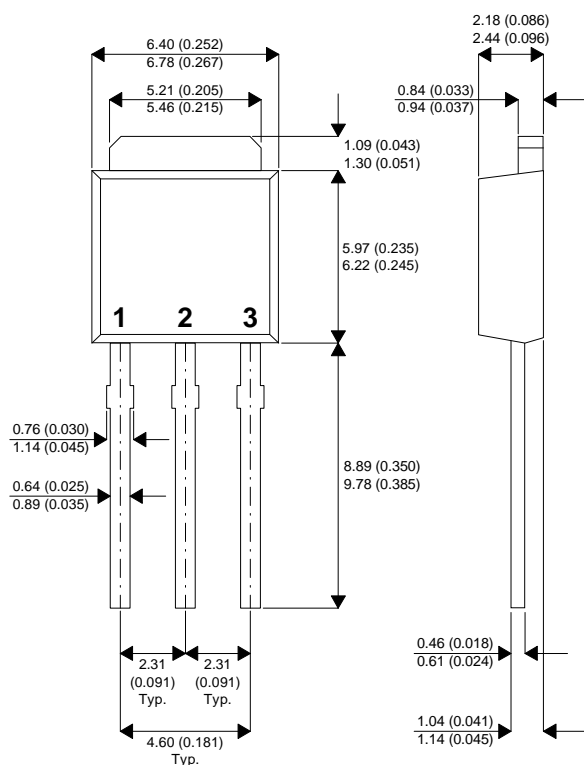


**MECHANICAL DATA**

Dimensions in mm (inches)



**I-PAK (TO-251)**

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
- FAST SWITCHING
- HIGH ENERGY RATING

**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	800V
$V_{CEO}$	Collector – Emitter Voltage ( $I_B = 0$ )	400V
$V_{EBO}$	Emitter – Base Voltage ( $I_C = 0$ )	10V
$I_C$	Continuous Collector Current	8A
$I_{C(PK)}$	Peak Collector Current	12A
$I_B$	Base Current	4A
$P_{tot}$	Total Dissipation at $T_{case} = 25^{\circ}C$	25W
$T_{stg}$	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	$I_{\text{C}} = 10\text{mA}$	400		V		
$V_{\text{(BR)CBO}}$	Collector – Base Breakdown Voltage	$I_{\text{C}} = 1\text{mA}$	800				
$V_{\text{(BR)EBO}}$	Emitter – Base Breakdown Voltage	$I_{\text{E}} = 1\text{mA}$	10				
$I_{\text{CBO}}$	Collector – Base Cut-Off Current	$V_{\text{CB}} = 800\text{V}$		10	$\mu\text{A}$		
			$T_{\text{C}} = 125^{\circ}\text{C}$	100			
$I_{\text{CEO}}$	Collector – Emitter Cut-Off Current	$I_{\text{B}} = 0$	$V_{\text{CE}} = 400\text{V}$	100	$\mu\text{A}$		
$I_{\text{EBO}}$	Emitter Cut-Off Current	$V_{\text{EB}} = 9\text{V}$	$I_{\text{C}} = 0$		10		
				$T_{\text{C}} = 125^{\circ}\text{C}$	100		
$h_{\text{FE}}^*$	DC Current Gain	$I_{\text{C}} = 0.1\text{A}$	$V_{\text{CE}} = 4\text{V}$	20	30	—	
		$I_{\text{C}} = 1\text{A}$	$V_{\text{CE}} = 4\text{V}$	15	25		45
		$I_{\text{C}} = 3\text{A}$	$V_{\text{CE}} = 4\text{V}$	10	15		
			$T_{\text{C}} = 125^{\circ}\text{C}$	5			
$V_{\text{CE(sat)}}^*$	Collector – Emitter Saturation Voltage	$I_{\text{C}} = 100\text{mA}$	$I_{\text{B}} = 20\text{mA}$		0.05	0.1	V
		$I_{\text{C}} = 2\text{A}$	$I_{\text{B}} = 0.4\text{A}$		0.1	0.3	
		$I_{\text{C}} = 3\text{A}$	$I_{\text{B}} = 0.6\text{A}$		0.3	0.5	
$V_{\text{BE(sat)}}^*$	Base – Emitter Saturation Voltage	$I_{\text{C}} = 2\text{A}$	$I_{\text{B}} = 0.4\text{A}$		0.8	1.0	V
		$I_{\text{C}} = 3\text{A}$	$I_{\text{B}} = 0.6\text{A}$		0.9	1.2	
<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	$V_{\text{CB}} = 20\text{V}$	$f = 1\text{MHz}$		40	pF	

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