

# PNP Medium Power Transistor (Switching)

## UMT2907A / SST2907A / MMST2907A / PN2907A

### ●Features

- 1)  $BV_{CEO} < -60V$  ( $I_C = -10mA$ )
- 2) Complements the UMT2222A / SST2222A / MMST2222A / PN2222A.

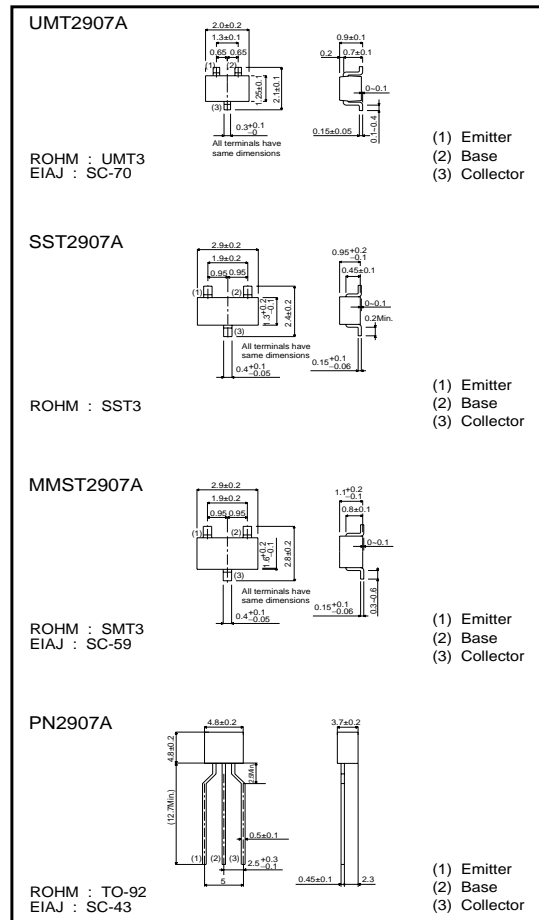
### ●Package, marking and packaging specifications

Part No.	UMT2907A	SST2907A	MMST2907A	PN2907A
Packaging type	UMT3	SST3	SMT3	TO-92
Marking	R2F	R2F	R2F	-
Code	T106	T116	T146	T93
Basic ordering unit (pieces)	3000	3000	3000	3000

### ●Absolute maximum ratings ( $T_a = 25^\circ C$ )

Parameter	Symbol	Limits	Unit	
Collector-base voltage	$V_{CB0}$	-60	V	
Collector-emitter voltage	$V_{CE0}$	-60	V	
Emitter-base voltage	$V_{EB0}$	-5	V	
Collector current	$I_C$	-0.6	A	
Collector power dissipation	UMT2907A, SST2907A, MMST2907A	$P_C$	0.2	W
	PN2907A		0.625	
Junction temperature	$T_J$	150	$^\circ C$	
Storage temperature	$T_{stg}$	-55~+150	$^\circ C$	

### ●External dimensions (Units : mm)



# UMT2907A / SST2907A / MMST2907A / PN2907A

## Transistors

### ●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	BV <sub>CB0</sub>	-60	-	-	V	I <sub>c</sub> =10μA
Collector-emitter breakdown voltage	BV <sub>CEO</sub>	-60	-	-	V	I <sub>c</sub> =10mA
Emitter-base breakdown voltage	BV <sub>EBO</sub>	-5	-	-	V	I <sub>E</sub> =10μA
Collector cutoff current	I <sub>cBO</sub>	-	-	-100	nA	V <sub>CB</sub> =-50V
	I <sub>cES</sub>	-	-	-100	nA	V <sub>CB</sub> =-30V
Emitter cutoff current	I <sub>EBO</sub>	-	-	-100	nA	V <sub>EB</sub> =-3V
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	-	-	-0.4	V	I <sub>c</sub> /I <sub>B</sub> =-150mA/-15mA
		-	-	-1.6	V	I <sub>c</sub> /I <sub>B</sub> =-500mA/-50mA
Base-emitter saturation voltage	V <sub>BE(sat)</sub>	0.6	-	-1.3	V	I <sub>c</sub> /I <sub>B</sub> =-150mA/-15mA
		-	-	-2.6	V	I <sub>c</sub> /I <sub>B</sub> =-500mA/-50mA
DC current transfer ratio	h <sub>FE</sub>	75	-	-	-	V <sub>CE</sub> =-10V, I <sub>c</sub> =-0.1mA
		100	-	-	-	V <sub>CE</sub> =-10V, I <sub>c</sub> =-1mA
		100	-	-	-	V <sub>CE</sub> =-10V, I <sub>c</sub> =-10mA
		100	-	300	-	V <sub>CE</sub> =-10V, I <sub>c</sub> =-150mA
		50	-	-	-	V <sub>CE</sub> =-10V, I <sub>c</sub> =-500mA
Transition frequency	f <sub>r</sub>	200	-	-	MHz	V <sub>CE</sub> =-20V, I <sub>c</sub> =-50mA, f=100MHz
Collector output capacitance	C <sub>ob</sub>	-	-	8	pF	V <sub>CB</sub> =-10V, f=100kHz
Emitter input capacitance	C <sub>ib</sub>	-	-	30	pF	V <sub>EB</sub> =-2V, f=100kHz
Turn-on time	t <sub>on</sub>	-	-	50	ns	V <sub>CC</sub> =-30V, V <sub>BE(OFF)</sub> =-1.5V, I <sub>c</sub> =-150mA, I <sub>B1</sub> =-15mA
Delay time	t <sub>d</sub>	-	-	10	ns	V <sub>CC</sub> =-30V, V <sub>BE(OFF)</sub> =-1.5V, I <sub>c</sub> =-150mA, I <sub>B1</sub> =-15mA
Rise time	t <sub>r</sub>	-	-	40	ns	V <sub>CC</sub> =-30V, V <sub>BE(OFF)</sub> =-1.5V, I <sub>c</sub> =-150mA, I <sub>B1</sub> =-15mA
Turn-off time	t <sub>off</sub>	-	-	100	ns	V <sub>CC</sub> =-30V, I <sub>c</sub> =-150mA, I <sub>B1</sub> =I <sub>B2</sub> =-15mA
Storage time	t <sub>stg</sub>	-	-	80	ns	V <sub>CC</sub> =-30V, I <sub>c</sub> =-150mA, I <sub>B1</sub> =I <sub>B2</sub> =-15mA
Fall time	t <sub>f</sub>	-	-	30	ns	V <sub>CC</sub> =-30V, I <sub>c</sub> =-150mA, I <sub>B1</sub> =I <sub>B2</sub> =-15mA

