

NPN/PNP Silicon Digital Transistor Array

- Switching circuit, inverter, interface circuit, driver circuit
- Two (galvanic) internal isolated NPN/PNP Transistors in one package
- Built in bias resistor NPN and PNP ($R_1=10\text{ k}\Omega$, $R_2=10\text{ k}\Omega$)
- Pb-free (RoHS compliant) package
- Qualified according AEC Q101


Tape loading orientation


Type	Marking	Pin Configuration					Package	
BCR10PN	W1s	1=E1	2=B1	3=C2	4=E2	5=B2	6=C1	SOT363

Maximum Ratings for NPN and PNP Types

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}	50	V
Collector-base voltage	V_{CBO}	50	V
Input forward voltage	$V_{i(fwd)}$	40	V
Input reverse voltage	$V_{i(rev)}$	10	V
DC collector current	I_C	100	mA
Total power dissipation, $T_S = 115\text{ }^\circ\text{C}$	P_{tot}	250	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature	T_{stg}	-65 ... 150	$^\circ\text{C}$

Thermal Resistance

Junction - soldering point ¹⁾	R_{thJS}	≤ 140	K/W
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¹⁾For calculation of R_{thJA} please refer to Application Note AN077 (Thermal Resistance Calculation)

Electrical Characteristics at $T_A=25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics for NPN and PNP Types					
Collector-emitter breakdown voltage $I_C = 100 \mu\text{A}, I_B = 0$	$V_{(BR)CEO}$	50	-	-	V
Collector-base breakdown voltage $I_C = 10 \mu\text{A}, I_E = 0$	$V_{(BR)CBO}$	50	-	-	
Collector cutoff current $V_{CB} = 40 \text{ V}, I_E = 0$	I_{CBO}	-	-	100	nA
Emitter cutoff current $V_{EB} = 10 \text{ V}, I_C = 0$	I_{EBO}	-	-	0.75	mA
DC current gain 1) $I_C = 5 \text{ mA}, V_{CE} = 5 \text{ V}$	h_{FE}	30	-	-	-
Collector-emitter saturation voltage1) $I_C = 10 \text{ mA}, I_B = 0.5 \text{ mA}$	V_{CEsat}	-	-	0.3	V
Input off voltage $I_C = 100 \mu\text{A}, V_{CE} = 5 \text{ V}$	$V_{i(off)}$	0.8	-	1.5	
Input on Voltage $I_C = 2 \text{ mA}, V_{CE} = 0.3 \text{ V}$	$V_{i(on)}$	1	-	2.5	
Input resistor	R_1	7	10	13	k Ω
Resistor ratio	R_1/R_2	0.9	1	1.1	-
AC Characteristics for NPN and PNP Types					
Transition frequency $I_C = 10 \text{ mA}, V_{CE} = 5 \text{ V}, f = 100 \text{ MHz}$	f_T	-	130	-	MHz
Collector-base capacitance $V_{CB} = 10 \text{ V}, f = 1 \text{ MHz}$	C_{cb}	-	3	-	pF

 1) Pulse test: $t < 300\mu\text{s}$; $D < 2\%$

NPN Type

DC Current Gain $h_{FE} = f(I_C)$

$V_{CE} = 5V$ (common emitter configuration)



Collector-Emitter Saturation Voltage

$V_{CEsat} = f(I_C), h_{FE} = 20$



Input on Voltage $V_{i(on)} = f(I_C)$

$V_{CE} = 0.3V$ (common emitter configuration)



Input off voltage $V_{i(off)} = f(I_C)$

$V_{CE} = 5V$ (common emitter configuration)



PNP Type

DC Current Gain $h_{FE} = f(I_C)$

$V_{CE} = 5V$ (common emitter configuration)



