New Jersey Semi-Conductor Products, Inc.

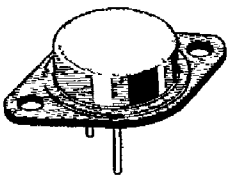
20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922

BUV52

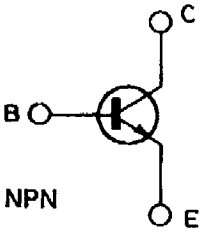
FAST SWITCHING POWER TRANSISTOR

- 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	20	A
I_{CM}	Collector Peak Current	30	A
I_B	Base Current	4	A
I_{BM}	Base Peak Current	6	A
P_{base}	Reverse Bias Base Dissipation (B.E. junction in avalanche)	1	W
P_{tot}	Total Dissipation at T_c < 25°C	150	W
T_{stg}	Storage Temperature	— 65 to 200	°C
T_j	Max. Operating Junction Temperature	200	°C

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-case	Max	1.17	°C/W

ELECTRICAL CHARACTERISTIC (T_{case} = 25°C unless otherwise Specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CER}	Collector Cutoff 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 Cutoff 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 Cutoff Current (I_C = 0)	V_{EB} = 5V			1	mA
$V_{CEO(sus)}$*	Collector Emitter Sustaining Voltage	I_C = 0.2A L = 25mH	250			V
V_{EBO}	Emitter-base Voltage (I_C = 0)	I_E = 50mA	7			V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = 4A I_B = 0.27A I_C = 8A I_B = 0.8A I_C = 12A I_B = 1.5A I_C = 4A I_B = 0.27A T_j = 100°C I_C = 8A I_B = 0.8A T_j = 100°C I_C = 12A I_B = 1.5A T_j = 100°C		0.35 0.45 0.6 0.35 0.6 0.9	0.8 0.9 1.2 0.9 1.5 1.9	V V V V V V
$V_{BE(sat)}$*	Base-emitter Saturation Voltage	I_C = 8A I_B = 0.8A I_C = 12A I_B = 1.5A I_C = 8A I_B = 0.8A T_j = 100°C I_C = 12A I_B = 1.5A T_j = 100°C		1 1.2 0.9 1.2	1.3 1.5 1.3 1.5	V V V V
dI_C/dt	Rated of Rise of On-state Collector Current	V_{CC} = 200V R_C = 0 I_{B1} = 1.2A T_j = 25°C See fig. 2 T_j = 100°C	30 25	70 60		A/µs A/µs
$V_{CE(2\mu s)}$	Collector Emitter Dynamic Voltage	V_{CC} = 200V I_{B1} = 0.8A R_C = 25Ω T_j = 25°C See fig. 2 T_j = 100°C		1.8 2.8	3 5	V V
$V_{CE(4\mu s)}$	Collector Emitter Dynamic Voltage	V_{CC} = 200V I_{B1} = 0.8A R_C = 25Ω T_j = 25°C See fig. 2 T_j = 100°C		1.1 1.5	1.7 2.5	V V

ELECTRICAL CHARACTERISTIC(continued)

RESISTIVE LOAD

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
t_r	Rise Time	V_{CC} = 200V	I_C = 12A		0.3	0.6	µs
t_s	Storage Time	V_{BB} = – 5V	I_{B2} = 1.5A		1	1.6	µs
t_f	Fall Time	R_{B2} = 1.7Ω	t_p = 30µs		0.15	0.3	µs
		See fig. 1					

INDUCTIVE LOAD

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
t_s	Storage Time	V_{CC} = 200V	V_{clamp} = 250V		1.2	1.8	µs
t_f	Fall Time	I_C = 8A	I_B = 0.8A		0.08	0.2	µs
t_t	Tail Time in Turn-on	V_{BB} = – 5V	R_{B2} = 3.1Ω		0.03	0.12	µs
t_c	Crossover Time	L_C = 1.3mH	See fig. 3		0.15	0.35	µs
t_s	Storage Time	V_{CC} = 200V	V_{clamp} = 250V		1.8	2.4	µs
t_f	Fall Time	I_C = 8A	I_B = 0.8A		0.2	0.4	µs
t_t	Tail Time in Turn-on	V_{BB} = – 5V	R_{B2} = 3.1Ω		0.08	0.2	µs
t_c	Crossover Time	L_C = 1.3mH	T_j = 100°C		0.35	0.7	µs
		See fig. 3					
t_s	Storage Time	V_{CC} = 200V	V_{clamp} = 250V		2.8		µs
t_f	Fall Time	I_C = 8A	I_B = 0.8A		0.5		µs
t_t	Tail Time in Turn-on	V_{BB} = 0	R_{B2} = 5.6Ω		0.15		µs
		L_C = 1.3mH	See fig. 3				
t_s	Storage Time	V_{CC} = 200V	V_{clamp} = 250V		4.5		µs
t_f	Fall Time	I_C = 8A	I_B = 0.8A		0.8		µs
t_t	Tail Time in Turn-on	V_{BB} = 0	R_{B2} = 5.6Ω		0.4		µs
		L_C = 1.3mH	T_j = 100°C				
		See fig. 3					

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

Figure 1 : Switching Times Test Circuit (resistive load).