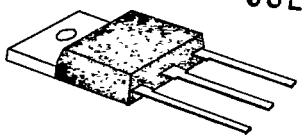
T-33-13

JUL 06 1988



SEMELAB

SMLB

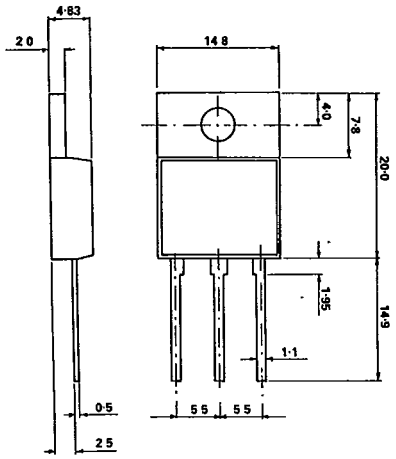
BUX 10P

NPN MULTI-EPITAXIAL POWER TRANSISTOR

Suitable for high current, high speed and high power applications

MECHANICAL DATA

Dimensions in mm



SOT 93
(ALSO AVAILABLE IN CHIP FORM)

FEATURES

- HIGH CURRENT
- FAST SWITCHING
- HIGH RELIABILITY

APPLICATIONS

- POWER SWITCHING CIRCUITS
- MOTOR CONTROLS

ABSOLUTE MAXIMUM RATINGS (T_{CASE} = 25°C unless otherwise stated)

V_{CBO}	Collector-base voltage ($I_E = 0$)	160V
V_{CEX}	Collector-emitter voltage ($V_{BE} = -1{\cdot}5V$)	160V
V_{CEO}	Collector-emnitter voltage ($I_b = 0$)	125V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	7V
I_C	Collector current	25A
$I_{C(PK)}$	Peak collector current (t_p = 10ms)	30A
I_B	Base current	5A
P_{tot}	Total dissipation at T_{CASE} = 25°C	150W
T_{stg}	Storage temperature	−55 to 200°C
T_j	Maximum operating junction temperature	200°C
R_{th}	Thermal resistance (junction-case)	Max. 1·17°C/W

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ELECTRICAL CHARACTERISTICS (T_{CASE} = 25°C unless otherwise stated)

Parameter		Test Conditions		Min.	Typ.	Max.	Unit
$V_{CEO(sus)}$	Collector-emitter sustaining voltage	$I_B = 0$	$I_C = 200mA$	125			V
I_{CEX}	Collector cut-off current	$V_{CE} = 160V$	$V_{BE} = -1{\cdot}5V$			1·5	mA
			$T_{CASE} = 125°C$			6·0	mA
I_{CEO}	Collector cut-off current	$I_B = 0$	$V_{CE} = 100V$			1·5	mA
I_{EBO}	Emitter cut-off current	$I_C = 0$	$V_{BE} = 5V$			1·0	mA
V_{EBO}	Emitter-base voltage	$I_C = 0$	$I_E = 50mA$	7·0			V
$V_{CE(sat)}$*	Collector-emitter saturation voltage	$I_C = 10A$	$I_B = 1A$		0·3	0·6	V
		$I_C = 20A$	$I_B = 2A$		0·7	1·2	V
$V_{BE(sat)}$*	Emitter-base saturation voltage	$I_C = 20A$	$I_B = 2A$		1·6	2·0	V
h_{FE}	DC Current gain	$I_C = 10A$	$V_{CE} = 2V$	20		60	–
		$I_C = 20A$	$V_{CE} = 4V$	10			–
$I_{S.B}$	Second breakdown collector current	$V_{CE} = 30V$	$t = 1s$	5·0			A
		$V_{CE} = 48V$	$t = 1s$	1·0		A	
f_T	Transition frequency	$I_C = 1A$	$V_{CE} = 15V$				
		$f = 10MHz$		8·0			MHz

SWITCHING CHARACTERISTICS (T_{CASE} = 25°C unless otherwise stated)

Parameter		Test Conditions		Min.	Typ.	Max.	Unit
t_{on}	On time	$I_C = 20A$	$I_{B1} = 2A$				
		$V_{CC} = 30V$			0·5	1·5	µs
t_s	Storage time	$I_C = 20A$	$I_{B1} = 2A$		0·6	1·2	µs
t_f	Fall time	$V_{CC} = 30V$	$I_{B2} = -2A$		0·15	0·3	µs
	Clamped $E_{S.B}$ collector current	$V_{clamp} = 125V$	$L = 500\mu H$	20			A

* Pulse test $t_p = 300\mu s$ $\delta \leq 2\%$