

350mW, PNP Small Signal Transistor

FEATURES

- AEC-Q101 qualified
- Low power loss, high efficiency
- Ideal for automated placement
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free

APPLICATIONS

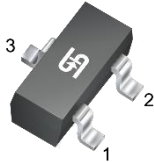
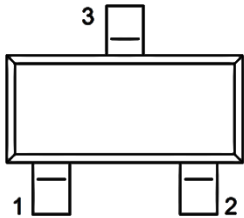
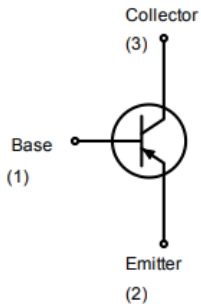
- General switching and amplification

MECHANICAL DATA

- Case: SOT-23
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Weight: 8.00mg (approximately)



KEY PARAMETERS		
PARAMETER	VALUE	UNIT
V_{CBO}	-60	V
V_{CEO}	-60	V
V_{EBO}	-5	V
I_C	-600	mA
h_{FE}	300	
Configuration	Single die	

PACKAGE: SOT-23	PIN CONFIGURATION	CIRCUIT DIAGRAM
		

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Power dissipation ⁽¹⁾	P_D	350	mW
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
Junction temperature	T_J	-55 to +150	$^\circ\text{C}$
Storage temperature	T_{STG}	-55 to +150	$^\circ\text{C}$

Note:

1. Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint

THERMAL PERFORMANCE

PARAMETER	SYMBOL	TYP	UNIT
Junction-to-ambient thermal resistance ⁽¹⁾	$R_{\theta JA}$	357	°C/W

Thermal Performance Note:

1. Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Collector-base breakdown voltage	$I_C = -10\mu\text{A}, I_E = 0\text{A}$	$V_{(BR)CBO}$	-60	-	-	V
Collector-emitter breakdown voltage	$I_C = -10\text{mA}, I_B = 0\text{A}$	$V_{(BR)CEO}$	-60	-	-	V
Emitter-base breakdown voltage	$I_E = -10\mu\text{A}, I_C = 0\text{A}$	$V_{(BR)EBO}$	-5	-	-	V
Collector-base cut-off current	$V_{CB} = -50\text{V}, I_E = 0\text{A}$	I_{CBO}	-	-	-20	nA
Collector cut-off current	$V_{CE} = -30\text{V}, V_{EB(off)} = -0.5\text{V}$	I_{CEX}	-	-	-50	nA
Base cut-off current	$V_{CE} = -30\text{V}, V_{EB(off)} = -0.5\text{V}$	I_{BL}	-	-	-50	nA
DC current gain	$V_{CE} = -10\text{V}, I_C = -0.1\text{mA}$	h_{FE}	75	-	-	-
	$V_{CE} = -10\text{V}, I_C = -1\text{mA}$		100	-	-	
	$V_{CE} = -10\text{V}, I_C = -10\text{mA}$		100	-	-	
	$V_{CE} = -10\text{V}, I_C = -150\text{mA}$		100	-	300	
	$V_{CE} = -10\text{V}, I_C = -500\text{mA}$		50	-	-	
Collector-emitter saturation voltage	$I_C = -150\text{mA}, I_B = -15\text{mA}$	$V_{CE(sat)}$	-	-	-0.4	V
	$I_C = -500\text{mA}, I_B = -50\text{mA}$		-	-	-1.6	
Base-emitter saturation voltage	$I_C = -150\text{mA}, I_B = -15\text{mA}$	$V_{BE(sat)}$	-	-	-1.3	V
	$I_C = -500\text{mA}, I_B = -50\text{mA}$		-	-	-2.6	
Transition frequency	$V_{CE} = -20\text{V}, I_C = -50\text{mA}, f = 100\text{MHz}$	f_T	200	-	-	MHz
Output capacitance	$V_{CB} = -10\text{V}, I_E = 0\text{A}, f = 1\text{MHz}$	C_{obo}	-	-	8	pF
Input capacitance	$V_{EB} = -2\text{V}, I_C = 0\text{A}, f = 1\text{MHz}$	C_{ibo}	-	-	30	pF
Turn on time	$V_{CC} = -30\text{V}, I_C = -150\text{mA}, I_{B1} = -15\text{mA}$	t_{on}	-	-	45	ns
Delay time		t_d	-	-	10	ns
Rise time		t_r	-	-	40	ns
Turn off time	$V_{CC} = -6\text{V}, I_C = -150\text{mA}, I_{B1} = I_{B2} = -15\text{mA}$	t_{off}	-	-	100	ns
Storage time		t_s	-	-	80	ns
Fall time		t_f	-	-	30	ns

