

# PNP General Purpose Transistor

UMT3906 / SST3906 / MMST3906 / 2N3906

●Features

- 1)  $BV_{CEO} > -40V$  ( $I_C = -1mA$ )
- 2) Complements the UMT3904 / SST3904 / MMST3904 / 2N3904.

●Package, marking and packaging specifications

Part No.	UMT3906	SST3906	MMST3906	2N3906
Packaging type	UMT3	SST3	SMT3	TO-92
Marking	R2A	R2A	R2A	—
Code	T106	T116	T146	T93
Basic ordering unit (pieces)	3000	3000	3000	3000

●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-base voltage	$V_{CBO}$	-40	V
Collector-emitter voltage	$V_{CEO}$	-40	V
Emitter-base voltage	$V_{EBO}$	-5	V
Collector current	$I_C$	-0.2	A
Collector power dissipation	UMT3906	0.2	W
	SST3906, MMST3906	0.3	W *
	2N3906	0.625	W
Junction temperature	TJ	150	°C
Storage temperature	Tstg	-55~+150	°C

\* When mounted on a 7×5×0.6mm ceramic board.

●External dimensions (Units : mm)

**UMT3906**

ROHM : UMT3  
EIAJ : SC-70

(1) Emitter  
(2) Base  
(3) Collector

All terminals have same dimensions

---

**SST3906**

ROHM : SST3

(1) Emitter  
(2) Base  
(3) Collector

All terminals have same dimensions

---

**MMST3906**

ROHM : SMT3  
EIAJ : SC-59

(1) Emitter  
(2) Base  
(3) Collector

All terminals have same dimensions

---

**2N3906**

ROHM : TO-92  
EIAJ : SC-43

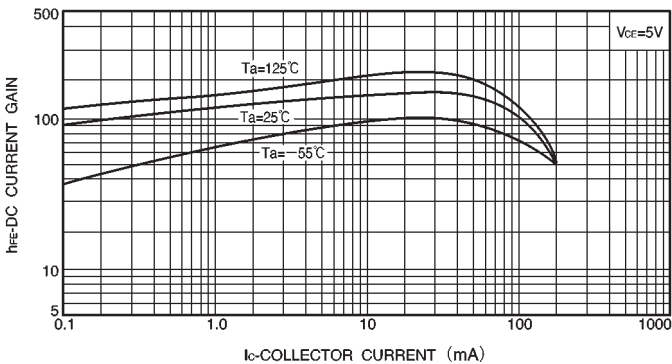
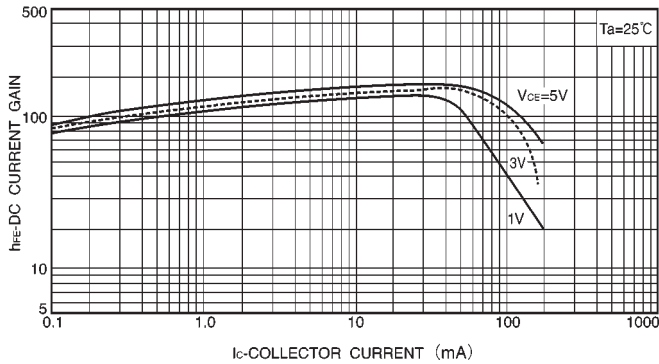
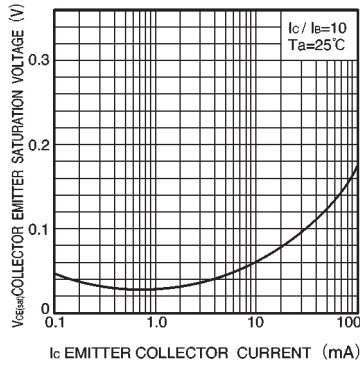
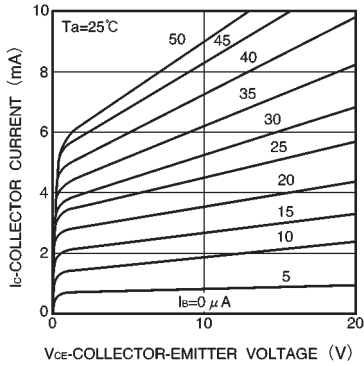
(1) Emitter  
(2) Base  
(3) Collector

