SGS-THOMSON MICROELECTRONICS

BUV20
BUV21

HIGH CURRENT NPN SILICON TRANSISTORS

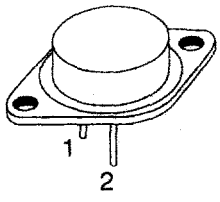
- SGS-THOMSON PREFERRED SALESTYPES
- NPN TRANSISTOR
- HIGH CURRENT CAPABILITY
- FAST SWITCHING SPEED
- HIGH RUGGEDNESS

APPLICATIONS

- LINEAR AND SWITCHING INDUSTRIAL EQUIPMENT
- SWITCHING REGULATORS

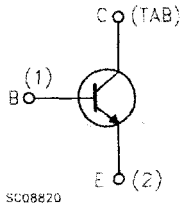
DESCRIPTION

The BUV20 and BUV21 are silicon multiepitaxial planar NPN transistor in jedec TO-3 metal case, intended for use in switching and linear applications in military and industrial equipment.



TO-3
(version "S")

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value		Unit
		BUV20	BUV21	
V_{CBO}	Collector-Base Voltage (I_E = 0)	160	250	V
V_{CER}	Collector-Emitter Voltage (R_{BE} = 100Ω)	150	240	V
V_{CEX}	Collector-Emitter Voltage (V_{BE} = -1.5V)	160	250	V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)	125	200	V
V_{EBO}	Emitter-Base Voltage (I_C = 0)	7	7	V
I_C	Collector Current	50	40	A
I_{CM}	Collector Peak Current	60	50	A
I_B	Base Current	10	8	A
P_{tot}	Total Power Dissipation at $T_{case} \leq 25$ °C	250		W
T_{stg}	Storage Temperature	-65 to 200		°C
T_j	Junction Temperature	200		°C

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	0.7	°C/W

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CEX}	Collector Cut-off Current (VBE = -1.5V)	$V_{CE} = V_{CEX}$ for **BUV20** for **BUV21** at T_{case} = 125 °C for **BUV20** for **BUV21**			 3 3 12 12	 mA mA mA mA
I_{CEO}	Collector Cut-off Current (I_B = 0)	for **BUV20** V_{CE} = 100 V for **BUV21** V_{CE} = 160 V			3 3	mA mA
I_{EBO}	Emitter Cut-off Current (I_C = 0)	V_{EB} = 5 V			1	mA
$V_{CEO(sus)}$*	Collector-Emitter Sustaining Voltage (I_B = 0)	I_C = 200 mA L = 25 mH for **BUV20** for **BUV21**	 125 200			 V V
$V_{(BR)EBO}$*	Emitter-base Breakdown Voltage (I_C = 0)	I_E = 50 mA	7			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	for **BUV20** I_C = 25 A I_B = 2.5 A I_C = 50 A I_B = 5 A for **BUV21** I_C = 12 A I_B = 1.2 A I_C = 25 A I_B = 3 A		 0.3 0.7 0.2 0.9	 0.6 1.2 0.6 1.5	 V V V V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	for **BUV20** I_C = 50 A I_B = 5 A for **BUV21** I_C = 25 A I_B = 3 A		 1.4 1.2	 2 1.5	 V V
h_{FE}*	DC Current Gain	for **BUV20** V_{CE} = 2 V I_C = 25 A V_{CE} = 4 V I_C = 50 A for **BUV21** V_{CE} = 2 V I_C = 12 A V_{CE} = 4 V I_C = 25 A	 20 10 20 10		 60 60	
f_T	Transition frequency	V_{CE} = 15 V I_C = 2 A f = 100 MHz	8			MHz
t_{on}	Turn-on Time	for **BUV20** I_C = 50 A I_B = 5 A for **BUV21** I_C = 25 A I_B = 3 A			1.5 1.2	µs µs
t_f	Fall time	for **BUV20** I_C = 50 A I_{B1} = - I_{B2} = 5 A for **BUV21** I_C = 25 A I_{B1} = - I_{B2} = 3 A			 0.3 0.4	 µs µs
t_S	Storage Time	for **BUV20** I_C = 50 A I_{B1} = - I_{B2} = 5 A for **BUV21** I_C = 25 A I_{B1} = - I_{B2} = 3 A			 1.2 1.8	 µs µs

* Pulsed: Pulse duration = 300 µs, duty cycle ≤ 2 %