New Jersey Semi-Conductor Products, Inc.

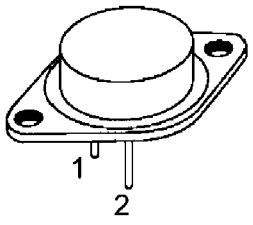
20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922
(212) 227-6005
FAX: (973) 376-8960

BUV42

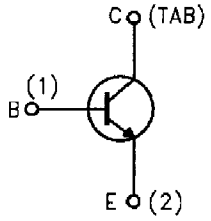
SILICON NPN SWITCHING TRANSISTOR

- FAST SWITCHING TIMES
- LOW SWITCHING LOSSES
- VERY LOW SATURATION VOLTAGE AND HIGH GAIN FOR REDUCED LOAD OPERATION



TO-3

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CEV}	Collector-emitter Voltage (V_{BE} = -1.5V)	350	V
V_{CEO}	Collector-emitter Voltage (I_B = 0)	250	V
V_{EBO}	Emitter-Base Voltage (I_C = 0)	7	V
I_C	Collector Current	12	A
I_{CM}	Collector Peak Current	18	A
I_B	Base Current	2.5	A
I_{BM}	Base Peak Current	4	A
P_{Base}	Reverse Bias Base Dissipation (B.E. junction in avalanche)	1	A
P_{tot}	Total Dissipation at $T_{case} \leq 25\ ^{\circ}C$	120	W
T_{stg}	Storage Temperature	-65 to 200	$^{\circ}C$
T_j	Max Operating Junction Temperature	200	$^{\circ}C$

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	1.46	°C/W

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CER}	Collector Cut-off Current (R_{BE} = 10Ω)	V_{CE} = V_{CEV} V_{CE} = V_{CEV} T_c = 100°C			0.5 2.5	mA mA
I_{CEV}	Collector Cut-off Current	V_{CE} = V_{CEV} V_{BE} = -1.5V V_{CE} = V_{CEV} V_{BE} = - 1.5V T_C=100°C			0.5 2	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_C = 0.2A L = 25 mH	250			V
V_{EB0}	Emitter-base Voltage (I_c = 0)	I_E = 50 mA	7			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = 2A I_B = 0.13A I_C = 4A I_B = 0.4A I_C = 6A I_B = 0.75A I_C = 2A I_B = 0.13A T_j = 100°C I_C = 4A I_B = 0.4A T_j = 100°C I_C = 6A I_B = 0.75A T_j = 100°C		0.25 0.4 0.5 0.25 0.45 0.6	0.8 0.9 1.2 0.9 1.2 1.5	V V V V V V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	I_C = 4A I_B = 0.4A I_C = 6A I_B = 0.75A I_C = 4A I_B = 0.4A T_j = 100°C I_C = 6A I_B = 0.75A T_j = 100°C		1 1.1 0.9 1.1	1.3 1.5 1.3 1.5	V V V V
di_c/d_t*	Rated of Rise of on-state Collector Current	V_{CC} = 200V R_C = 0 I_{B1} = 0.6A T_j = 25°C T_j = 100°C	 25 20	 40 35		 A/µs A/µs
$V_{CE(2\mu s)}$	Collector Emitter Dynamic Voltage	V_{CC} = 200V I_{B1} = 0.4A R_C = 50Ω T_j = 25°C T_j = 100°C		 1.7 2.5	 2.5 4	 V V
$V_{CE(4\mu s)}$	Collector Emitter Dynamic Voltage	VCC = 200V I_{B1} = 0.4A R_C = 50Ω T_j = 25°C T_j = 100°C		 0.9 1.1	 1.7 2	 V V

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

ELECTRICAL CHARACTERISTICS (continued)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
t_r	**RESISTIVE LOAD**	V_{CC} = 200V	I_C = 6A		0.3	0.4	µs
t_s	Rise Time	V_{BB} = -5V	I_{B1} = 0.75A		1	1.6	µs
t_f	Storage Time	R_{B2} = 3.3Ω	T_p = 30µs		0.15	0.3	µs
	Fall Time						
	INDUCTIVE LOAD						
t_s	Storage Time	V_{CC} = 200V	V_{clamp} = 250V		1.2	1.8	µs
t_f	Fall Time	I_{CC} = 4A	I_B = 0.4A		0.08	0.2	µs
t_t	Tail Time in Turn-on	V_{BB} = -5V	R_{B2} = 6.3Ω		0.03	0.12	µs
t_c	Crossover Time	L_C = 2.5mH			0.15	0.35	µs
t_s	Storage Time	VCC = 200V	V_{clamp} = 250V		1.8	2.4	µs
t_f	Fall Time	I_{CC} = 4A	I_B = 0.4A		0.2	0.4	µs
t_t	Tail Time in Turn-on	V_{BB} = -5V	R_{B2} = 6.3Ω		0.08	0.2	µs
t_c	Crossover Time	L_C = 2.5mH	T_j = 100°C		0.4	0.7	µs
t_s	Storage Time	V_{CC} = 200V	V_{clamp} = 250V		2.5		µs
t_f	Fall Time	I_{CC} = 4A	I_B = 0.5A		0.4		µs
t_t	Tail Time in Turn-on	V_{BB} = 0	R_{B2} = 7.5Ω		0.15		µs
		L_C = 2.5mH					
t_s	Storage Time	V_{CC} = 200V	V_{clamp} = 250V		4.8		µs
t_f	Fall Time	I_{CC} = 4A	I_B = 0.4A		0.7		µs
t_t	Tail Time in Turn-on	V_{BB} = 0	R_{B2} = 7.5Ω		0.4		µs
		L_C = 2.5mH	T_j = 100°C				

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

TO-3 (H) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A		11.7			0.460	
B	0.96		1.10	0.037		0.043
C			1.70			0.066
D			8.7			0.342
E			20.0			0.787
G		10.9			0.429	
N		16.9			0.665	
P			26.2			1.031
R	3.88		4.09	0.152		0.161
U			39.50			1.555
V		30.10			1.185