

# General Purpose Transistors

BCK \* ) 5 LT1

## NPN Silicon

### Features

We declare that the material of product compliance with RoHS requirements.

**Pb-Free package is available**

RoHS product for packing code suffix "G"

Halogen free product for packing code suffix "H"

Moisture Sensitivity Level 1

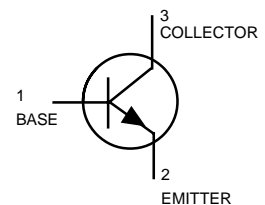
### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	$V_{CEO}$	32	Vdc
Collector–Base Voltage	$V_{CBO}$	60	Vdc
Emitter–Base Voltage	$V_{EBO}$	5.0	Vdc
Collector Current — Continuous	$I_C$	800	mAdc



### THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR–5 Board, (1) $T_A = 25^\circ\text{C}$	$P_D$	225	mW
Derate above $25^\circ\text{C}$		1.8	mW/ $^\circ\text{C}$
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 $25^\circ\text{C}$		2.4	mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$



### DEVICE MARKING

BCW65ALT1 = EA

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Typ	Max	Unit
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### OFF CHARACTERISTICS

Collector–Emitter Breakdown Voltage ( $I_C = 10\text{mAdc}, I_E = 0$ )	$V_{(BR)CEO}$	32	—	—	Vdc
Collector–Emitter Breakdown Voltage ( $I_C = 10\ \mu\text{Adc}, V_{EB} = 0$ )	$V_{(BR)CES}$	60	—	—	Vdc
Emitter–Base Breakdown Voltage ( $I_E = 10\ \mu\text{Adc}, I_C = 0$ )	$V_{(BR)EBO}$	5.0	—	—	Vdc
Collector Cutoff Current ( $V_{CE} = 32\ \text{Vdc}, I_E = 0$ )	$I_{CES}$	—	—	20	nAdc
( $V_{CE} = 32\ \text{Vdc}, I_E = 0, T_A = 150^\circ\text{C}$ )		—	—	20	$\mu\text{Adc}$
Emitter Cutoff Current ( $V_{EB} = 4.0\ \text{Vdc}, I_C = 0$ )	$I_{EBO}$	—	—	20	nAdc

1. FR–5 =  $1.0 \times 0.75 \times 0.062$  in.

2. Alumina =  $0.4 \times 0.3 \times 0.024$  in. 99.5% alumina.

**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted) (Continued)

Characteristic	Symbol	Min	Typ	Max	Unit
<b>ON CHARACTERISTICS</b>					
DC Current Gain ( $I_C = 100 \mu\text{Adc}$ , $V_{CE} = 10 \text{Vdc}$ )	$h_{FE}$	35	—	—	—
( $I_C = 10 \text{mAdc}$ , $V_{CE} = 1.0 \text{Vdc}$ )		75	—	220	
( $I_C = 100 \text{mAdc}$ , $V_{CE} = 1.0 \text{Vdc}$ )		100	—	250	
( $I_C = 500 \text{mAdc}$ , $V_{CE} = 2.0 \text{Vdc}$ )		35	—	—	
Collector–Emitter Saturation Voltage ( $I_C = 500 \text{mAdc}$ , $I_B = 50 \text{mAdc}$ )	$V_{CE(sat)}$	—	0.7	—	Vdc
( $I_C = 100 \text{mAdc}$ , $I_B = 10 \text{mAdc}$ )		—	0.3	—	
Base–Emitter Saturation Voltage ( $I_C = 500 \text{mAdc}$ , $I_B = 50 \text{mAdc}$ )	$V_{BE(sat)}$	—	—	2.0	Vdc

**SMALL–SIGNAL CHARACTERISTICS**

Current–Gain — Bandwidth Product ( $I_C = 20 \text{mAdc}$ , $V_{CE} = 10 \text{Vdc}$ , $f = 100 \text{MHz}$ )	$f_T$	100	—	—	MHz
Output Capacitance ( $V_{CB} = 10 \text{Vdc}$ , $I_E = 0$ , $f = 1.0 \text{MHz}$ )	$C_{obo}$	—	—	12	pF
Input Capacitance ( $V_{EB} = 0.5 \text{Vdc}$ , $I_C = 0$ , $f = 1.0 \text{MHz}$ )	$C_{ibo}$	—	—	80	pF
Noise Figure ( $V_{CE} = 5.0 \text{Vdc}$ , $I_C = 0.2 \text{mAdc}$ , $R_s = 2.0 \text{k}\Omega$ , $f = 1.0 \text{kHz}$ , $BW = 200 \text{Hz}$ )	NF	—	—	10	dB

