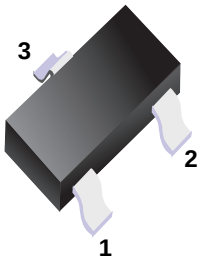
MMST3906

PNP Transistor



1.Base
2.Emitter
3.Collector

■ **Simplified outline(SOT-323)**

■ Features

- Collector Current Capability I_C=-0.2A
- Collector Emitter Voltage V_{CEO}=-40V

■ Marking

Marking	K5N

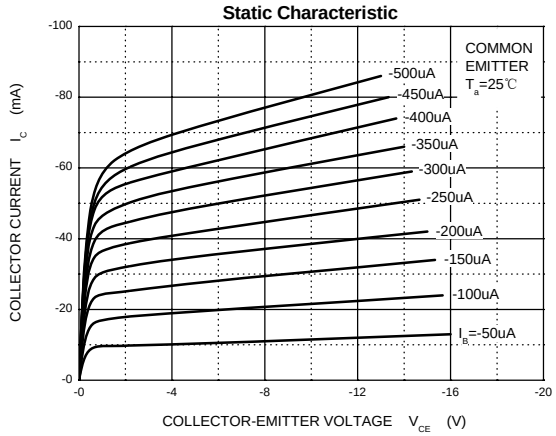
■ Absolute Maximum Ratings Ta = 25℃

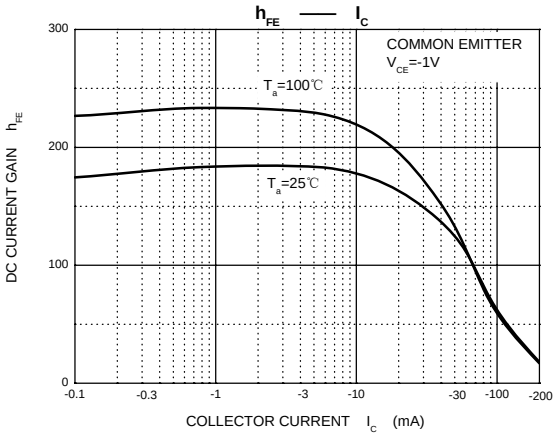
Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CBO}	-40	V
Collector - Emitter Voltage	V_{CEO}	-40	
Emitter - Base Voltage	V_{EBO}	-5	
Collector Current - Continuous	I_C	-200	mA
Collector Power Dissipation	P_C	200	mW
Thermal Resistance From Junction To Ambient	$R_{\Theta JA}$	625	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{stg}	-55 to 150	

