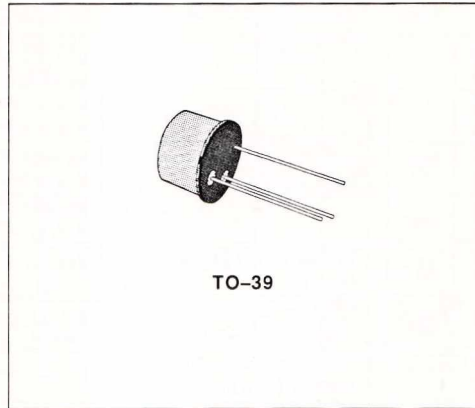


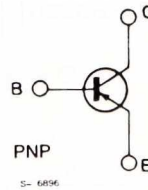
## MEDIUM POWER AMPLIFIERS

### 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.



### 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 $T_{case} \leq 25^\circ\text{C}$	5		W
$T_{stg}, T_j$	Storage and Junction Temperature	- 65 to 200		$^\circ\text{C}$

**THERMAL DATA**

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

**ELECTRICAL CHARACTERISTICS**( $T_{amb} = 25\ ^{\circ}C$  unless otherwise specified)

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

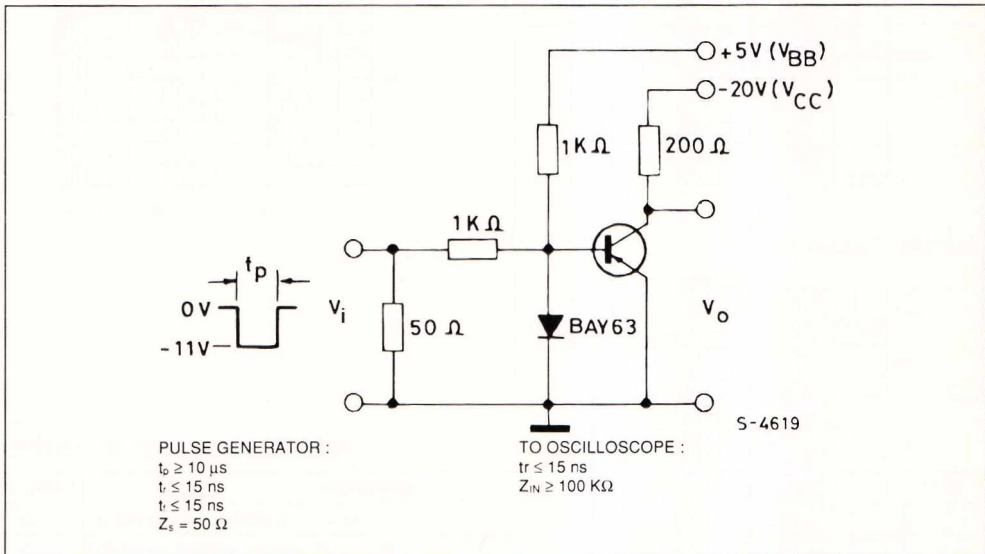
\* Pulsed : pulse duration = 300  $\mu s$ , duty cycle = 1 %.

## ELECTRICAL CHARACTERISTICS (continued)

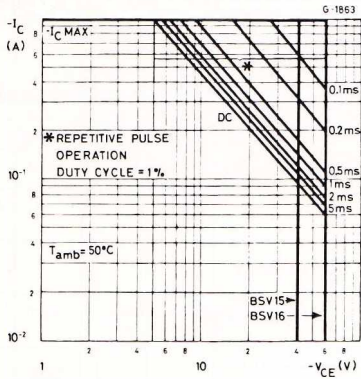
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$h_{FE}$	DC Current Gain	$I_C = -500 \text{ mA}$ $V_{CE} = -1 \text{ V}$ Gr. 6 Gr. 10 Gr. 16	20 25 35	40 55 85		
$h_{fe}$	Small Signal Current Gain	$I_C = -1 \text{ mA}$ $V_{CE} = -5 \text{ V}$ $f = 1 \text{ KHz}$	20			
$f_T$	Transition Frequency	$I_C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

\*\* See test circuit.

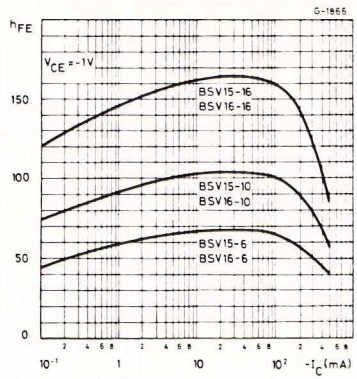
Test Circuit for  $t_s$ ,  $t_f$  and  $t_{on}$ .



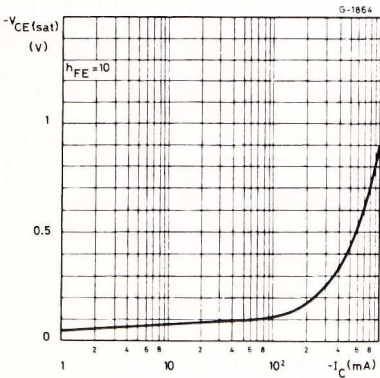
**Safe Operating Areas.**



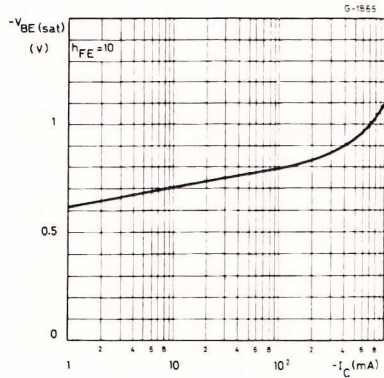
**DC Current Gain.**



**Collector-emitter Saturation Voltage.**



**Base-emitter Saturation Voltage.**



**Transition Frequency.**

