



# MMBT2907A

## SMALL SIGNAL PNP TRANSISTOR

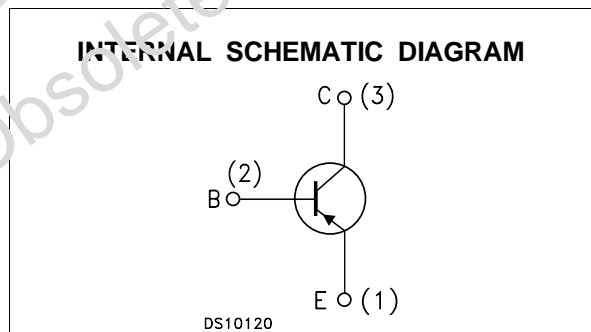
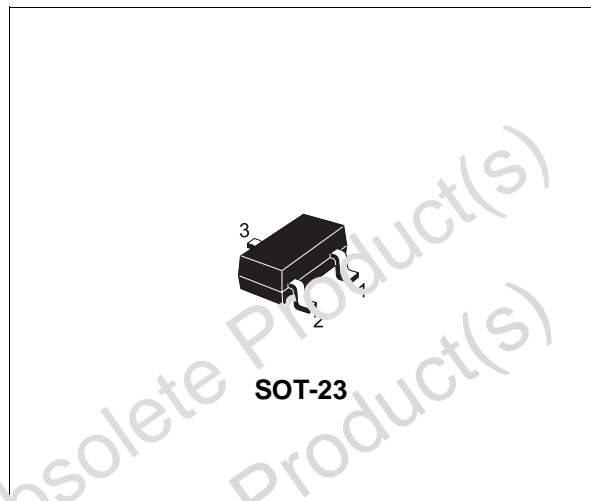
PRELIMINARY DATA

Type	Marking
MMBT2907A	M29

- SILICON EPITAXIAL PLANAR PNP TRANSISTOR
- MINIATURE SOT-23 PLASTIC PACKAGE FOR SURFACE MOUNTING CIRCUITS
- TAPE & REEL PACKING
- THE NPN COMPLEMENTARY TYPE IS MMBT2222A

### APPLICATIONS

- WELL SUITABLE FOR PORTABLE EQUIPMENT
- SMALL LOAD SWITCH TRANSISTOR WITH HIGH GAIN AND LOW SATURATION VOLTAGE



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Emitter Voltage ( $I_E = 0$ )	-60	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )	-60	V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )	-5	V
$I_C$	Collector Current	-0.6	A
$I_{CM}$	Collector Peak Current ( $t_p < 5$ ms)	-0.8	A
$P_{tot}$	Total Dissipation at $T_{amb} = 25$ °C	350	mW
$T_{stg}$	Storage Temperature	-65 to 150	°C
$T_j$	Max. Operating Junction Temperature	150	°C

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## THERMAL DATA

$R_{thj-amb}$	Thermal Resistance Junction-Ambient	Max	357.1	$^{\circ}\text{C}/\text{W}$
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• Device mounted on a PCB area of  $1\text{ cm}^2$

