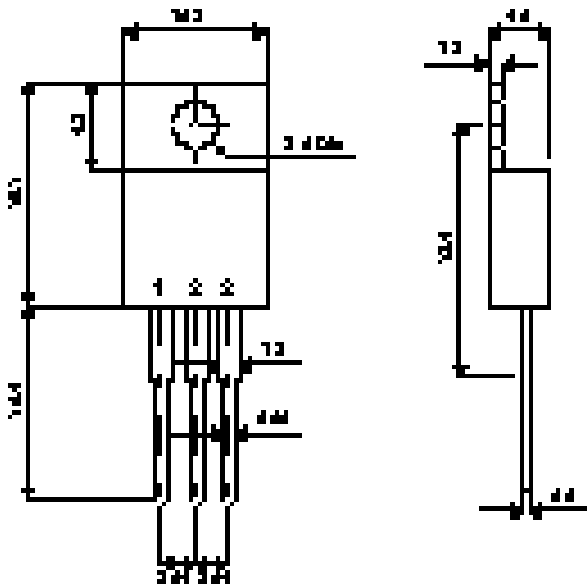


**MECHANICAL DATA**

Dimensions in mm

**TO220**

Pin 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)

$V_{\text{CBO}}$	Collector – Base Voltage	200V
$V_{\text{CEO}}$	Collector – Emitter Voltage ( $I_B = 0$ )	100V
$V_{\text{EBO}}$	Emitter – Base Voltage ( $I_C = 0$ )	7V
$I_C$	Collector Current	14A
$I_B$	Base Current	4A
$P_{\text{tot}}$	Total Dissipation at $T_{\text{case}} = 25^\circ\text{C}$	85W
$T_{\text{stg}}$	Storage Temperature Range	$-55$ to $175^\circ\text{C}$
$R_{\text{th}}$	Thermal Resistance Junction – Case	$175^\circ\text{C/W}$

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit	
<b>ELECTRICAL CHARACTERISTICS</b>						
$V_{\text{CEO(sus)}}^*$ 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				
$I_{\text{CER}}^*$ 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	
$I_{\text{CBO}}^*$ 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	
$I_{\text{EBO}}^*$ 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	
<b>SWITCHING CHARACTERISTICS (resistive load)</b>						
$t_{\text{on}}$ Turn–On Time	$V_{\text{CC}} = 50\text{V}$	$I_{\text{C}} = 12\text{A}$		0.2	0.6	$\mu\text{S}$
$t_{\text{s}}$ Storage Time	$V_{\text{BE}} = -6\text{V}$	$I_{\text{B1}} = 1.2\text{A}$		0.4	1	
$t_{\text{f}}$ Fall Time	$R_{\text{BB}} = 2.5\Omega$			0.04	0.25	
<b>SWITCHING CHARACTERISTICS (inductive load)</b>						
$t_{\text{s}}$ Storage Time	$V_{\text{CC}} = 50\text{V}$	$I_{\text{C}} = 12\text{A}$		0.5		$\mu\text{S}$
$t_{\text{f}}$ Fall Time	$V_{\text{BE}} = -5\text{V}$	$I_{\text{B1}} = 1.2\text{A}$		0.04		
$t_{\text{s}}$ Storage Time ( $T_{\text{j}} = 125^{\circ}\text{C}$ )	$L_{\text{B}} = 0.5\mu\text{H}$				2	
$t_{\text{f}}$ Fall Time ( $T_{\text{j}} = 125^{\circ}\text{C}$ )					0.15	

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