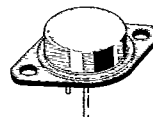


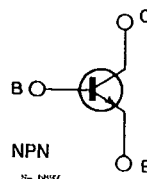
FAST SWITCHING POWER TRANSISTOR

- HIGH EFFICIENCY SWITCHING
- VERY LOW SATURATION VOLTAGE
- RECTANGULAR SAFE OPERATING AREA
- WIDE ACCIDENTAL OVERLOAD AREA



TO-3

INTERNAL SCHEMATIC DIAGRAM



DESCRIPTION

Suitable for motor drives, SMPS converters, uninterruptable power supply operating low voltage supply.

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CEV}	Collector-emitter Voltage ($V_{BE} = -1.5V$)	400	V
V_{CEO}	Collector-emitter Voltage ($I_B = 0$)	300	V
V_{EBO}	Emitter-base Voltage ($I_C = 0$)	7	V
I_E	Emitter Current	50	A
I_{EM}	Emitter Peak Current	75	A
I_B	Base Current	10	A
I_{BM}	Base Peak Current	15	A
P_{tot}	Total Dissipation at $T_C < 25^\circ C$	300	W
T_{stg}	Storage Temperature	- 65 to 200	$^\circ C$
T_j	Max. Operating Junction Temperature	200	$^\circ C$

THERMAL DATA

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$R_{th \text{ J-case}}$	Thermal Resistance Junction-case	Max	0.58	°C/W
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ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CER}	Collector Cutoff Current ($R_{BE} = 10\Omega$)	$V_{CE} = V_{CEV}$ $V_{CE} = V_{CEV} \quad T_C = 100^{\circ}\text{C}$			1 5	mA mA
I_{CEV}	Collector Cutoff Current	$V_{CE} = V_{CEV} \quad V_{BE} = -1.5\text{V}$ $V_{CE} = V_{CEV} \quad V_{BE} = -1.5\text{V} \quad T_C = 100^{\circ}\text{C}$			1 4	mA mA
I_{EBO}	Emitter Cutoff Current ($I_C = 0$)	$V_{EB} = 5\text{V}$			1	mA
$V_{CEO(sus)}^*$	Collector Emitter Sustaining Voltage	$I_C = 0.2\text{A}$ $L = 25\text{mH}$	300			V
V_{EBO}	Emitter-base Voltage ($I_C = 0$)	$I_E = 50\text{mA}$	7			V
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	$I_C = 40\text{A} \quad I_B = 4\text{A}$ $I_C = 40\text{A} \quad I_B = 4\text{A} \quad T_J = 100^{\circ}\text{C}$			0.9 1.9	V V
$V_{BE(sat)}^*$	Base-emitter Saturation Voltage	$I_C = 40\text{A} \quad I_B = 4\text{A}$ $I_C = 40\text{A} \quad I_B = 4\text{A} \quad T_J = 100^{\circ}\text{C}$			1.4 1.4	V V
di_C/dt	Rated of Rise of On-state Collector Current	$V_{CC} = 250\text{V} \quad R_C = 0$ $t_p = 3\mu\text{s}$ See fig. 1	120			A/ μs
t_s t_f t_c	INDUCTIVE LOAD Storage Time Fall Time Crossover Time	$V_{CC} = 250\text{V}$ $I_C = 40\text{A}$ $V_{BB} = -5\text{V}$ $R_{B2} = 0.60\Omega$ See fig. 2			3 0.4 0.7	μs μs μs
V_{CEW}	Maximum Collector Emitter Voltage without Snubber	$V_{CC} = 50\text{V}$ $V_{BB} = -5\text{V}$ $L_C = 42\mu\text{H}$ $T_J = 125^{\circ}\text{C}$	$I_{CWOFF} = 60\text{A}$ $I_{B1} = 4\text{A}$ $R_{B2} = 0.6\Omega$ See fig. 2	300		V

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

Figure 1 : Turn-on Switching Characteristics of the Transistor.

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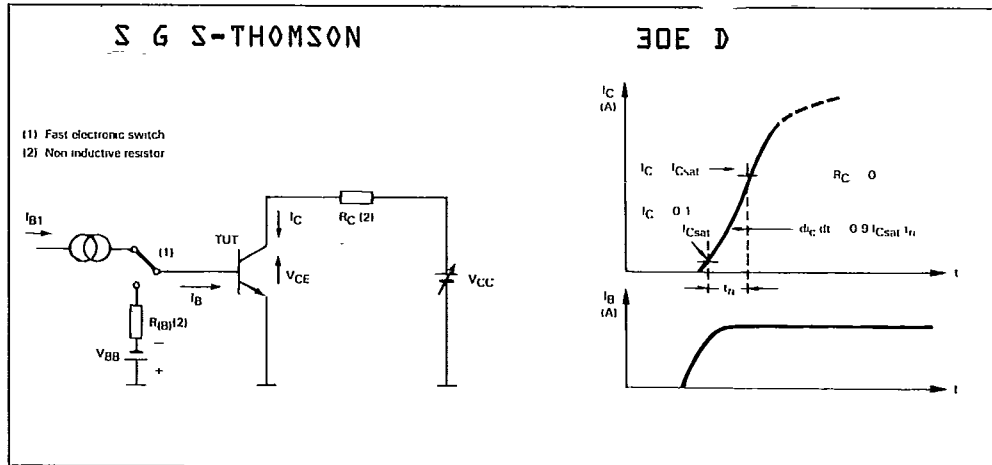
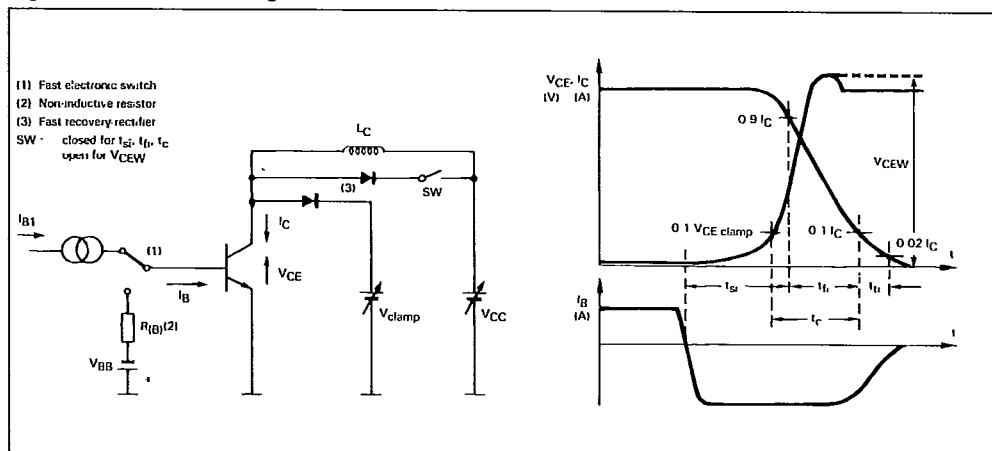


Figure 2 : Turn-off Switching Characteristics of the Transistor.



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Forward biased Safe Operating Area (FBSOA).

Reverse biased Safe Operating Area (RBSOA).