### ●Electrical characteristic curves

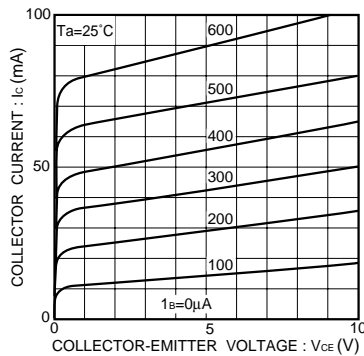


Fig.1 Grounded emitter output characteristics

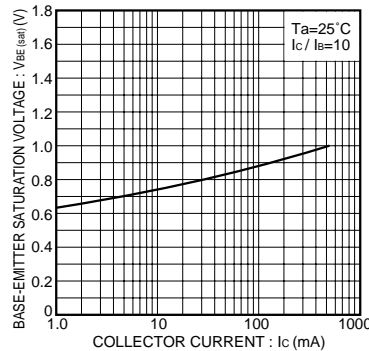


Fig.2 Base-emitter saturation voltage vs. collector current

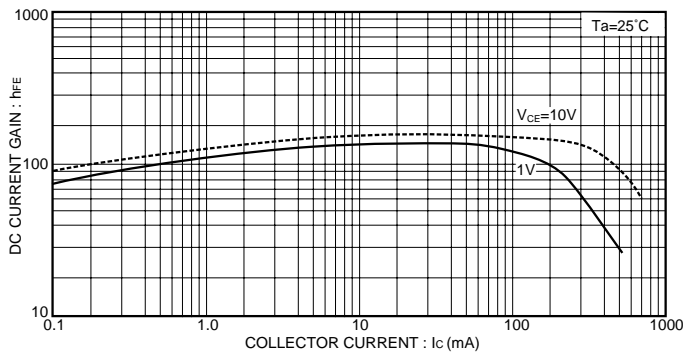


Fig.3 DC current gain vs. collector current (I)

Transistors

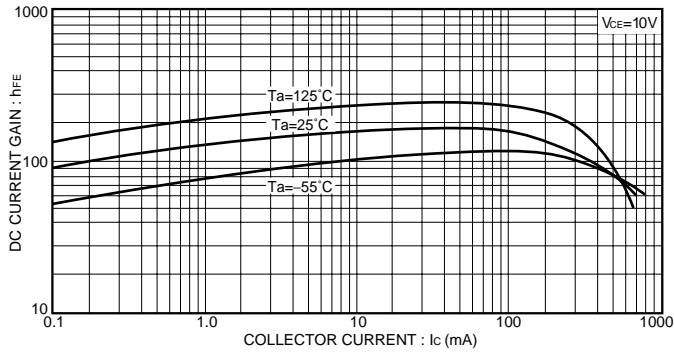


Fig.4 DC current gain vs. collector current (II)

