

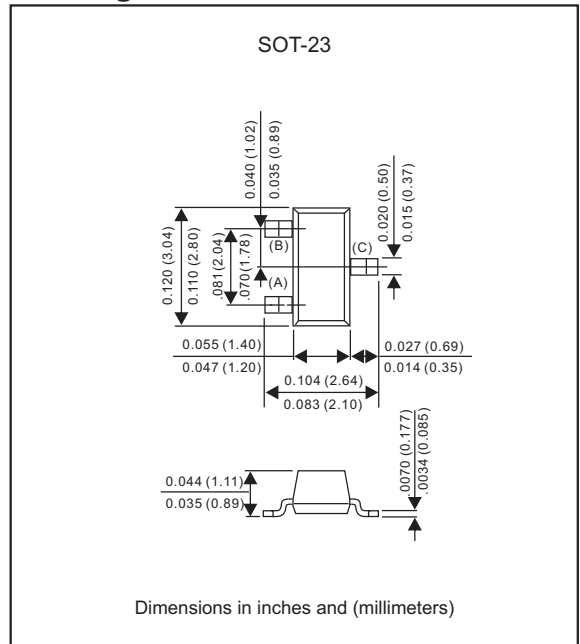
Features

- Collector current. (100mA)
- Pb-Free package is available
- Compliant to-Halogen-free
- Suffix "-Q1" for AEC-Q101

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

Package outline



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

Rating	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}	45	V
Collector-base voltage	V_{CBO}	50	V
Emitter-base voltage	V_{EBO}	5	V
Collector current -continuous	I_C	100	mA

Thermal characteristics

PARAMETER	Symbol	MIN.	TYP.	MAX.	UNIT
Total device dissipation FR-5 board (1)	$T_A = 25^\circ\text{C}$ P_D			225	mW
				Derate above 25°C	1.8
Thermal resistance	Junction to ambient	$R_{\theta JA}$		556	$^\circ\text{C}/\text{W}$
Total device dissipation alumina substrate(2)	$T_A = 25^\circ\text{C}$ P_D			300	mW
				Derate above 25°C	2.4
Thermal resistance	Junction to ambient	$R_{\theta JA}$		417	$^\circ\text{C}/\text{W}$
Operating junction temperature range	T_J	-55		+150	$^\circ\text{C}$
Storage temperature range	T_{STG}	-55		+150	$^\circ\text{C}$

1. FR-5 = 1.0 X 0.75 X 0.062 in.

2. Alumina = 0.4 X 0.3 X 0.024 in. 99.5% alumina.

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

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
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Off characteristics

Collector-emitter breakdown voltage	$I_C=1\text{mA}$	$V_{(BR)CEO}$	45			V
Emitter-base breakdown voltage	$I_E=100\mu\text{A}$	$V_{(BR)EBO}$	5			V
Collector-base breakdown voltage	$I_C=100\mu\text{A}$	$V_{(BR)CBO}$	50			V
Collector cutoff current	$V_{CB}=40\text{V}$	I_{CBO}			100	nA
Emitter cutoff current	$V_{EB}=3\text{V}$	I_{EBO}			100	nA

On characteristics

Collector-emitter saturation voltage	$I_C=100\text{mA}$ $I_B=5\text{mA}$	$V_{CE(sat)}$			0.3	V
DC current gain	$I_C=1\text{mA}$ $V_{CE}=5\text{V}$	h_{FE}	200		1000	-

h_{FE} values are classified as follows:

RANK	L	H
RANGE	200~450	450~1000

Rating and characteristic curves (S9014-Q1)

