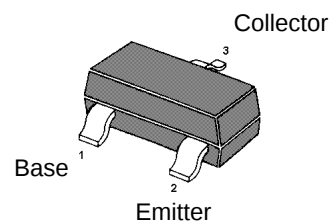


MMBT2907 / MMBT2907A PNP Silicon Epitaxial Planar Transistor

for switching and AF amplifier applications.

The transistor is subdivided into one group

according to its DC current gain.



SOT-23

Marking Code : MMBTA2907A 2F

MMBTA2907 M2B

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	-60	V
Collector Emitter Voltage	V_{CEO}	-40	V
MMBT2907		-60	
MMBT2907A			
Emitter Base Voltage	V_{EBO}	-5	V
Collector Current	I_C	-600	mA
Power Dissipation	P_{tot}	350	mW
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	- 55 to + 150	$^\circ\text{C}$

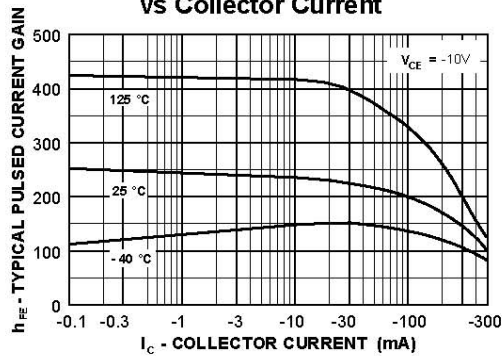
Characteristics at $T_a = 25^\circ\text{C}$ (MMBT2907)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = -10\mu\text{A}$, $I_E = 0$	-60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = -10\text{mA}$, $I_B = 0$	-40			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = -10\mu\text{A}$, $I_C = 0$	-5			V
Collector cut-off current	I_{CBO}	$V_{CB} = -50\text{V}$, $I_E = 0$			-20	nA
DC current gain	$h_{FE(1)}$	$V_{CE} = -10\text{V}$, $I_C = -0.1\text{mA}$	35			
	$h_{FE(2)}$	$V_{CE} = -10\text{V}$, $I_C = -1\text{mA}$	50			
	$h_{FE(3)}$	$V_{CE} = -10\text{V}$, $I_C = -0.1\text{mA}$	75			
	$h_{FE(4)}$	$V_{CE} = -10\text{V}$, $I_C = -150\text{mA}$	100		300	
	$h_{FE(5)}$	$V_{CE} = -10\text{V}$, $I_C = -500\text{mA}$	30			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -150\text{mA}$, $I_B = -15\text{mA}$			-0.4	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = -150\text{mA}$, $I_B = -15\text{mA}$			-1.3	V
Transition frequency	f_T	$V_{CE} = -20\text{V}$, $I_C = -50\text{mA}$, $f = 100\text{MHz}$	200			MHz
Delay time	t_d	$V_{CC} = -30\text{V}$, $I_C = -150\text{mA}$, $I_{B1} = -15\text{mA}$			10	ns
Rise time	t_r	$V_{CC} = -30\text{V}$, $I_C = -150\text{mA}$, $I_{B1} = -15\text{mA}$			40	ns
Turn-on time	t_{on}	$V_{CC} = -30\text{V}$, $I_C = -150\text{mA}$, $I_{B1} = -15\text{mA}$			45	ns
Turn-off time	t_{off}	$V_{CC} = -6\text{V}$, $I_C = -150\text{mA}$, $I_{B1} = I_{B2} = -15\text{mA}$			100	ns
Storage time	t_s	$V_{CC} = -6\text{V}$, $I_C = -150\text{mA}$, $I_{B1} = I_{B2} = -15\text{mA}$			80	ns
Fall time	t_f	$V_{CC} = -6\text{V}$, $I_C = -150\text{mA}$, $I_{B1} = I_{B2} = -15\text{mA}$			30	ns

