

FMBT5551-Q1

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FMBT5551-Q1

600mA, 160V NPN General Purpose Amplifier

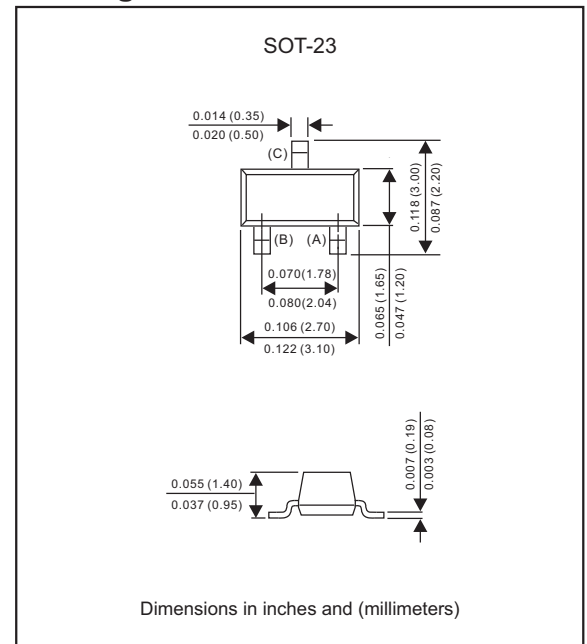
Features

- Complementary to FMBT5401.
- Collector-emitter breakdown voltage.
($V_{(BR)CEO} = 160V \text{ Min.}@I_C=1mA$)
- Ideal for medium power amplification and switching.
- Lead-free parts for green partner, exceeds environmental standards of MIL-STD-19500 /228
- Qualified to AEC-Q101 standards for high reliability.
- Suffix "-H" indicates Halogen free part, ex. FMBT5551-Q1-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-23
- Terminals : Solder plated, solderable per
MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.008 gram

Package outline



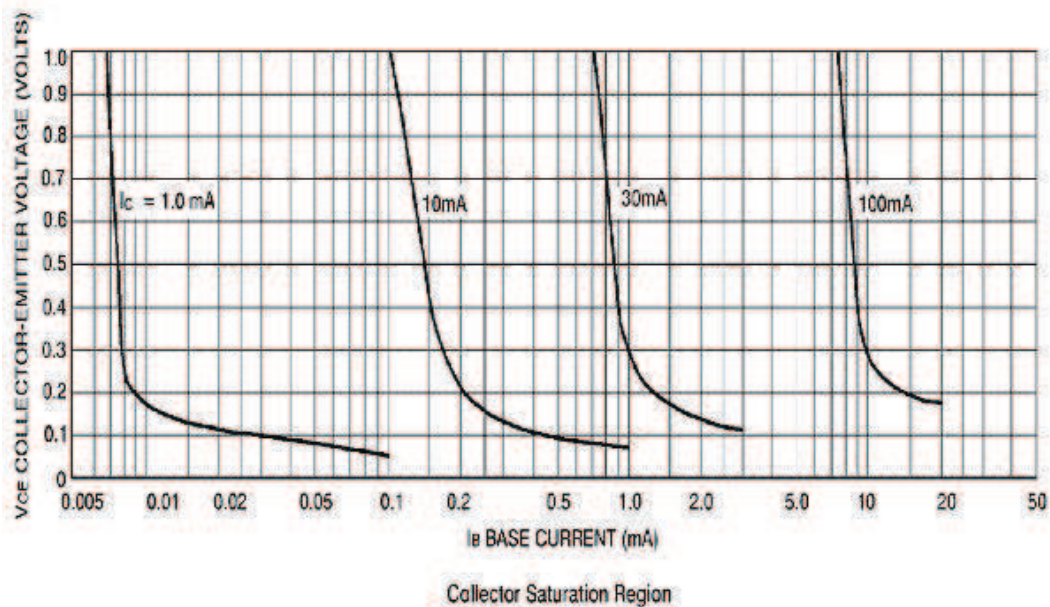
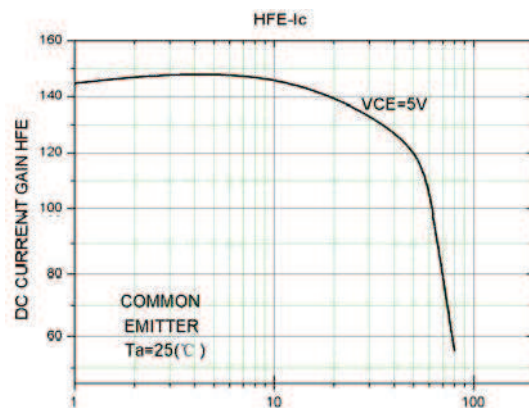
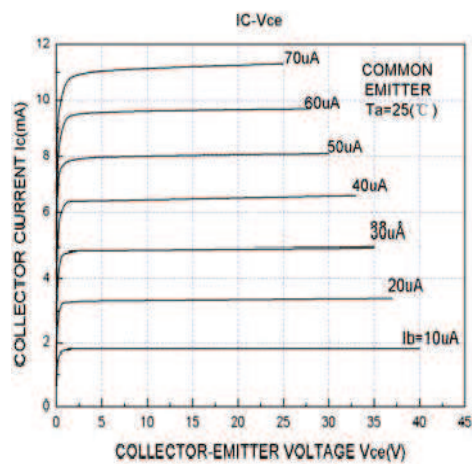
Maximum ratings (AT $T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector to base voltage	V_{CBO}	180	V
Collector to Emitter Voltage	V_{CEO}	160	V
Emitter to base voltage	V_{EBO}	6	V
Collector current	I_C	600	mA
Total power dissipation	P_D	300	mW
Junction temperature	T_J	+150	$^\circ C$
Storage temperature range	T_{STG}	-55 ~ +150	$^\circ C$

