

## Features

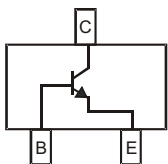
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

## Maximum Ratings

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 625°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Collector-Base Voltage	$V_{CBO}$	180	V
Collector-Emitter Voltage	$V_{CEO}$	160	V
Emitter-Base Voltage	$V_{EBO}$	6	V
Collector Current	$I_C$	200	mA
Collector Power Dissipation	$P_C$	200	mW

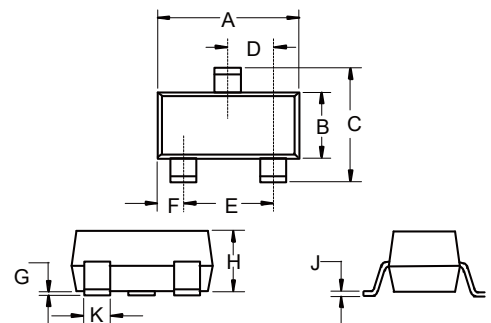
## Internal Structure



Marking: K4N

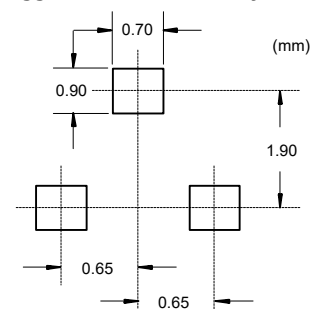
# NPN Small Signal Transistor

## SOT-323



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.071	0.087	1.80	2.20	
B	0.045	0.053	1.15	1.35	
C	0.083	0.096	2.10	2.45	
D	0.026		0.65		TYP.
E	0.047	0.055	1.20	1.40	
F	0.012	0.016	0.30	0.40	
G	0.000	0.004	0.00	0.10	
H	0.035	0.044	0.90	1.10	
J	0.002	0.010	0.05	0.25	
K	0.006	0.016	0.15	0.40	

### Suggested Solder Pad Layout



**Electrical Characteristics @ 25°C Unless Otherwise Specified**

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	180			V	$I_C=100\mu A, I_E=0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	160			V	$I_C=1mA, I_B=0$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	6			V	$I_E=10\mu A, I_C=0$
Collector-Base Cutoff Current	$I_{CBO}$			50	nA	$V_{CB}=120V, I_E=0$
Emitter-Base Cutoff Current	$I_{EBO}$			50	nA	$V_{EB}=4V, I_C=0$
DC Current Gain	$h_{FE(1)}$	80				$V_{CE}=5V, I_C=1mA$
	$h_{FE(2)}$	100		300		$V_{CE}=5V, I_C=10mA$
	$h_{FE(3)}$	30				$V_{CE}=5V, I_C=50mA$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$			0.15	V	$I_C=10mA, I_B=1mA$
				0.2	V	$I_C=50mA, I_B=5mA$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$			1	V	$I_C=10mA, I_B=1mA$
				1	V	$I_C=50mA, I_B=5mA$
Transition Frequency	$f_T$	100		300	MHz	$V_{CE}=10V, I_C=20mA, f=100MHz$
Output Capacitance	$C_{ob}$			6	pF	$V_{CB}=10V, I_E=0, f=1MHz$
Noise Figure	NF			8	dB	$V_{CE}=5V, I_C=200\mu A, f=1KHz, R_S=1K\Omega$

