SOT-23 Formed SMD Package

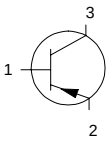
BSR20
BSR20A

SILICON P–N–P HIGH–VOLTAGE TRANSISTORS

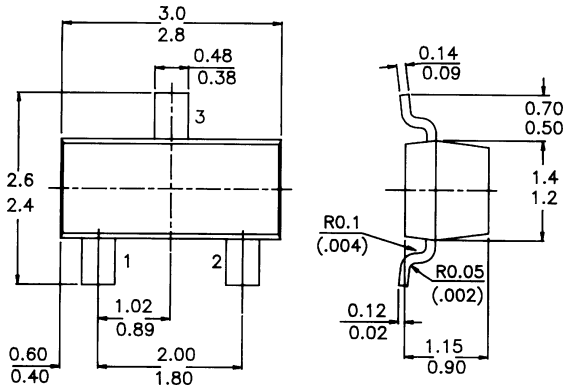
P–N–P high–voltage small–signal transistors

Marking
BSR20 = T35
BSR20A = T36

Pin configuration
1 = BASE
2 = EMITTER
3 = COLLECTOR



PACKAGE OUTLINE DETAILS
ALL DIMENSIONS IN mm



ABSOLUTE MAXIMUM RATINGS

			BSR20	***BSR20A***	
Collector–base boltage (open emitter)	$-V_{CB0}$	*max.*	*130*	*160*	*V*
Collector–emitter voltage (open base)	$-V_{CE0}$	*max.*	*120*	*150*	*V*
Collector current	$-I_C$	*max.*	*600*	*600*	*mA*
Total power dissipation up to T_{amb} = 25 °C	P_{tot}	*max.*	*250*	*250*	*mW*
Junction temperature	T_j	*max.*	*150*	*150*	*° C*
Collector–emitter saturation voltage					
I_C = 50 mA; I_B = 5 mA	V_{CEsat}	*max.*	*0,5*	*0,5*	*V*
D.C. current gain					
I_C = 10 mA; V_{CE} = –5 V	h_{FE}	*min.*	*40*	*60*	
		max.	*180*	*240*	

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

			BSR20	***BSR20A***	
Collector–base voltage (open emitter)	$-V_{CBO}$	*max.*	*130*	*160*	*V*
Collector–emitter voltage (open base)	$-V_{CEO}$	*max.*	*120*	*150*	*V*
Emitter–base voltage (open collector)	$-V_{EBO}$	*max.*	*5*		*V*
Collector current	$-I_C$	*max.*	*600*		*mA*
Total power dissipation					
up to T_{amb} = 25 °C	P_{tot}	*max.*	*250*		*mW*
Junction temperature	T_j	*max.*	*150*		*° C*
Storage temperature	T_{stg}		*–55 to +150*		*° C*

THERMAL RESISTANCE

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

CHARACTERISTICS
T_{amb} = 25 °C unless otherwise specified

			BSR20	***BSR20A***	
Collector cut–off current					
I_E = 0; $-V_{CB}$ = 100 V	$-I_{CB0}$	*max.*	*100*		*nA*
I_E = 0; $-V_{CB}$ = 120 V	$-I_{CB0}$	*max.*		*50*	*nA*
I_E = 0; $-V_{CB}$ = 100 V; T_{amb} = 100 °C	$-I_{CB0}$	*max.*	*100*		mA
I_E = 0; $-V_{CB}$ = 120 V; T_{amb} = 100 °C	$-I_{CB0}$	*max.*		*50*	mA
Emitter cut–off current					
I_C = 0; $-V_{EB}$ = 4,0 V	$-I_{EB0}$	*max.*	*50*	*50*	*nA*
Breakdown voltages					
I_C = 1,0 mA; l_B = 0	$-V_{(BR)CE0}$	*min.*	*120*	*150*	*V*
I_C = 100 mA; I_E = 0	$-V_{(BR)CB0}$	*min.*	*130*	*160*	*V*
I_C = 0; I_E = 10mA	$-V_{(BR)EB0}$	*min.*	*5,0*	*5,0*	*V*
Saturation voltages					
$-I_C$ = 10 mA; $-I_B$ = 1,0 mA	$-V_{CEsat}$	*max.*	*0,2*	*0,2*	*V*
	$-V_{BEsat}$	*max.*	*1,0*	*1,0*	*V*
$-I_C$ = 50 mA; —l_B = 5,0 mA	$-V_{CEsat}$	*max.*	*0,5*	*0,5*	*V*
	$-V_{BEsat}$	*max.*	*1,0*	*1,0*	*V*
D.C. current gain					
I_C = 1,0 mA; $-V_{CE}$ = 5 V	h_{FE}	*min.*	*30*	*50*	
I_C = 10 mA; $-V_{CE}$ = 5 V	h_{FE}	*min.*	*40*	*60*	
		max.	*180*	*240*	
I_C = 50 mA; $-V_{CE}$ = 5 V	h_{FE}	*min.*	*40*	*50*	
Output capacitance at f = 1 MHz					
I_E = 0; $-V_{CB}$ = 10V	Co	*max.*	*6*	*6*	*pF*

			BSR20	BSR20A
Transition frequency at f = 100 MHz	f_T	*min.*	*100*	*100 MHz*
$-I_C$ *= 10 mA;* $-V_{CE}$ *= 10 V*		*max.*	*400*	*300 MHz*
Noise figure at R_S *= 1 k*Ω				
I_C *= 250*μA*;* $-V_{CE}$ *= 5 V;*				
f = 10 Hz to 15,7 kHz	*F*	*max.*	*8*	*8 dB*
Small Signal Current Gain	h_{fe}	*min.*	*30*	*40*
$-V_{CE}$ *= 10V;* $-I_C$ *= 1 mA; f = 1 KHz*		*max.*	*200*	*200*

Disclaimer

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