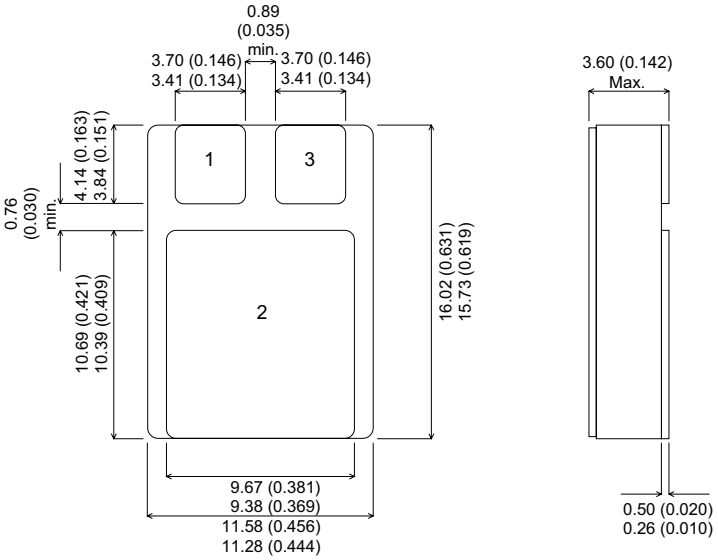
BUL53BSMD

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

MECHANICAL DATA
Dimensions in mm



SMD1

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

- **CERAMIC SURFACE MOUNT PACKAGE**
- **FULL MIL/AEROSPACE TEMPERATURE RANGE**
- **SCREENING OPTIONS FOR MILITARY AND SPACE APPLICATIONS**
- **SEMEFAB DESIGNED AND DIFFUSED DIE**
- **HIGH VOLTAGE (V_{CBO} = 800V)**
- **FAST SWITCHING (t_f = 100ns)**
- **HIGH ENERGY RATING**

FEATURES

- **Multi-Base design for efficient energy distribution across the chip.**
- **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	500V
V_{CEO}	Collector – Emitter Voltage (I_B = 0)	250V
V_{EBO}	Emitter – Base Voltage (I_C = 0)	10V
I_C	Collector Current	12A
$I_{C(PK)}$	Peak Collector Current	20A
I_B	Base Current	3A
P_D	Power Dissipation	60W
$R_?$	Thermal Impedance (when mounted on thermally conducting PCB)	3.0°C/W
T_j	Maximum Junction Temperature	200°C
T_{stg}	Storage Temperature Range	–55 to +200°C

Semelab plc. Telephone +44(0)1455 556565. Fax +44(0)1455 552612.
E-mail: sales@semelab.co.uk Website: http://www.semelab.co.uk

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

Parameter		Test Conditions		Min.	Typ.	Max.	Unit
$V_{CEO(sus)}$*	Collector - Emitter sustaining voltage	I_C = 100mA		250			V
$V_{(BR)CBO}$*	Collector - Base breakdown voltage	I_C = 1mA		500			V
$V_{(BR)EBO}$*	Emitter - Base breakdown voltage	I_B = 1mA	I_C = 0	10			V
I_{CEO}*	Collector cut-off current	I_B = 0	V_{CE} = 250V			100	µA
I_{CBO}*	Collector - Base cut-off current	I_E = 0	V_{CB} = 500V			10	µA
			T_C = 125°C			100	
I_{EBO}*	Emitter cut-off current	I_C = 0	V_{EB} = 5V			10	µA
			T_C = 125°C			100	
$V_{CE(sat)}$*	Collector - Emitter saturation voltage	I_C = 100mA	I_B = 10mA		0.05	0.1	V
		I_C = 2A	I_B = 200mA		0.15	0.3	
		I_C = 5A	I_B = 500mA		0.3	0.6	
$V_{BE(sat)}$*	Base - Emitter saturation voltage	I_C = 2A	I_B = 200mA		0.8	1.1	V
		I_C = 5A	I_B = 500mA		0.9	1.2	
$V_{BE(on)}$*	Base - Emitter saturation voltage	I_C = 1A	V_{CE} = 4V		0.8	1.0	V
h_{FE}*	DC Current gain	I_C = 100mA	V_{CE} = 4V	20	45		—
		I_C = 2A	V_{CE} = 4V	20	40		
		I_C = 5A	V_{CE} = 4V	20			

* Pulse test t_p = 300µs , $\delta \leq 2\%$

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

Parameter		Test Conditions		Min.	Typ.	Max.	Unit
f_T	Transition frequency	I_C = 100mA f = 10MHz	V_{CE} = 4V		20		MHz
C_{ob}	Output capacitance	V_{CB} = 20V f = 1.0MHz	I_E = 0		200		pF

littlediode
COMPONENTS FOR ALL

Littlediode supplies new, hard to find or obsolete electronic components and semiconductors all over the world.

With over two million different components listed you are sure to find the part you need.

Feel free to visit us today at our online store:

LittleDiode.com

Looking forward to providing you with the best possible service.