SOT-23 Formed SMD Package

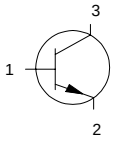
BSR13
BSR14

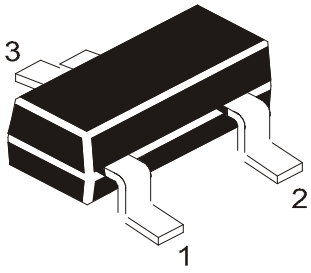
SILICON PLANAR EPITAXIAL TRANSISTORS

N–P–N silicon transistors

Marking
BSR13 = U7
BSR14 = U8

Pin configuration
1 = BASE
2 = EMITTER
3 = COLLECTOR





ABSOLUTE MAXIMUM RATINGS

			BSR13	BSR14	
Collector–base voltage (open emitter)	V_{CB0}	*max.*	*60*	*75*	*V*
Collector–emitter voltage (open base)	V_{CE0}	*max.*	*30*	*40*	*V*
Emitter–base voltage (open collector)	V_{EB0}	*max.*	*5*	*6*	*V*
Collector current (d.c.)	I_C	*max.*	*800*		*mA*
Total power dissipation up to T_{amb} *= 25 °C*	P_{tot}	*max.*	*250*		*mW*
Junction temperature	T_j	*max.*	*150*		*°C*
D.C. current gain					
I_C *= 150 mA;* V_{CE} *= 10 V*	h_{FE}		*100 to 300*		
I_C *= 500 mA;* V_{CE} *= 10 V*	h_{FE}	>	*30*	*40*	
Transition frequency at f = 100 MHz					
I_C *= 20 mA;* V_{CE} *= 20 V*	f_T	>	*250*	*300*	MHz

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

			BSR13	BSR14	
Collector–base voltage (open emitter)	V_{CB0}	*max.*	*60*	*75*	*V*
Collector–emitter voltage (open base)	V_{CE0}	*max.*	*30*	*40*	*V*
Emitter–base voltage (open collector)	V_{EB0}	*max.*	*5*	*6*	*V*
Collector current (d.c.)	I_C	*max.*	*800*		*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_j = 25 °C unless otherwise specified

			BSR13	BSR14	
Collector cut–off current					
I_E = 0; V_{CB} = 50 V	I_{CB0}	<	*30*	*–*	*nA*
I_E = 0; V_{CB} = 60 V	I_{CB0}	<	*–*	*10*	*nA*
I_E = 0; V_{CB} = 50V; T_j = 150°C	I_{CB0}	<	*10*	*–*	*µA*
I_E = 0; V_{CB} = 60V; T_j = 150°C	I_{CB0}	<	*–*	*10*	*µ A*
V_{EB} = 3 V; V_{CE} = 60 V	I_{CEX}	<	*–*	*10*	*nA*
Base current					
with reverse biased emitter junction					
V_{EB} = 3 V; V_{CE} = 60 V	I_{BEX}	<	*–*	*20*	*nA*
Emitter cut–off current					
I_C = 0; V_{EB} = 3 V	I_{EB0}	<	*30*	*15*	*nA*
Saturation voltages					
I_C = 150 mA; I_B: 15 mA	V_{CEsat}	<	*400*	*300*	*mV*
	V_{BEsat}	<	*1.3*	*–*	*V*
	V_{BEsat}		*–*	*0,6 to 1,2*	*V*
I_C = 500 mA; l_B = 50 mA	V_{CEsat}	<	*1.6*	*1.0*	*V*
	V_{BEsat}	<	*2.6*	*2.0*	*V*
D.C. current gain					
I_C = 0,1 mA; V_{CE} = 10 V	h_{FE}	>	*35*		
I_C = 1 mA; V_{CE} = 10 V	h_{FE}	>	*50*		
I_C = 10 mA; V_{CE} = 10 V	h_{FE}	>	*75*		
I_C = 150 mA; V_{CE} = 10 V	h_{FE}		*100 to 300*		
I_C = 150 mA; V_{CE} = 1 V	h_{FE}	>	*50*		
I_C = 500 mA; V_{CE} = 10 VBSR13; R	h_{FE}	>	*30*		
I_C = 500mA; V_{CE} = 10V BSR14; R	h_{FE}	>	*40*		
Transition frequency at f = 100 MHz					
I_C = 20 mA; V_{CE} = 20 V BSR13; R	f_T	>	*250*		MHz
I_C: 20 mA; V_{CE} = 20 V BSR14; R	f_T	>	*300*		MHz
Collector capacitance at f = 1 MHz					
I_E = I_e = 0; V_{CB} = 10 V	C_c	<	*8*		*pF*
Small signal current gain					
I_C = 1 mA; V_{CE} = 10 V; f = 1 KHz; BSR14	h_{fe}		*50 to 300*		
I_C = 10 mA; V_{CE} = 10 V; f = 1 KHz; BSR13	h_{fe}		*75 to 375*		