ORDERING AND MARKING INFORMATION

ORDERING CODE	PACKAGE	PACKING
MMBT2907AH RFG	SOT-23	3,000 / 7" Tape & Reel

CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.1 Power Dissipation Curve

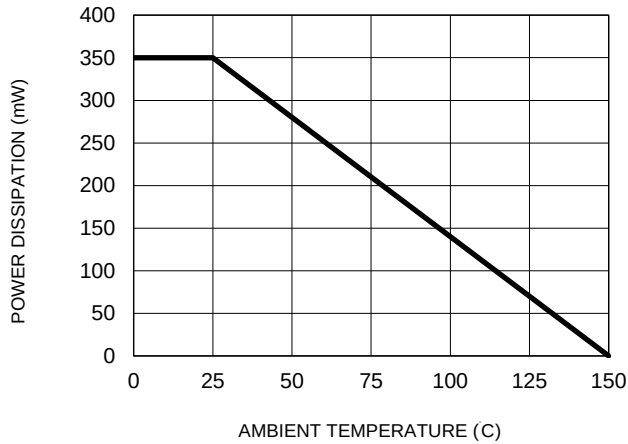


Fig.2 Typical Capacitance Characteristics

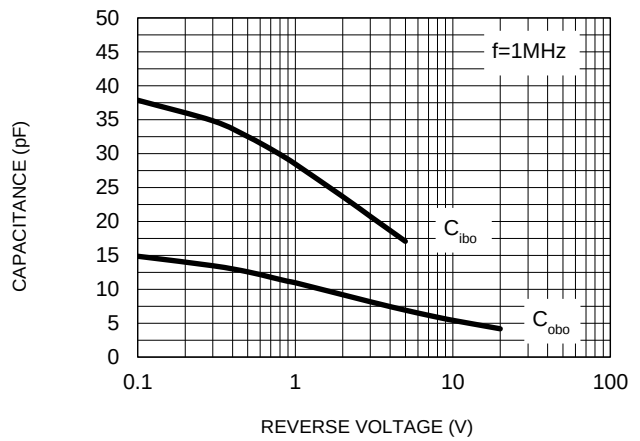


Fig.3 DC Current Gain vs. Collector Current

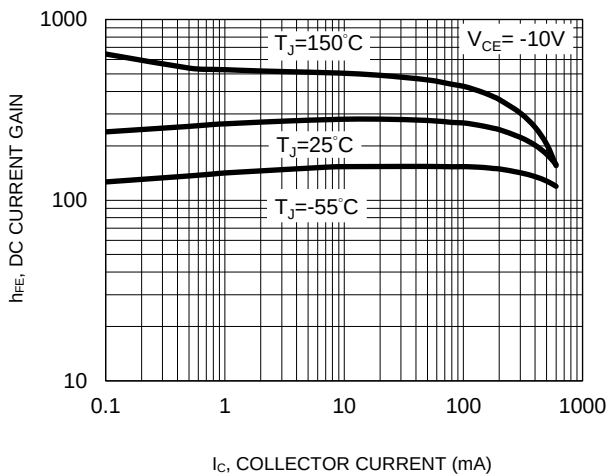


Fig.4 Collector-Emitter Saturation Voltage vs. Collector Current

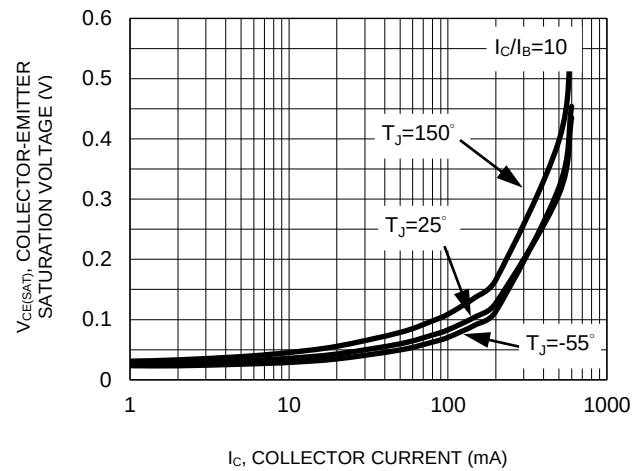


Fig.5 Base-Emitter Saturation Voltage vs. Collector Current

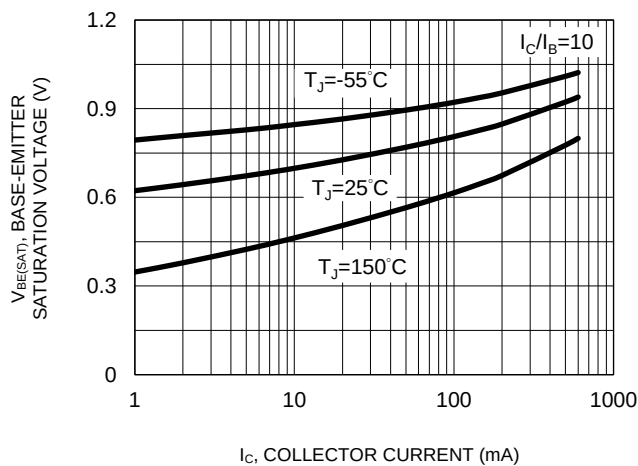
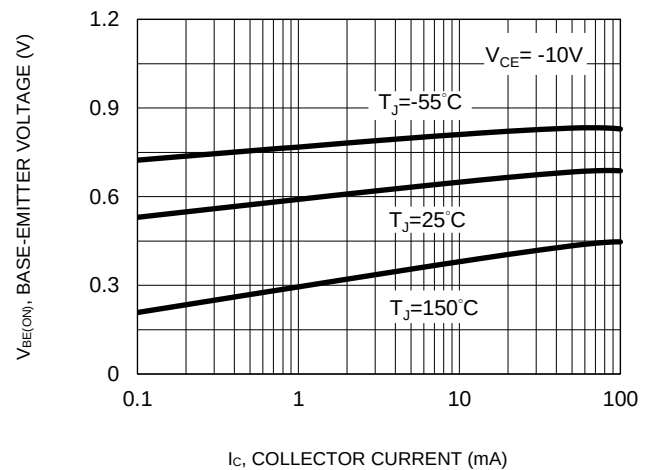
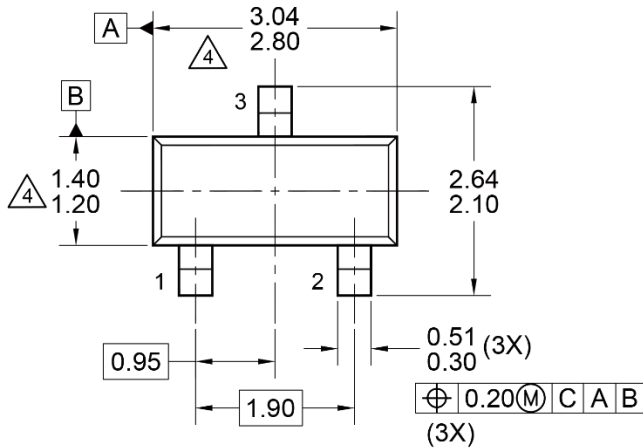
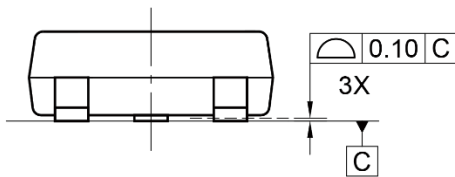
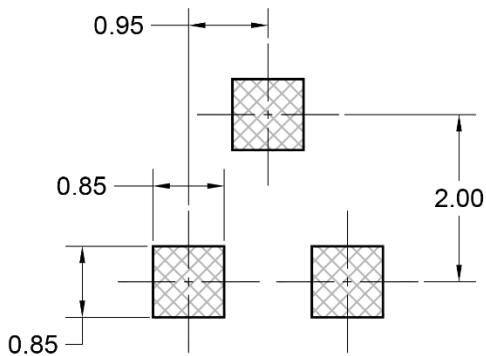


Fig.6 Base-Emitter Voltage vs. Collector Current

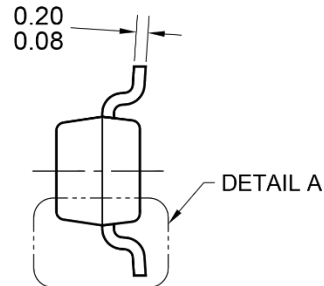
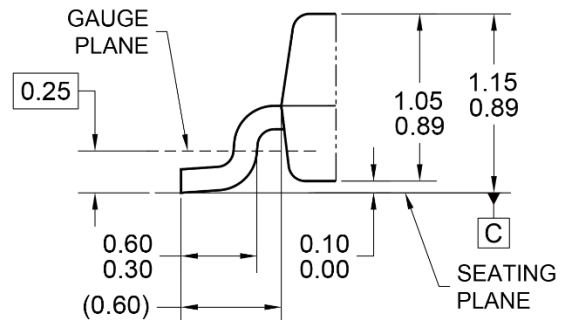


PACKAGE OUTLINE DIMENSIONS

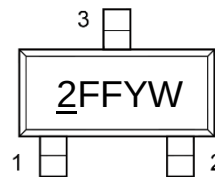
SOT-23



SUGGESTED PAD LAYOUT



DETAIL A, ROTATED -90°
(SCALE 2:1)



MARKING DIAGRAM

NOTES: UNLESS OTHERWISE SPECIFIED

- ALL DIMENSIONS ARE IN MILLIMETERS.
- DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
- PACKAGE OUTLINE REFERENCE: JEDEC TO-236, ISSUE H, VARIATION AA.
- MOLDED PLASTIC BODY DIMENSIONS DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
- DWG NO. REF: HQ2SD07-SOT23JEDEC-104 REV B.

- 2F = Device marking
F = Factory code
Y = Year code
W = Bi-Week code (A~Z)

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