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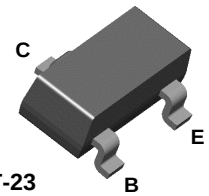


SOT-23
Mark: U3

NPN General Purpose Amplifier

This device is designed for general purpose high voltage amplifiers and gas discharge display driving. Sourced from Process 16.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	80	V
V_{CBO}	Collector-Base Voltage	120	V
V_{EBO}	Emitter-Base Voltage	5.0	V
I_C	Collector Current - Continuous	200	mA
T_J, T_{stg}	Operating and Storage Junction Temperature Range	-55 to +150	°C

*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

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

Symbol	Characteristic	Max	Units
		*BSS64	
P_D	Total Device Dissipation Derate above 25°C	350 2.8	mW mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	°C/W

*Device mounted on FR-4 PCB 40 mm X 40 mm X 1.5 mm.

NPN General Purpose Amplifier
(continued)

Electrical Characteristics
TA = 25°C unless otherwise noted

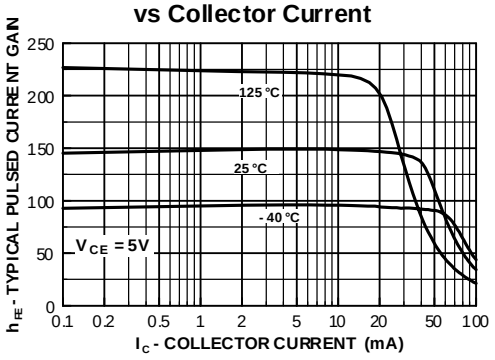
Symbol	Parameter	Test Conditions	Min	Max	Units
OFF CHARACTERISTICS					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	I_C = 4.0 mA, I_B = 0	80		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 100 µA, I_E = 0	120		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 100 µA, I_C = 0	5.0		V
I_{CBO}	Collector-Cutoff Current	V_{CB} = 90 V, I_E = 0 V_{CB} = 90 V, I_E = 0, T_A = 150°C		0.1 50	µA µA
I_{EBO}	Emitter-Cutoff Current	V_{EB} = 5.0 V, I_C = 0		200	nA
ON CHARACTERISTICS					
h_{FE}	DC Current Gain	I_C = 10 mA, V_{CE} = 1.0 V	20		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 4.0 mA, I_B = 400 µA I_C = 50 mA, I_B = 15 mA		0.15 0.2	V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	I_C = 4.0 mA, I_B = 400 µA		1.2	V
SMALL SIGNAL CHARACTERISTICS					
f_T	Current Gain - Bandwidth Product	I_C = 4.0 mA, V_{CE} = 10, f = 35 MHz	60		MHz
C_{ob}	Output Capacitance	V_{CB} = 10 V, f = 1.0 MHz		5.0	pF

Spice Model

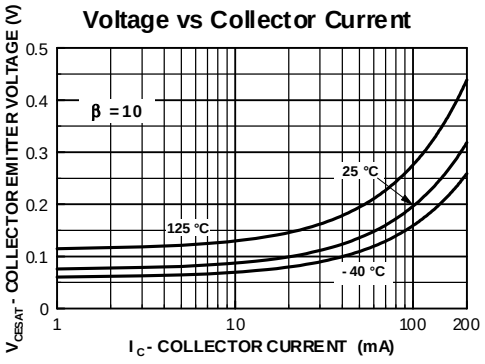
NPN (Is=2.511f Xti=3 Eg=1.11 Vaf=100 Bf=242.6 Ne=1.249 Ise=2.511f Ikf=.3458 Xtb=1.5 Br=3.197 Nc=2 Isc=0 Ikr=0 Rc=1 Cjc=4.883p Mjc=.3047 Vjc=.75 Fc=.5 Cje=18.79p Mje=.3416 Vje=.75 Tr=1.202n Tf=560p Itf=50m Vtf=5 Xtf=8 Rb=10)

Typical Characteristics

Typical Pulsed Current Gain vs Collector Current



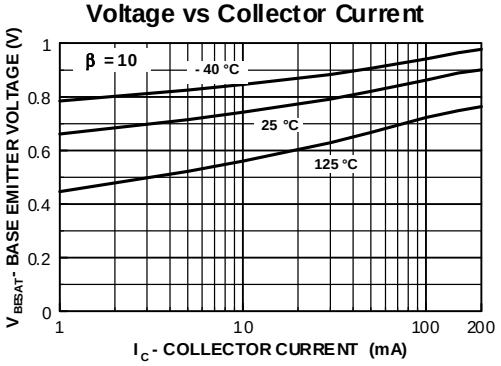
Collector-Emitter Saturation Voltage vs Collector Current