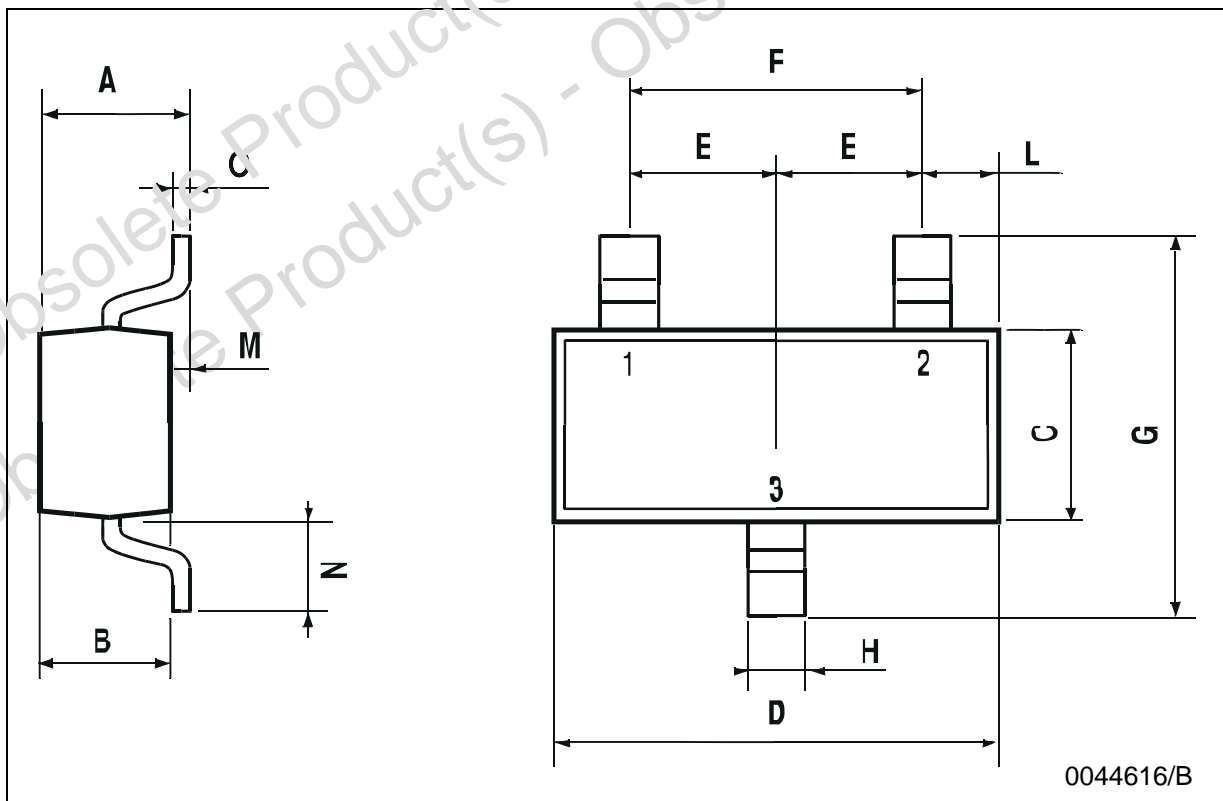
## ELECTRICAL CHARACTERISTICS ( $T_{case} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CEX}$	Collector Cut-off Current ( $V_{BE} = -3\text{ V}$ )	$V_{CE} = -30\text{ V}$			-50	nA
$I_{BEX}$	Base Cut-off Current ( $V_{BE} = -3\text{ V}$ )	$V_{CE} = -30\text{ V}$			-50	nA
$I_{CBO}$	Collector Cut-off Current ( $I_E = 0$ )	$V_{CB} = -50\text{ V}$			-10	nA
$V_{(BR)CEO}^*$	Collector-Emitter Breakdown Voltage ( $I_B = 0$ )	$I_C = -10\text{ mA}$	-60			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ( $I_E = 0$ )	$I_C = -10\text{ }\mu\text{A}$	-60			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage ( $I_C = 0$ )	$I_E = -10\text{ }\mu\text{A}$	-5			V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = -150\text{ mA}$ $I_C = -500\text{ mA}$	$I_B = -15\text{ mA}$ $I_B = -50\text{ mA}$		-0.4 -1.6	V V
$V_{BE(sat)}^*$	Collector-Base Saturation Voltage	$I_C = -150\text{ mA}$ $I_C = -500\text{ mA}$	$I_B = -15\text{ mA}$ $I_B = -50\text{ mA}$		-1.3 -2.6	V V
$h_{FE}^*$	DC Current Gain	$I_C = -0.1\text{ mA}$ $I_C = -1\text{ mA}$ $I_C = -10\text{ mA}$ $I_C = -150\text{ mA}$ $I_C = -500\text{ mA}$	$V_{CE} = -10\text{ V}$ $V_{CE} = -10\text{ V}$ $V_{CE} = -10\text{ V}$ $V_{CE} = -10\text{ V}$ $V_{CE} = -10\text{ V}$	75 100 100 100 50		300
$f_T$	Transition Frequency	$I_C = -50\text{ mA}$ $V_{CE} = -20\text{ V}$ $f = 100\text{ MHz}$	200			MHz
$C_{CBO}$	Collector-Base Capacitance	$I_E = 0$ $V_{CB} = -10\text{ V}$ $f = 1\text{ MHz}$			8	pF
$C_{EBO}$	Emitter-Base Capacitance	$I_C = 0$ $V_{EB} = -2\text{ V}$ $f = 1\text{ MHz}$			30	pF
$t_D$	Delay Time	$I_C = -150\text{ mA}$ $I_B = -15\text{ mA}$ $V_{CC} = -30\text{ V}$			10	ns
$t_r$	Rise Time				40	ns
$t_{on}$	Switching On Time				45	ns
$t_s$	Storage Time	$I_C = -150\text{ mA}$ $I_{B1} = -I_{B2} = -15\text{ mA}$ $V_{CC} = -30\text{ V}$		190		ns
$t_f$	Fall Time				30	ns
$t_{off}$	Switching Off Time			220		ns

\* Pulsed: Pulse duration =  $300\text{ }\mu\text{s}$ , duty cycle  $\leq 2\%$

## SOT-23 MECHANICAL DATA

DIM.	mm			mils		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	0.85		1.1	33.4		43.3
B	0.65		0.95	25.6		37.4
C	1.20		1.4	47.2		55.1
D	2.80		3	110.2		118
E	0.95		1.05	37.4		41.3
F	1.9		2.05	74.8		80.7
G	2.1		2.5	82.6		98.4
H	0.38		0.48	14.9		18.8
L	0.3		0.6	11.8		23.6
M	0		0.1	0		3.9
N	0.3		0.65	11.8		25.6
O	0.09		0.17	3.5		6.7



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