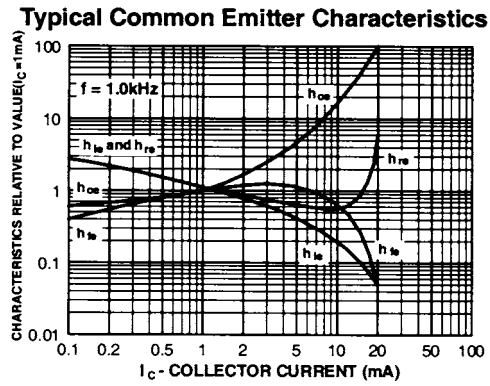
**Power Dissipation vs
Ambient Temperature**



UTC 2N5088/2N5089 NPN EPITAXIAL SILICON TRANSISTOR



UTC 2N5088/2N5089 NPN EPITAXIAL SILICON TRANSISTOR



UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.