BCW68F/G/H-Q1

List

BCW68F/G/H-Q1

PNP Epitaxial Silicon Transistor

Features

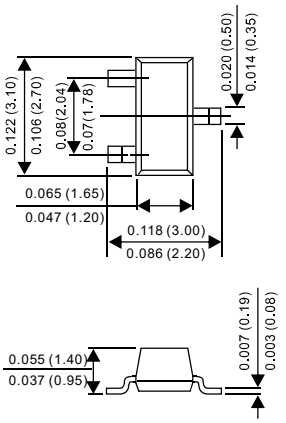
- Epitaxial planar die construction.
- For high current application.
- -Q1 for automotive and other applications requiring unique site and control change requirements; AEC-Q101 qualified and PPAP capable.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free part, ex.BCW68F-Q1-H.

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.

Package outline

SOT-23



Dimensions in inches and (millimeters)

Maximum ratings (At T_A=25°C unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Collector to Base voltage	$-V_{CBO}$	60	V
Collector to Emitter voltage	$-V_{CEO}$	45	V
Emitter to Base voltage	$-V_{EBO}$	5	V
Collector current	$-I_C$	800	mA
Peak collector current	$-I_{CM}$	1	A
Base current	$-I_B$	100	mA
Peak base current	$-I_{BM}$	200	mA
Total power dissipation	P_{TOT}	200	mW
Junction temperature	T_J	150	ºC
Storage temperature	T_{STG}	-55 to +150	ºC

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Electrical characteristics (AT T_A=25°C unless otherwise noted)

Parameter	Symbol	Condition		Min.	Typ.	Max.	Unit
DC current gain	h_{FE}	$-V_{CE}$ = 10 V, $-I_C$ = 100 μA	BCW68F-Q1	35			
			BCW68G-Q1	50			
			BCW68H-Q1	80			
		$-V_{CE}$ = 1 V, $-I_C$ = 10 mA	BCW68F-Q1	75			
			BCW68G-Q1	120			
			BCW68H-Q1	180			
		$-V_{CE}$ = 1V, $-I_C$ = 100 mA	BCW68F-Q1	100		250	
			BCW68G-Q1	160		400	
			BCW68H-Q1	250		630	
		$-V_{CE}$ = 2V, $-I_C$ = 500 mA	BCW68F-Q1	35			
			BCW68G-Q1	60			
			BCW68H-Q1	100			
Collector cut-off current	$-I_{CBO}$	$-V_{CB}$ = 45 V				20	nA
Emitter cut-off current	$-I_{EBO}$	$-V_{EB}$ = 4V				20	nA
Collector-Base breakdown voltage	$-V_{(BR)CBO}$	$-I_C$ = 10 μA		60			V
Collector-Emitter breakdown voltage	$-V_{(BR)CEO}$	$-I_C$ = 10 mA		45			V
Emitter-Base breakdown voltage	$-V_{(BR)EBO}$	$-I_E$ = 10 μA		5			V
Collector-Emitter saturation voltage	$-V_{CE(sat)}$	$-I_C$ = 100mA, $-I_B$= 10mA				0.3	V
Collector-Emitter saturation voltage	$-V_{CE(sat)}$	$-I_C$ = 500mA, $-I_B$= 50mA				0.7	V
Base-Emitter saturation voltage	$-V_{BE(sat)}$	$-I_C$ = 100mA, $-I_B$= 10mA				1.25	V
Base-Emitter saturation voltage	$-V_{BE(sat)}$	$-I_C$ = 500mA, $-I_B$= 50mA				2	V
Transition frequency	f_T	$-V_{CE}$ = 5 V, $-I_C$ = 50 mA , f=100MHz			200		MHz
Collector base capacitance	C_{ob}	$-V_{CB}$ = 10 V, f=1MHz			6		pF
Emitter base capacitance	C_{eb}	$-V_{BE}$ = 0.5 V, f=1MHz			60		pF

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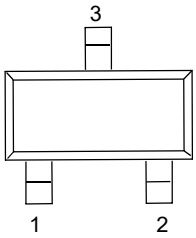
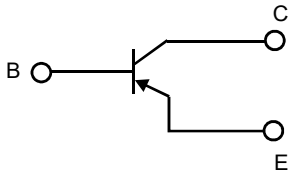
Pinning information

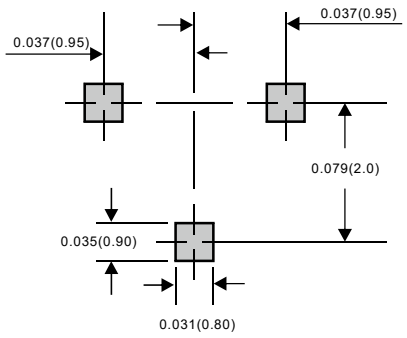
Pin	Simplified outline	Symbol
Pin 1 Base Pin 2 Emitter Pin 3 Collector		

Marking and h_{FE} range

Type number	Marking code	DC current gain range (h_{FE})
BCW68F-Q1	DF	100-250
BCW68G-Q1	DG	160-400
BCW68H-Q1	DH	250-630

Suggested solder pad layout

SOT-23



Dimensions in inches and (millimeters)