**Curve Characteristics**

Fig. 1 - Static Characteristics

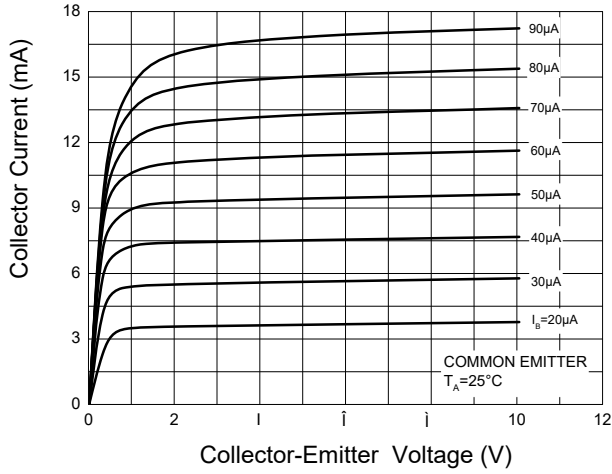


Fig. 2 - DC Current Gain Characteristics

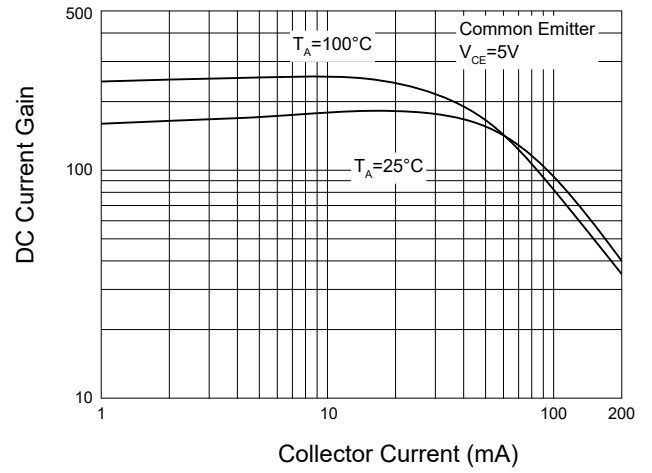


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

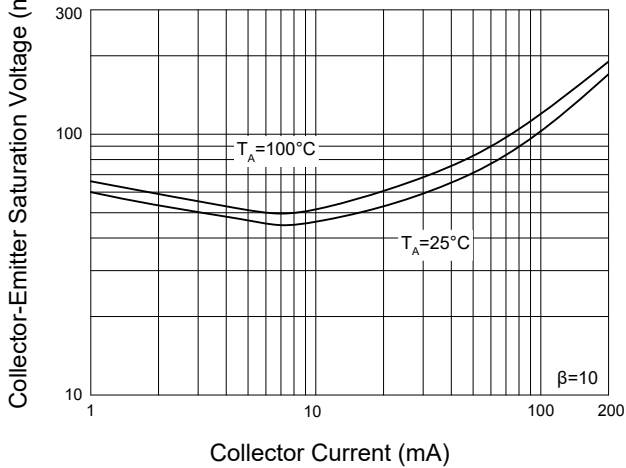


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

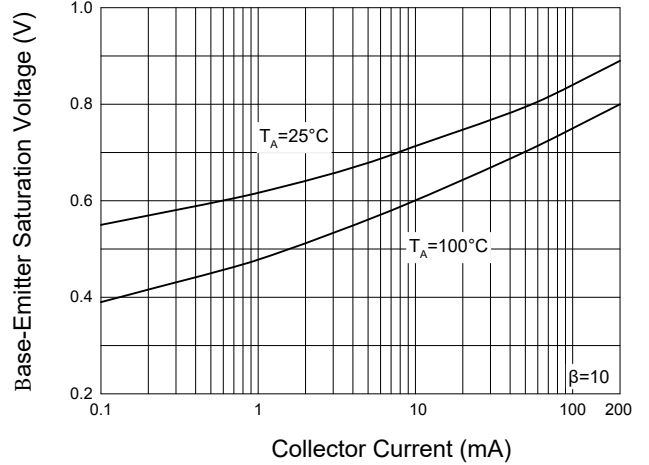


Fig. 5 - Base-Emitter Voltage Characteristics

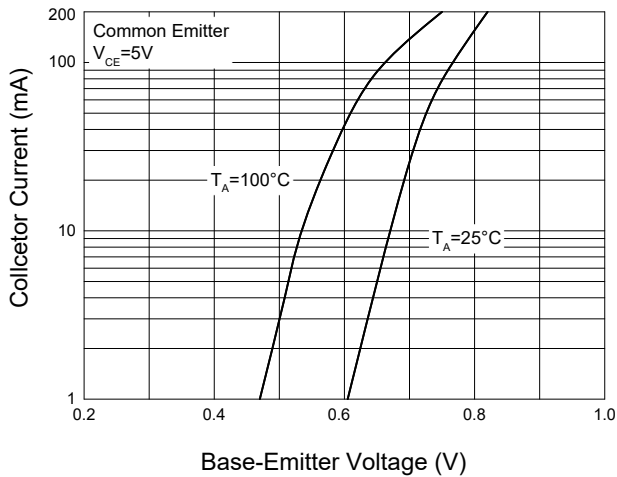
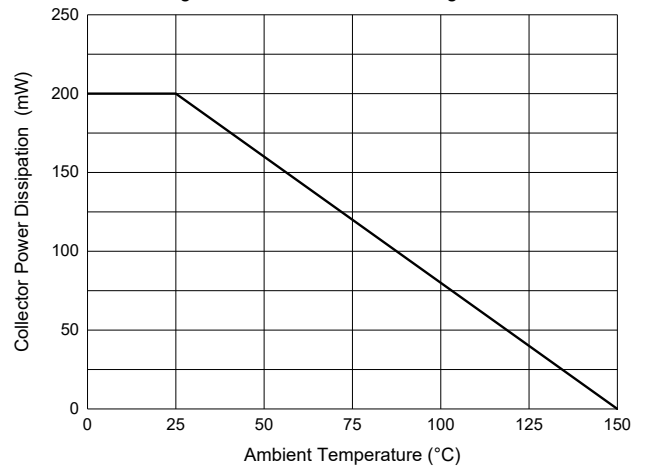


Fig. 6 - Collector Power Derating Curve



## Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

Note : Adding "-HF" Suffix For Halogen Free, eg. Part Number-TP-HF

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