



MMBT3356 QH / RH / SH

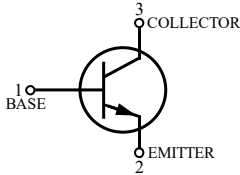
NPN TRANSISTOR

FEATURES

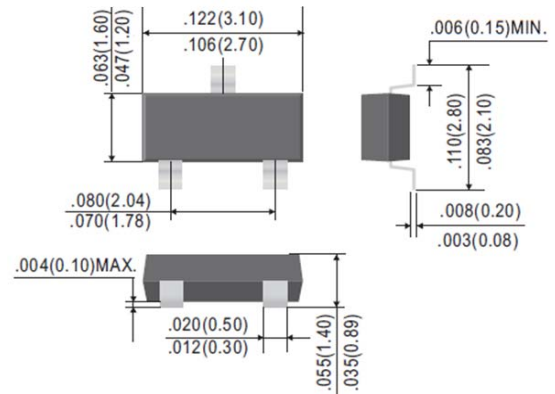
· Suffix "H" indicates Halogen-free parts, ex.MMBT3356QH



B	Base
C	Collector
E	Emitter



SOT-23



Dimensions in inch and (millimeter)

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

Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	20	V
Collector Emitter Voltage	V_{CEO}	12	V
Emitter Base Voltage	V_{EBO}	3	V
Collector Current	I_C	100	mA
Power Dissipation	P_{tot}	200	mW
Thermal Resistance from Junction to Ambient (Note 1)	$R_{\theta JA}$	625	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	- 55 to + 150	$^\circ\text{C}$

Note:

1. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain	$V_{CE}=10\text{V}, I_C=20\text{mA}$	Q	50	-	100	-
		R	80	-	160	-
		S	125	-	250	-
Collector Base Cutoff Current	$V_{CB}=10\text{V}$	I_{CBO}	-	-	1	μA
Emitter Base Cutoff Current	$V_{EB}=1\text{V}$	I_{EBO}	-	-	1	μA
Collector Base Breakdown Voltage	$I_C=10\mu\text{A}$	$V_{(BR)CBO}$	20	-	-	V
Collector Emitter Breakdown Voltage	$I_C=1\text{mA}$	$V_{(BR)CEO}$	12	-	-	V
Emitter Base Breakdown Voltage	$I_E=10\mu\text{A}$	$V_{(BR)EBO}$	3	-	-	V
Collector Emitter Saturation Voltage	$I_C=10\text{mA}, I_B=5\text{mA}$	$V_{CE(sat)}$	-	-	0.5	V
Gain Bandwidth Product	$V_{CE}=10\text{V}, I_E=20\text{mA}$	f_T	-	7	-	GHz
Feed-Back Capacitance ⁽²⁾	$V_{CB}=10\text{V}, f=1\text{MHz}$	C_{re}	-	-	1	pF

Note:

2. The emitter terminal and the case shall be connected to the guard terminal of the three-terminal capacitance bridge.



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RATINGS AND CHARACTERISTIC CURVES

