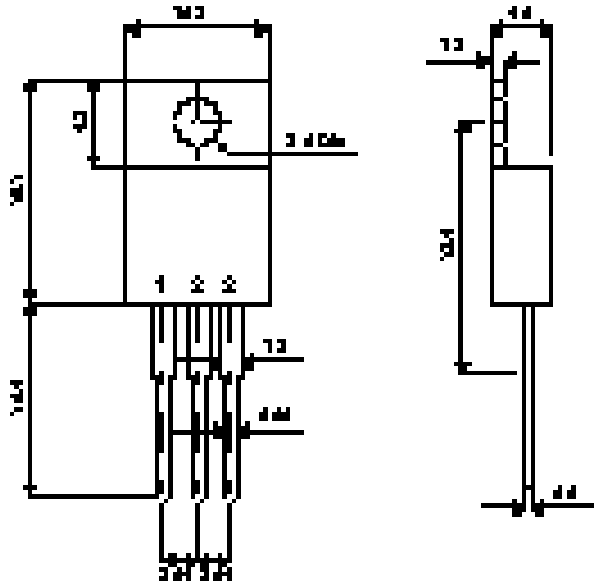
SEME LAB

SM56B

NPN FAST SWITCHING TRANSISTOR

MECHANICAL DATA
Dimensions in mm



TO220

Pin 1 – Base Pad 2 – Collector Pad 3 – Emitter

FEATURES

- **LOW SATURATION VOLTAGE**
- **ULTRA FAST TURN–ON AND TURN–OFF SWITCHING (t_r / t_f = 40ns)**

APPLICATIONS

- **High speed TO220 transistor suited for low voltage applications.**
- **High frequency and high efficiency converters, switching regulators and motor controls.**
- **Ideally suited for 12V and 24V inverters.**

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

V_{CBO}	Collector – Base Voltage	200V
V_{CEO}	Collector – Emitter Voltage (I_B = 0)	100V
V_{EBO}	Emitter – Base Voltage (I_C = 0)	7V
I_C	Collector Current	14A
I_B	Base Current	4A
P_{tot}	Total Dissipation at T_{case} = 25°C	85W
T_{stg}	Storage Temperature Range	–55 to 175°C
R_{th}	Thermal Resistance Junction – Case	175°C/W

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

	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
	ELECTRICAL CHARACTERISTICS						
$V_{CEO(sus)}$*	Collector – Emitter Sustaining Voltage	I_C = 200mA		100			V
$V_{(BR)EBO}$*	Emitter – Base Breakdown Voltage	I_E = 1mA		7			
I_{CER}*	Collector Cut–Off Current	I_B = 0 R_{BE} = 50Ω	V_{CE} = 200V T_C = 125°C			3	mA
I_{CBO}*	Collector – Base Cut–Off Current	I_E = 0 V_{BE} = –1.5V	V_{CB} = 200V T_C = 125°C			1	mA
I_{EBO}*	Emitter Cut–Off Current	I_C = 0	V_{EB} = 5V			1	mA
$V_{CE(sat)}$*	Collector – Emitter Saturation Voltage	I_C = 5A	I_B = 500mA			0.6	V
		I_C = 10A	I_B = 1A			1.5	
$V_{BE(sat)}$*	Base – Emitter Saturation Voltage	I_C = 10A	I_B = 1A			2	V
	SWITCHING CHARACTERISTICS (resistive load)						
t_{on}	Turn–On Time	V_{CC} = 50V	I_C = 12A		0.2	0.6	µS
t_s	Storage Time	V_{BE} = –6V	I_{B1} = 1.2A		0.4	1	
t_f	Fall Time	R_{BB} = 2.5Ω			0.04	0.25	
	SWITCHING CHARACTERISTICS (inductive load)						
t_s	Storage Time	V_{CC} = 50V V_{BE} = –5V L_B = 0.5µH	I_C = 12A I_{B1} = 1.2A		0.5		µS
t_f	Fall Time				0.04		
t_s	Storage Time (T_j = 125°C)					2	
t_f	Fall Time (T_j = 125°C)					0.15	

* Pulse test t_p = 300µs , δ ≤ 2%

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