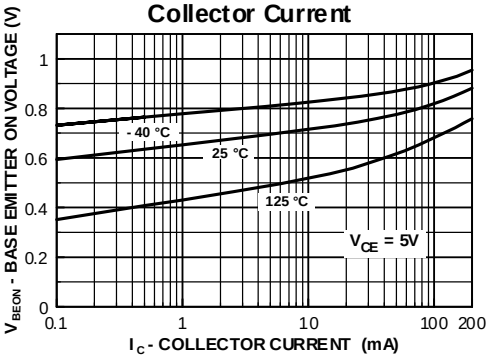
NPN General Purpose Amplifier
(continued)

Typical Characteristics

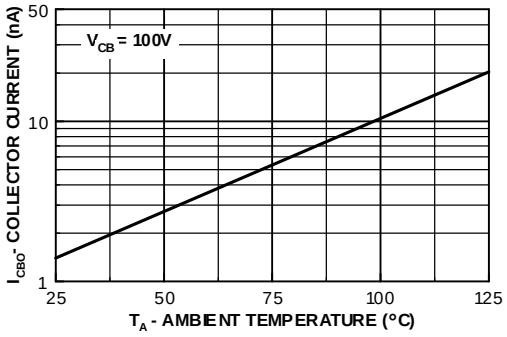
Base-Emitter Saturation Voltage vs Collector Current



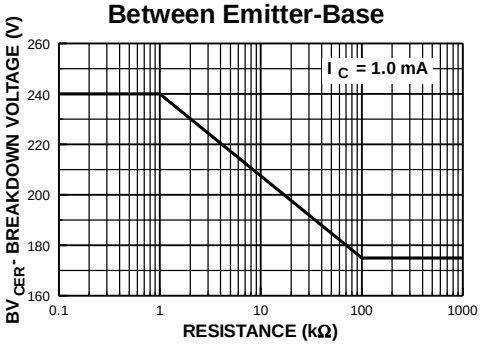
Base Emitter ON Voltage vs Collector Current



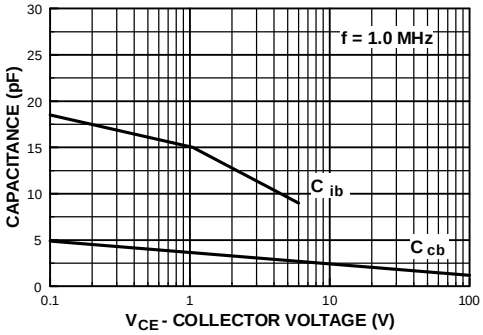
Collector-Cutoff Current vs. Ambient Temperature



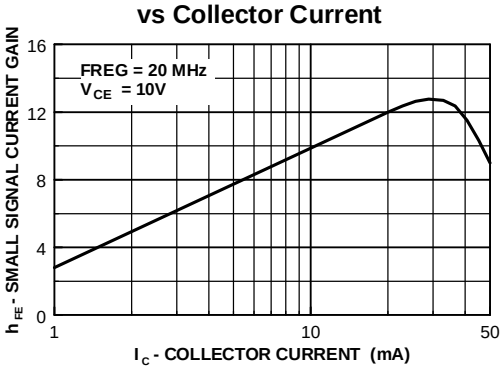
Collector-Emitter Breakdown Voltage with Resistance Between Emitter-Base



Input and Output Capacitance vs Reverse Voltage

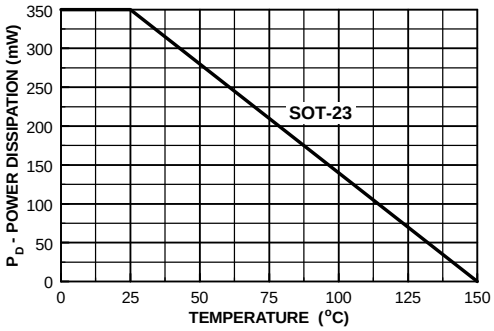


Small Signal Current Gain vs Collector Current



Typical Characteristics (continued)

Power Dissipation vs Ambient Temperature



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Rev. G