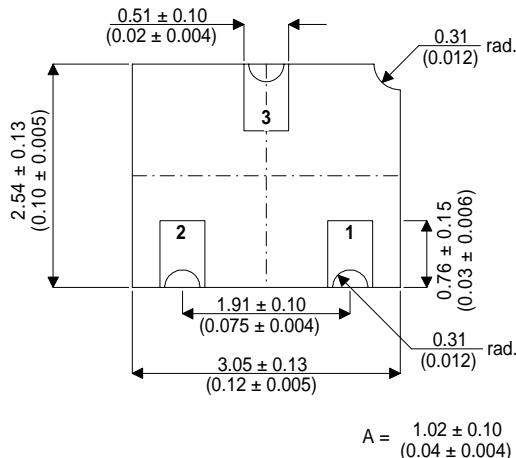


**HIGH SPEED, MEDIUM POWER, NPN
SWITCHING TRANSISTOR IN A
HERMETICALLY SEALED
CERAMIC SURFACE MOUNT PACKAGE
FOR HIGH RELIABILITY APPLICATIONS**

MECHANICAL DATA

Dimensions in mm (inches)



**SOT23 CERAMIC
(LCC1 PACKAGE)**

Underside View

PAD 1 – Base PAD 2 – Emitter PAD 3 – Collector

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

V_{CBO}	Collector – Base Voltage	40V
V_{CEO}	Collector – Emitter Voltage	15V
V_{EBO}	Emitter – Base Voltage	4.5V
I_C	Collector Current	200mA
P_D	Total Device Dissipation @ $T_A = 25^\circ\text{C}$	360mW
	Derate above 25°C	2.06mW / $^\circ\text{C}$
P_D	Total Device Dissipation @ $T_C = 25^\circ\text{C}$	680mW
	Derate above 25°C	6.85mW / $^\circ\text{C}$
T_{STG}, T_J	Operating and Storage Temperature Range	–65 to +200 $^\circ\text{C}$

Semelab Plc reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

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

Parameter	Test Conditions		Min.	Typ.	Max.	Unit
$V_{(\text{BR})\text{CEO}}^*$	Collector – Emitter Breakdown Voltage	$I_C = 10\text{mA}$	$I_B = 0$	15		V
$V_{(\text{BR})\text{CBO}}$	Collector – Base Breakdown Voltage	$I_C = 10\mu\text{A}$	$I_E = 0$	40		V
$V_{(\text{BR})\text{EBO}}$	Emitter – Base Breakdown Voltage	$I_E = 10\mu\text{A}$	$I_C = 0$	4.5		V
I_{CES}	Collector – Emitter Cut-off Current	$V_{\text{CE}} = 20\text{V}$	$V_{\text{BE}} = 0$		0.40	μA
I_{CBO}	Collector – Base Cut-off Current	$V_{\text{CB}} = 20\text{V}$	$T_A = +150^\circ\text{C}$		30	
$V_{\text{CE}(\text{sat})}^*$	Collector – Emitter Saturation Voltage	$I_C = 10\text{mA}$	$I_B = 1\text{mA}$		0.20	V
			$T_A = +125^\circ\text{C}$		0.30	
		$I_C = 30\text{mA}$	$I_B = 3\text{mA}$		0.25	
		$I_C = 100\text{mA}$	$I_B = 10\text{mA}$		0.50	
$V_{\text{BE}(\text{sat})}^*$	Base – Emitter Saturation Voltage	$I_C = 10\text{mA}$	$T_A = +25^\circ\text{C}$	0.70	0.85	V
		$I_B = 1\text{mA}$	$T_A = +125^\circ\text{C}$	0.59		
			$T_A = -55^\circ\text{C}$		1.02	
		$I_C = 30\text{mA}$	$I_B = 3\text{mA}$		1.15	
		$I_C = 100\text{mA}$	$I_B = 10\text{mA}$		1.60	
h_{FE}^*	Current Gain	$I_C = 10\text{mA}$	$V_{\text{CE}} = 0.35\text{V}$	40		—
			$T_A = -55^\circ\text{C}$	20		
		$I_C = 30\text{mA}$	$V_{\text{CE}} = 0.4\text{V}$	30		
		$I_C = 10\text{mA}$	$V_{\text{CE}} = 1.0\text{V}$		120	
		$I_C = 100\text{mA}$	$V_{\text{CE}} = 1\text{V}$	20		
f_T	Transition Frequency	$I_C = 10\text{mA}$	$V_{\text{CE}} = 10\text{V}$		500	MHz
C_{ob}	Output Capacitance	$V_{\text{CB}} = 5\text{V}$	$I_E = 0$		4	pF
t_s	Storage Time	$f = 140\text{kHz}$				
t_{on}	Turn-On Time	$I_C = 10\text{mA}$	$V_{\text{CC}} = 3\text{V}$		12	ns
t_{off}	Turn-Off Time	$I_{B1} = 3\text{mA}$	$I_{B2} = 1.5\text{mA}$		18	

* Pulse Test: $t_p \leq 300\mu\text{s}$, $\delta \leq 2\%$.

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