



SEMICONDUCTOR
TECHNICAL DATA

MMBT2907A

PNP EPITAXIAL SILICON TRANSISTOR

- * Complement to MMBT2222A
- * Collector Dissipation: $P_c(\max)=225\text{mW}$

Package: SOT-23



PIN:	1	2	3
STYLE			
NO.1	B	E	C

ABSOLUTE MAXIMUM RATINGS at $T_a=25^\circ\text{C}$

Characteristic	Symbol	Rating	Unit
Collector-Base Voltage	V_{cb0}	-60	V
Collector-Emitter Voltage	V_{ceo}	-60	V
Emitter-Base Voltage	V_{ebo}	-5	V
Collector Current	I_c	-600	mA
Collector Dissipation $T_a=25^\circ\text{C}$ *	P_D	225	mW
Junction Temperature Range	T_j	-55-150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55-150	$^\circ\text{C}$

ELECTRICAL CHARACTERISTICS at $T_a=25^\circ\text{C}$

Characteristic	Symbol	Min	Max	Unit	Test Conditions
Collector-Base Breakdown Voltage	BV_{cb0}	-60		V	$I_c=-10\mu\text{A}$ $I_e=0$
Collector-Emitter Breakdown Voltage	BV_{ceo}	-60		V	$I_c=-10\text{mA}$ $I_b=0$
Emitter-Base Breakdown Voltage	BV_{ebo}	-5		V	$I_e=-10\mu\text{A}$ $I_c=0$
Emitter Cutoff Current	I_{cex}		-50	nA	$V_{ce}=-30\text{V}$ $V_{BE}(\text{OFF}) = -0.5\text{Vdc}$
Collect Cutoff Current	I_{cbo}		-10	nA	$V_{cb}=-50\text{V}$ $I_e=0$
Collect Cutoff Current	I_{cbo}		-10	μA	$V_{cb}=-50\text{V}$ $I_e=0$ $T_a=125^\circ\text{C}$
DC Current Gain	H_{fe1}	75			$V_{ce}=-10\text{V}$ $I_c=-0.1\text{mA}$
DC Current Gain	H_{fe2}	100			$V_{ce}=-10\text{V}$ $I_c=-1\text{mA}$
DC Current Gain	H_{fe3}	100			$V_{ce}=-10\text{V}$ $I_c=-10\text{mA}$
DC Current Gain	H_{fe4}	100	300		$V_{ce}=-10\text{V}$ $I_c=-150\text{mA}$
DC Current Gain	H_{fe5}	50			$V_{ce}=-10\text{V}$ $I_c=-500\text{mA}$



ELECTRICAL CHARACTERISTICS at Ta=25°C (continued)

Characteristic	Symbol	Min	Max	Unit	Test Conditions
Collector-Emitter Saturation Voltage	V _{ce(sat)}		-0.4	V	I _c = -150mA I _b = -15mA
Collector-Emitter Saturation Voltage	V _{ce(sat)}		-1.6	V	I _c = -500mA I _b = -50mA
Base-Emitter Saturation Voltage	V _{be(sat)}		-1.3	V	I _c = -150mA I _b = -15mA
Base-Emitter Saturation Voltage	V _{be(sat)}		-2.6	V	I _c = -500mA I _b = -50mA
Input Base Capacitance	C _{ibo}		30	PF	V _{EB} = -2.0Vdc, I _C = 0, f = 1.0 MHz
Output Base Capacitance	C _{obo}		8	PF	V _{cb} = -10V I _c = 0 f = 1MHz
Current Gain-Bandwidth Product	f _T	200		MHz	V _{ce} = -20V I _c = -50mA f = 100MHz

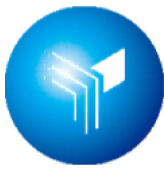
SWITCHING CHARACTERISTICS

Characteristic	Symbol	Min	Max	Unit	Test Conditions
Delay Time	t _d		10	ns	V _{CC} = -30 Vdc, I _C = -150 mAdc, I _{B1} = -15 mAdc
Rise Time	t _r		40	ns	
Turn-On Time	t _{on}		45	ns	
Storage Time	t _s		80	ns	V _{CC} = -6 Vdc, I _C = -150 mAdc I _{B1} = I _{B2} = 15 mAdc
Fall Time	t _f		30	ns	
Turn-Off Time	t _{off}		100	ns	

* Total Device Dissipation : FR=1x0.75x0.062in Board, Derate 25°C.

