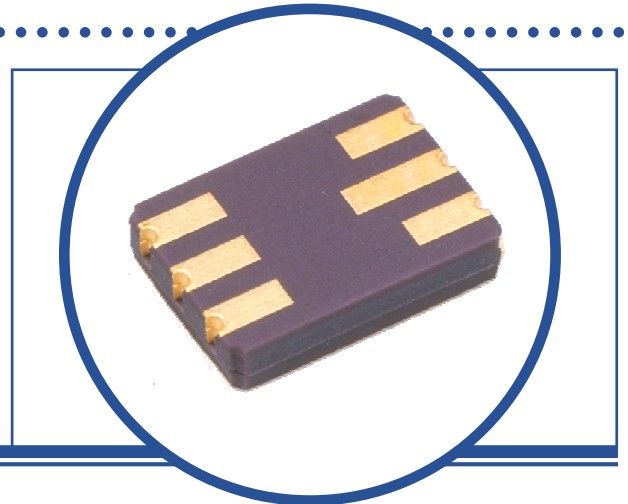


NPN SILICON DUAL TRANSISTORS

2N3019DCSM

- High Voltage, High Current Dual Small Signal NPN Transistors.
- Hermetic Ceramic Surface Mount Package.
- Ideally Suited For General Purpose Amplifier and High Speed Switching Applications.
- Screening Options Available.



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

		Each Side	Total Device
V_{CBO}	Collector – Base Voltage	140V	
V_{CEO}	Collector – Emitter Voltage	80V	
V_{EBO}	Emitter – Base Voltage	7V	
I_C	Continuous Collector Current	1.0A	
P_D	Total Power Dissipation at $T_A = 25^\circ\text{C}$	500mW	500mW ⁽¹⁾
	Derate Above 25°C	2.86mW/ $^\circ\text{C}$	2.86mW/ $^\circ\text{C}$
T_J	Junction Temperature Range	-65 to $+200^\circ\text{C}$	
T_{stg}	Storage Temperature Range	-65 to $+200^\circ\text{C}$	

THERMAL PROPERTIES (Each Side)

Symbols	Parameters	Max.	Units
$R_{\theta JA}$	Thermal Resistance, Junction To Ambient	350	$^\circ\text{C}/\text{W}$

Notes

(1) Total device power dissipation limited by package.

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

Symbols	Parameters	Test Conditions	Min.	Typ	Max.	Units
$V_{(BR)CEO}^{(2)}$	Collector-Emitter Breakdown Voltage	$I_C = 10\text{mA}$ $I_B = 0$	80			V
I_{CBO}	Collector Cut-Off Current	$V_{CB} = 140\text{V}$ $I_E = 0$			10	μA
I_{EBO}	Emitter Cut-Off Current	$V_{EB} = 5\text{V}$ $I_C = 0$			10	nA
		$V_{EB} = 7\text{V}$ $I_C = 0$			10	μA
I_{CES}	Collector Cut-Off Current	$V_{CE} = 90\text{V}$ $I_B = 0$			10	nA
		$T_A = 150^\circ\text{C}$			5	μA
$h_{FE}^{(2)}$	Forward-current transfer ratio	$I_C = 0.1\text{mA}$ $V_{CE} = 10\text{V}$	50		300	
		$I_C = 10\text{mA}$ $V_{CE} = 10\text{V}$	90			
		$I_C = 150\text{mA}$ $V_{CE} = 10\text{V}$	100		300	
		$T_A = -55^\circ\text{C}$	40			
		$I_C = 500\text{mA}$ $V_{CE} = 10\text{V}$	50		300	
$V_{CE(sat)}^{(2)}$	Collector-Emitter Saturation Voltage	$I_C = 150\text{mA}$ $I_B = 15\text{mA}$			0.2	V
		$I_C = 500\text{mA}$ $I_B = 50\text{mA}$			0.5	
$V_{BE(sat)}^{(2)}$	Base-Emitter Saturation Voltage	$I_C = 150\text{mA}$ $I_B = 15\text{mA}$			1.1	

