

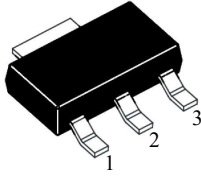


2N3904C3H

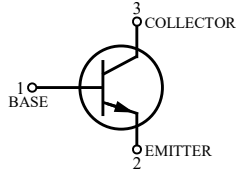
NPN TRANSISTOR

FEATURES

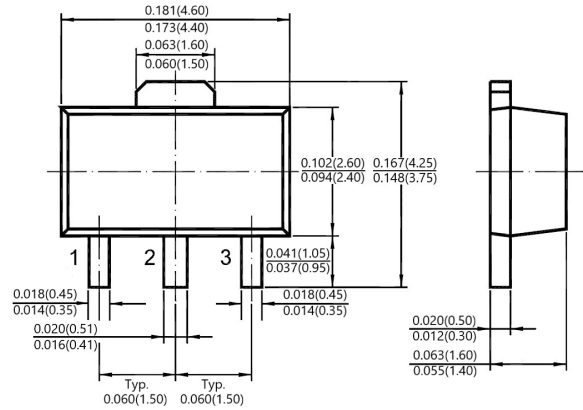
- Suffix "H" indicates Halogen-free parts, ex. 2N3904C3H



1.Base 2.Collector 3.Emitter



SOT-89



Dimension in inches and (millimeters)

Maximum Ratings($T_A=25\text{ }^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	60	V
Collector Emitter Voltage	V_{CEO}	40	V
Emitter Base Voltage	V_{EBO}	6	V
Collector Current	I_C	200	mA
Power Dissipation	P_D	500	mW
Thermal Resistance from Junction to Ambient (Note 1)	$R_{\theta JA}$	250	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	- 55 to + 150	$^\circ\text{C}$

Note :

1. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.



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Electrical Characteristics ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise specified)

Parameter	Conditions	Symbol	Min.	Max.	Unit
DC Current Gain	$V_{CE}=1V, I_C=0.1mA$	h_{FE}	40	-	-
	$V_{CE}=1V, I_C=1mA$		70	-	
	$V_{CE}=1V, I_C=10mA$		100	300	
	$V_{CE}=1V, I_C=50mA$		60	-	
	$V_{CE}=1V, I_C=100mA$		30	-	
Collector Base Cutoff Current	$V_{CB}=30V$	I_{CBO}	-	50	nA
Emitter Base Cutoff Current	$V_{EB}=6V$	I_{EBO}	-	50	nA
Collector Base Breakdown Voltage	$I_C=10\mu A$	$V_{(BR)CBO}$	60	-	V
Collector Emitter Breakdown Voltage	$I_C=1mA$	$V_{(BR)CEO}$	40	-	V
Emitter Base Breakdown Voltage	$I_E=10\mu A$	$V_{(BR)EBO}$	6	-	V
Collector Emitter Saturation Voltage	$I_C=10mA, I_B=1mA$	$V_{CE(sat)}$	-	0.20	V
	$I_C=50mA, I_B=5mA$		-	0.30	
Base Emitter Saturation Voltage	$I_C=10mA, I_B=1mA$	$V_{BE(sat)}$	-	0.85	V
	$I_C=50mA, I_B=5mA$		-	0.95	
Gain Bandwidth Product	$V_{CE}=20V, I_C=10mA,$ $f=100MHz$	f_T	300	-	MHz
Collector Base Capacitance	$V_{CB}=5V, f=100KHz$	C_{ob}	-	4	pF
Delay Time	$V_{CC}=3V, V_{BE}=0.5V,$ $I_C=10mA, I_{B1}=1mA$	t_d	-	35	ns
Rise Time		t_r	-	35	
Storage Time		t_s	-	200	
Fall Time		t_f	-	50	



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RATINGS AND CHARACTERISTIC CURVES

