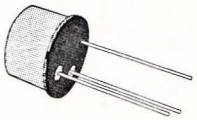
SGS-THOMSON
MICROELECTRONICS

BSV15
BSV16

MEDIUM POWER AMPLIFIERS

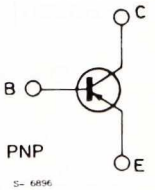
DESCRIPTION

The BSV15 and BSV16 are silicon planar epitaxial PNP transistors in Jedec TO-39 metal case, intended for use in medium power general industrial applications.



TO–39

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		BSV15	BSV16	
V_{CES}	Collector-emitter Voltage (V_{BE} = 0)	– 40	– 60	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	– 40	– 60	V
V_{EBO}	Emitter-base Voltage (I_C = 0)	– 5		V
I_C	Collector Current	– 1		A
I_B	Base Current	– 0.2		A
P_{tot}	Total Power Dissipation at $T_{case} \leq 25$ °C	5		W
T_{stg}, T_j	Storage and Junction Temperature	– 65 to 200		°C

THERMAL DATA

$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	35	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	200	°C/W

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

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
I_{CES}	Collector Cutoff Current (V_{BE} = 0)	for **BSV 15**					
		V_{CE} = – 40 V				– 0.1	µA
		V_{CE} = – 40 V	T_{amb} = 150 °C			– 50	µA
		for **BSV 16**					
		V_{CE} = - 60 V				– 0.1	µA
		V_{CE} = - 60 V	T_{amb} = 150 °C			– 50	µA
I_{CEX}	Collector Cutoff Current (V_{BE} = 0.2 V)	for **BSV 15**					
		V_{CE} = – 40 V	T_{amb} = 100 °C			– 50	µA
		for **BSV 16**					
		V_{CE} = – 60 V	T_{amb} = 100 °C			– 50	µA
I_{EBO}	Emitter Cutoff Current (I_C = 0)	V_{EB} = – 4 V				– 50	nA
$V_{(BR)\ CES}$	Collector-emitter Breakdown Voltage (V_{BE} = 0)	I_C = – 10 µA	for **BSV 15**	– 40			V
			for **BSV 16**	– 60			V
$V_{CEO\ (sus)}$*	Collector-emitter Sustaining Voltage (I_B = 0)	I_C = – 10 mA	for **BSV 15**	– 40			V
			for **BSV 16**	– 60			V
$V_{(BR)\ EBO}$	Emitter-base Breakdown Voltage (I_C = 0)	I_E = – 10 µA		– 5			V
$V_{CE\ (sat)}$	Collector-emitter Saturation Voltage	I_C = – 500 mA	I_B = – 25 mA	– 0.25		– 1	V
V_{BE}	Base-emitter Voltage	I_C = – 100 mA	V_{CE} = – 1 V			– 1	V
		I_C = – 500 mA	V_{CE} = – 1 V	– 0.7	– 0.85	– 1.4	V
h_{FE}	DC Current Gain	I_C = – 0.1 mA	V_{CE} = – 1 V				
			Gr. 6	15	44		
			Gr. 10	20	75		
			Gr. 16	30	120		
		I_C = – 100 mA	V_{CE} = – 1 V				
			Gr. 6	40	63	100	
			Gr. 10	63	100	160	
			Gr. 16	100	160	250	

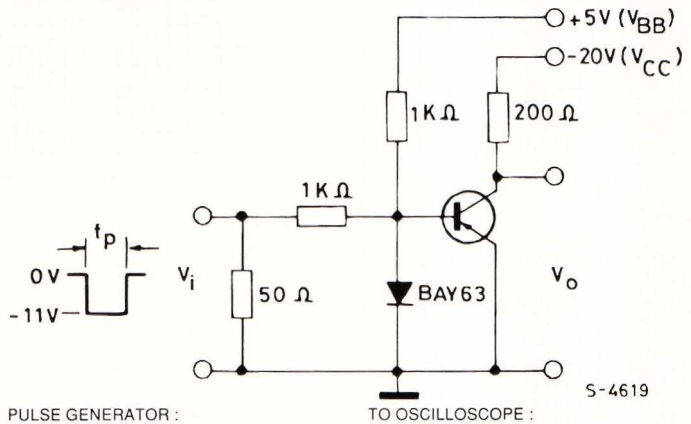
* Pulsed : pulse duration = 300 µs, duty cycle = 1 %.