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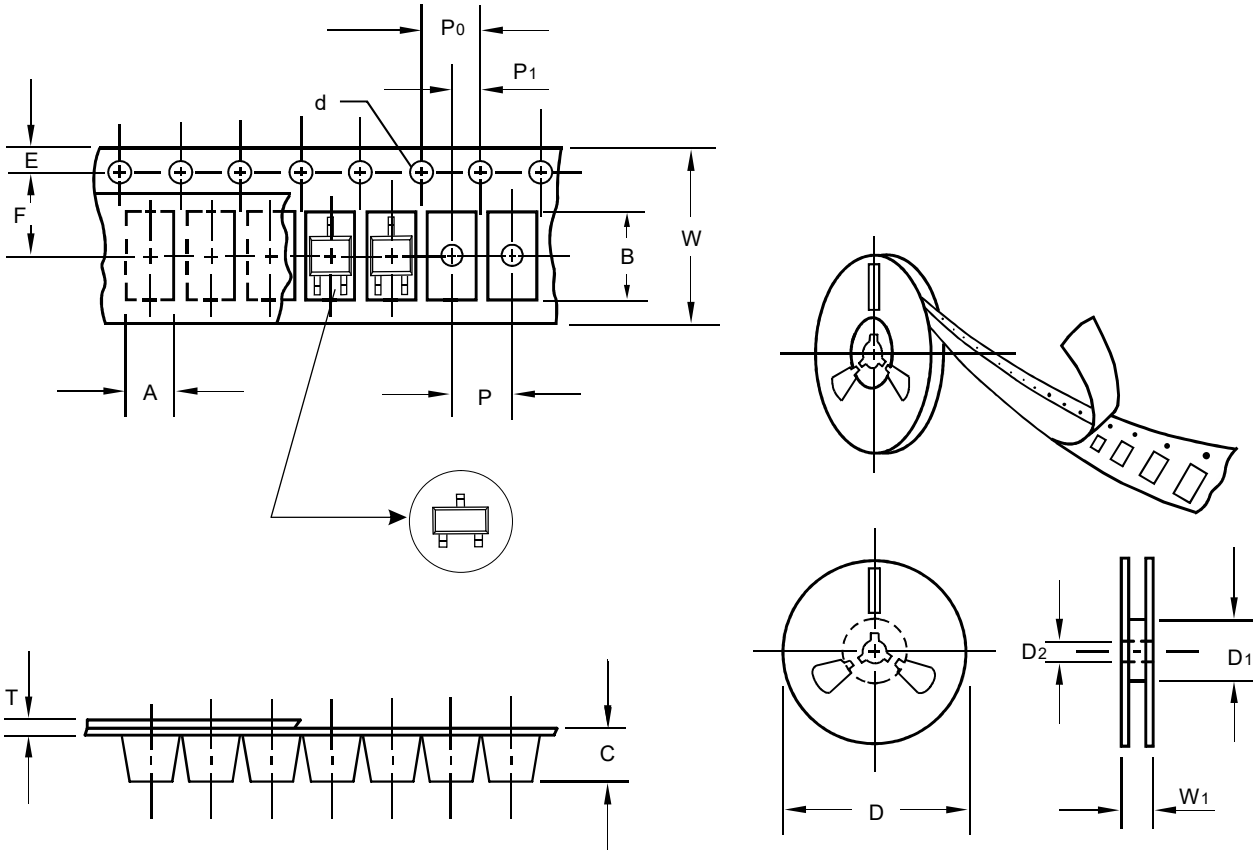
Packing information



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	D_1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D_1	min	55.00
Feed hole diameter	D_2	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	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W_1	1.0	12.0

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

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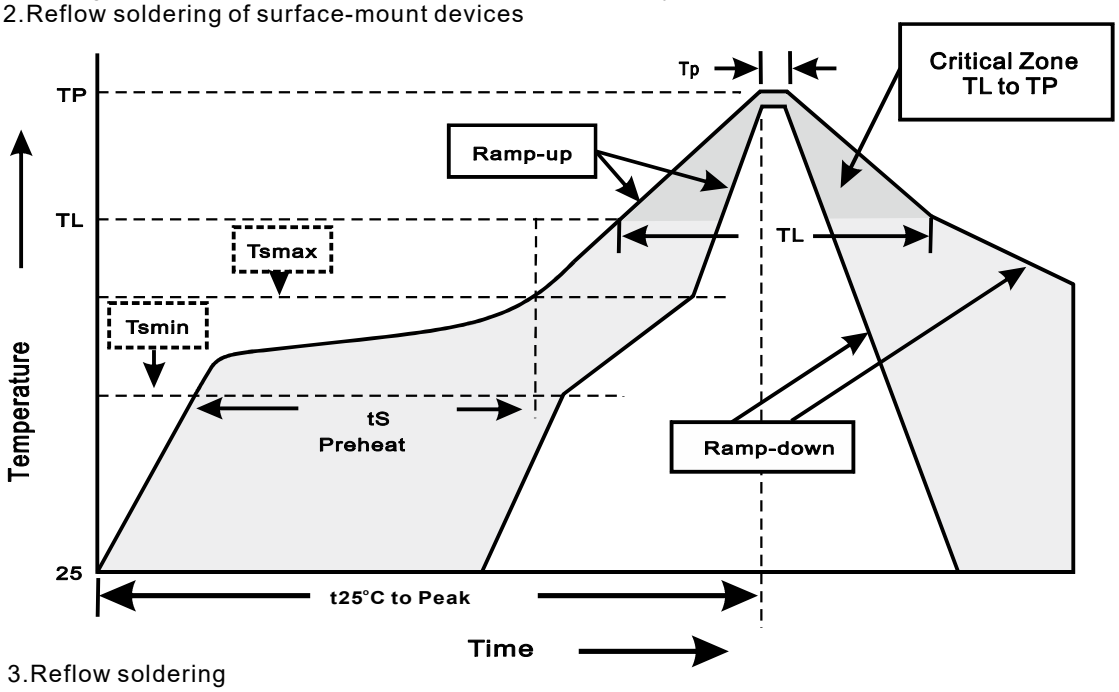
Reel packing

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)
SOT-23	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000

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(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax 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