

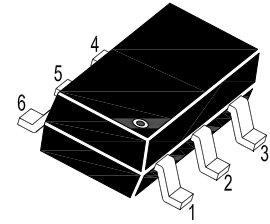
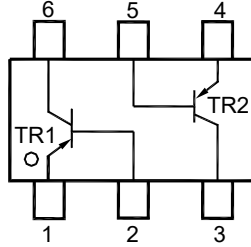
# MMBT2907ADW-HAF

## Dual PNP Silicon Epitaxial Planar Transistor

for switching and amplifier applications

### Features

- Halogen and Antimony Free(HAF),  
RoHS compliant



TR1: 1. Emitter 2. Base 6. Collector  
TR2: 4. Emitter 5. Base 3. Collector  
SOT-363 Plastic package

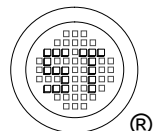
### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Value	Unit
Collector Base Voltage	$-V_{CBO}$	60	V
Collector Emitter Voltage	$-V_{CEO}$	60	V
Emitter Base Voltage	$-V_{EBO}$	5	V
Collector Current	$-I_C$	600	mA
Power Dissipation	$P_{tot}$	200	mW
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	- 55 to + 150	$^\circ\text{C}$

### Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Ambient <sup>1)</sup>	$R_{\theta JA}$	625	$^\circ\text{C}/\text{W}$

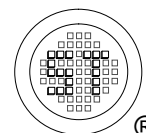
<sup>1)</sup> Device mounted on FR-4 PCB with minimum recommended pad layout.



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## Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain at $-V_{CE} = 10\text{ V}$ , $-I_C = 0.1\text{ mA}$	$h_{FE}$	75	-	-
at $-V_{CE} = 10\text{ V}$ , $-I_C = 1\text{ mA}$	$h_{FE}$	100	-	-
at $-V_{CE} = 10\text{ V}$ , $-I_C = 10\text{ mA}$	$h_{FE}$	100	-	-
at $-V_{CE} = 10\text{ V}$ , $-I_C = 150\text{ mA}$	$h_{FE}$	100	300	-
at $-V_{CE} = 10\text{ V}$ , $-I_C = 500\text{ mA}$	$h_{FE}$	50	-	-
Collector Base Cutoff Current at $-V_{CB} = 50\text{ V}$	$-I_{CBO}$	-	100	nA
Collector Emitter Cutoff Current at $-V_{CE} = 30\text{ V}$	$-I_{CES}$	-	100	nA
Emitter Base Cutoff Current at $-V_{EB} = 3\text{ V}$	$-I_{EBO}$	-	100	nA
Collector Base Breakdown Voltage at $-I_C = 10\text{ }\mu\text{A}$	$-V_{(BR)CBO}$	60	-	V
Collector Emitter Breakdown Voltage at $-I_C = 10\text{ mA}$	$-V_{(BR)CEO}$	60	-	V
Emitter Base Breakdown Voltage at $-I_E = 10\text{ }\mu\text{A}$	$-V_{(BR)EBO}$	5	-	V
Collector Emitter Saturation Voltage at $-I_C = 150\text{ mA}$ , $-I_B = 15\text{ mA}$	$-V_{CE(sat)}$	-	0.4	V
at $-I_C = 500\text{ mA}$ , $-I_B = 50\text{ mA}$	$-V_{CE(sat)}$	-	1.6	V
Base Emitter Saturation Voltage at $-I_C = 150\text{ mA}$ , $-I_B = 15\text{ mA}$	$-V_{BE(sat)}$	-	1.3	V
at $-I_C = 500\text{ mA}$ , $-I_B = 50\text{ mA}$	$-V_{BE(sat)}$	-	2.6	V
Transition Frequency at $-V_{CE} = 20\text{ V}$ , $I_E = 50\text{ mA}$ , $f = 100\text{ MHz}$	$f_T$	200	-	MHz
Collector Output Capacitance at $-V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$	$C_{ob}$	-	8	pF
Turn-on Time at $-V_{CC} = 30\text{ V}$ , $-V_{BE(OFF)} = 1.5\text{ V}$ , $-I_C = 150\text{ mA}$ , $-I_{B1} = 15\text{ mA}$	$t_{on}$	-	50	ns
Delay Time at $-V_{CC} = 30\text{ V}$ , $-V_{BE(OFF)} = 1.5\text{ V}$ , $-I_C = 150\text{ mA}$ , $-I_{B1} = 15\text{ mA}$	$t_d$	-	10	ns
Rise Time at $-V_{CC} = 30\text{ V}$ , $-V_{BE(OFF)} = 1.5\text{ V}$ , $-I_C = 150\text{ mA}$ , $-I_{B1} = 15\text{ mA}$	$t_r$	-	40	ns
Turn-off Time at $-V_{CC} = 30\text{ V}$ , $-I_C = 150\text{ mA}$ , $I_{B1} = I_{B2} = -15\text{ mA}$	$t_{off}$	-	100	ns
Storage Time at $-V_{CC} = 30\text{ V}$ , $-I_C = 150\text{ mA}$ , $I_{B1} = I_{B2} = -15\text{ mA}$	$t_{stg}$	-	80	ns
Fall Time at $-V_{CC} = 30\text{ V}$ , $-I_C = 150\text{ mA}$ , $I_{B1} = I_{B2} = -15\text{ mA}$	$t_f$	-	30	ns



