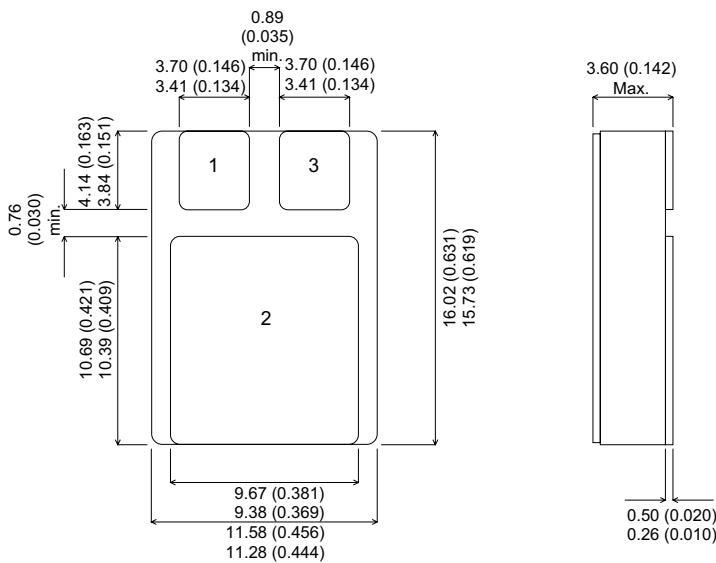


MECHANICAL DATA

Dimensions in mm



SMD1

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

**NPN
FAST SWITCHING
TRANSISTOR**

FEATURES

- **LOW SATURATION VOLTAGE**
- **ULTRA FAST TURN-ON AND TURN-OFF SWITCHING ($t_r / t_f = 40\text{ns}$)**

APPLICATIONS

- **High speed TO220 transistor suited for low voltage applications.**
- **High frequency and high efficiency converters, switching regulators and motor controls.**
- **Ideally suited for 12V and 24V inverters.**

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

V_{CBO}	Collector – Base Voltage	200V
V_{CEO}	Collector – Emitter Voltage ($I_B = 0$)	100V
V_{EBO}	Emitter – Base Voltage ($I_C = 0$)	7V
I_C	Collector Current	14A
I_B	Base Current	4A
P_{tot}	Total Dissipation at $T_{\text{case}} = 25^\circ\text{C}$	85W
	Derate above 25°C when used on efficient heatsink	4.8W/ $^\circ\text{C}$
T_{stg}	Storage Temperature Range	-65 to 200°C
R_{th}	Thermal Resistance Junction – Case	175 $^\circ\text{C} / \text{W}$

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit		
ELECTRICAL CHARACTERISTICS							
$V_{\text{CEO(sus)}}^*$	Collector – Emitter Sustaining Voltage	$I_{\text{C}} = 200\text{mA}$	100		V		
$V_{(\text{BR})\text{EBO}}^*$	Emitter – Base Breakdown Voltage	$I_{\text{E}} = 1\text{mA}$	7				
I_{CER}^*	Collector Cut–Off Current	$I_{\text{B}} = 0$ $R_{\text{BE}} = 50\Omega$	$V_{\text{CE}} = 200\text{V}$ $T_{\text{C}} = 125^{\circ}\text{C}$		3	mA	
I_{CBO}^*	Collector – Base Cut–Off Current	$I_{\text{E}} = 0$ $V_{\text{BE}} = -1.5\text{V}$	$V_{\text{CB}} = 200\text{V}$ $T_{\text{C}} = 125^{\circ}\text{C}$		1	mA	
I_{EBO}^*	Emitter Cut–Off Current	$I_{\text{C}} = 0$	$V_{\text{EB}} = 5\text{V}$		1	mA	
$V_{\text{CE(sat)}}^*$	Collector – Emitter Saturation Voltage	$I_{\text{C}} = 5\text{A}$	$I_{\text{B}} = 500\text{mA}$		0.6	V	
		$I_{\text{C}} = 10\text{A}$	$I_{\text{B}} = 1\text{A}$		1.5		
$V_{\text{BE(sat)}}^*$	Base – Emitter Saturation Voltage	$I_{\text{C}} = 10\text{A}$	$I_{\text{B}} = 1\text{A}$		2	V	
SWITCHING CHARACTERISTICS (resistive load)							
t_{on}	Turn–On Time	$V_{\text{CC}} = 50\text{V}$	$I_{\text{C}} = 12\text{A}$		0.2	0.6	μS
t_{s}	Storage Time	$V_{\text{BE}} = -6\text{V}$	$I_{\text{B1}} = 1.2\text{A}$		0.4	1	
t_{f}	Fall Time	$R_{\text{BB}} = 2.5\Omega$			0.04	0.25	
SWITCHING CHARACTERISTICS (inductive load)							
t_{s}	Storage Time	$V_{\text{CC}} = 50\text{V}$ $V_{\text{BE}} = -5\text{V}$ $L_{\text{B}} = 0.5\mu\text{H}$	$I_{\text{C}} = 12\text{A}$ $I_{\text{B1}} = 1.2\text{A}$		0.5		μS
t_{f}	Fall Time				0.04		
t_{s}	Storage Time ($T_{\text{j}} = 125^{\circ}\text{C}$)					2	
t_{f}	Fall Time ($T_{\text{j}} = 125^{\circ}\text{C}$)					0.15	

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