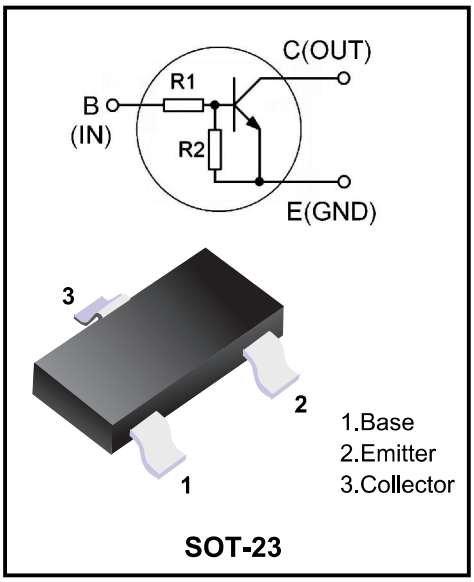
NPN 100mA Digital Transistor



Features

- Built-In Biasing Resistors, R_1 =10kΩ, R_2 = 47kΩ
- Built-in bias resistors enable the configuration of an inverter circuit without connecting external input resistors.
- Only the on/off conditions need to be set for operation, making the circuit design easy.

Marking Code	
BCR135	WJ

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Value	Unit
Supply voltage	V_{CBO}	50	V
Input voltage	V_{CEO}	50	V
Input forward voltage	V_{IF}	40	V
Input reverse voltage	V_{IR}	6	V
Output current	I_C	100	mA
Total power dissipation	P_{tot}	200	mA
Junction temperature	T_j	150	℃
Storage temperature	T_{stg}	-56~150	℃

Thermal Resistance

Parameter	Symbol	Value	Unit
Junction ambient	R_{thjA}	240	K/W
Junction soldering point	R_{thjA}	105	K/W

Electrical Characteristics (Ta=25℃)

Parameter	Symbol	Conditions	Value			Unit
			Min	Typ	Max	
Collector-base breakdown voltage	BV_{CBO}	I_C=10μA, I_E=0	50			V
Collector-emitter breakdown voltage	BV_{CEO}	I_C=100μA, I_B=0	50			V
Collector-base cutoff current	I_{CBO}	V_{CB}=40V			100	nA
Emitter-base cutoff current	I_{EBO}	V_{EB}=6V			167	μA
DC current gain	h_{FE}	V_{CE}=5V, I_O=5mA	70			
Collector-emitter saturation voltage*	$V_{CE(sat)}$	I_C=10mA, I_B=0.5mA			0.3	V
Input voltage	$V_{I(off)}$	V_{CE}=5V, I_O=100μA	0.5		1	V
	$V_{I(on)}$	V_{CE}=0.3V, I_O=2 mA	0.5		1.4	V
Input resistor	R_1		7	10	13	KΩ
Resistor ratio	R_1/R_2		0.19	.21	.24	
Transition frequency	f_T	V_{CE}=10V, I_E=10mA, f=100MHz		150		MHz
Collector-base capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz		3		pF

* Pulse test: t < 300μs; D < 2%

Typical Characteristics

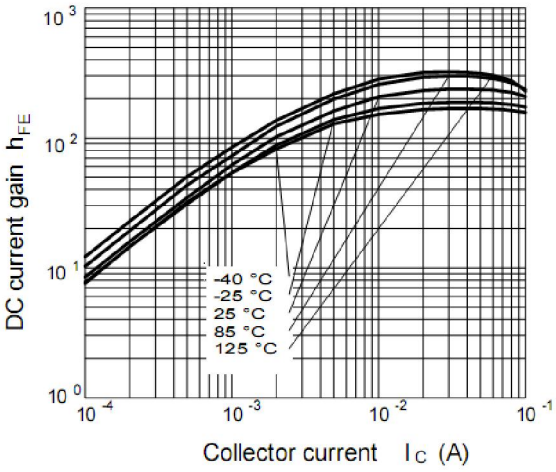


Figure 1. DC current gain

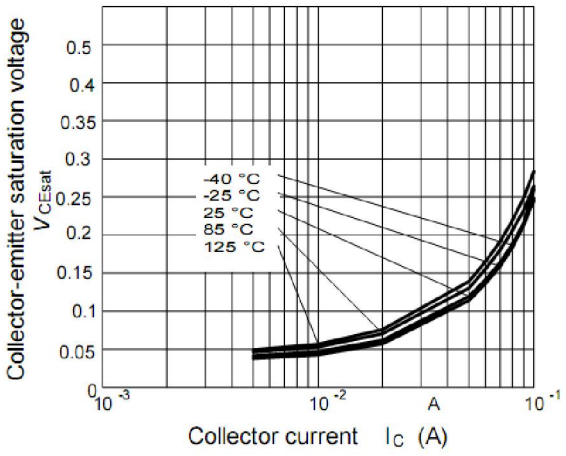


Figure2. Collector-emitter saturation voltage

Typical Characteristics

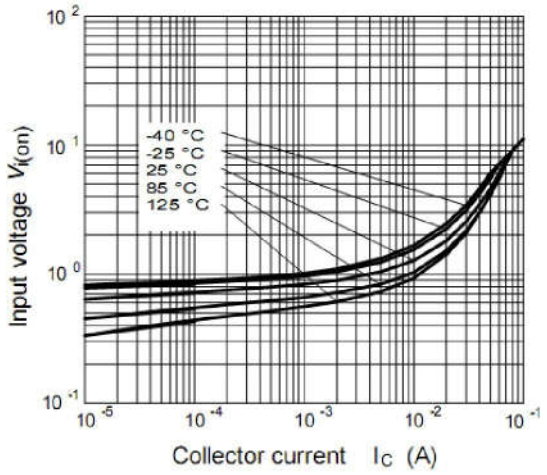


Figure 3. Input voltage vs. output current (ON characteristics)