●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$BV_{CBO}$	-40	—	—	V	$I_C = -10 \mu A$
Collector-emitter breakdown voltage	$BV_{CEO}$	-40	—	—	V	$I_C = -10mA$
Emitter-base breakdown voltage	$BV_{EBO}$	-5	—	—	V	$I_E = -10 \mu A$
Collector cutoff current	$I_{CES}$	—	—	-50	nA	$V_{CB} = -30V$
Emitter cutoff current	$I_{EBO}$	—	—	-50	nA	$V_{EB} = -3V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	—	—	-0.25	V	$I_C/I_B = -10mA/-1mA$
		—	—	-0.4	V	$I_C/I_B = -50mA/-5mA$
Base-emitter saturation voltage	$V_{BE(sat)}$	0.65	—	-0.85	V	$I_C/I_B = -10mA/-1mA$
		—	—	-0.95	V	$I_C/I_B = -50mA/-5mA$
DC current transfer ratio	$h_{FE}$	60	—	—	—	$V_{CE} = -1V, I_C = -0.1mA$
		80	—	—	—	$V_{CE} = -1V, I_C = -1mA$
		100	—	300	—	$V_{CE} = -1V, I_C = -10mA$
		60	—	—	—	$V_{CE} = -1V, I_C = -50mA$
		30	—	—	—	$V_{CE} = -1V, I_C = -100mA$
Transition frequency	$f_T$	250	—	—	MHz	$V_{CE} = -20V, I_C = 10mA, f = 100MHz$
Collector output capacitance	$C_{ob}$	—	—	4.5	pF	$V_{CB} = -10V, f = 100kHz$
Emitter input capacitance	$C_{ib}$	—	—	10	pF	$V_{EB} = -0.5V, f = 100kHz$
Delay time	$t_d$	—	—	35	ns	$V_{CC} = -3V, V_{BE(OFF)} = -0.5V, I_C = -10mA, I_{B1} = -1mA$
Rise time	$t_r$	—	—	35	ns	$V_{CC} = -3V, V_{BE(OFF)} = -0.5V, I_C = -10mA, I_{B1} = -1mA$
Storage time	$t_{stg}$	—	—	225	ns	$V_{CC} = -3V, I_C = -10mA, I_{B1} = -I_{B2} = -1mA$
Fall time	$t_f$	—	—	75	ns	$V_{CC} = -3V, I_C = -10mA, I_{B1} = -I_{B2} = -1mA$