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## Electrical Characteristics Curves

Fig. 1 Output Characteristics Curve

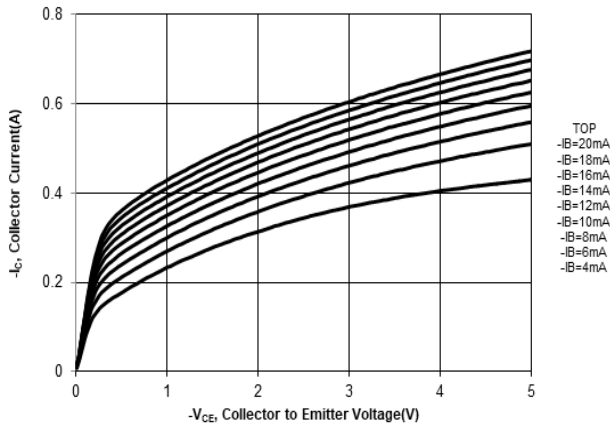


Fig. 2 Output Characteristics Curve

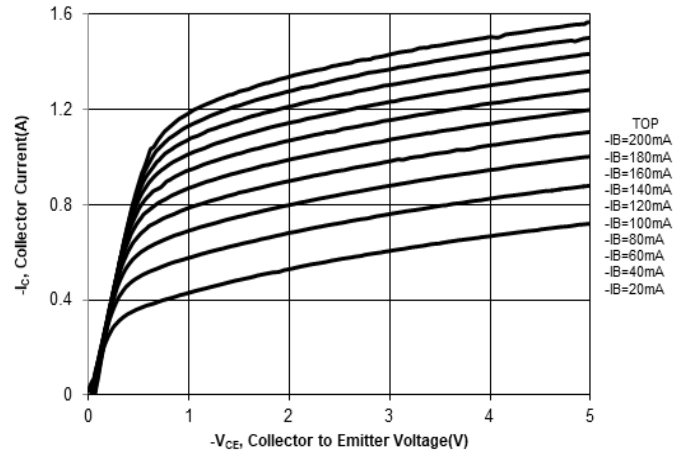


Fig. 3 Collector Current vs. Base-Emitter Voltage

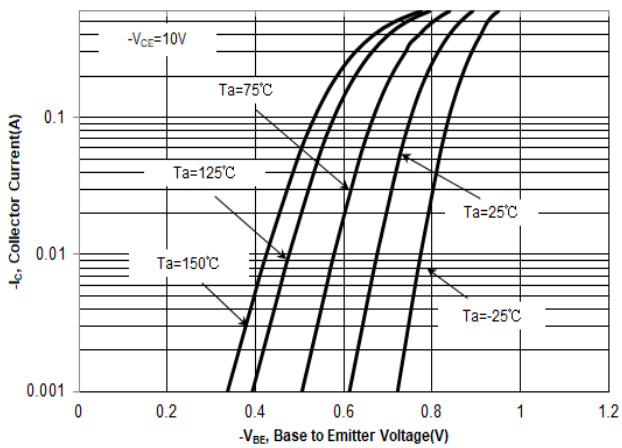
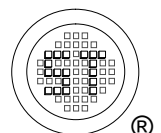
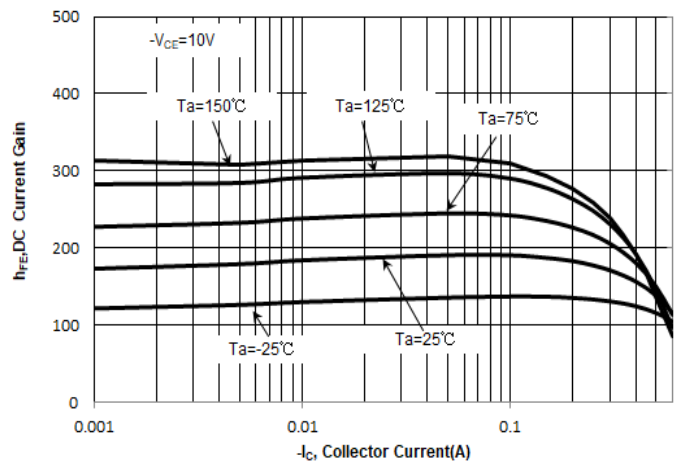


Fig. 4  $h_{FE,DC}$  Current Gain vs. Collector Current



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## Electrical Characteristics Curves

