BSV15
BSV16
BSV17

CASE 79, STYLE 1
TO-39 (TO-205AD)

AMPLIFIER TRANSISTOR

PNP SILICON

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Refer to 2N4405 for graphs.

MAXIMUM RATINGS

Rating	Symbol	BSV 15	BSV 16	BSV 17	Unit
Collector-Emitter Voltage	V_{CEO}	40	60	80	Vdc
Collector-Emitter Voltage	V_{CES}	40	60	90	Vdc
Collector-Base Voltage	V_{CBO}	40	60	90	Vdc
Emitter-Base Voltage	V_{EBO}	5			Vdc
Collector Current – Continuous	I_C	1			Adc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	1.25 7.15			Watt mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	7 40			Watt mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to +200			°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	20	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	140	°C/W

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector Cutoff Current		I_{CES}			
(V_{CE} = 40 V)				50	nA
(V_{CE} = 40 V, T_A = 150°C)	BSV15			50	µA
(V_{CE} = 60 V)				50	nA
(V_{CE} = 60 V, T_A = 150°C)	BSV16			50	µA
(V_{CE} = 80 V)				50	nA
(V_{CE} = 80 V, T_A = 150°C)	BSV17			50	µA
(V_{CE} = 40 V, V_{BE} = −0.2 V, T_A = 100°C)	BSV15	I_{CEX}		50	µA
(V_{CE} = 60 V, V_{BE} = −0.2 V, T_A = 100°C)	BSV16			50	
(V_{CE} = 80 V, V_{BE} = −0.2 V, T_A = 100°C)	BSV17			50	
Emitter Cutoff Current (V_{EB} = 4 V)		I_{EBO}		50	nA
Collector-Emitter Breakdown Voltage (I_C = 50 mA(1)		$V_{(BR)CEO}$			V
	BSV15		40		
	BSV16		60		
	BSV17		80		
Collector-Emitter Breakdown Voltage (I_C = 10 µA)	BSV15	$V_{(BR)CES}$	40		V
	BSV16		60		
	BSV17		90		
Emitter-Base Breakdown Voltage (I_E = 10 µA)		$V_{(BR)EBO}$	5		V
Emitter Cutoff Current (V_{EB} = 4 V)		I_{EBO}		50	nA
ON CHARACTERISTICS					
DC Current Gain		h_{FE}			
(V_{CE} = 1 V, I_C = 0.1 mA)	BSV15,16,17 − 6		15		
	− 10		20		
	BSV15,16 − 16		30		
(V_{CE} = 1 V, I_C = 100 mA)(1)	BSV15,16,17 − 6		40	100	
	− 10		63	160	
	BSV15,16 − 16		100	250	
(V_{CE} = 1 V, I_C = 500 mA)(1)	BSV15,16,17 − 6		20		
	− 10		25		
	BSV15,16 − 16		35		
Base-Emitter Voltage		$V_{BE(on)}$			V
(V_{CE} = 1 V, I_C = 100 mA)(1)				1	
(V_{CE} = 1 V, I_C = 500 mA)(1)			0.7	1.4	

(1) Pulsed: Pulse Duration = 300 µs, Duty Cycle = 1%.

ELECTRICAL CHARACTERISTICS (continued) (T_A = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
SMALL SIGNAL CHARACTERISTICS				
Current Gain Bandwidth Product (I_C = 50 mA, V_{CE} = 10 V, f = 20 MHz)	f_T	50		MHz
Output Capacitance (V_{CB} = 10 V, I_E = 0, f = 1 MHz)	C_{ob}		25	pF
Small Signal Current Gain (I_C = 1 mA, V_{CE} = 5 V, f = 1 MHz)	h_{fe}	20		
Turn On Time (Fig. 1) (I_C = 100 mA, I_{B1} = I_{B2} = 5 mA) Storage Time (Fig. 1) (I_C = 100 mA, I_{B1} = I_{B2} = 5 mA)	t_{on} t_s		500 500	ns
Fall Time (Fig. 1) (I_C = 100 mA, I_{B1} = I_{B2} = 5 mA)	t_f		150	ns

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FIGURE 1 — SWITCHING TIME CIRCUIT