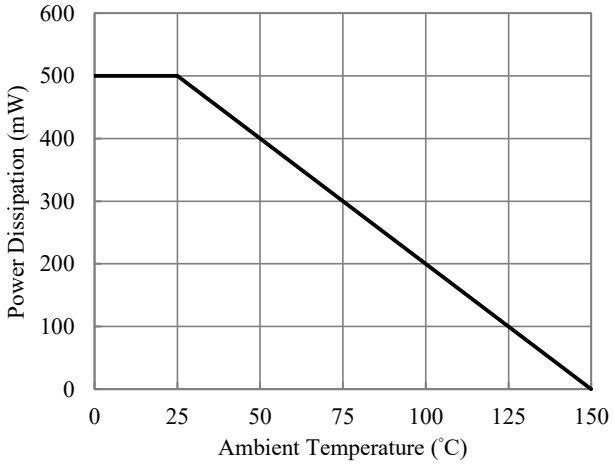


Fig. 1 Power Derating Curves

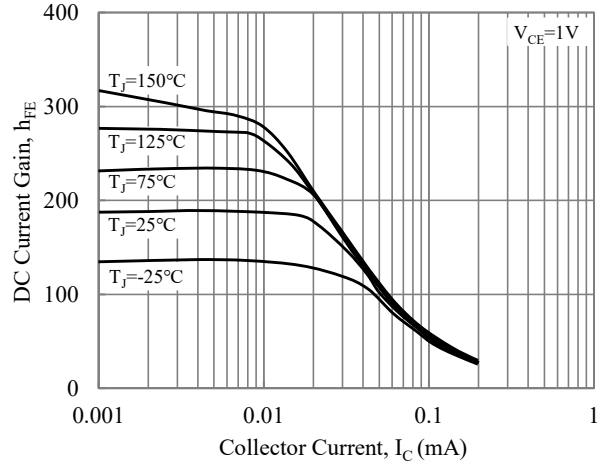


Fig. 2 Current Gain vs. Collector Current

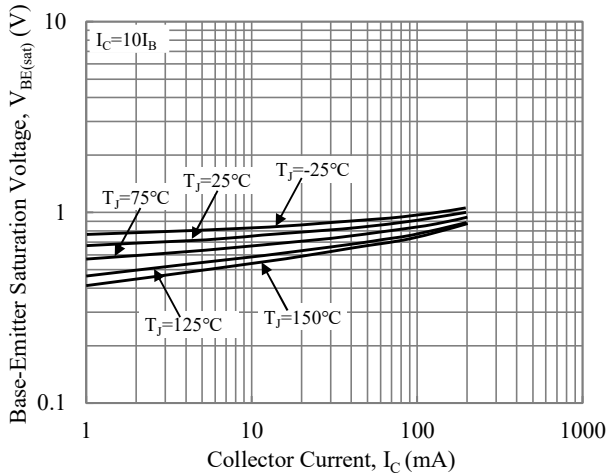


Fig. 3 Base-Emitter Saturation Voltage vs. Collector Current

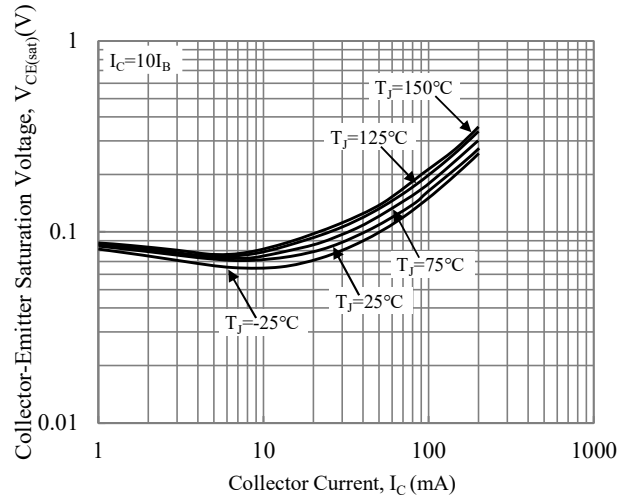


Fig. 4 Collector-Emitter Saturation Voltage vs. Collector Current