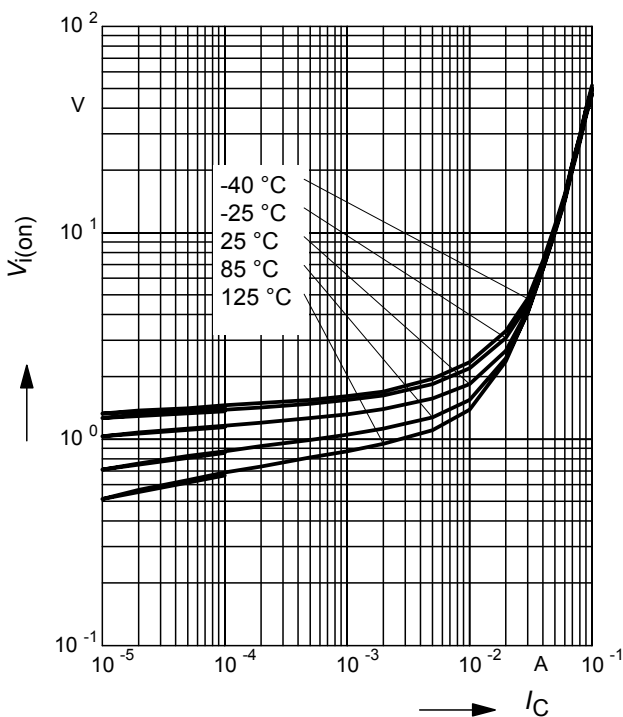
Collector-Emitter Saturation Voltage

$V_{CEsat} = f(I_C), h_{FE} = 20$



Input on Voltage $V_{i(on)} = f(I_C)$

$V_{CE} = 0.3V$ (common emitter configuration)

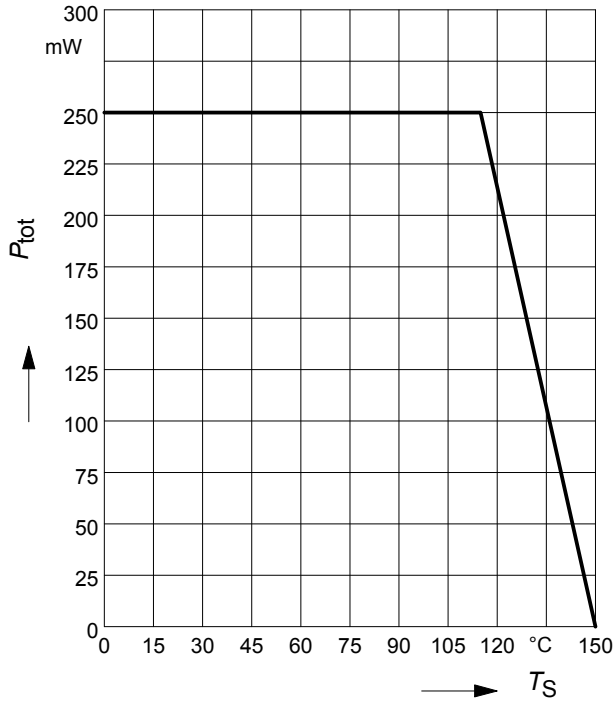


Input off voltage $V_{i(off)} = f(I_C)$

$V_{CE} = 5V$ (common emitter configuration)



Total power dissipation $P_{tot} = f(T_S)$



Permissible Pulse Load $R_{thJS} = f(t_p)$



Permissible Pulse Load

$P_{totmax} / P_{totDC} = f(t_p)$



Package Outline



Foot Print



Marking Layout (Example)

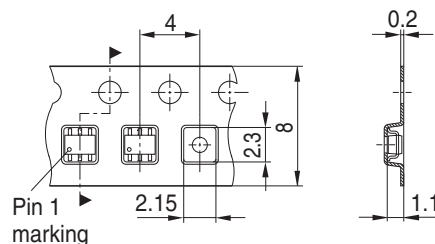
Small variations in positioning of Date code, Type code and Manufacture are possible.



Standard Packing

Reel \varnothing 180 mm = 3.000 Pieces/Reel
 Reel \varnothing 330 mm = 10.000 Pieces/Reel

For symmetric types no defined Pin 1 orientation in reel.



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