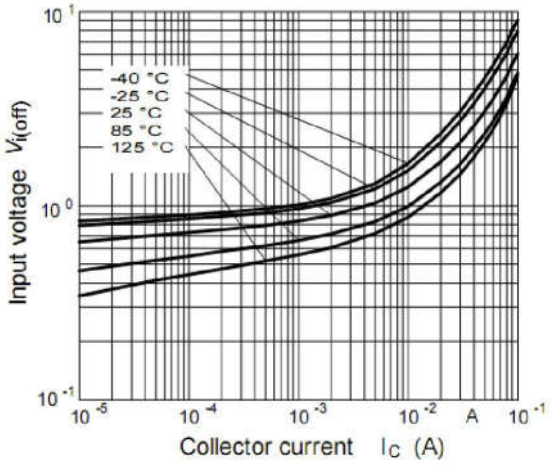


Figure 4. Output current vs. input voltage (OFF characteristics)

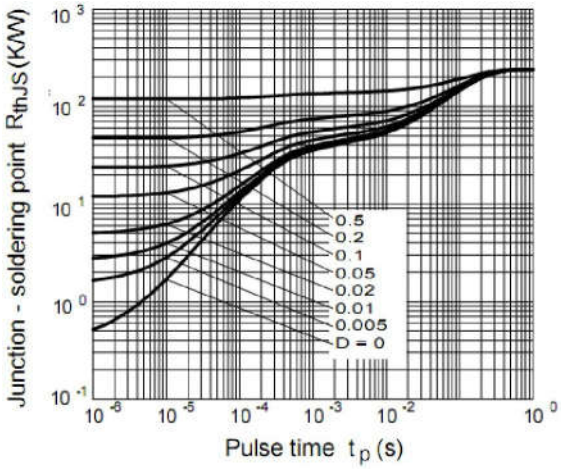


Figure 5. Permissible Pulse Load

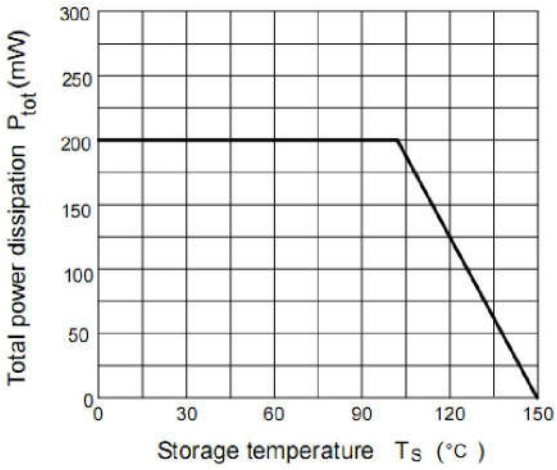


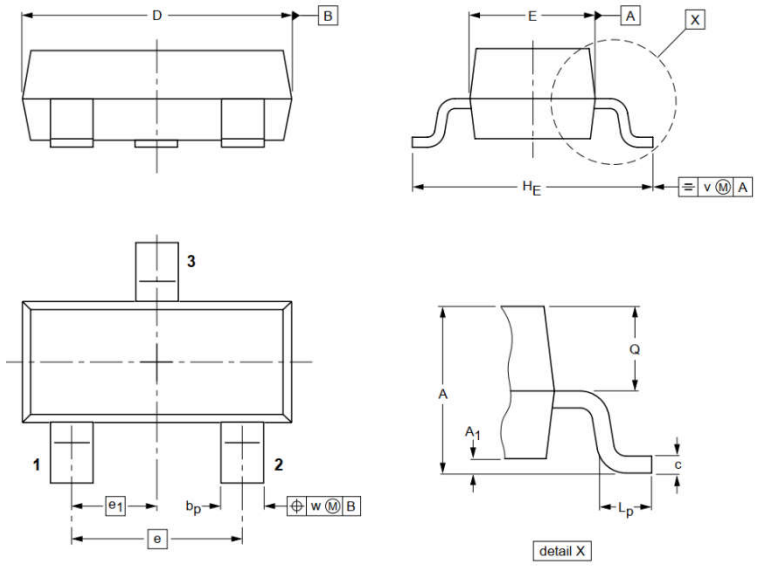
Figure 5. Total power dissipation

Ordering information

Package	Packing Description	Base Quantity	Packing Quantity
SOT-23	Tape/Reel,7"reel	3000pcs/Reel	24000PCS/Box 120000PCS/Carton

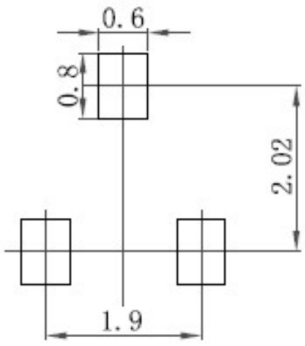
Package Dimensions

SOT-23



Dim.	Millimeter (mm)		mil	
	Min.	Max.	Min.	Max.
A	0.9	1.15	35	45
A1	0.1		3.9	
bp	0.38	0.48	15	19
C	0.09	0.15	3.54	5.9
D	2.8	3.0	110	118
E	1.2	1.4	47	55
E	1.9		75	
E1	0.95		37	
HE	2.1	2.55	83	100
Lp	0.15	0.45	5.9	18
Q	0.45	0.55	18	22
v	0.2		7.9	
W	0.1		4	

The recommended mounting pad size



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