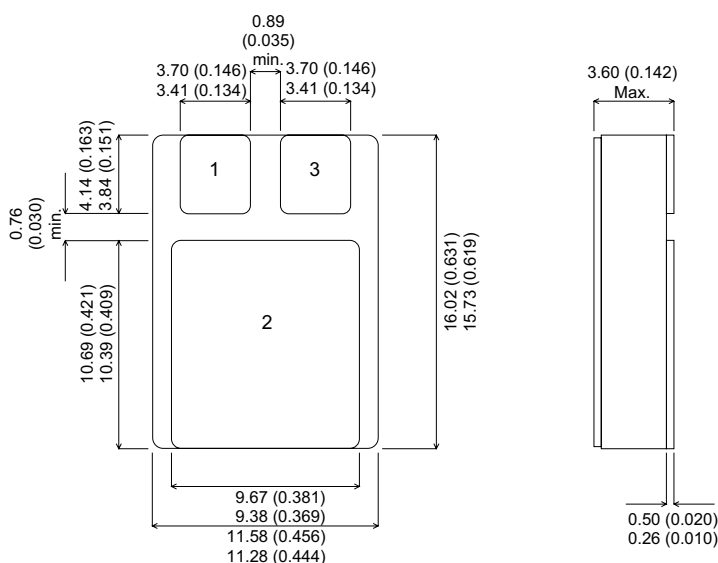


MECHANICAL DATA

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

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

* Pulse test $t_{\text{p}} = 300\mu\text{s}$, $\delta \leq 2\%$

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
f_{T} Transition frequency	$I_{\text{C}} = 100\text{mA}$ $V_{\text{CE}} = 4\text{V}$ $f = 10\text{MHz}$		20		MHz
C_{ob} Output capacitance	$V_{\text{CB}} = 20\text{V}$ $I_{\text{E}} = 0$ $f = 1.0\text{MHz}$		200		pF