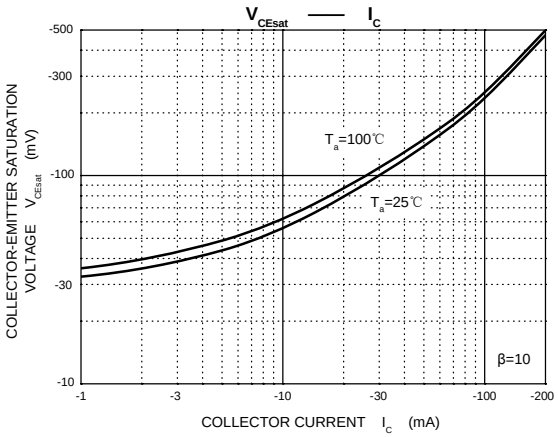
■ Electrical Characteristics Ta = 25℃

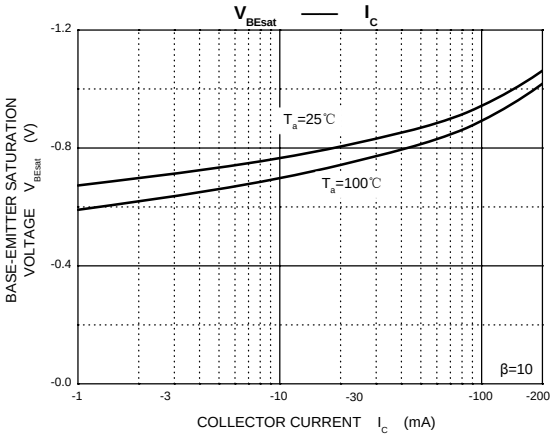
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector- base breakdown voltage	V_{CBO}	I_C= -100 μA， I_E= 0 (Note.1)	-40			V
Collector- emitter breakdown voltage	V_{CEO}	I_C= -1 mA， I_B= 0 (Note.1)	-40			
Emitter - base breakdown voltage	V_{EBO}	I_E= -100 μ A， I_C= 0 (Note.1)	-5			
Collector-base cut-off current	I_{CBO}	V_{CB}= -40 V , I_E= 0 (Note.1)			-100	nA
Base cut-off current	I_{BL}	V_{CE}= -30 V , $V_{EB(off)}$= -3V (Note.1)			-50	
Collector- emitter cut-off current	I_{CEX}	V_{CE}= -30 V ,$V_{BE(off)}$= -3V			-50	
Emitter cut-off current	I_{EBO}	V_{EB}= -5V , I_C=0			-100	
Collector-emitter saturation voltage (Note.1)	$V_{CE(sat)}$	I_C=-10 mA, I_B=-1 mA			-0.2	V
		I_C=-50 mA, I_B=-5 mA			-0.3	
Base - emitter saturation voltage (Note.1)	$V_{BE(sat)}$	I_C=-10 mA, I_B=-1 mA			-0.85	
		I_C=-50 mA, I_B=-5 mA			-0.95	
DC current gain (Note.1)	$h_{FE(1)}$	V_{CE}= -1V, I_C= -100 uA	60			
	$h_{FE(2)}$	V_{CE}= -1V, I_C= -1 mA	80			
	$h_{FE(3)}$	V_{CE}= -1V, I_C= -10 mA	100		300	
Delay time	t_d	V_{CC}=-3V, $V_{BE(off)}$=-0.5V I_C=-10mA, I_{B1}=-1mA			35	nS
Rise time	t_r				35	
Storage time	t_s	V_{CC}=-3V, I_C=-10mA, I_{B1}= I_{B2}=-1mA			225	
Fall time	t_f				75	
Collector input capacitance	C_{ib}	V_{EB}= -0.5V, I_E= 0,f=1MHz			10	pF
Collector output capacitance	C_{ob}	V_{CB}= -5V, I_E= 0,f=1MHz			4.5	
Transition frequency	f_T	V_{CE}= -20V, I_C= -10mA,f=100MHz	250			MHz

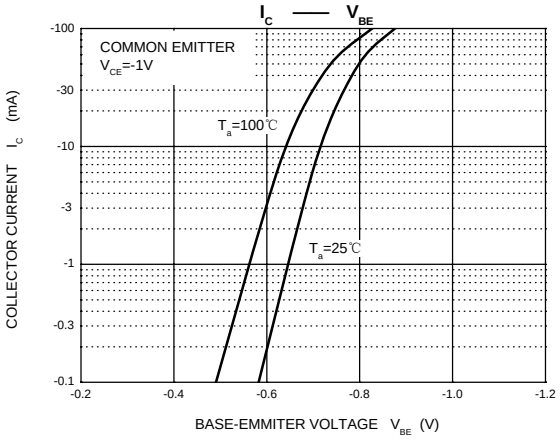
Note.1: Pulse test: pulse width ≤300μs,duty cycle≤ 2.0%.

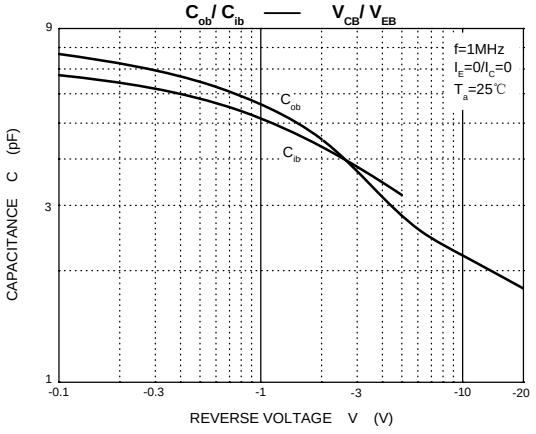

Static Characteristic
COMMON EMITTER
T_a=25℃
-500uA
-450uA
-400uA
-350uA
-300uA
-250uA
-200uA
-150uA
-100uA
I_B=-50uA
COLLECTOR CURRENT I_C (mA)
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)

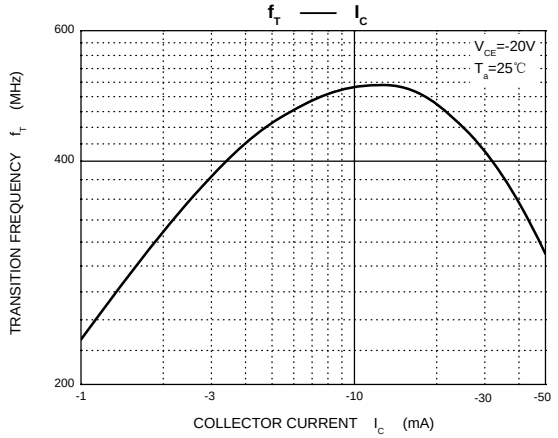

h_{FE} —— I_C
COMMON EMITTER
V_{CE}=-1V
T_a=100℃
T_a=25℃
DC CURRENT GAIN h_{FE}
COLLECTOR CURRENT I_C (mA)