Pulse Test : Pulse Width ≤300uS, Duty cycle ≤2%

DEVICE MARKING: 2F (Hfe4: 100-300@V_{ce}=-10V I_c= -150mA)



MMBT2907A

TYPICAL CHARACTERISTICS

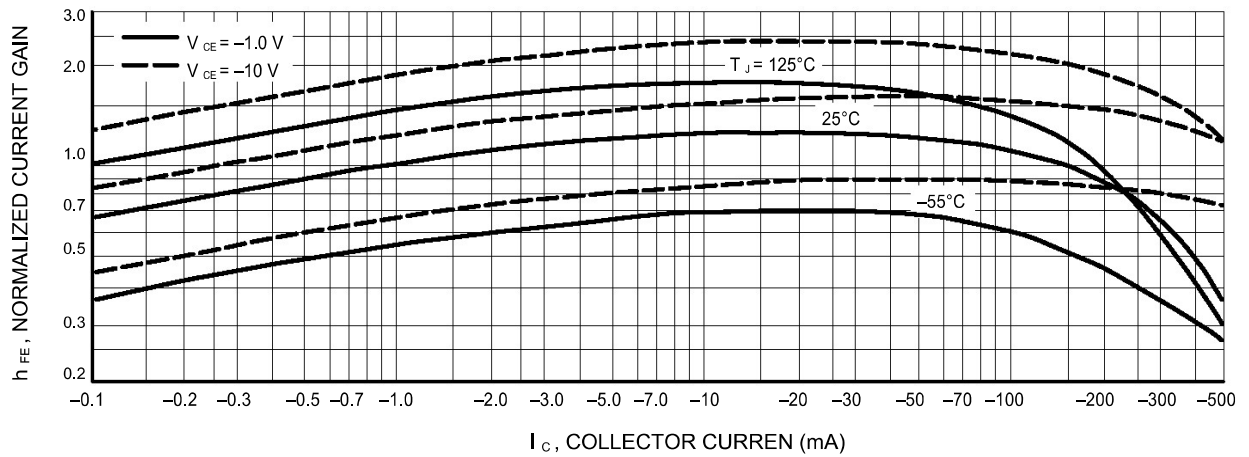


Figure 1. DC Current Gain

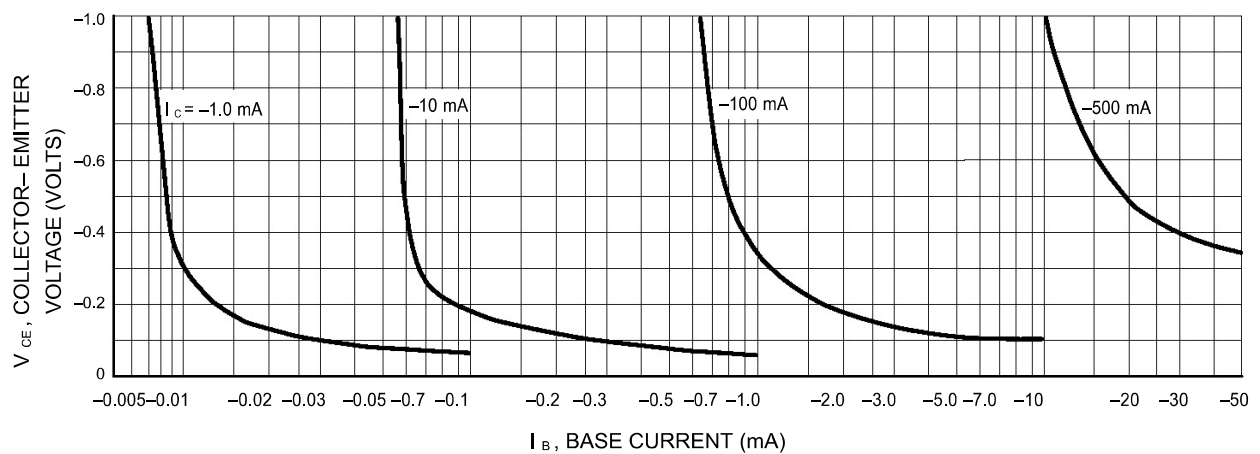


Figure 2. Collector Saturation Region

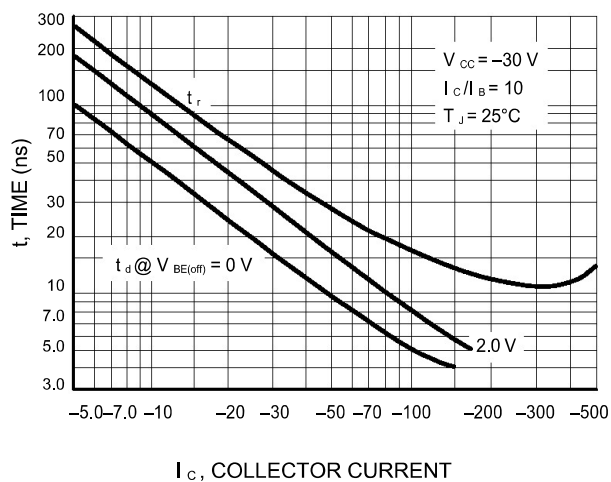


Figure 3. Turn-On Time

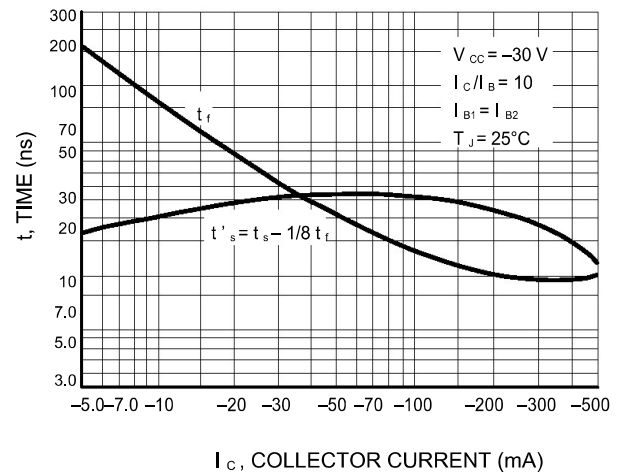


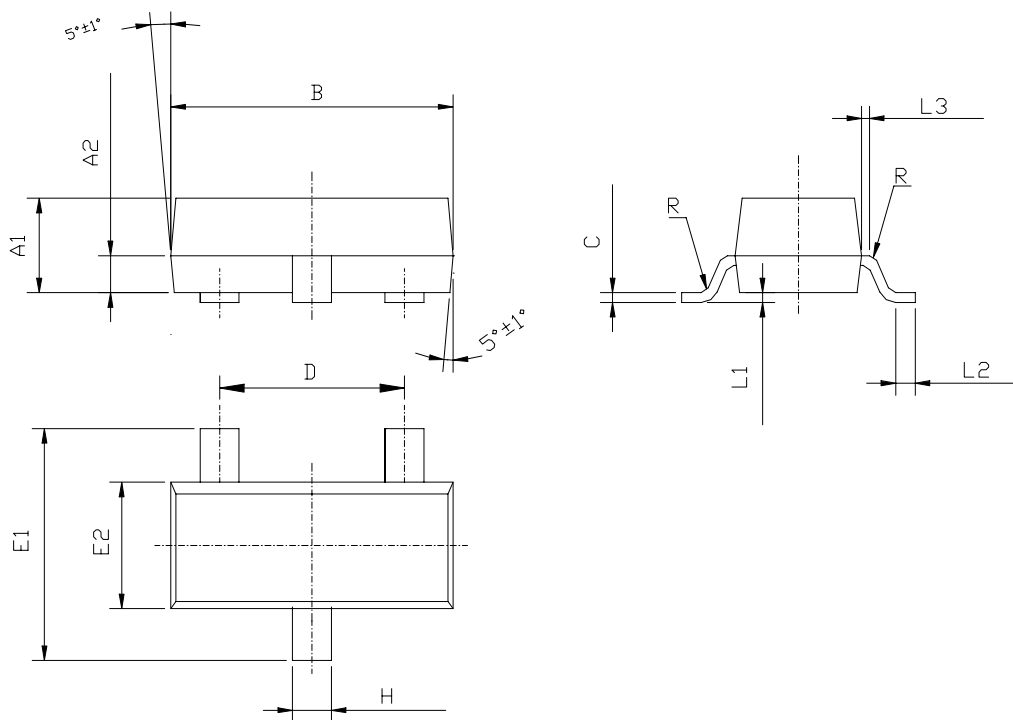