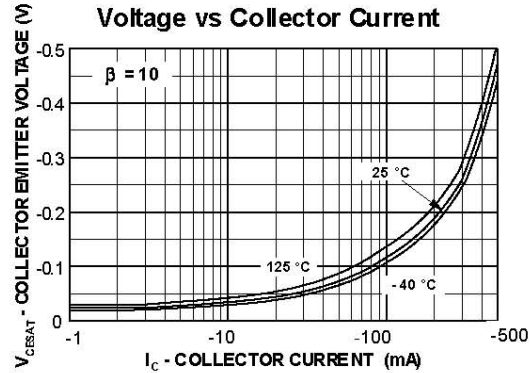
Characteristics at $T_a = 25^\circ\text{C}$ (MMBT2907A)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C = -10\mu\text{A}$, $I_E = 0$	-60			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = -10\text{mA}$, $I_B = 0$	-60			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E = -10\mu\text{A}$, $I_C = 0$	-5			V
Collector cut-off current	I_{CBO}	$V_{CB} = -50\text{V}$, $I_E = 0$			-10	nA
DC current gain	$h_{FE(1)}$	$V_{CE} = -10\text{V}$, $I_C = -0.1\text{mA}$	75			
	$h_{FE(2)}$	$V_{CE} = -10\text{V}$, $I_C = -1\text{mA}$	100			
	$h_{FE(3)}$	$V_{CE} = -10\text{V}$, $I_C = -0.1\text{mA}$	100			
	$h_{FE(4)}$	$V_{CE} = -10\text{V}$, $I_C = -150\text{mA}$	100		300	
	$h_{FE(5)}$	$V_{CE} = -10\text{V}$, $I_C = -500\text{mA}$	50			
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -150\text{mA}$, $I_B = -15\text{mA}$			-0.4	V
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = -150\text{mA}$, $I_B = -15\text{mA}$			-1.3	V
Transition frequency	f_T	$V_{CE} = -20\text{V}$, $I_C = -50\text{mA}$, $f = 100\text{MHz}$	200			MHz
Delay time	t_d	$V_{CC} = -30\text{V}$, $I_C = -150\text{mA}$, $I_{B1} = -15\text{mA}$			10	ns
Rise time	t_r	$V_{CC} = -30\text{V}$, $I_C = -150\text{mA}$, $I_{B1} = -15\text{mA}$			40	ns
Turn-on time	t_{on}	$V_{CC} = -30\text{V}$, $I_C = -150\text{mA}$, $I_{B1} = -15\text{mA}$			45	ns
Turn-off time	t_{off}	$V_{CC} = -6\text{V}$, $I_C = -150\text{mA}$, $I_{B1} = I_{B2} = -15\text{mA}$			100	ns
Storage time	t_s	$V_{CC} = -6\text{V}$, $I_C = -150\text{mA}$, $I_{B1} = I_{B2} = -15\text{mA}$			80	ns
Fall time	t_f	$V_{CC} = -6\text{V}$, $I_C = -150\text{mA}$, $I_{B1} = I_{B2} = -15\text{mA}$			30	ns

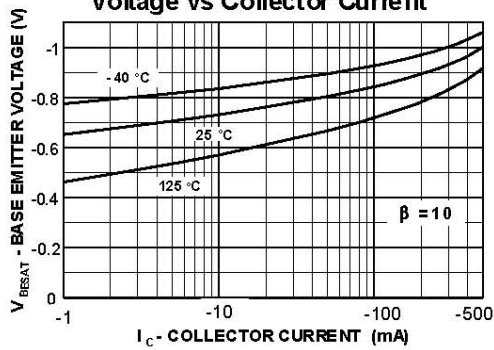
**Typical Pulsed Current Gain
vs Collector Current**



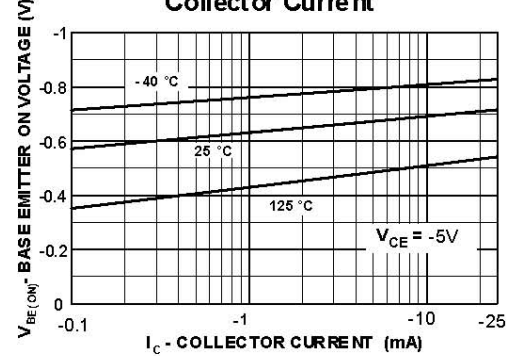
**Collector-Emitter Saturation
Voltage vs Collector Current**



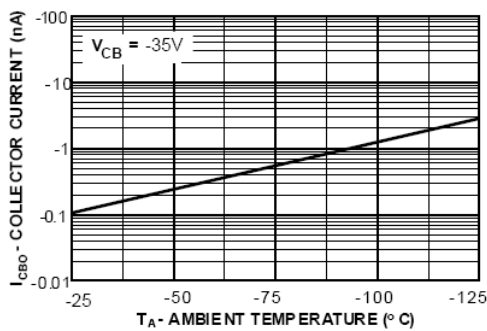
**Base-Emitter Saturation
Voltage vs Collector Current**