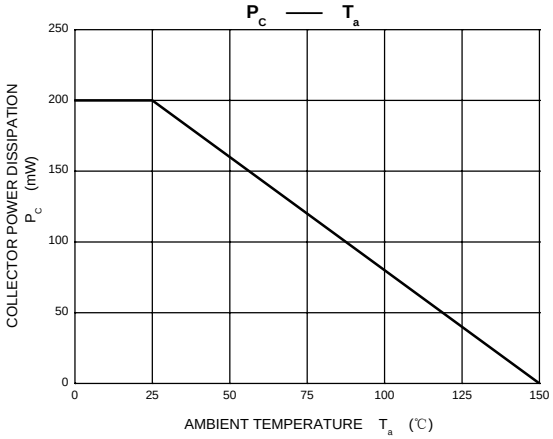

V_{CEsat} —— I_C
T_a=100℃
T_a=25℃
β=10
COLLECTOR-EMITTER SATURATION VOLTAGE V_{CEsat} (mV)
COLLECTOR CURRENT I_C (mA)


V_{BEsat} —— I_C
T_a=25℃
T_a=100℃
β=10
BASE-EMITTER SATURATION VOLTAGE V_{BEsat} (V)
COLLECTOR CURRENT I_C (mA)

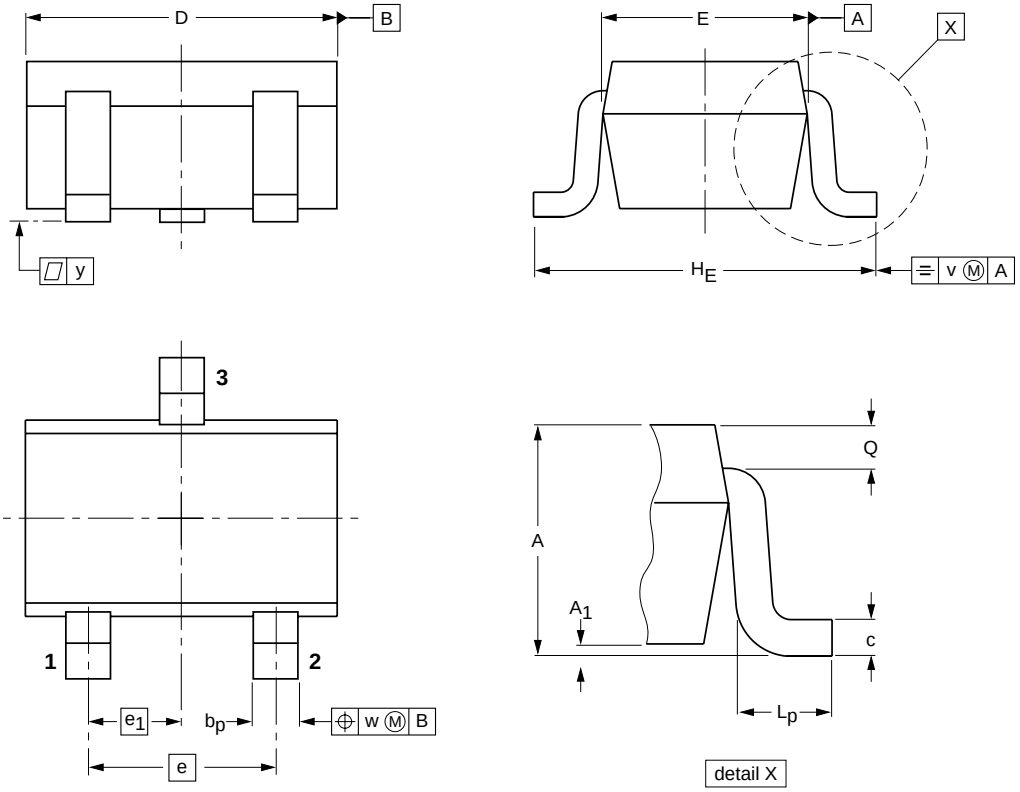

I_C —— V_{BE}
COMMON EMITTER
V_{CE}=-1V
T_a=100℃
T_a=25℃
COLLECTOR CURRENT I_C (mA)
BASE-EMMITER VOLTAGE V_{BE} (V)


C_{ob}/ C_{ib} —— V_{CB}/ V_{EB}
f=1MHz
I_E=0/I_C=0
T_a=25℃
C_{ob}
C_{ib}
CAPACITANCE C (pF)
REVERSE VOLTAGE V (V)


f_T —— I_C
V_{CE}=-20V
T_a=25℃
TRANSITION FREQUENCY f_T (MHz)
COLLECTOR CURRENT I_C (mA)


P_C —— T_a
COLLECTOR POWER DISSIPATION P_C (mW)
AMBIENT TEMPERATURE T_a (℃)

■ SOT-323



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.8	0.1	0.4 0.3	0.25 0.10	2.2 1.8	1.35 1.15	1.3	0.65	2.2 2.0	0.45 0.15	0.23 0.13	0.2	0.2

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