Figure 4. Turn-Off Time



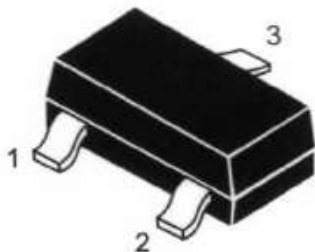
SEMICONDUCTOR
TECHNICAL DATA

外型尺寸及内部结构图

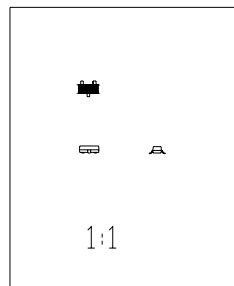
OUTSIDE DEMENSION AND INTERNAL CONFIGURATION (SOT-23)



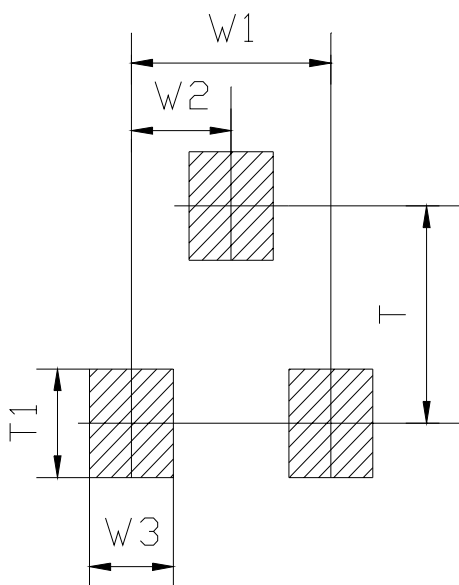
Symbol	Dimensions in Millimeters			内部结构 STYLS	管脚 PIN		
	Min	Nominal	Max		1 脚	2 脚	3 脚
A1	0.900	0.970	1.000	6	基极 BASE	发射极 EMITTER	集电极 COLLCTOR
A2	0.350	0.380	0.410				
B	2.800	2.900	3.000	8	阳极 ANODE	不连接 NO- CONNECTION	阴极 CATHODE
C	0.085	0.100	0.150				
D	1.800	1.900	2.000	9	阳极 ANODE	阳极 ANODE	阴极 CATHODE
E1	2.200	2.400	2.600				
E2	1.200	1.300	1.400	11	阳极 ANODE	阴极 CATHODE	阳极-阴极 ANODE-CATHODE
H	0.300	0.400	0.500				
L1	0.000		0.100	12	阴极 CATHODE	阴极 CATHODE	阳极 ANODE
L2	0.200						
L3	0.030	0.080	0.130	18	不连接 NO- CONNECTION	阴极 CATHODE	阳极 ANODE
R	0.080TYP						
				19	阴极 CATHODE	阳极 ANODE	阴极-阳极 CATHODE-ANODE



