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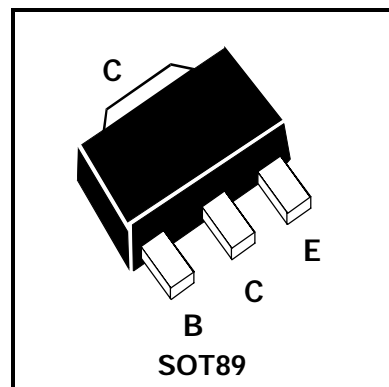
# SOT89 PNP SILICON PLANAR MEDIUM POWER TRANSISTORS

ISSUE 3 – FEBRUARY 1996

BSR31  
BSR33

COMPLEMENTARY TYPE – BSR31 – BSR41  
 BSR33 – BSR43

PARTMARKING DETAILS – BSR31 – BR2  
 BSR33 – BR4



## ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	BSR31	BSR33	UNIT
Collector-Base Voltage	$V_{CBO}$	-70	-90	V
Collector-Emitter Voltage	$V_{CEO}$	-60	-80	V
Emitter-Base Voltage	$V_{EBO}$	-5		V
Peak Pulse Current	$I_{CM}$	-2		A
Continuous Collector Current	$I_C$	-1		A
Power Dissipation at $T_{amb}=25^{\circ}C$	$P_{TOT}$	1		W
Operating and Storage Temperature Range	$T_j:T_{stg}$	-65 to +150		$^{\circ}C$

## ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}C$ unless otherwise stated).

PARAMETER	SYMBOL	MIN.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	-70 -90		V V	$I_C = -100\mu A$ $I_C = -100\mu A$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	-60 -80		V	$I_C = -10mA$ $I_C = -10mA$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	-5		V	$I_E = -10mA$
Collector Cut-Off Current	$I_{CBO}$		-100 -50	nA $\mu A$	$V_{CB} = -60V$ $V_{CB} = -60V, T_{amb} = 125^{\circ}C$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		-0.25 -0.5	V V	$I_C = -150mA, I_B = -15mA^*$ $I_C = -500mA, I_B = -50mA^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		-1.0 -1.2	V V	$I_C = -150mA, I_B = -15mA^*$ $I_C = -500mA, I_B = -50mA^*$
Static Forward Current Transfer Ratio	$h_{FE}$	30 100 50	300		$I_C = -100\mu A, V_{CE} = -5V^*$ $I_C = -100mA, V_{CE} = -5V^*$ $I_C = -500mA, V_{CE} = -5V^*$
Collector Capacitance	$C_c$		20	pF	$V_{CB} = -10V, f = 1MHz$
Emitter Capacitance	$C_e$		120	pF	$V_{EB} = -0.5V, f = 1MHz$
Transition Frequency	$f_T$	100		MHz	$I_C = -50mA, V_{CE} = -10V$ $f = 35MHz$
Turn-On Time	$T_{on}$		500	ns	$V_{CC} = -20V, I_C = -100mA$
Turn-Off Time	$T_{off}$		650	ns	$I_{B1} = -I_{B2} = -5mA$

\*Measured under pulsed conditions. Pulse width=300 $\mu s$ . Duty cycle  $\leq 2\%$   
 Spice parameter data is available upon request for this device