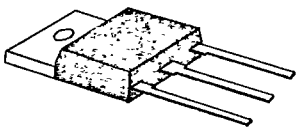


JUL 06 1988

SMLB

SEMELAB

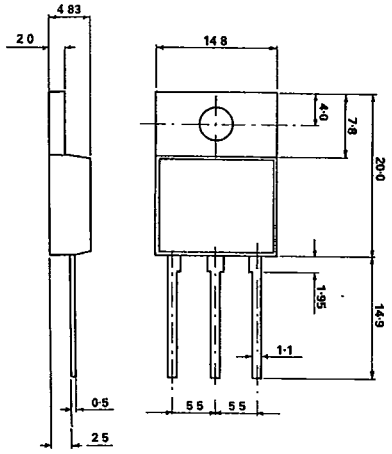
BUT 72

NPN MULTI-EPITAXIAL POWER TRANSISTOR

Suitable for high efficiency switching applications

MECHANICAL DATA

Dimensions in mm



SOT 93
(ALSO AVAILABLE IN CHIP FORM)

FEATURES

- VERY LOW $V_{CE(SAT)}$
- HIGH CURRENT
- FAST SWITCHING

APPLICATIONS

- HIGH EFFICIENCY CONVERTERS
- MOTOR CONTROLS
- POWER SWITCHING

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

V_{CEX}	Collector-emitter voltage (V_{BE} = −1·5V)	400V
V_{CEO}	Collector-emitter voltage (I_B = 0)	300V
V_{EBO}	Emitter-base voltage	7V
I_E	Emitter current	40A
$I_{E(PK)}$	Peak emitter current	60A
I_B	Base current	8A
$I_{B(PK)}$	Peak base current	12A
P_{tot}	Total dissipation at T_{CASE} = 25°C	200W
T_{stg}	Storage temperature	−55 to 200°C
T_j	Maximum operating junction temperature	200°C
R_{th}	Thermal resistance (junction-case)	Max. 0·63°C/W

T-33-15

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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	$I_B = 0, I_C = 0{\cdot}2A$	$L = 25mH$	300			V
$V_{(BR)EBO}$	Emitter base breakdown voltage	$I_C = 0$	$I_E = 50mA$	7			V
I_{CEX}	Collector cut-off current	$V_{BE} = -1{\cdot}5V$	$V_{CE} = V_{CEX}$ $T_j = 100°C$			1·0 4·0	mA mA
I_{CER}	Collector cut-off current	$R_{BE} = 5\Omega$	$V_{CE} = V_{CEX}$ $T_j = 100°C$			1·0 5·0	mA mA
I_{EBO}	Emitter cut-off current	$I_C = 0$	$V_{BE} = -5V$			1·0	mA
$V_{CE(sat)}$*	Collector-emitter saturation voltage	$I_C = 30A$	$I_B = 3A$ $T_j = 100°C$			0·9 1·9	V V
$V_{BE(sat)}$*	Emitter-base saturation voltage	$I_C = 30A$	$I_B = 3A$ $T_j = 100°C$			1·3 1·3	V V

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

Parameter		Test Conditions		Min.	Typ.	Max.	Unit
TURN-ON SWITCHING CHARACTERISTICS							
di_c/dt	On state collector current rate of rise	$R_C = 0$ $I_{B1} = 4{\cdot}5A$ $T_j = 100°C$	$V_{CC} = 250V$ $t_p = 3\mu s$		125		A/µs
TURN-OFF SWITCHING CHARACTERISTICS - INDUCTIVE LOAD, WITH NEGATIVE BIAS							
t_{si}	Carrier storage time	$I_C = 30A$	$V_{clamp} = 300V$			3·0	µs
t_{fi}	Fall time	$I_{B1} = 3A$ $V_{CC} = 250V$	$L_C = 0{\cdot}4mH$ $R_{BB} = 0{\cdot}83\Omega$			0·4	µs
t_c	V_{CE}/I_C Crossover time	$V_{BB} = -5V$	$T_j = 100°C$			0·7	µs

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