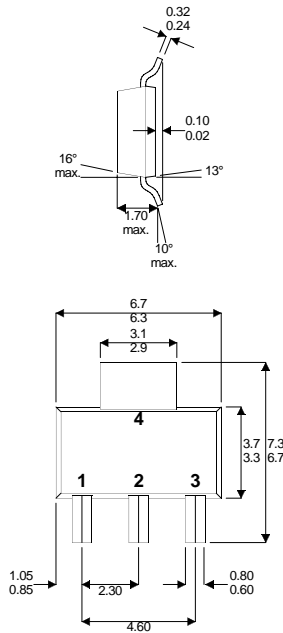


**MECHANICAL DATA**

Dimensions in mm



**SOT-223**

- Pin 1 - Base
- Pin 2 - Collector
- Pin 3 - Emitter
- Pin 4 - Collector

**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 ( $I_E=0$ )	350V
$V_{CEO}$	Collector – Emitter Voltage ( $I_B = 0$ )	160V
$V_{EBO}$	Emitter – Base Voltage ( $I_C = 0$ )	10V
$I_C$	Continuous Collector Current	7A
$I_{C(PK)}$	Peak Collector Current	12A
$I_B$	Base Current	2A
$P_{tot}$	Total Dissipation at $T_{case} = 25^{\circ}C$	2W
$T_{stg}$	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	$I_{\text{C}} = 10\text{mA}$	160		V	
$V_{\text{(BR)CBO}}$	Collector – Base Breakdown Voltage	$I_{\text{C}} = 1\text{mA}$	350			
$V_{\text{(BR)EBO}}$	Emitter – Base Breakdown Voltage	$I_{\text{E}} = 1\text{mA}$	10			
$I_{\text{CBO}}$	Collector – Base Cut-Off Current	$V_{\text{CB}} = 350\text{V}$		10	$\mu\text{A}$	
			$T_{\text{C}} = 125^{\circ}\text{C}$	100		
$I_{\text{CEO}}$	Collector – Emitter Cut-Off Current	$I_{\text{B}} = 0$	$V_{\text{CE}} = 150\text{V}$	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	$I_{\text{C}} = 0.3\text{A}$	$V_{\text{CE}} = 4\text{V}$	30	90	
		$I_{\text{C}} = 2\text{A}$	$V_{\text{CE}} = 4\text{V}$	25	60	
		$I_{\text{C}} = 4\text{A}$	$V_{\text{CE}} = 4\text{V}$	20	50	
			$T_{\text{C}} = 125^{\circ}\text{C}$			
$V_{\text{CE(sat)}}^*$	Collector – Emitter Saturation Voltage	$I_{\text{C}} = 1\text{A}$	$I_{\text{B}} = 0.1\text{A}$		0.1	0.2
		$I_{\text{C}} = 3\text{A}$	$I_{\text{B}} = 0.3\text{A}$		0.3	0.6
		$I_{\text{C}} = 4\text{A}$	$I_{\text{B}} = 0.4\text{A}$		1.0	1.2
$V_{\text{BE(sat)}}^*$	Base – Emitter Saturation Voltage	$I_{\text{C}} = 3\text{A}$	$I_{\text{B}} = 0.3\text{A}$			1.2
		$I_{\text{C}} = 4\text{A}$	$I_{\text{B}} = 0.4\text{A}$			1.4
<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	$V_{\text{CB}} = 10\text{V}$	$f = 1\text{MHz}$		30	pF

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