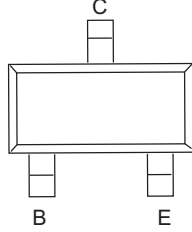
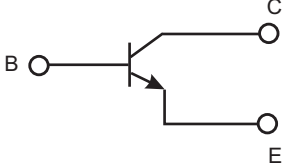
Electrical characteristics (AT $T_A=25^\circ C$ unless otherwise noted)

Parameter	Conditions	Symbol	Min.	Typ.	Max.	Unit
Collector-base breakdown voltage	$I_C = 100\mu A, I_E = 0$	$V_{(BR)CBO}$	180			V
Collector-emitter breakdown voltage	$I_C = 1mA, I_B = 0$	$V_{(BR)CEO}$	160			V
Emitter-base breakdown voltage	$I_E = 10\mu A, I_C = 0$	$V_{(BR)EBO}$	6			V
Collector-base cut off current	$V_{CB} = 120V, I_E = 0$	I_{CBO}			50	nA
Emitter-base cut off current	$V_{EB} = 4V, I_C = 0$	I_{EBO}			50	nA
Collector-emitter saturation voltage	$I_C = 10mA, I_B = 1mA$	$V_{CE(sat)}$			0.15	V
	$I_C = 50mA, I_B = 5mA$				0.2	
Base-emitter saturation voltage	$I_C = 10mA, I_B = 1mA$	$V_{BE(sat)}$			1	V
	$I_C = 50mA, I_B = 5mA$				1	
DC current gain	$V_{CE} = 5V, I_C = 1mA$	h_{FE1}	80			
	$V_{CE} = 5V, I_C = 10mA$	h_{FE2}	100		300	
	$V_{CE} = 5V, I_C = 50mA$	h_{FE3}	50			
Transition Frequency	$V_{CE} = 10V, I_C = 10mA, f = 100MHz$	f_T	100		300	MHZ
Collector output capacitance	$V_{CB} = 10V, I_E = 0, f = 1MHz$	C_{ob}			6	pF
Input capacitance	$V_{BE} = 0.5V, I_C = 0, f = 1MHz$	C_{ib}			20	pF
Noise figure	$V_{CE} = 5V, I_C = 0.25mA, f = 10Hz \text{ to } 15.7KHz, R_s = 1K\Omega$	NF			8	dB