FIG.1 - STATIC CHARACTERISTIC

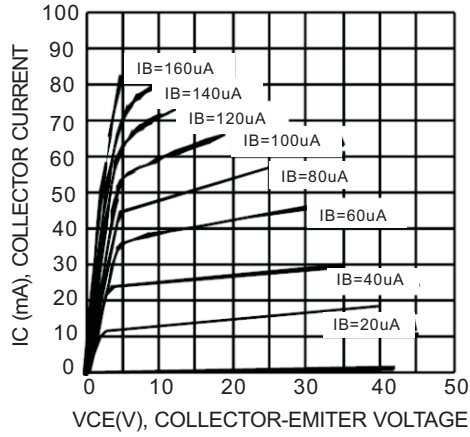


FIG.2 - DC CURRENT GAIN

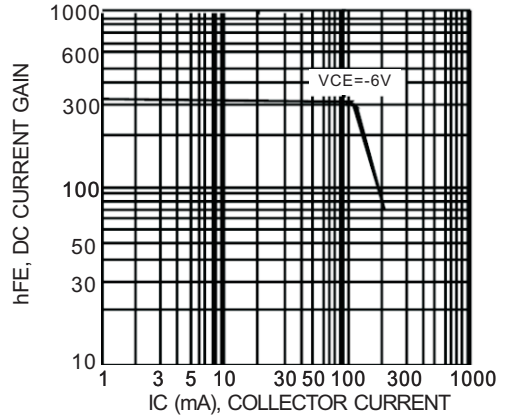


FIG.3 - BASE-EMITTER SATURATION VOLTAGE
COLLECTOR-EMITTER SATURATION VOLTAGE

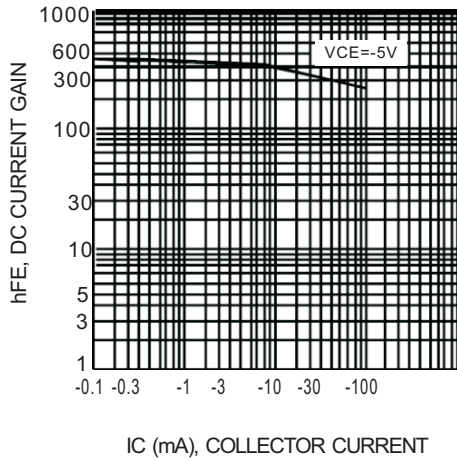
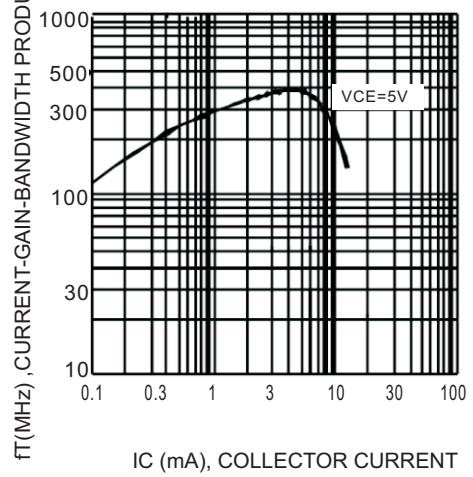
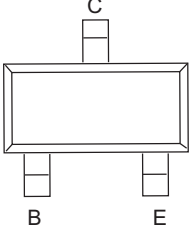
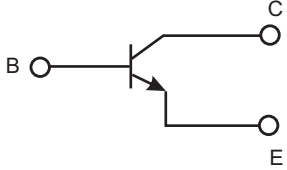


FIG.4 - CURRENT GAIN-BANDWIDTH PRODUCT



Pinning information

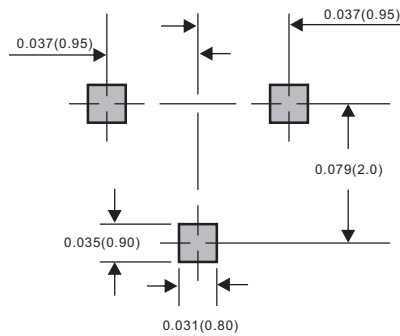
Pin	Simplified outline	Symbol
PinB Base PinC Collector PinE Emitter		

Marking

Type number	Marking code
S9014-Q1	J6

Suggested solder pad layout

SOT-23



Dimensions in inches and (millimeters)