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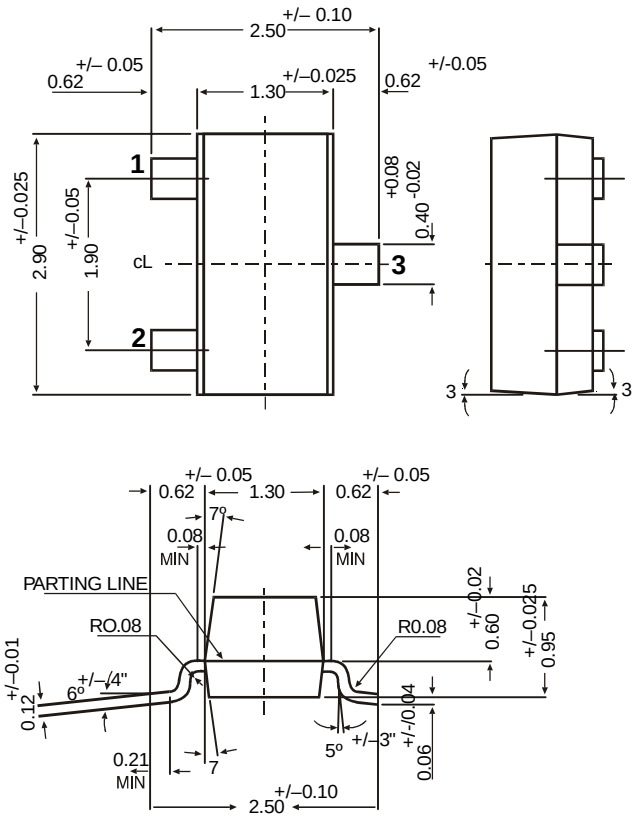
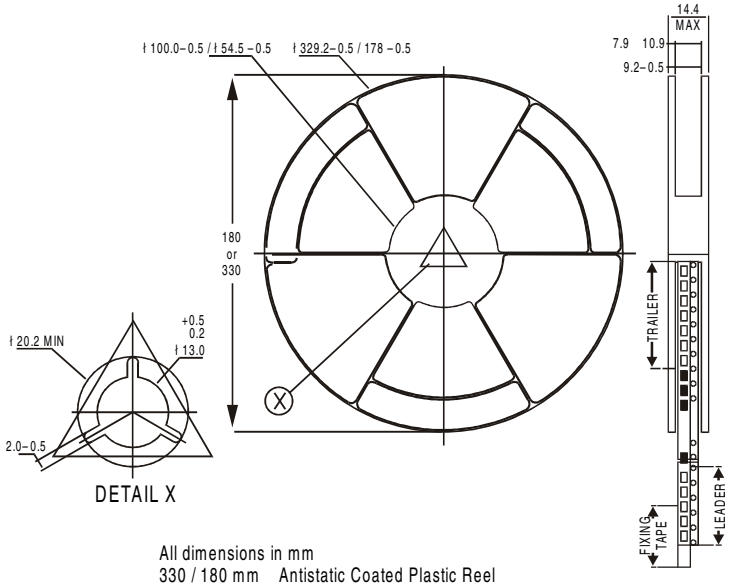


SOT-23 Package Reel Information
Reel specifications for Packing (13"/7" reels)

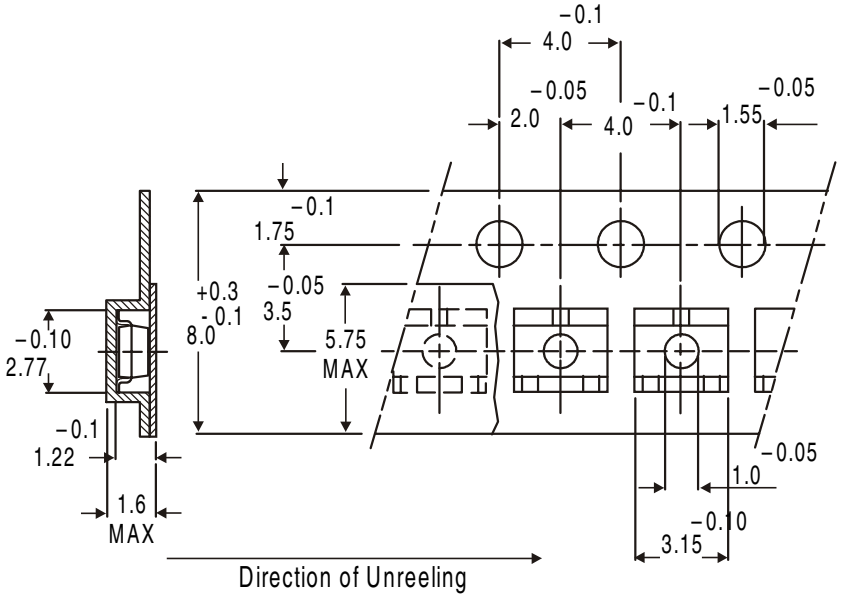


All dimensions in mm
330 / 180 mm Antistatic Coated Plastic Reel

NOTES:	8mm Tape Size of Reel 330 mm (13")	8mm Tape Size of Reel 180 mm (7")
No. of Devices	10,000 Pcs	3,000 Pcs

1. The bandolier of 330 mm reel contains at least 10,000 devices.
2. The bandolier of 180 mm reel contains at least 3,000 devices.
3. No more than 0.5% missing devices / reel. 50 empty compartments for 330 mm reel. 15 empty compartments for 180 mm reel.
4. Three consecutive empty places might be found provided this gap is followed by 6 consecutive devices.
5. The carrier tape (leader) starts with at least 75 empty positions (equivalent to 330 mm). In order to fix the carrier tape a self adhesive tape of 20 to 50 mm is applied. At the end of the bandolier at least 40 empty positions (equivalent to 160 mm) are there.

Tape Specification for SOT-23 Surface Mount Device



All dimensions in mm

Packing Detail

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
SOT-23 T&R	3K/reel	136 gm/3K pcs	3" x 7.5" x 7.5"	12.0K	17" x 15" x 13.5"	192.0K	12 kgs
			9" x 9" x 9"	51.0K	19" x 19" x 19"	408.0K	28 kgs
	10K/reel	415 gm/10K pcs	13" x 13" x 0.5"	10.0K	17" x 15" x 13.5"	300.0K	16 kgs

Customer Notes

Component Disposal Instructions

1. CDIL Semiconductor Devices are RoHS compliant, customers are requested to please dispose as per prevailing Environmental Legislation of their Country.
2. In Europe, please dispose as per EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE).

Disclaimer

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