Rating and characteristic curves (FMBT5551-Q1)

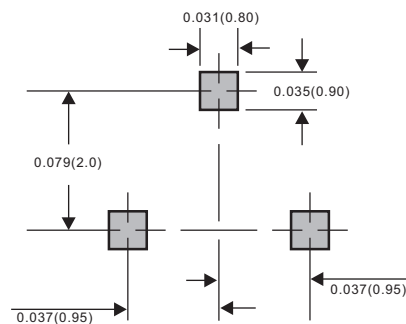


FMBT5551-Q1**Pinning information**

Pin	Simplified outline	Symbol
PinB Base PinC Collector PinE Emitter		

Marking

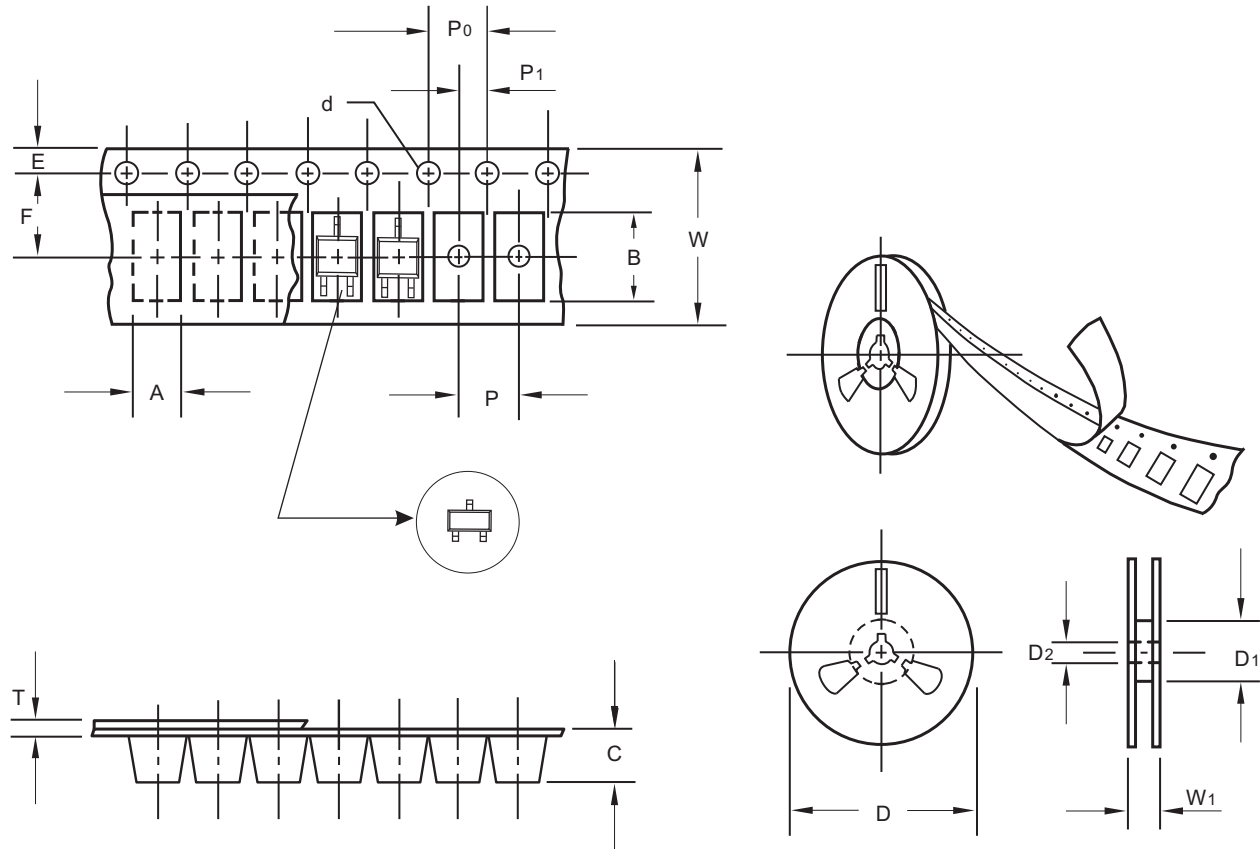
Type number	Marking code
FMBT5551-Q1	G1

Suggested solder pad layout**SOT-23**

Dimensions in inches and (millimeters)

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Packing information



unit:mm

Item	Symbol	Tolerance	SOT-23
Carrier width	A	0.1	3.15
Carrier length	B	0.1	2.77
Carrier depth	C	0.1	1.22
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	55.00
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W1	1.0	12.0