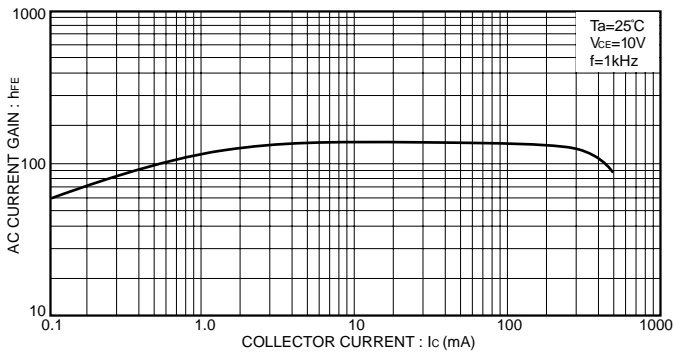


Fig.5 AC current gain vs. collector current

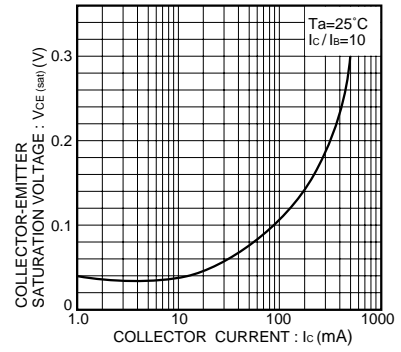


Fig.6 Collector-emitter saturation voltage vs. collector current

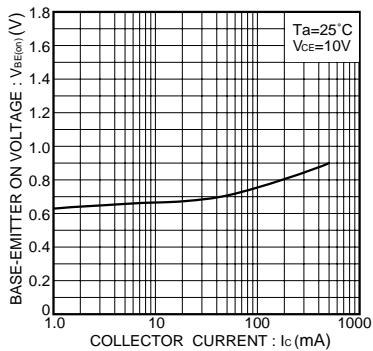


Fig.7 Grounded emitter propagation characteristics

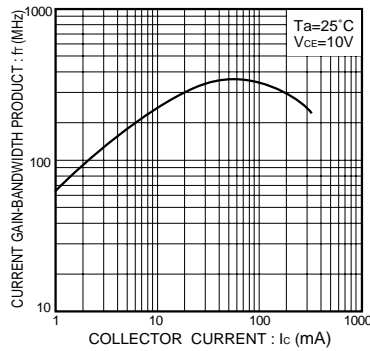


Fig.8 Gain bandwidth product vs. collector current

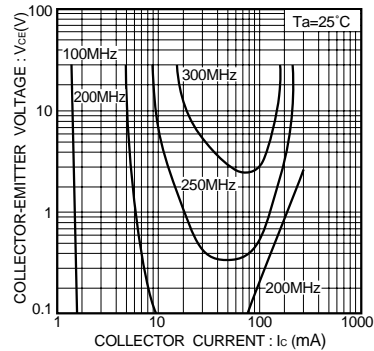


Fig.9 Gain bandwidth product

UMT2907A / SST2907A / MMST2907A / PN2907A

Transistors

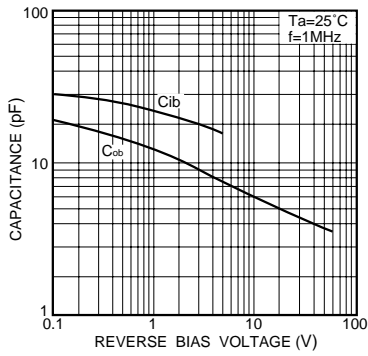


Fig.10 Input/output capacitance vs. voltage

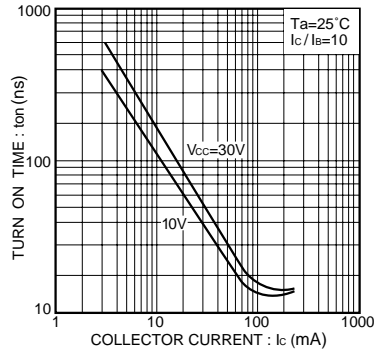


Fig.11 Turn-on time vs. collector current

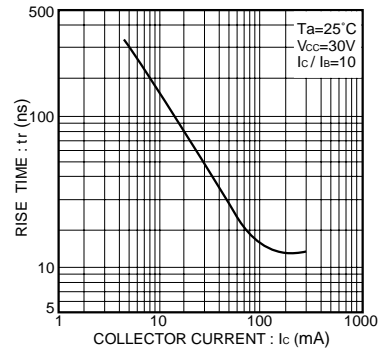


Fig.12 Rise time vs. collector current

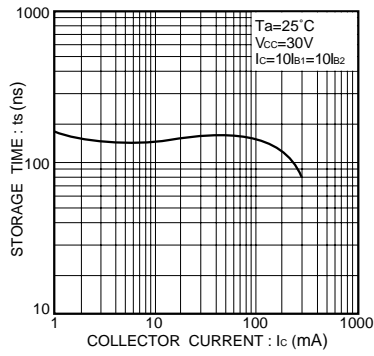


Fig.13 Storage time vs. collector current

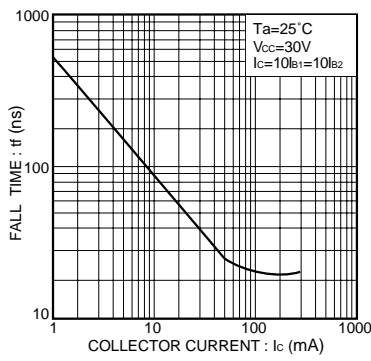


Fig.14 Fall time vs. collector current