Features

- Epitaxial Planar Die Construction
- Complementary NPN Type Available MMST3904
- Halogen Free. “Green” Device (Note 1)
- 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)

PNP Small Signal Transistors

Maximum Ratings @ 25°C Unless Otherwise Specified

- Operating Junction Temperature Range: -55℃ to +150℃
- Storage Temperature Range: -55℃ to +150℃

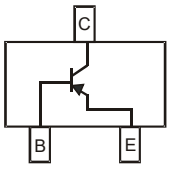
Parameter	Symbol	Rating	Unit
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-40	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current (2)	I_C	-200	mA
Collector Power Dissipation (2)	P_C	200	mW

Note: 1. Halogen free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

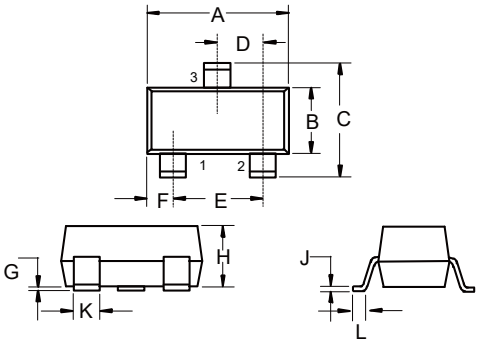
2. Valid provided that terminals are kept at ambient temperature.

Marking: K5N

Internal Structure

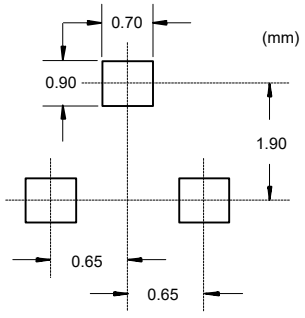


SOT-323



DIMENSIONS					
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	
L	0.010	0.018	0.26	0.46	

Suggested Solder Pad Layout



Electrical Characteristics @ 25°C Unless Otherwise Specified

Parameter	Symbol	Min	Typ	Max	Units	Conditions
Collector-Base Breakdown Voltage [3]	$V_{(BR)CBO}$	-40			V	I_C=-10μA, I_E=0
Collector-Emitter Breakdown Voltage [3]	$V_{(BR)CEO}$	-40			V	I_C=-1mA, I_B=0
Emitter-Base Breakdown Voltage [3]	$V_{(BR)EBO}$	-5			V	I_E=-10μA, I_C=0
Collector Cutoff Current [3]	I_{CEX}			-50	nA	V_{CE}=-30V, $V_{EB(OFF)}$=-3V
Base Cutoff Current [3]	I_{BL}			-50	nA	V_{CE}=-30V, $V_{EB(OFF)}$=-3V
DC Current Gain [3]	$h_{FE(1)}$	60				V_{CE}=-1V, I_C=-0.1mA
	$h_{FE(2)}$	80				V_{CE}=-1V, I_C=-1mA
	$h_{FE(3)}$	100		300		V_{CE}=-1V, I_C=-10mA
	$h_{FE(4)}$	60				V_{CE}=-1V, I_C=-50mA
	$h_{FE(5)}$	30				V_{CE}=-1V, I_C=-500mA
Collector-Emitter Saturation Voltage[3]	$V_{CE(sat)}$			-0.2	V	I_C=-10mA, I_B=-1mA
				-0.3	V	I_C=-50mA, I_B=-5mA
Base-Emitter Saturation Voltage[3]	$V_{BE(sat)}$	-0.65		-0.85	V	I_C=-10mA, I_B=-1mA
				-0.95	V	I_C=-50mA, I_B=-5mA
Output Capacitance	C_{cbo}			4.5	pF	V_{CB}=-5V, I_E=0, f=1MHz
Input Capacitance	C_{ibo}			10	pF	V_{EB}=-0.5V, I_C=0, f=1MHz
Input Impedance	h_{ie}	2		12	KΩ	V_{CE}=-10V, I_C=-1mA, f=1KHz
Voltage Feedback Ratio	h_{re}	0.1		10	$x10^4$	
Small Signal Current Gain	h_{fe}	100		400		
Output Admittance	h_{oe}	3		60	uS	
Transition Frequency	f_T	300			MHz	V_{CE}=-20V, I_C=-10mA, f=100MHz
Noise Figure	NF			4	dB	V_{CE}=-5V, I_C=-0.1mA R_S=1KΩ, f=1KHz
Delay Time	t_d			35	ns	V_{CC}=-3V, I_C=-10mA $V_{BE(OFF)}$=-0.5V, I_{B1}=-1mA
Rise Time	t_r			35	ns	
Storage Time	t_s			225	ns	V_{CC}=-3V, I_C=-10mA I_{B1}=I_{B2}=-1mA
Fall Time	t_f			75	ns	

