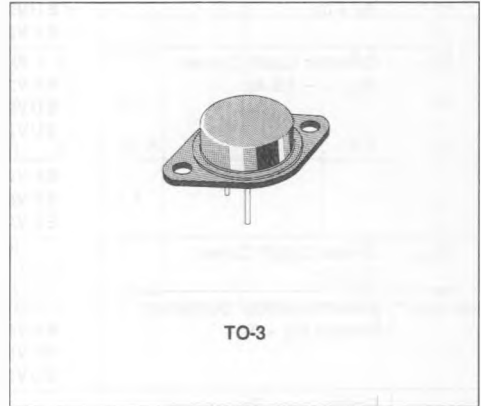


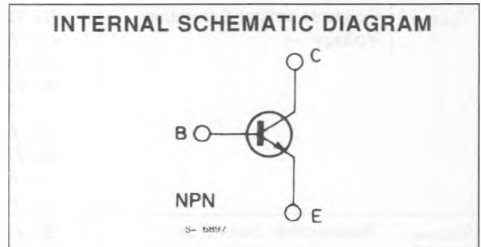
HIGH CURRENT POWER SWITCH

DESCRIPTION

The BUV20, BUV21 and BUV22 are silicon multi-epitaxial planar NPN transistor in jedec TO-3 metal case, intended for use in switching and linear applications in military and industrial equipment.



TO-3



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value			Unit
		BUV20	BUV21	BUV22	
V_{CBO}	Collector-base Voltage ($I_E = 0$)	160	250	300	V
V_{GER}	Collector-emitter Voltage ($R_{BE} = 100 \Omega$)	150	240	290	V
V_{CEX}	Collector-emitter Voltage ($V_{BE} = -1.5$ V)	160	250	300	V
V_{CEO}	Collector-emitter Voltage ($I_B = 0$)	125	200	250	V
V_{EBO}	Emitter-base Voltage ($I_C = 0$)	7	7	7	V
I_C	Collector Current	50	40	40	A
I_{CM}	Collector Peak Current	60	50	50	A
I_B	Base Current	10	8	8	A
P_{tot}	Total Power Dissipation at $T_{case} \leq 25^\circ C$	250			W
T_{stg}	Storage Temperature	- 65 to 200			$^\circ C$
T_j	Junction Temperature	200			$^\circ C$

THERMAL DATA

$R_{th\ j-case}$	Thermal Resistance Junction-case	Max	0.7	°C/W
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ELECTRICAL CHARACTERISTICS ($T_{case} = 25\text{ °C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CEO}	Collector Cutoff Current ($I_B = 0$)	for BUV20 $V_{CE} = 100\text{ V}$ for BUV21 $V_{CE} = 160\text{ V}$ for BUV22 $V_{CE} = 200\text{ V}$			3 3 3	mA mA mA
I_{CEX}	Collector Cutoff Current ($V_{BE} = -1.5\text{ A}$)	$V_{CE} = V_{CEX}$ for BUV20 for BUV21 for BUV22 at $T_{case} = 125\text{ °C}$ for BUV20 for BUV21 for BUV22			3 3 3 12 12 12	mA mA mA mA mA mA
I_{EBO}	Emitter Cutoff Current ($I_C = 0$)	$V_{EB} = 5\text{ V}$			1	mA
$V_{CEO(sus)}^*$	Collector-emitter Sustaining Voltage ($I_B = 0$)	$I_C = 200\text{ mA}$ $L = 25\text{ mH}$ for BUV20 for BUV21 for BUV22	125 200 250			V V V
$V_{(BR)EBO}^*$	Emitter-base Breakdown Voltage ($I_C = 0$)	$I_E = 50\text{ mA}$	7			V
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	for BUV20 $I_C = 25\text{ A}$ $I_B = 2.5\text{ A}$ $I_C = 50\text{ A}$ $I_B = 5\text{ A}$ for BUV21 $I_C = 12\text{ A}$ $I_B = 1.2\text{ A}$ $I_C = 25\text{ A}$ $I_B = 3\text{ A}$ for BUV22 $I_C = 10\text{ A}$ $I_B = 1\text{ A}$ $I_C = 20\text{ A}$ $I_B = 2.5\text{ A}$		0.3 0.7 0.2 0.9 0.2 0.5	0.6 1.2 0.6 1.5 1 1.5	V V V V V V
$V_{BE(sat)}^*$	Base-emitter Saturation Voltage	for BUV20 $I_C = 50\text{ A}$ $I_B = 5\text{ A}$ for BUV21 $I_C = 25\text{ A}$ $I_B = 3\text{ A}$ for BUV22 $I_C = 40\text{ A}$ $I_B = 4\text{ A}$		1.4 1.2 1.2	2 1.5 1.5	V V V
h_{FE}^*	DC Current Gain	for BUV20 $V_{CE} = 2\text{ V}$ $I_C = 25\text{ A}$ $V_{CE} = 4\text{ V}$ $I_C = 50\text{ A}$ for BUV21 $V_{CE} = 2\text{ V}$ $I_C = 12\text{ A}$ $V_{CE} = 4\text{ V}$ $I_B = 25\text{ A}$ for BUV22 $V_{CE} = 4\text{ V}$ $I_C = 10\text{ A}$ $V_{CE} = 4\text{ V}$ $I_C = 20\text{ A}$	20 10 20 10 20 10		60 60 60	
f_T	Transition Frequency	$V_{CE} = 15\text{ V}$ $f = 100\text{ MHz}$ $I_C = 2\text{ A}$	8			MHz

* Pulsed pulse duration = 300 μs , duty cycle < 2%.

ELECTRICAL CHARACTERISTICS (continued)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t_{on}	Turn-on Time	for BUV20 $I_C = 50\text{ A}$ $I_B = 5\text{ A}$			1.5	μs
		for BUV21 $I_C = 25\text{ A}$ $I_B = 3\text{ A}$			1.2	μs
		for BUV22 $I_C = 20\text{ A}$ $I_B = 2.5\text{ A}$			1.3	μs
t_f	Fall Time	for BUV20 $I_C = 50\text{ A}$ $I_{B1} = -I_{B2} = 5\text{ A}$			0.3	μs
		for BUV21 $I_C = 25\text{ A}$ $I_{B1} = -I_{B2} = 3\text{ A}$			0.4	μs
		for BUV22 $I_C = 20\text{ A}$ $I_{B1} = -I_{B2} = 2.5\text{ A}$			0.5	μs
t_s	Storage Time	for BUV20 $I_C = 50\text{ A}$ $I_{B1} = -I_{B2} = 5\text{ A}$			1.2	μs
		for BUV21 $I_C = 25\text{ A}$ $I_{B1} = -I_{B2} = 3\text{ A}$			1.8	μs
		for BUV22 $I_C = 20\text{ A}$ $I_{B1} = -I_{B2} = 2.5\text{ A}$			2	μs

* Pulsed, pulse duration = 300 μs , duty cycle $\leq 2\%$.