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

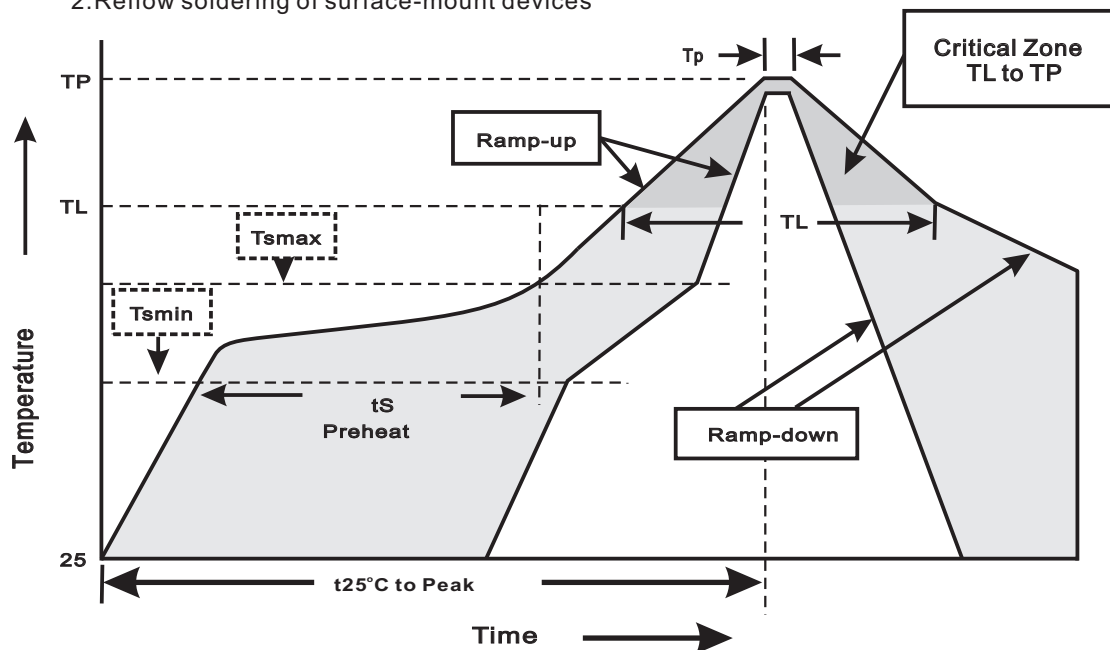
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Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
SOT-23	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	11.6

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T _L to T _P)	<3°C/sec
Preheat -Temperature Min(T _{smín}) -Temperature Max(T _{smáx}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smáx} to T _L -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(T _L) -Time(t _L)	217°C 60~260sec
Peak Temperature(T _P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t _p)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes