

13002MQ-HAF

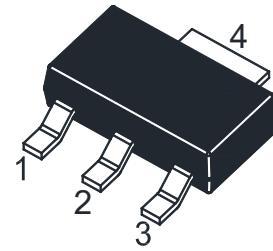
NPN Silicon Epitaxial Planar Power Transistor

Features

- Low Collector Emitter Saturation Voltage
- Halogen and Antimony Free(HAF), RoHS compliant

Applications

- Audio output amplifier
- Power switching applications



1.Base 2.Collector 3.Emitter 4.Collector
SOT-223 Plastic Package

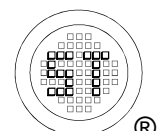
Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	600	V
Collector Emitter Voltage	V_{CEO}	400	V
Emitter Base Voltage	V_{EBO}	6	V
Collector Current	I_C	1	A
Peak Collector Current, Pulesd	I_{CM}	2	A
Power Dissipation	P_{tot}	1.25	W
Operating Junction and Storage Temperature Range	T_j, T_{stg}	- 55 to + 150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction to Ambient ¹⁾	$R_{\theta JA}$	100	$^\circ\text{C/W}$

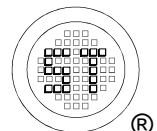
¹⁾ Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate.



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

Parameter	Symbol	Min.	Max.	Unit
DC Current Gain at $V_{CE} = 5\text{ V}$, $I_C = 100\text{ mA}$	h_{FE}	15	30	-
Collector Base Cutoff Current at $V_{CB} = 600\text{ V}$	I_{CBO}	-	10	μA
Collector Emitter Cutoff Current at $V_{CE} = 400\text{ V}$	I_{CEO}	-	100	μA
Emitter Base Cutoff Current at $V_{EB} = 6\text{ V}$	I_{EBO}	-	10	μA
Collector Base Breakdown Voltage at $I_C = 100\text{ }\mu\text{A}$	$V_{(BR)CBO}$	600	-	V
Collector Emitter Breakdown Voltage at $I_C = 1\text{ mA}$	$V_{(BR)CEO}$	400	-	V
Emitter Base Breakdown Voltage at $I_E = 100\text{ }\mu\text{A}$	$V_{(BR)EBO}$	6	-	V
Collector Emitter Saturation Voltage at $I_C = 500\text{ mA}$, $I_B = 100\text{ mA}$	$V_{CE(sat)}$	-	0.5	V
Base Emitter Saturation Voltage at $I_C = 500\text{ mA}$, $I_B = 100\text{ mA}$	$V_{BE(sat)}$	-	1.5	V
Base Emitter Turn-On Voltage at $V_{CE} = 10\text{ V}$, $I_C = 1\text{ A}$	$V_{BE(on)}$	-	1.5	V
Current Gain Bandwidth Product at $V_{CE} = 10\text{ V}$, $I_C = 100\text{ mA}$, $f = 1\text{ MHz}$	f_T	5	-	MHz



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Electrical Characteristics Curves

Fig. 1 Output Characteristics Curve

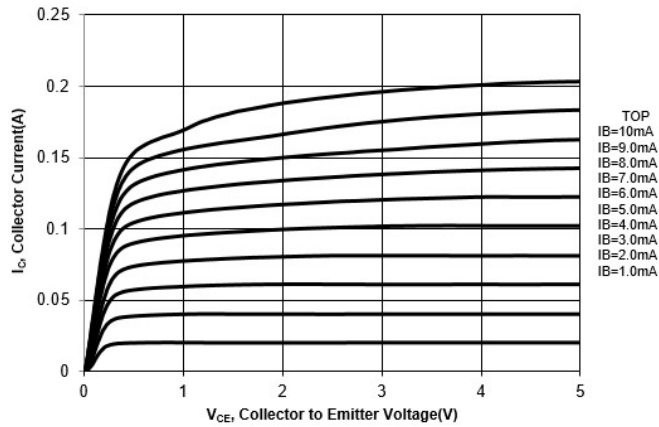


Fig. 2 Collector Current vs. Base to Emitter Voltage

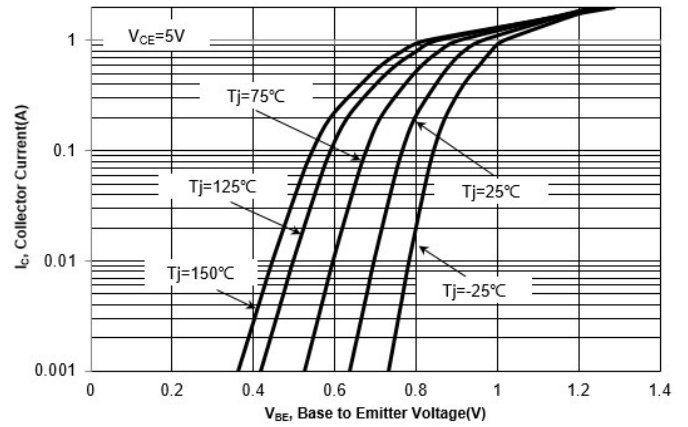


Fig. 3 DC Current Gain vs. Collector Current

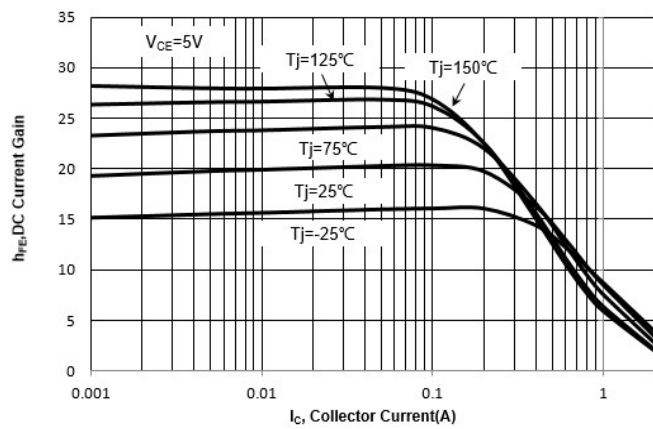
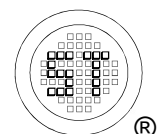
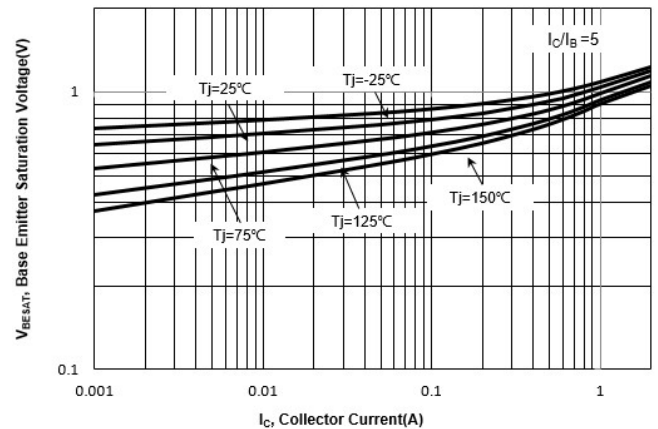