ELECTRICAL CHARACTERISTICS (continued)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
h_{FE}	DC Current Gain	$I_C = -500$ mA $V_{CE} = -1$ V Gr. 6 Gr. 10 Gr. 16	 20 25 35	 40 55 85		
h_{fe}	Small Signal Current Gain	$I_C = -1$ mA $V_{CE} = -5$ V f = 1 KHz	20			
f_T	Transition Frequency	$I_C = -50$ mA $V_{CE} = -1$ V f = 20 MHz	50			MHz
C_{EBO}	Emitter-base Capacitance	$I_C = 0$ $V_{EB} = -0.5$ V f = 1 MHz		180		pF
C_{CBO}	Collector-base Capacitance	$I_E = 0$ $V_{CB} = -10$ V f = 1 MHz		20	30	pF
t_s **	Storage Time	$I_C = -100$ mA $V_{CC} = -20$ V $I_{B1} = -I_{B2} = -5$ mA			500	ns
t_f **	Fall Time	$I_C = -100$ mA $V_{CC} = -20$ V $I_{B1} = -I_{B2} = -5$ mA			150	ns
t_{on} **	Turn-on Time	$I_C = -100$ mA $V_{CC} = -20$ V $I_{B1} = -5$ mA			500	ns

** See test circuit.

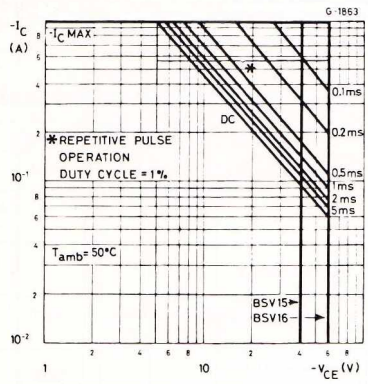
Test Circuit for t_s, t_f and t_{on}.



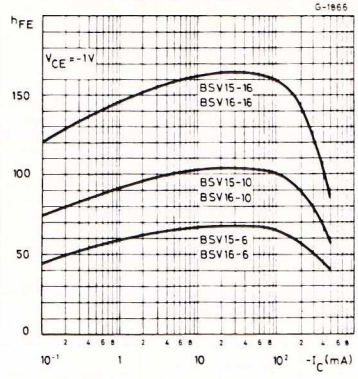
PULSE GENERATOR :
$t_p \geq 10\ \mu s$
$t_r \leq 15$ ns
$t_f \leq 15$ ns
$Z_s = 50\ \Omega$

TO OSCILLOSCOPE :
$tr \leq 15$ ns
$Z_{IN} \geq 100\ K\Omega$

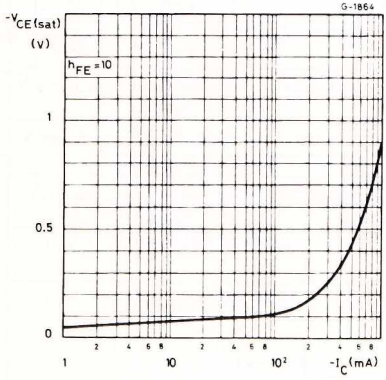
Safe Operating Areas.



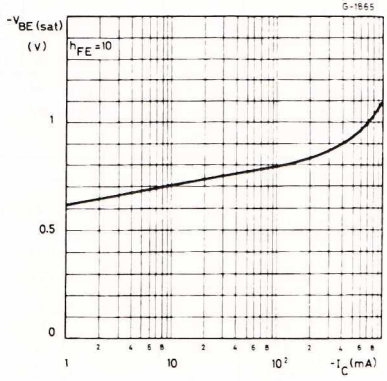
DC Current Gain.



Collector-emitter Saturation Voltage.



Base-emitter Saturation Voltage.



Transition Frequency.