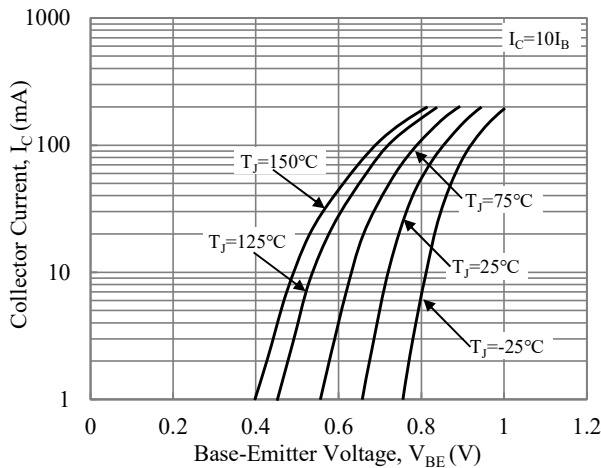


Fig. 5 Base-Emitter Voltage vs. Collector Current

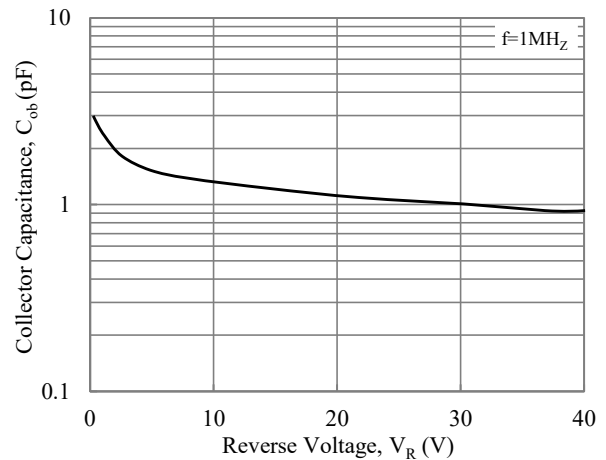


Fig. 6 Capacitance Characteristics



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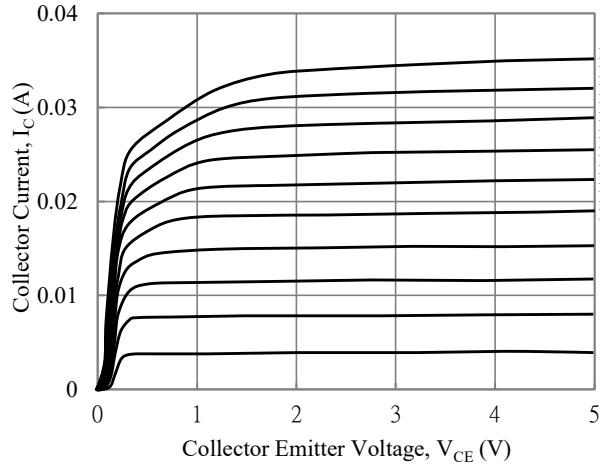


Fig. 7 Output Characteristics Curve

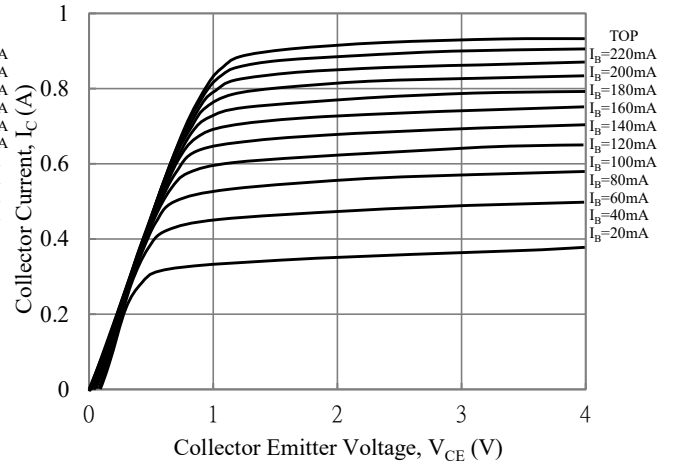


Fig. 8 Output Characteristics Curve