Note: 3.Pulse Width ≤ 300μs, Duty Cycle≤2.0%

Curve Characteristics

Fig. 1 - Static Characteristics

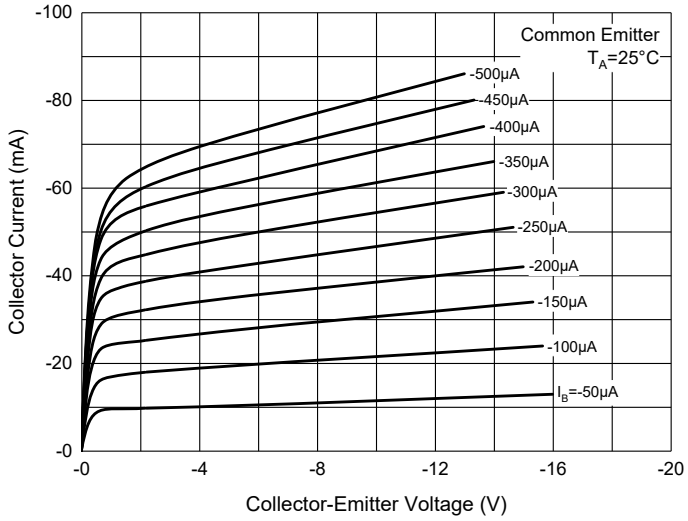


Fig. 2 - DC Current Gain Characteristics

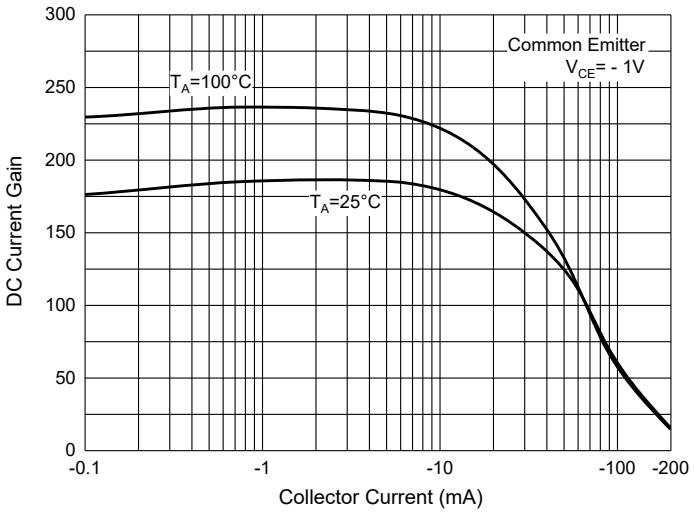


Fig. 3 - Collector-Emitter Saturation Voltage Characteristics

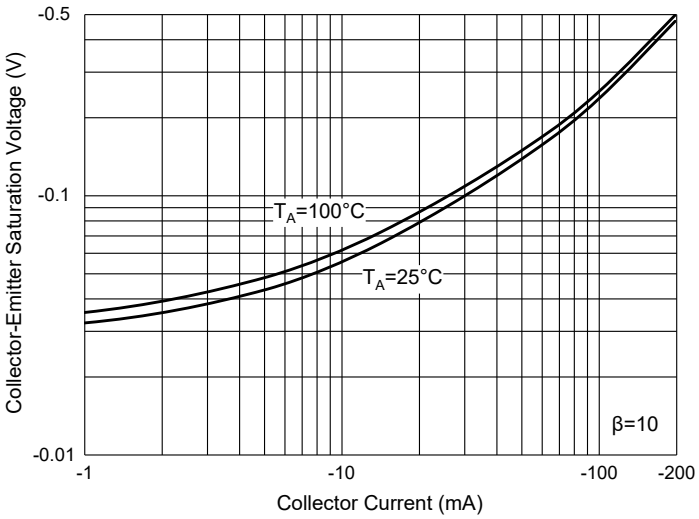


Fig. 4 - Base-Emitter Saturation Voltage Characteristics