● Electrical characteristic curves



# Transistors

# UMT3906/SST3906/MMST3906/2N3906

## ● Electrical characteristic curves

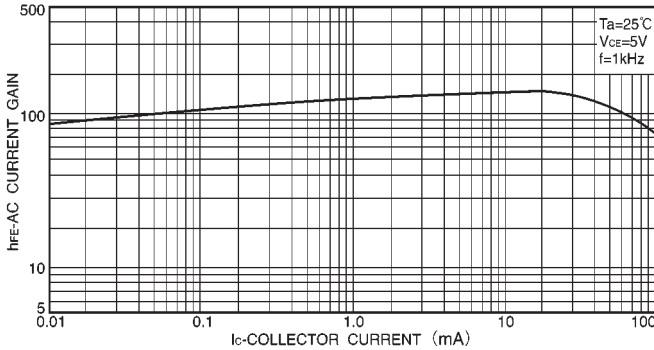


Fig.5 AC current gain vs. collector current

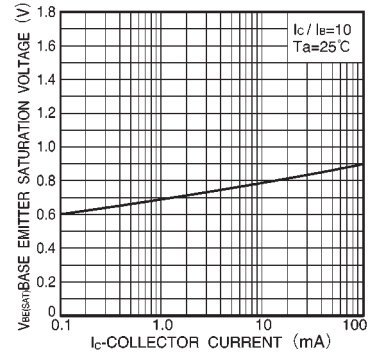


Fig.6 Base-emitter saturation voltage vs. collector current

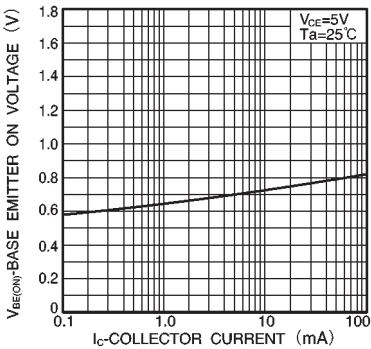


Fig.7 Grounded emitter propagation characteristics

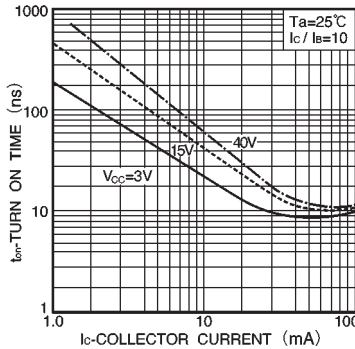


Fig.8 Turn-on time vs. collector current

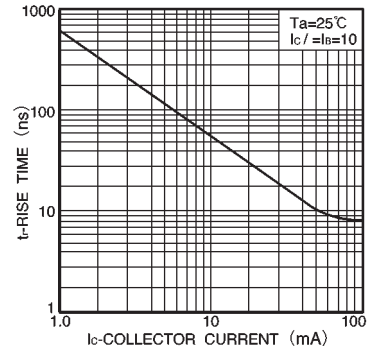


Fig.9 Rise time vs. collector current

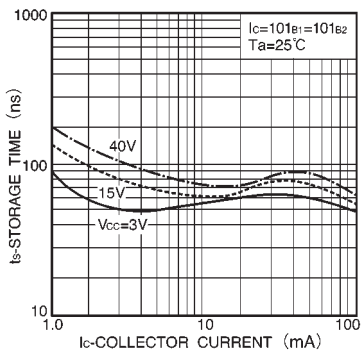


Fig.10 Storage time vs. collector current

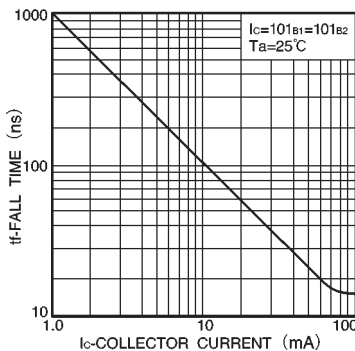


Fig.11 Fall time vs. collector current

