

# PNP Medium Power Transistor (Switching)

## UMT2907A / SST2907A / MMST2907A / PN2907A

### ●Features

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

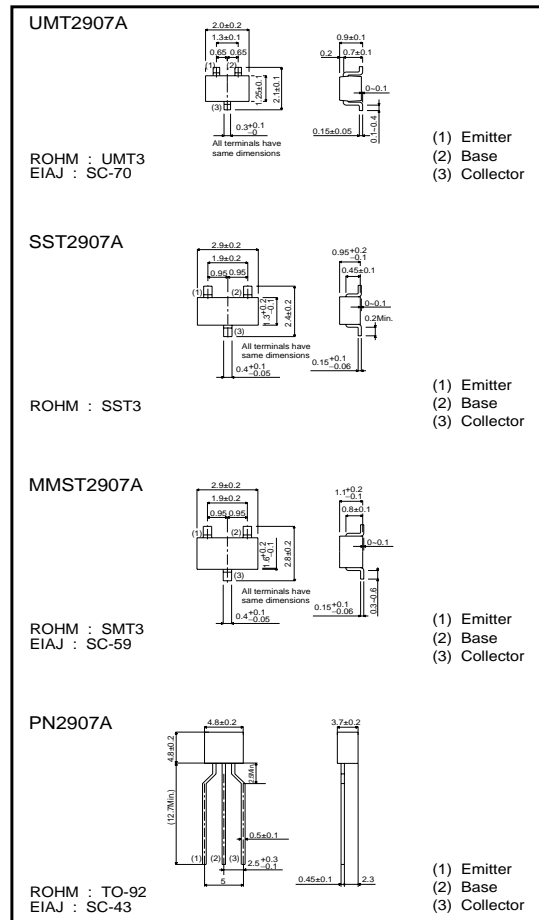
### ●Package, marking and packaging specifications

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

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### ●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

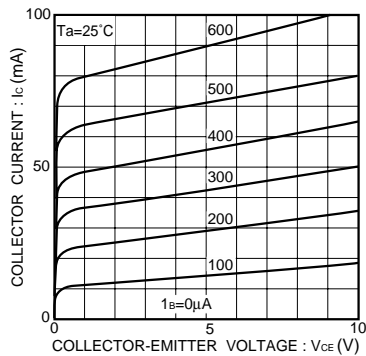


Fig.1 Grounded emitter output characteristics

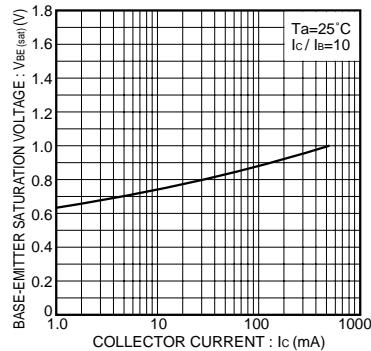


Fig.2 Base-emitter saturation voltage vs. collector current

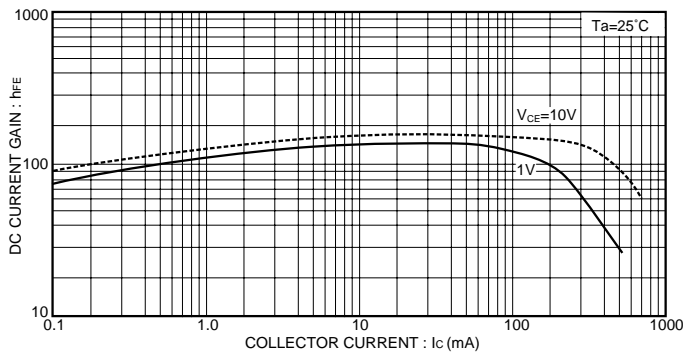


Fig.3 DC current gain vs. collector current (I)

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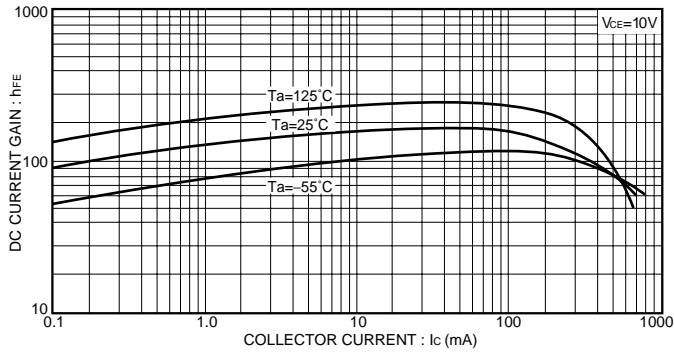


Fig.4 DC current gain vs. collector current (II)

