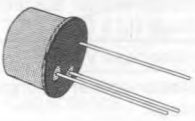
SGS-THOMSON MICROELECTRONICS

BUY49S

HIGH VOLTAGE, MEDIUM CURRENT SWITCH

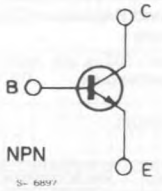
DESCRIPTION

The BUY49S is a silicon epitaxial planar NPN transistor in Jedec TO-39 metal case. It is used in high-voltage, high-current switching applications up to 3A.



TO-39

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base Voltage (I_E = 0)	250	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	200	V
V_{EBO}	Emitter-base Voltage (I_C = 0)	6	V
I_C	Collector Current	3	A
I_{CM}	Collector Peak Current	5	A
P_{tot}	Total Power Dissipation at $T_{amb} \leq 25$ °C $T_{case} \leq 50$ °C	1 10	W W
T_{stg}	Storage Temperature	– 65 to 200	°C
T_j	Junction Temperature	200	°C

THERMAL DATA

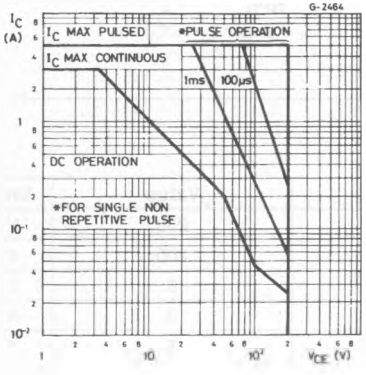
$R_{th\ j\text{-}case}$	Thermal Resistance Junction-case	Max	15	°C/W
$R_{th\ j\text{-}amb}$	Thermal Resistance Junction-ambient	Max	175	°C/W

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

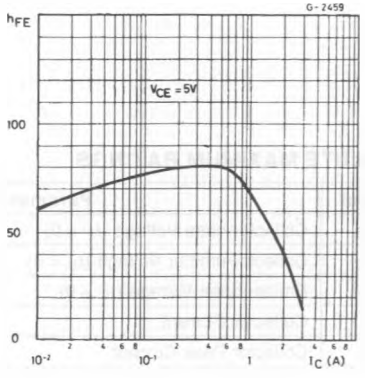
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cutoff Current (I_E = 0)	V_{CB} = 200 V V_{CB} = 200 V T_{case} = 150 °C			0.1 50	µA µA
$V_{(BR)CBO}$*	Collector-base Breakdown Voltage (I_E = 0)	I_C = 100 µA	250			V
$V_{CEO(sus)}$*	Collector-emitter Sustaining Voltage (I_B = 0)	I_C = 20 mA	200			V
V_{EBO}*	Emitter-base Voltage (I_C = 0)	I_E = 1 mA	6			V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = 0.5 A I_B = 50 mA			0.2	V
$V_{BE(sat)}$*	Base-emitter Saturation Voltage	I_C = 0.5 A I_B = 50 mA			1.1	V
h_{FE}*	DC Current Gain	I_C = 20 mA V_{CE} = 5 V I_C = 0.5 A V_{CE} = 5 V I_C = 20 mA V_{CE} = 2 V T_{case} = − 55 °C	40 40 16	80		
f_T	Transition Frequency	I_C = 100 mA V_{CE} = 10 V	50			MHz
C_{CBO}	Collector-base Capacitance	I_E = 0 V_{CB} = 10 V f = 1 MHz			30	pF
t_{on}	Turn-on Time	I_C = 0.5 A V_{CC} = 20 V I_{B1} = − I_{B2} = 50 mA			0.3	µs
t_{off}	Turn-off Time				1	µs
$I_{s/b}$**	Second Breakdown Collector Current	V_{CE} = 50 V	0.2			A

* Pulsed : pulse duration = 300 µs, duty cycle = 1.5 %.
** Pulsed : 1 s, non repetitive pulse.

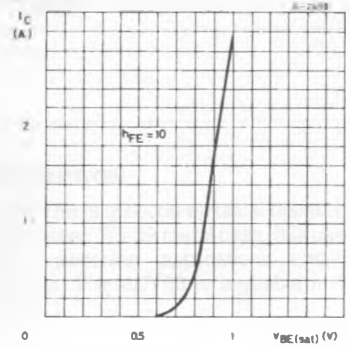
Safe Operating Areas.



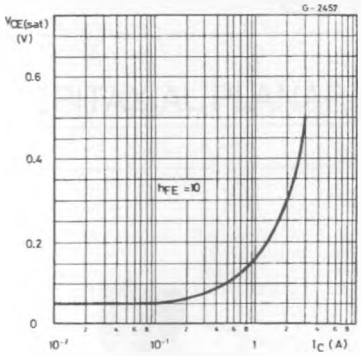
DC Current Gain.



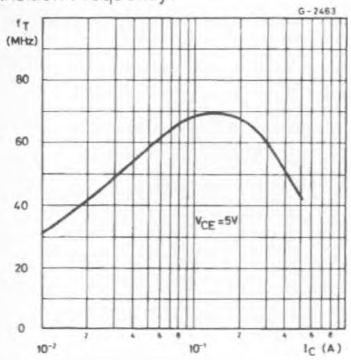
DC Transconductance.



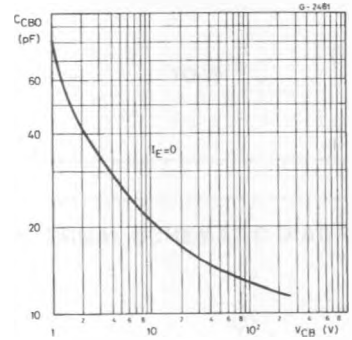
Collector-emitter Saturation Voltage.



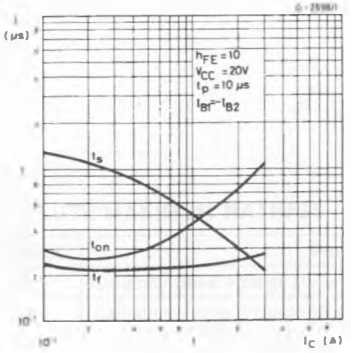
Transition Frequency.



Collector-base Capacitance.



Saturated Switching Characteristics.



Power Rating Chart.