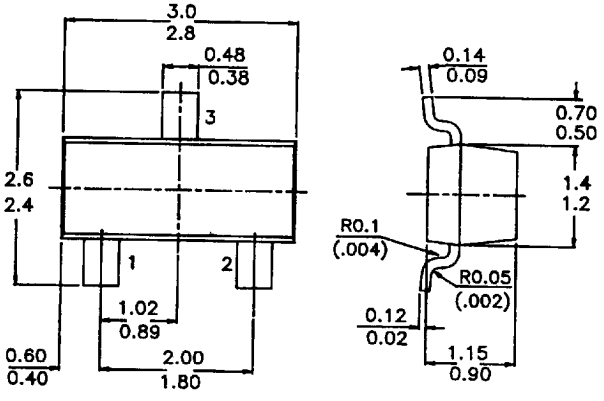
SILICON PLANAR EPITAXIAL TRANSISTORS

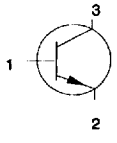
N–P–N silicon transistors

Marking
BCW60A = AA
BCW60B = AB
BCW60C = AC
BCW60D = AD

PACKAGE OUTLINE DETAILS
ALL DIMENSIONS IN mm



Pin configuration
1 = BASE
2 = EMITTER
3 = COLLECTOR



ABSOLUTE MAXIMUM RATINGS

Collector–emitter voltage (V_{BE} = 0)	V_{CES}	max.	32 V
Collector–emitter voltage (open base)	V_{CEO}	max.	32 V
Collector current (d.c.)	I_C	max.	200 mA
Total power dissipation	P_{tot}	max.	250 mW
Junction temperature	T_j	max.	150 °C
Transition frequency at f = 100 MHz			
V_{CE} = 5 V; I_C = 10 mA	f_T	typ.	250 MHz
Noise figure at f = 1 kHz			
V_{CE} = 5V; I_C = 200 μA; B = 200Hz	F	typ.	2 dB

RATINGS (at T_A = 25°C unless otherwise specified)

Limiting values			
Collector–emitter voltage (V_{BE} = 0)	V_{CES}	max.	32 V
Collector–emitter voltage (open base)	V_{CEO}	max.	32 V
Emitter–base voltage (open collector)	V_{EBO}	max.	5 V
Collector current (d.c.)	I_C	max.	200 mA
Base current	I_B	max.	50 mA
Total power dissipation up to T_{amb}: 25 °C	P_{tot}	max.	250 mW
Storage temperature	T_{stg}		–55 to +150 °C
Junction temperature	T_j	max.	150 °C

THERMAL RESISTANCE

From junction to ambient*	$R_{th\ j-a}$ =	500 K/W

CHARACTERISTICS

T_{amb} = 25 °C unless otherwise specified

Collector–emitter cut–off current			
V_{BE} = 0; V_{CE} = 32 V	I_{CES}	<	20 nA
V_{BE} = 0; V_{CE} = 32V; T_{amb} = 150°C	I_{CES}	<	20 µA
Emitter–base cut–off current			
I_C = 0; V_{EB} = 4 V	I_{EB0}	<	20 nA
Saturation voltages			
at I_C = 10 mA; I_B = 0,25 mA	V_{CEsat}	0,05 to 0,35	V
	V_{BEsat}	0,6 to 0,85	V
at I_C = 50 mA; I_B = 1,25 mA	V_{CEsat}	0,1 to 0,55	V
	V_{BEsat}	0,7 to 1,05	V
Transition frequency at f = 100 MHz		>	125 MHz
I_C = 10 mA; V_{CE} = 5 V	f_T	typ.	250 MHz
Collector capacitance at f = 1 MHz			
I_E = I_e = 0; V_{CB} = 10V	C_c	typ.	2,5 pF
Emitter capacitance at f = 1 MHz			
I_C = I_c = 0; V_{EB} = 0,5 V	C_e	typ.	8 pF
Noise figure at R_S = 2 kΩ		typ.	2 dB
I_C = 200 µ.µA; V_{CE} = 5 V; f: 1 kHz; B = 200 Hz	F	<	6 dB

			BCW60A	60B	60C	60D	
D.C. current gain							
V_{CE} = 5 V; I_C = 10 µA	h_{FE}	>	–	20	40	100	
V_{CE} = 5 V; I_C: 2 mA	h_{FE}	>	120	180	250	380	
		<	220	310	460	630	
V_{CE} = 1 V; I_C: 50 mA	h_{FE}	>	50	70	90	100	
Input impedance							
V_{CE} = 5 V; I_C = 2 mA, f = 1 kHz	h_{ie}	typ.	2,7	3,6	4,5	7,5	kΩ

			A	B	C	D	
Reverse voltage transfer ratio							
V_{CE} = 5 V; I_C = 2 mA; f: 1 kHz	h_{re}	typ.	1,5	2	2	3	10^{-4}
Small–signal current gain							
V_{CE} = 5 V; I_C = 2 mA; f = 1 kHz	h_{fe}	min.	125	175	250	350	
		max.	250	350	500	700	
Output admittance							
V_{CE} = 5 V; I_C = 2 mA; f = 1 kHz	h_{oe}	typ.	18	24	30	50	µs

Base–emitter voltage				
V_{CE} = 5 V; I_C: 2 mA	V_{BE}		0,55 to 0,75	V
		typ.	0,65	V
V_{CE} = 5 V; I_C = 10 µA	V_{BE}	typ.	0,52	V
V_{CE} = 1 V; I_C = 50 mA	V_{BE}	typ.	0,78	V