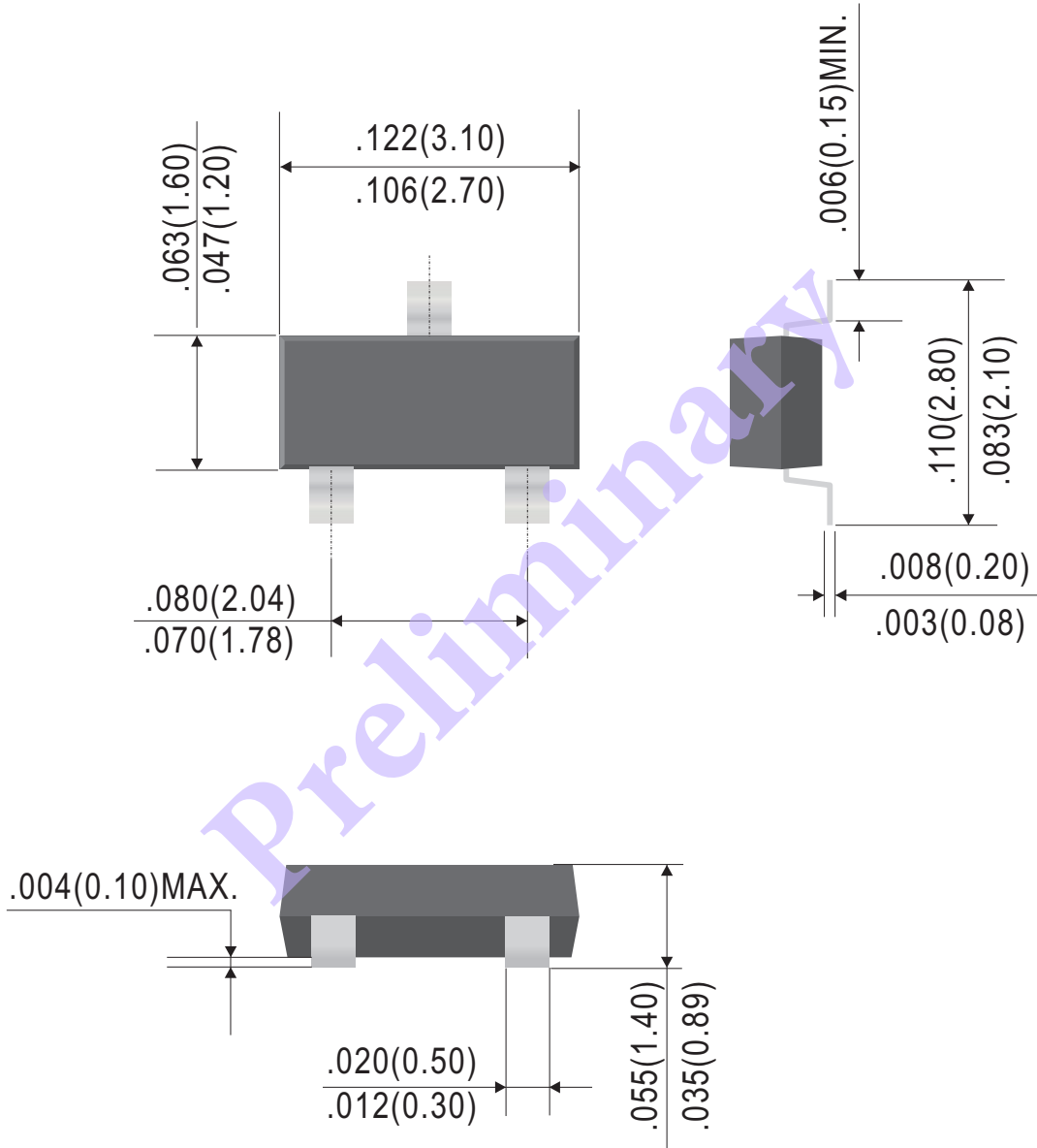
**SWITCHING CHARACTERISTICS**

Turn–On Time ( $I_{B1} = I_{B2} = 15 \text{mAdc}$ )	$t_{on}$	—	—	100	ns
Turn–Off Time ( $I_C = 150 \text{mAdc}$ , $R_L = 150 \Omega$ )	$t_{off}$	—	—	400	ns

**Ordering Information**

Device	Marking	Shipping
BCW65ALT1	EA	3000/Tape&Reel

**SOT-23**



Dimensions in inches and (millimeters)



# WILLAS



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### Ordering Information:

Device PN	Packing
BCW65ALT1 G <sup>(1)</sup> -WS	Tape&Reel: 3 Kpcs/Reel

Note: (1) RoHS product for packing code suffix "G" ; Halogen free product for packing code suffix "H"

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