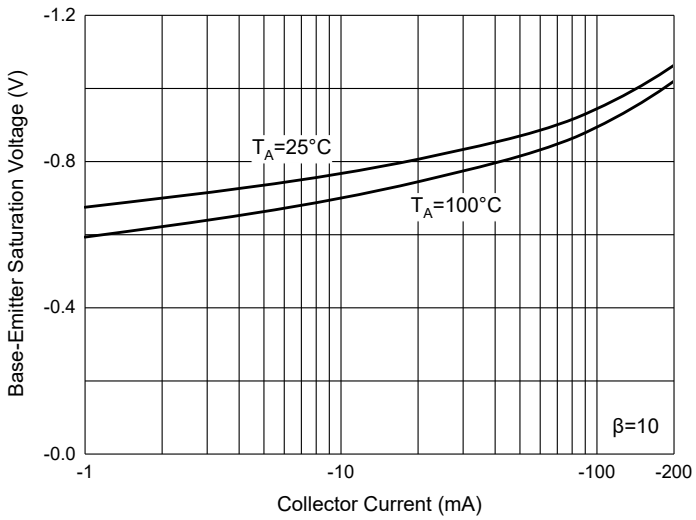


Fig. 5 - Base-Emitter Voltage Characteristics

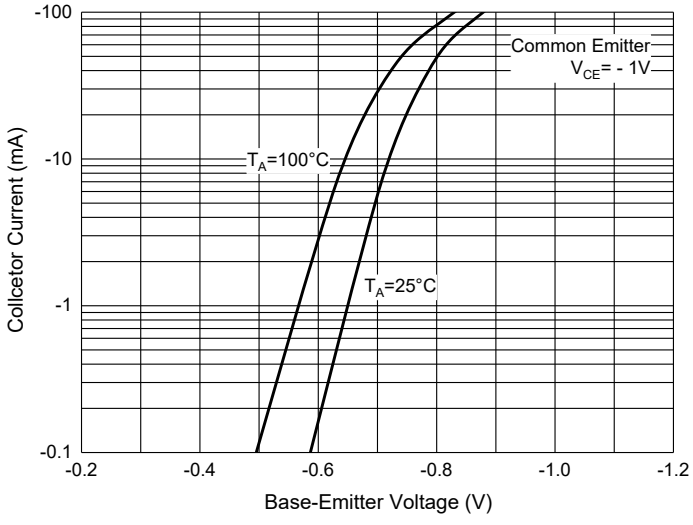
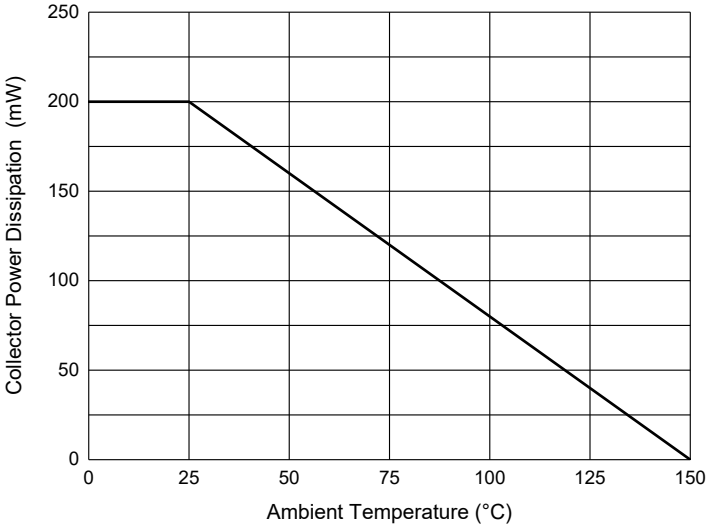


Fig. 6 - Collector Power Derating Curve



Ordering Information

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

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