OUTSIDE



Scale 1:1 on letter size paper

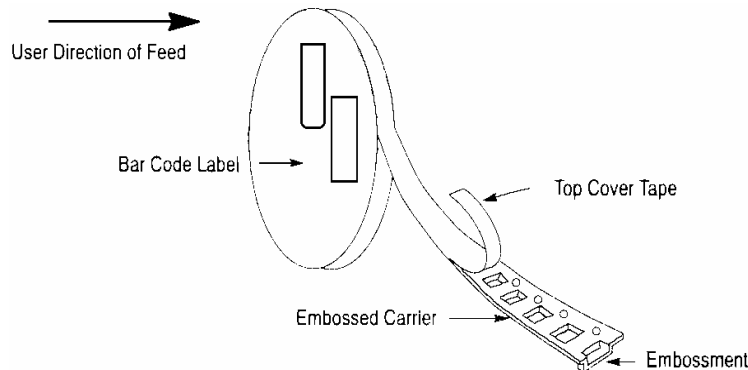


FOOTPRINTS FOR SOLDERING

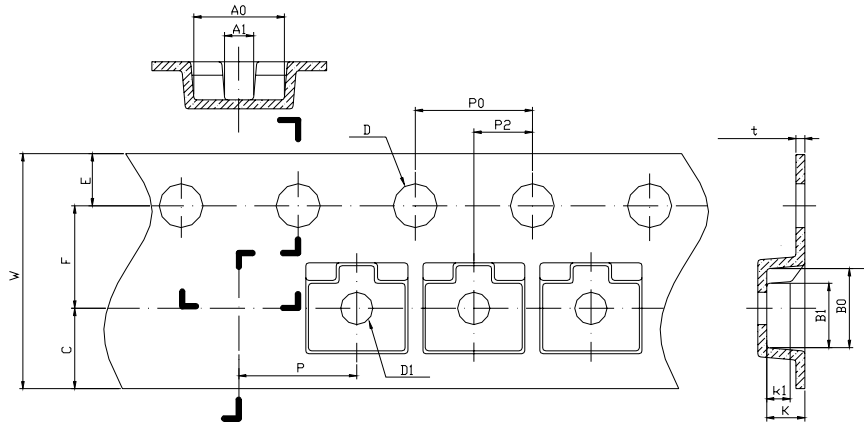
Symbol	Dimensions in Millimeters	Dimensions in Inches
	Nominal	Nominal
W1	1.900	0.0748
W2	0.950	0.0374
W3	0.800	0.0315
T	2.000	0.0787
T1	1.000	0.0394



SOT-23 PACKAGING:



SOT-23 EMBOSSED CARRIER TAPE:



Symbol	Dimensions in Millimeters			Dimensions in Inches		
	Minimum	Nominal	Maximum	Minimum	Nominal	Maximum
A0	3.050	3.150	3.250	0.1201	0.1240	0.1280
A1	0.900	1.000	1.100	0.0354	0.0394	0.0433
B0	2.669	2.769	2.869	0.1051	0.1090	0.1130
B1	2.100	2.200	2.300	0.0827	0.0866	0.0906
C	2.750TYP			0.1083TYP		
D	1.500	1.500	1.600	0.0591	0.0591	0.0630
D1	0.900	1.000	1.100	0.0354	0.0394	0.0433
E	1.650	1.750	1.850	0.0650	0.0689	0.0728
F	3.450	3.500	3.550	0.1358	0.1378	0.1398
K	1.119	1.219	1.319	0.0441	0.0480	0.0519
K1	0.850TYP			0.03346TYP		
P	3.900	4.000	4.100	0.1535	0.1575	0.1614
P0	3.900	4.000	4.100	0.1535	0.1575	0.1614
P010	39.800	40.000	40.200	1.5669	1.5748	1.5827
P2	1.950	2.000	2.050	0.0768	0.0787	0.0807
t	0.216	0.229	0.242	0.0085	0.0090	0.0095
W	7.900	8.000	8.300	0.3110	0.3150	0.3268