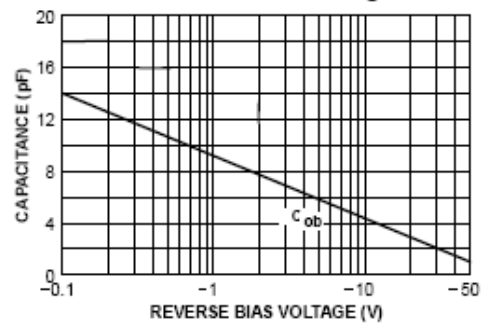
**Base Emitter ON Voltage vs
Collector Current**



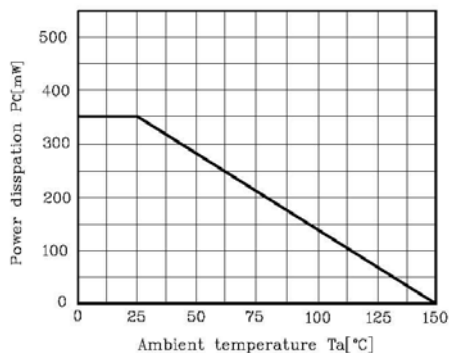
**Collector-Cutoff Current
vs Ambient Temperature**



**Input and Output Capacitance
vs Reverse Bias Voltage**



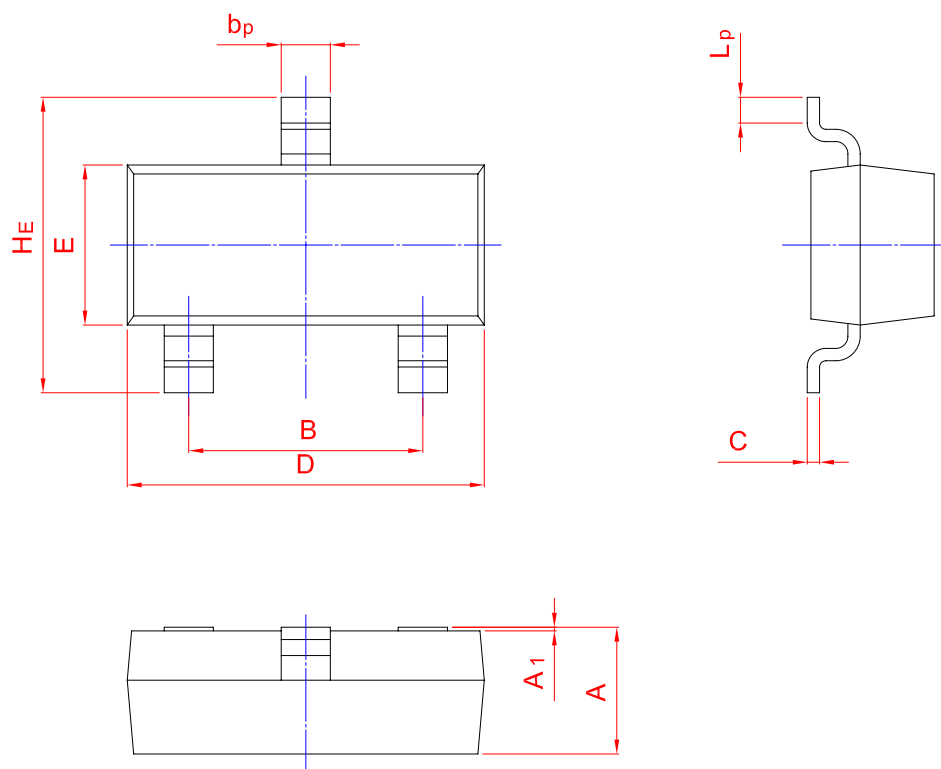
P_C T_a



PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



UNIT	A	B	b _p	C	D	E	H _E	A ₁	L _p
mm	1.40 0.95	2.04 1.78	0.50 0.35	0.19 0.08	3.10 2.70	1.65 1.20	3.00 2.20	0.100 0.013	0.50 0.20