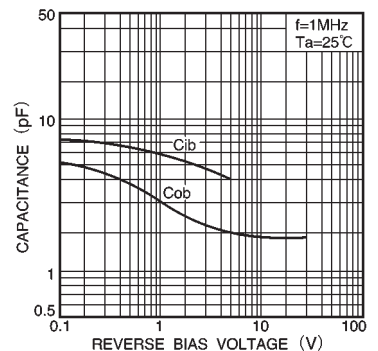


Fig.12 Input/output capacitance vs. voltage

● Electrical characteristic curves

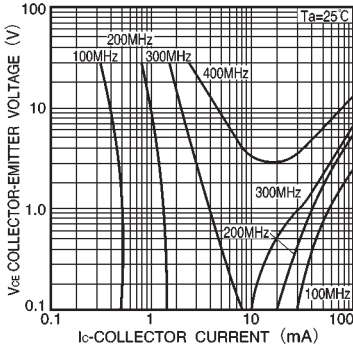


Fig.13 Gain bandwidth product

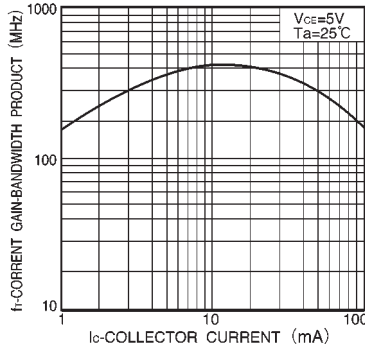


Fig.14 Gain bandwidth product vs. collector current

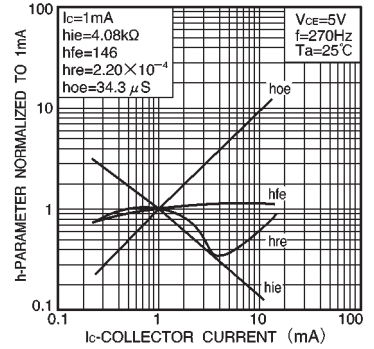


Fig.15 h parameter vs. collector current

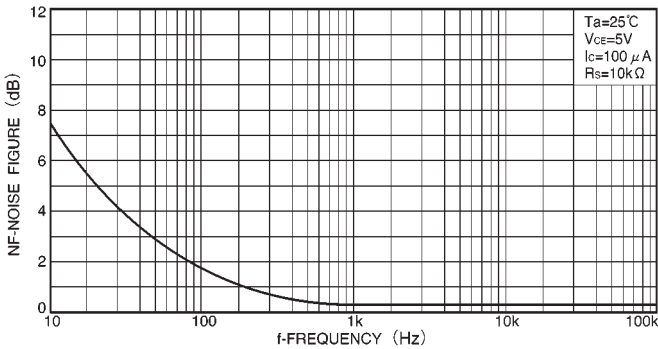


Fig.16 Noise vs. collector current

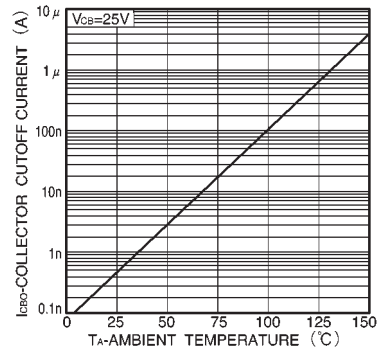


Fig.17 Noise characteristics ( I )

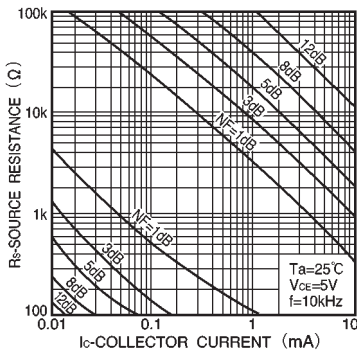


Fig.18 Noise characteristics ( II )

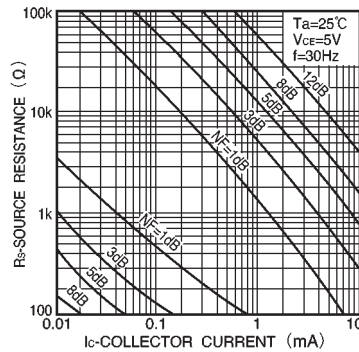


Fig.19 Noise characteristics ( III )

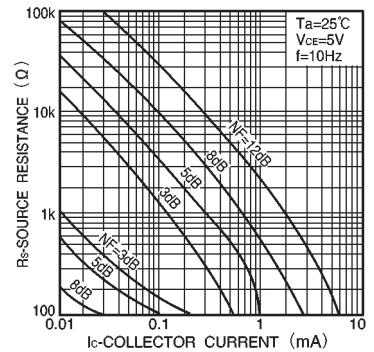


Fig.20 Noise characteristics ( IV )