SEME LAB

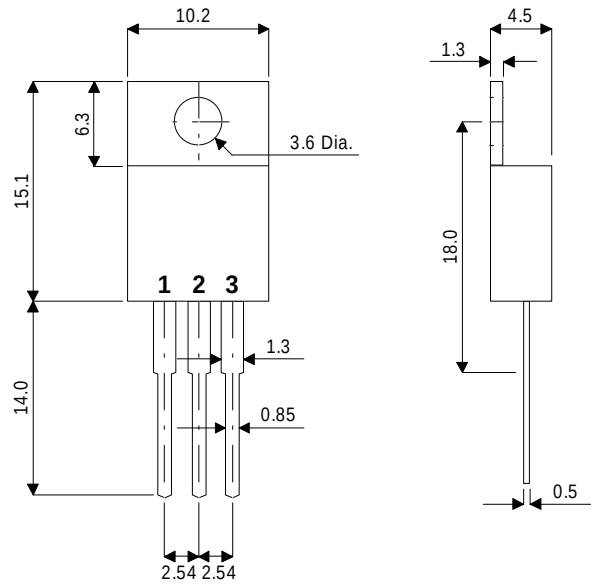
BUL54A

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

Designed for use in electronic ballast applications

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

MECHANICAL DATA
Dimensions in mm



TO220

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

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	4A
$I_{C(PK)}$	Peak Collector Current	7A
I_B	Base Current	2A
P_{tot}	Total Dissipation at T_{case} = 25°C	65W
T_{stg}	Operating and Storage Temperature Range	–55 to +150°C

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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 = 10mA		500			V
$V_{(BR)CBO}$	Collector – Base Breakdown Voltage	I_C = 1mA		1000			
$V_{(BR)EBO}$	Emitter – Base Breakdown Voltage	I_E = 1mA		10			
I_{CBO}	Collector – Base Cut–Off Current	V_{CB} = 1000V				10	µA
			T_C = 125°C			100	
I_{CEO}	Collector – Emitter Cut–Off Current	I_B = 0	V_{CE} = 500V			100	µA
I_{EBO}	Emitter Cut–Off Current	V_{EB} = 9V				10	µA
		I_C = 0	T_C = 125°C			100	
h_{FE*}	DC Current Gain	I_C = 0.1A	V_{CE} = 5V	20	40		—
		I_C = 0.5A	V_{CE} = 5V	12	15		
		I_C = 1A	V_{CE} = 1V	5	8		
			T_C = 125°C				
$V_{CE(sat)*}$	Collector – Emitter Saturation Voltage	I_C = 100mA	I_B = 20mA		0.05	0.1	V
		I_C = 0.5A	I_B = 0.1A		0.15	0.2	
		I_C = 1A	I_B = 0.2A		0.3	0.5	
$V_{BE(sat)*}$	Base – Emitter Saturation Voltage	I_C = 0.5A	I_B = 0.1A		0.8	1.0	V
		I_C = 1A	I_B = 0.2A		0.9	1.1	
	DYNAMIC CHARACTERISTICS						
f_t	Transition Frequency	I_C = 0.2A	V_{CE} = 4V		20		MHz
C_{ob}	Output Capacitance	V_{CB} = 20V	f = 1MHz		20		pF

* Pulse test t_p = 300µs , δ < 2%

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