DYNAMIC CHARACTERISTICS

h_{fe}	Small-Signal Current Gain	$I_C = 1.0\text{mA}$ $V_{CE} = 5\text{V}$ $f = 1.0\text{KHz}$	80		400	
$ h_{fe} $	Magnitude of Small-Signal Short-Circuit Forward Current, Transfer Ratio	$I_C = 50\text{mA}$ $V_{CE} = 10\text{V}$ $f = 20\text{MHz}$	5		20	
C_{obo}	Output Capacitance	$V_{CB} = 10\text{V}$ $I_E = 0$ $f = 1.0\text{MHz}$			12	pF
C_{ibo}	Input Capacitance	$V_{EB} = 0.5\text{V}$ $I_C = 0$ $f = 1.0\text{MHz}$			60	
NF ⁽³⁾	Noise Figure	$V_{CE} = 6\text{V}$ $I_C = 100\mu\text{A}$ $f = 1.0\text{KHz}$ $R_G = 1.0\text{K}\Omega$			4	dB
$r_b' C_C^{(3)}$	Collector Base Time Constant	$I_E = 10\text{mA}$ $V_{CB} = 10\text{V}$ $f = 79.8\text{MHz}$			400	ps
t_{on}	Turn-On Time	$I_C = 500\text{mA}$ $V_{CC} = 20\text{V}$ $I_{B1} = 50\text{mA}$			200	ns
t_{off}	Turn-Off Time	$I_C = 500\text{mA}$ $V_{CC} = 20\text{V}$ $I_{B1} = -I_{B2} = 50\text{mA}$			700	

Notes

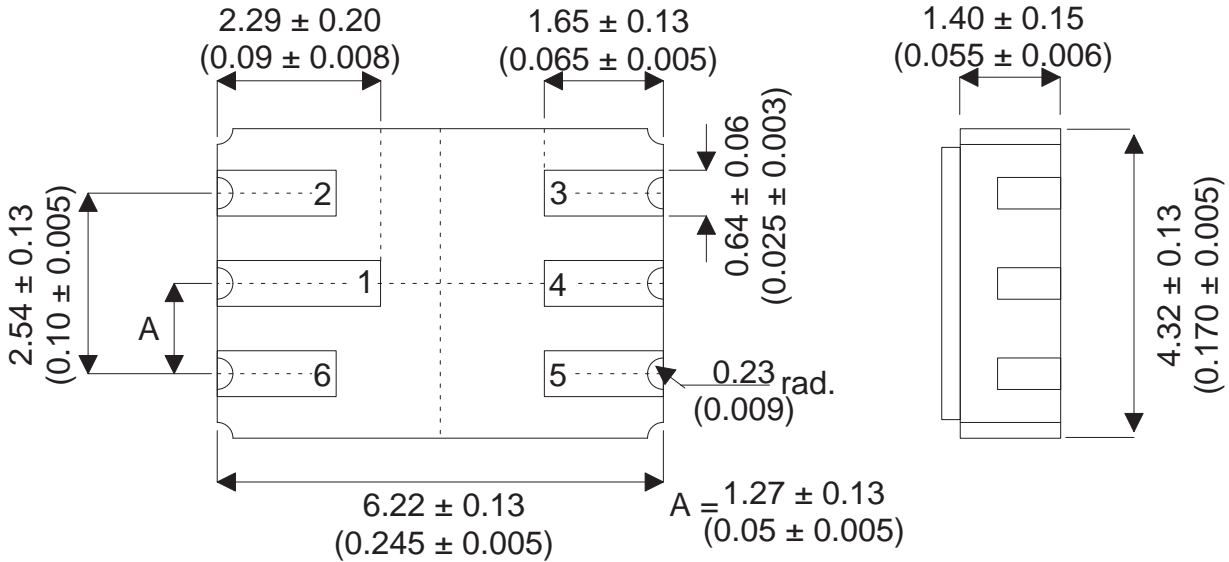
(2) Pulse Width $\leq 380\mu\text{s}$, $\delta \leq 2\%$

(3) By design only, not a production test.

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MECHANICAL DATA

Dimensions in mm (inches)



LCC2 (MO-041BB)

Underside View

Pad 1 – Collector 1	Pad 4 – Collector 2
Pad 2 – Base 1	Pad 5 – Emitter 2
Pad 3 – Base 2	Pad 6 – Emitter 1