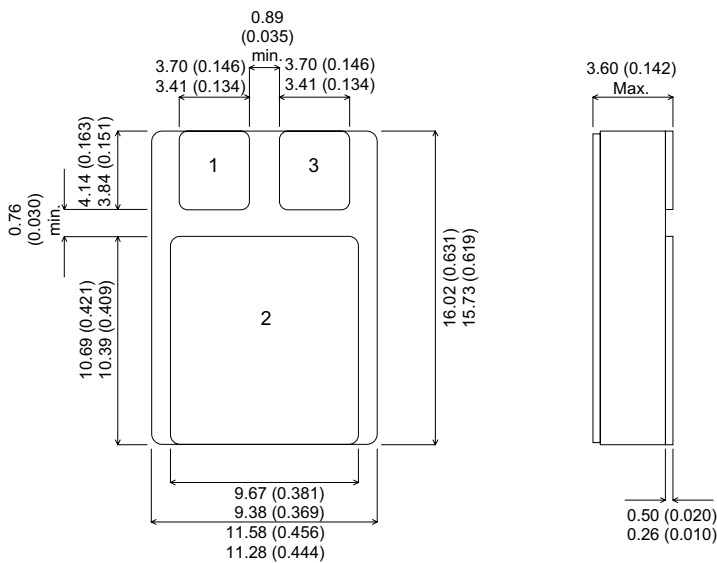


MECHANICAL DATA

Dimensions in mm



SMD1

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

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

- 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 ($T_{case} = 25^\circ C$ 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_θ	Thermal Impedance (when mounted on thermally conducting PCB)	$3.0^\circ C/W$
T_j	Maximum Junction Temperature	$200^\circ C$
T_{stg}	Storage Temperature Range	-55 to $+200^\circ C$

ELECTRICAL CHARACTERISTICS ($T_{case} = 25^{\circ}C$ 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 $I_E = 0$ $V_{CB} = 500V$ $T_C = 125^{\circ}C$			10	μA
				100	
I_{EBO*}	Emitter cut-off current $I_C = 0$ $V_{EB} = 5V$ $T_C = 125^{\circ}C$			10	μA
				100	
$V_{CE(sat)*}$	$I_C = 100mA$ $I_B = 10mA$		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	
$V_{BE(sat)*}$	$I_C = 2A$ $I_B = 200mA$		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*}	$I_C = 100mA$ $V_{CE} = 4V$	20	45		—
	$I_C = 2A$ $V_{CE} = 4V$	20	40		
	$I_C = 5A$ $V_{CE} = 4V$	20			

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

DYNAMIC CHARACTERISTICS ($T_{case} = 25^{\circ}C$ unless otherwise stated)

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