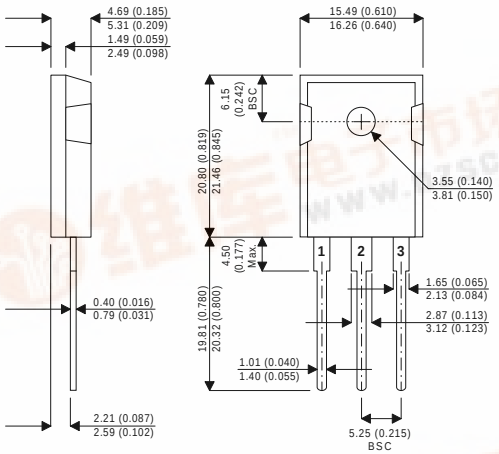
SEME LAB

BUL50A

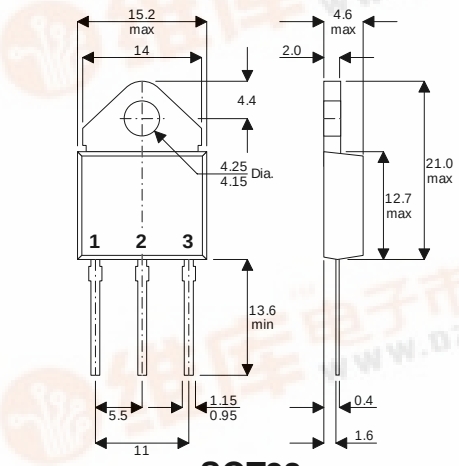
MECHANICAL DATA

Dimensions in mm (inches)



TO–247

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



SOT93

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

ADVANCED DISTRIBUTED BASE DESIGN HIGH VOLTAGE HIGH SPEED NPN SILICON POWER TRANSISTOR

- SEMEFAB DESIGNED AND DIFFUSED DIE
- HIGH VOLTAGE
- FAST SWITCHING
- HIGH ENERGY RATING
- EFFICIENT POWER SWITCHING
- MILITARY AND HI–REL VERSIONS AVAILABLE IN METAL AND CERAMIC SURFACE MOUNT PACKAGES

FEATURES

- Multi–base for efficient energy distribution across the chip resulting in significantly improved switching and energy ratings across full temperature range.
- Ion implant and high accuracy masking for tight control of characteristics from batch to batch.
- Triple Guard Rings for improved control of high voltages.

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

V_{CBO}	Collector – Base Voltage	1000V
V_{CEO}	Collector – Emitter Voltage (I_B = 0)	500V
V_{EBO}	Emitter – Base Voltage (I_C = 0)	10V
I_C	Continuous Collector Current	15A
$I_{C(PK)}$	Peak Collector Current	30A
I_B	Base Current	5A
P_{tot}	Total Dissipation at T_{case} = 25°C	125W
T_{stg}	Operating and Storage Temperature Range	–55 to +175°C

SEME LAB

BUL50A

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 = 100mA		500			V
$V_{(BR)CBO}$	Collector – Base Breakdown Voltage	I_C = 1mA		1000			V
$V_{(BR)EBO}$	Emitter – Base Breakdown Voltage	I_E = 1mA		10			V
I_{CBO}	Collector – Base Cut–Off Current	V_{CB} = 1000V				10	µA
			T_C = 125°C			100	µA
I_{CEO}	Collector – Emitter Cut–Off Current	I_B = 0	V_{CE} = 500V			100	µA
I_{EBO}	Emitter Cut–Off Current	V_{EB} = 5V				10	µA
		I_C = 0	T_C = 125°C			100	µA
h_{FE*}	DC Current Gain	I_C = 0.5A	V_{CE} = 4V	15	50		—
		I_C = 5A	V_{CE} = 4V	10	20		—
		I_C = 10A	V_{CE} = 4V	5	12		—
			T_C = 125°C	4	10		—
$V_{CE(sat)*}$	Collector – Emitter Saturation Voltage	I_C = 0.5A	I_B = 0.1A		0.05	0.1	V
		I_C = 5A	I_B = 1A		0.2	0.4	V
		I_C = 10A	I_B = 2A		0.3	1.2	V
$V_{BE(sat)*}$	Base – Emitter Saturation Voltage	I_C = 5A	I_B = 1A		0.9	1.1	V
		I_C = 10A	I_B = 2A		1.0	1.3	V
$V_{BE(on)}$	Base – Emitter On Voltage	I_C = 3A	V_{CE} = 4V		0.8	1.0	V
	DYNAMIC CHARACTERISTICS						
f_t	Transition Frequency	I_C = 0.2A	V_{CE} = 4V		20		MHz
C_{ob}	Output Capacitance	V_{CB} = 20V	f = 1MHz		45		pF

* Pulse test t_p = 300µs , δ < 2%