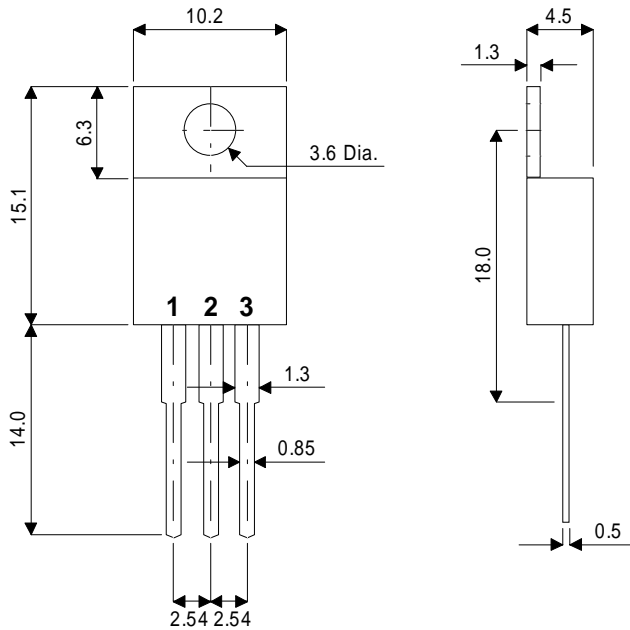


**MECHANICAL DATA**  
Dimensions in mm



**TO-220**

Pin 1 - Base      Pin 2 - Collector      Pin 3 - Emitter

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

Designed for use in  
electronic ballast applications

- SEMEFAB DESIGNED AND DIFFUSED DIE
- HIGH VOLTAGE
- HIGH CURRENT
- EFFICIENT POWER SWITCHING

**FEATURES**

- Multi-base for efficient energy distribution across the chip resulting in 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 ( $I_E=0$ )	250V
$V_{CEO}$	Collector – Emitter Voltage ( $I_B = 0$ )	100V
$V_{EBO}$	Emitter – Base Voltage ( $I_C = 0$ )	10V
$I_C$	Continuous Collector Current	70A
$I_B$	Base Current	14A
$P_{tot}$	Total Dissipation at $T_{case} = 25^{\circ}C$	85W
$T_j$	Junction Temperature	150°C
$T_{stg}$	Operating and Storage Temperature Range	-55 to +150°C

**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	$I_{\text{C}} = 100\text{mA}$	100		V
$V_{\text{(BR)CBO}}$	Collector – Base Breakdown Voltage	$I_{\text{C}} = 1\text{mA}$	250		
$V_{\text{(BR)EBO}}$	Emitter – Base Breakdown Voltage	$I_{\text{E}} = 1\text{mA}$	10		
$I_{\text{CBO}}$	Collector – Base Cut-Off Current	$V_{\text{CB}} = 240\text{V}$ $T_{\text{C}} = 125^{\circ}\text{C}$		10	$\mu\text{A}$
				100	
$I_{\text{CEO}}$	Collector – Emitter Cut-Off Current	$V_{\text{CE}} = 90\text{V}$		100	$\mu\text{A}$
$I_{\text{EBO}}$	Emitter Cut-Off Current	$V_{\text{EB}} = 9\text{V}$ $T_{\text{C}} = 125^{\circ}\text{C}$		10	$\mu\text{A}$
				100	
$h_{\text{FE}}^*$	DC Current Gain	$I_{\text{C}} = 1\text{A}$ $V_{\text{CE}} = 1\text{V}$	45	90	—
		$I_{\text{C}} = 15\text{A}$ $V_{\text{CE}} = 1\text{V}$	25	60	
		$I_{\text{C}} = 10\text{A}$ $V_{\text{CE}} = 5\text{V}$	50	80	
		$I_{\text{C}} = 18\text{A}$ $V_{\text{CE}} = 5\text{V}$	40	70	
$V_{\text{CE(sat)}}^*$	Collector – Emitter Saturation Voltage	$I_{\text{C}} = 10\text{A}$ $I_{\text{B}} = 1\text{A}$		0.5	V
		$I_{\text{C}} = 20\text{A}$ $I_{\text{B}} = 2\text{A}$		0.8	
		$I_{\text{C}} = 20\text{A}$ $I_{\text{B}} = 4\text{A}$		0.7	
$V_{\text{BE(sat)}}^*$	Base – Emitter Saturation Voltage	$I_{\text{C}} = 10\text{A}$ $I_{\text{B}} = 1\text{A}$		1.2	V
		$I_{\text{C}} = 20\text{A}$ $I_{\text{B}} = 2\text{A}$		1.5	
<b>DYNAMIC CHARACTERISTICS</b>					
$f_{\text{t}}$	Transition Frequency	$I_{\text{C}} = 0.2\text{A}$ $V_{\text{CE}} = 4\text{V}$		20	MHz
$C_{\text{ob}}$	Output Capacitance	$V_{\text{CB}} = 10\text{V}$ $f = 1\text{MHz}$		200	pF

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