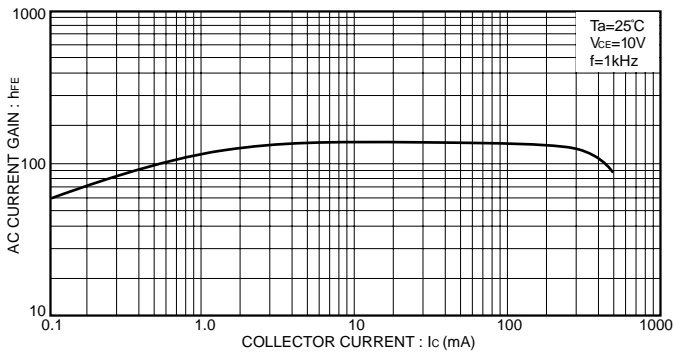


Fig.5 AC current gain vs. collector current

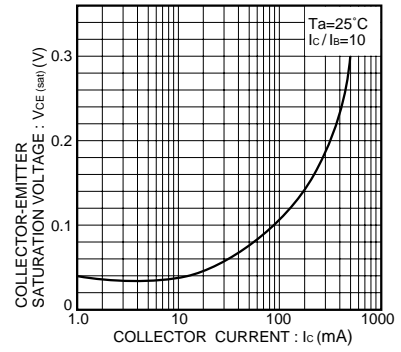


Fig.6 Collector-emitter saturation voltage vs. collector current

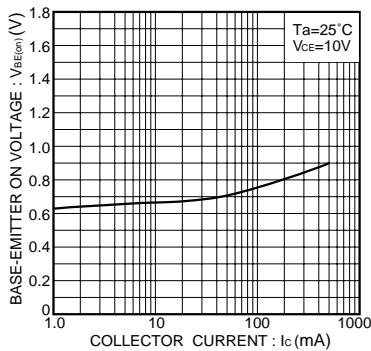


Fig.7 Grounded emitter propagation characteristics

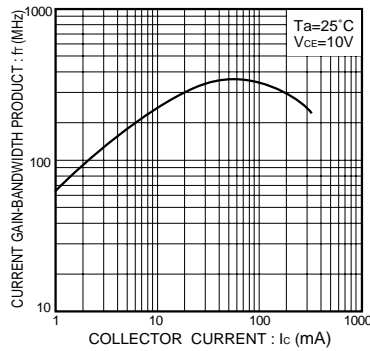


Fig.8 Gain bandwidth product vs. collector current

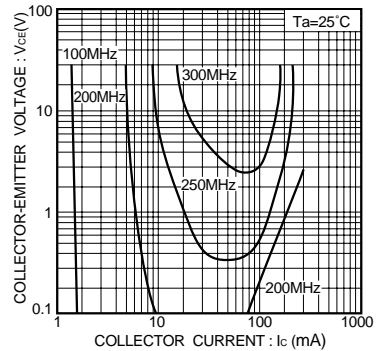


Fig.9 Gain bandwidth product

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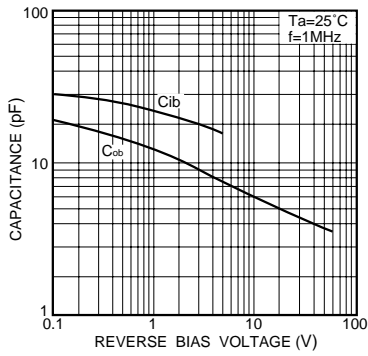


Fig.10 Input/output capacitance vs. voltage

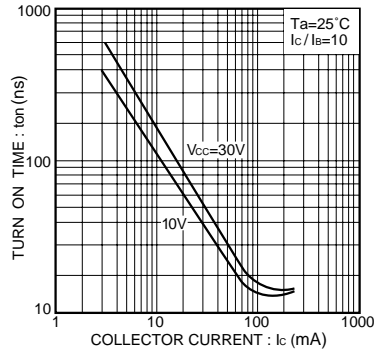


Fig.11 Turn-on time vs. collector current

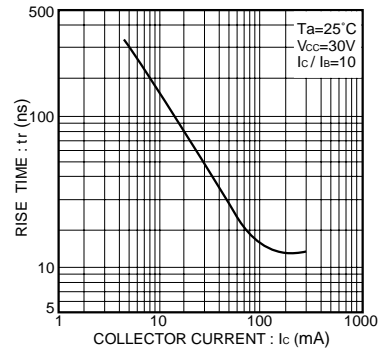


Fig.12 Rise time vs. collector current

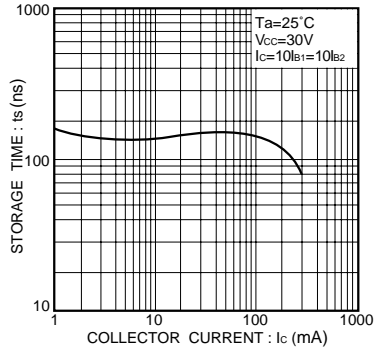


Fig.13 Storage time vs. collector current

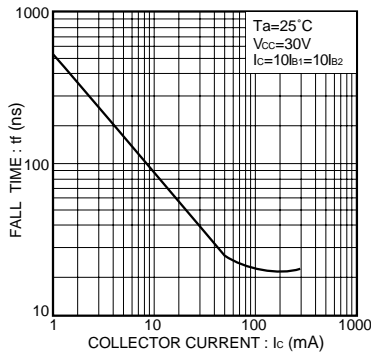


Fig.14 Fall time vs. collector current