Fig. 4 V_{BESAT} vs. Collector Current



Electrical Characteristics Curves

Fig. 5 V_{CESAT} vs. Collector Current

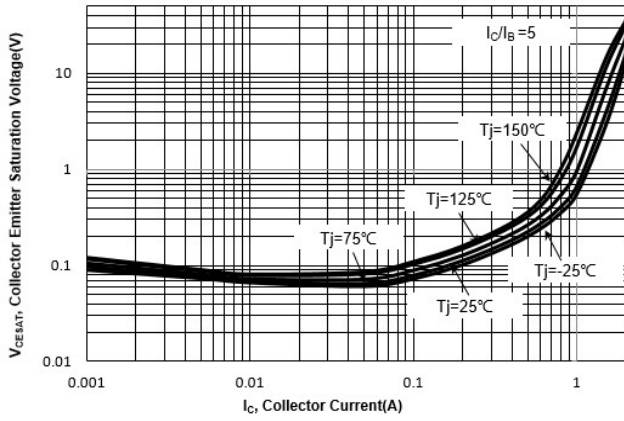


Fig. 6 Output Capacitance

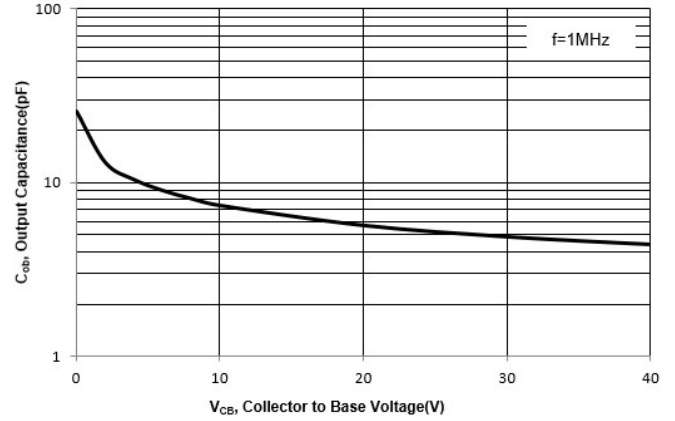
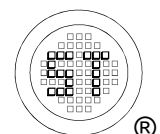
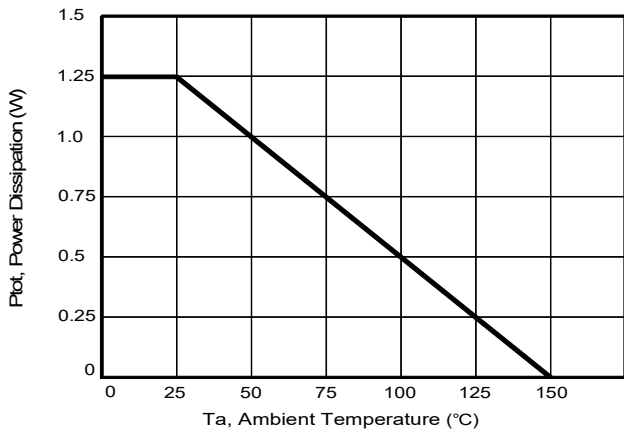


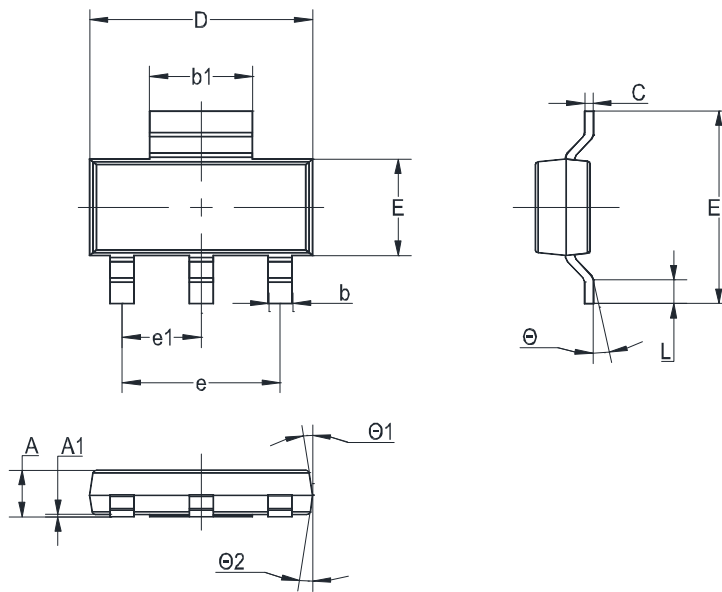
Fig. 7 Power Derating Curve



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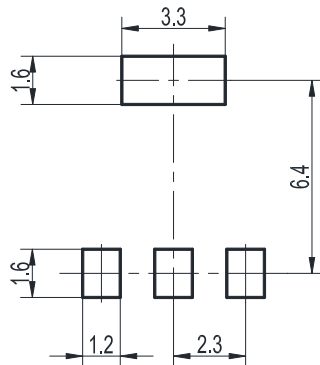
Package Outline (Dimensions in mm)

SOT-223



Unit	A	A1	b	b1	C	D	E	E1	e	e1	L	Θ	Θ1	Θ2
mm	1.8	0.1	0.8	3.1	0.32	6.7	3.7	7.3	4.6	2.3	1.1	10°	7°	7°
	1.5	MAX	0.6	2.9	0.22	6.3	3.3	6.7	TYP	TYP	0.7	0°	0°	0°

Recommended Soldering Footprint



Packing information

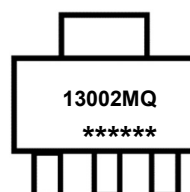
Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-223	12	8 ± 0.1	0.315 ± 0.004	330	13	3,000

Marking information

" 13002MQ " = Part No.

" ***** " = Date Code Marking

Font type: Arial



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