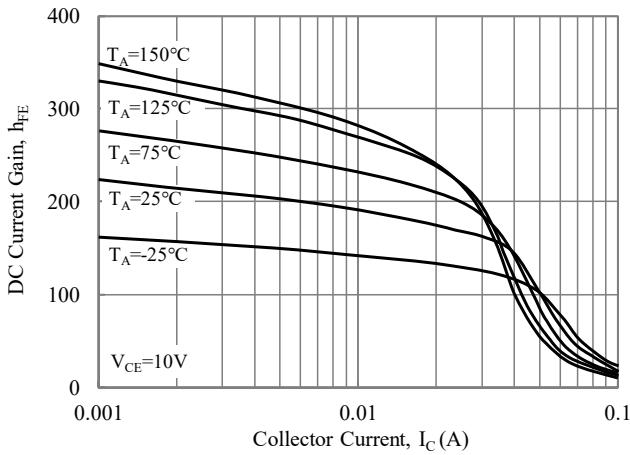


Fig. 1 Current Gain vs Collector Current

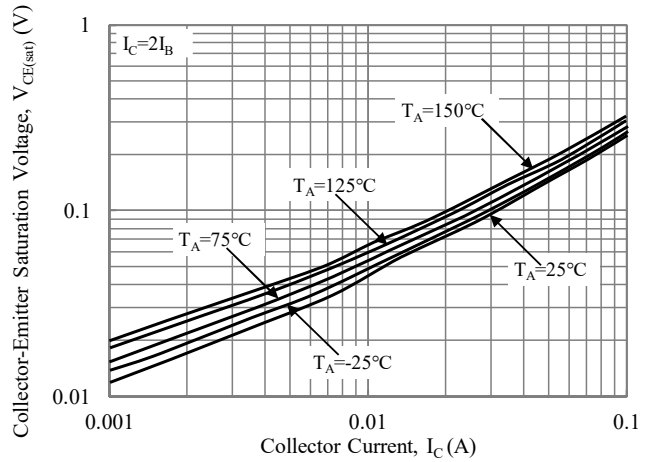


Fig. 2 Collector-Emitter Saturation Voltage vs Collector Current

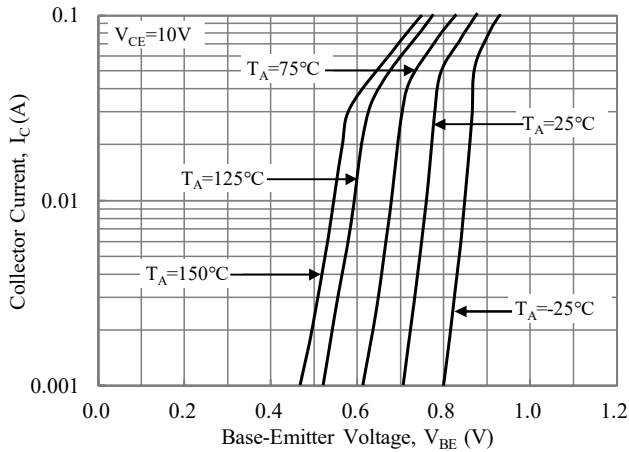


Fig. 3 Base-Emitter Voltage vs Collector Current

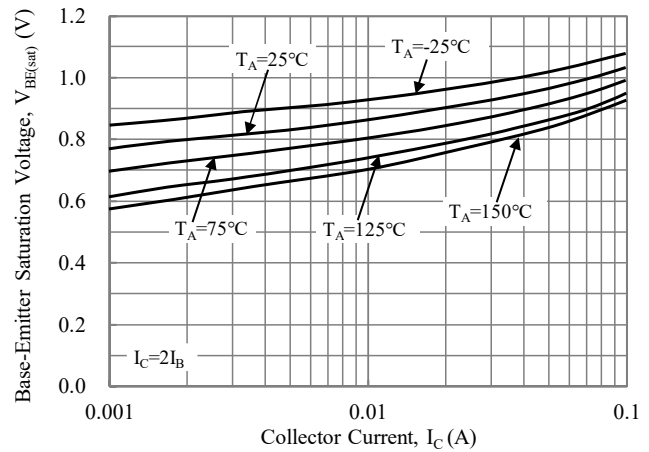


Fig. 4 Base-Emitter Saturation Voltage vs Collector Current

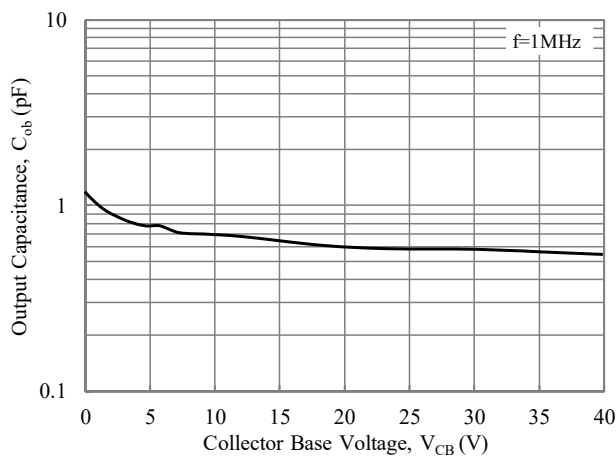


Fig. 5 Output Capacitance

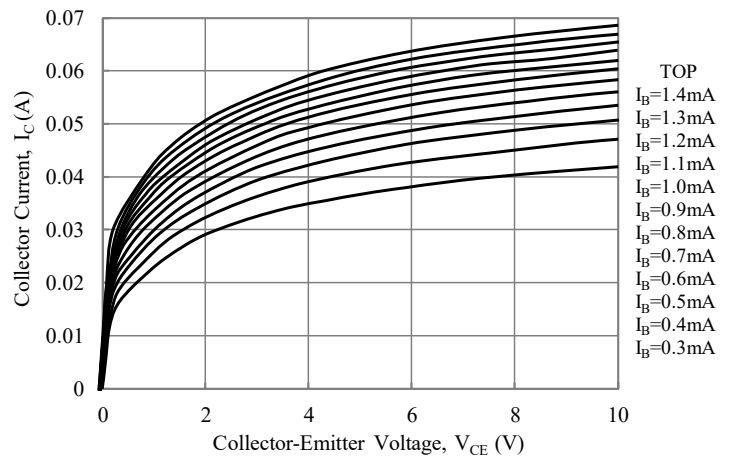


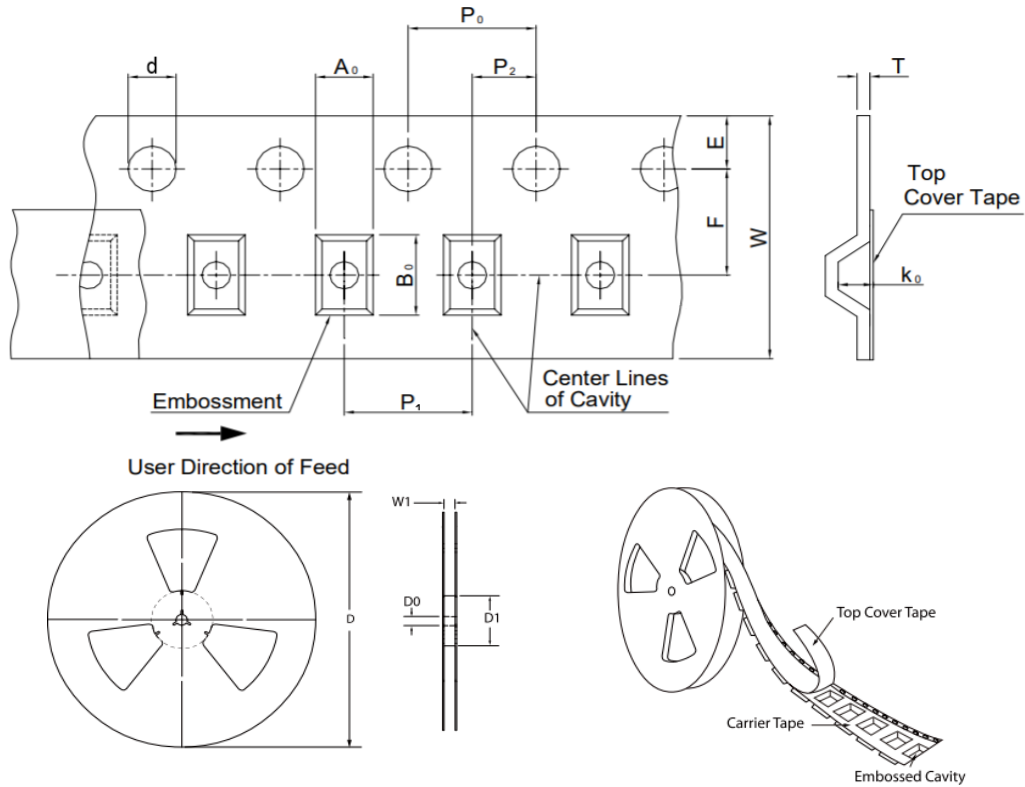
Fig. 6 Output Characteristics



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TAPE & REEL SPECIFICATION



Item	Symbol	SOT-23
Carrier width	A ₀	3.30 ± 0.10
Carrier length	B ₀	3.00 ± 0.10
Carrier depth	K	1.70 ± 0.10
Sprocket hole	d	1.50 ± 0.10
Reel outside diameter	D	178.00 ± 2.00
Feed hole width	D ₀	13.00 ± 0.50
Reel inner diameter	D ₁	MIN. 50.00
Sprocket hole position	E	1.75 ± 0.10
Punch hole position	F	3.50 ± 0.10
Sprocket hole pitch	P ₀	4.00 ± 0.10
Punch hole pitch	P ₁	4.00 ± 0.10
Embossment center	P ₂	2.00 ± 0.10
Overall tape thickness	T	0.20 ± 0.05
Tape width	W	8.00 ± 0.20
Reel width	W1	MAX. 14.50

ORDER INFORMATION

Package	Reel Size	Quantity
SOT-23	7"	3,000

MARKING CODE

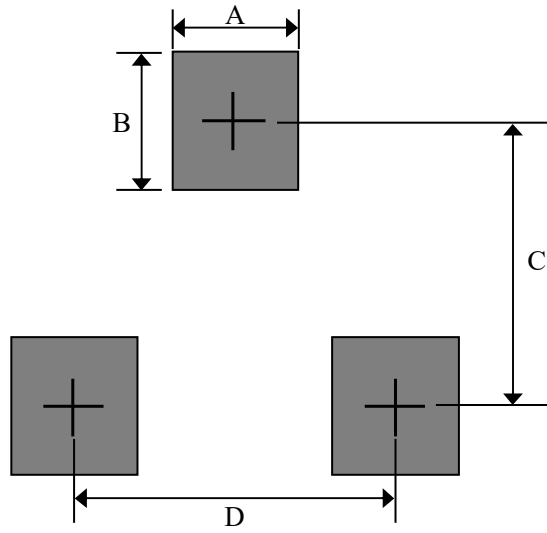
Part Number	Marking Code
MMBT3356QH	R23
MMBT3356RH	R24
MMBT3356SH	R25



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SUGGESTED SOLDER PAD LAYOUT



Unit : mm

PACKAGE	A	B	C	D
SOT-23	0.80	1.00	2.40	1.90