Fig. 5  $V_{BE(sat)}$  vs. Collector Current

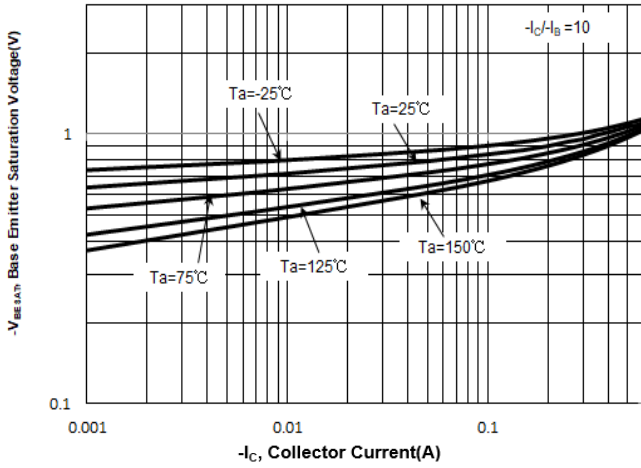


Fig. 6  $V_{CE(sat)}$  vs. Collector Current

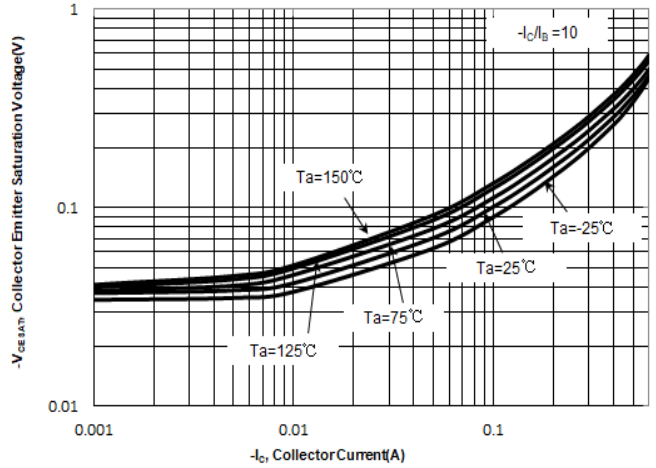


Fig. 7 Capacitance

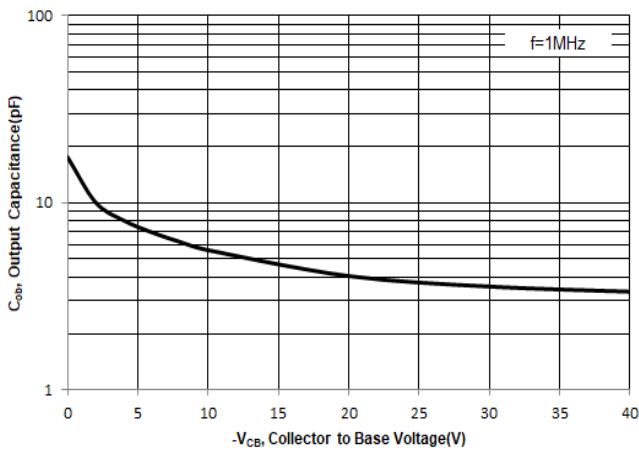
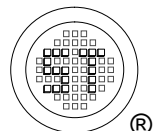
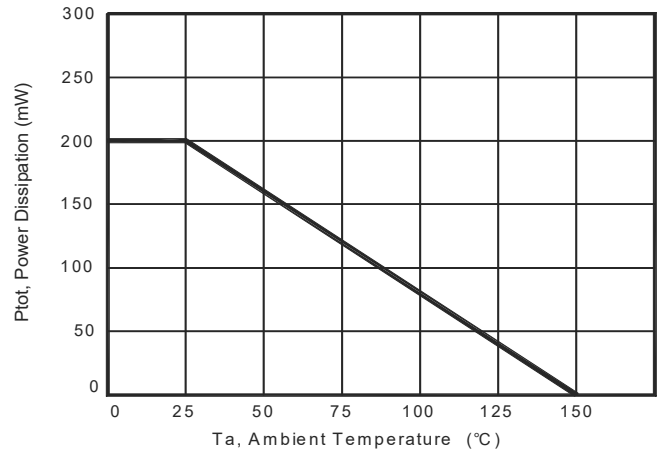


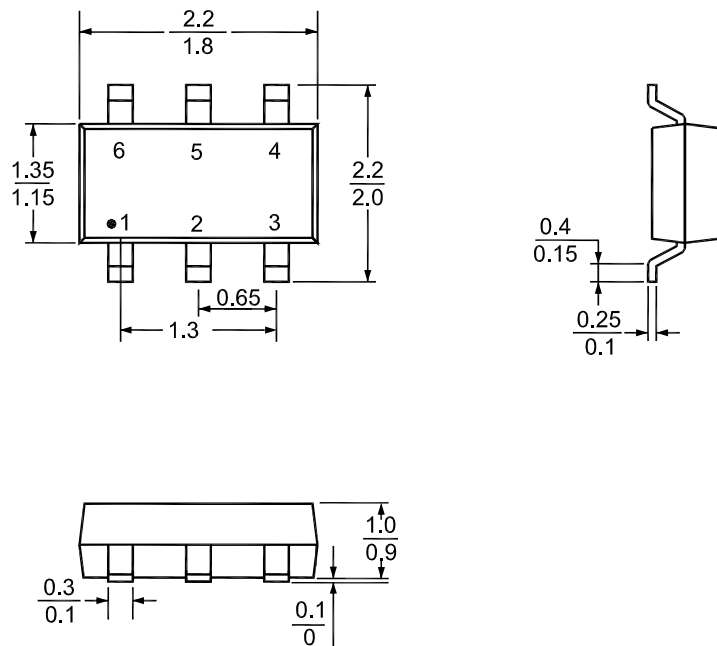
Fig 8. Power Derating Curve



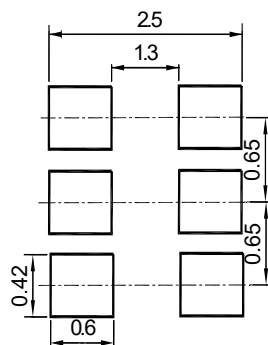
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Package Outline Dimensions (Units: mm)

SOT-363



## Recommended Soldering Footprint



## Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-363	8	4 ± 0.1	0.157 ± 0.004	178	7	3,000

## Marking information

- "•" = HAF (Halogen and Antimony Free(HAF)).
- "2F" = Part No.
- "YM" = Date Code Marking
- "Y" = Year
- "M" = Month
- Font type: Arial

