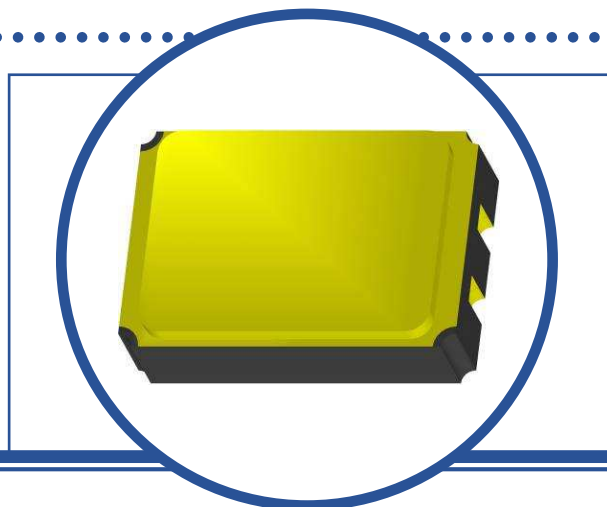


SILICON PLANAR EPITAXIAL NPN TRANSISTOR

2N3439C3A / 2N3440C3A 2N3439C3B / 2N3440C3B 2N3439C3C / 2N3440C3C

- High Voltage
- Hermetic Ceramic Surface Mount Package.
- Variant B to MIL-PRF-19500/368 outline
- Ideally suited for drivers in high-voltage low current inverters, switching and series regulators.
- Screening Options Available



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise stated)

Symbols	Parameters	2N3439	2N3440
V _{CBO}	Collector – Base Voltage	450V	300V
V _{CEO}	Collector – Emitter Voltage	350V	250V
V _{EBO}	Emitter – Base Voltage	7V	
I _C	Collector Current – Continuous	1.0A	
I _B	Base Current	0.5A	
P _D	Total Power Dissipation at T _A = 25°C	800mW	
	Derate Above 25°C	4.6mW/°C	
P _D	Total Power Dissipation at T _{SP} = 25°C	1.5W	
	Derate Above 25°C	8.6mW/°C	
T _J	Junction Temperature Range	-65 to +200°C	
T _{stg}	Storage Temperature Range	-65 to +200°C	

THERMAL PROPERTIES

Symbols	Parameters	Max.	Units
R _{θJA}	Thermal Resistance, Junction To Ambient	218.7	°C/W
R _{θJSP}	Thermal Resistance, Junction To Solder Pads	116.7	°C/W

Semelab Limited 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.

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2N3439C3A, 2N3439C3B, 2N3439C3C
2N3440C3A, 2N3440C3B, 2N3440C3C

2N3439C3A, 2N3439C3B, 2N3439C3C ($T_A = 25^\circ\text{C}$ unless otherwise stated)							
ELECTRICAL CHARACTERISTICS							
Symbols	Parameters	Test Conditions	Min.	Typ	Max.	Units	
I_{CEO}	Collector Cut-Off Current	$V_{CE} = 300\text{V}$ $I_B = 0$			2	μA	
I_{CBO}	Collector Cut-Off Current	$V_{CB} = 450\text{V}$ $I_E = 0$			5		
		$V_{CB} = 360\text{V}$ $I_E = 0$			2		
			$T_A = 150^\circ\text{C}$				
I_{CEX}	Collector Cut-Off Current	$V_{CE} = 450\text{V}$ $V_{BE} = -1.5\text{V}$			5		
I_{EBO}	Emitter Cut-Off Current	$V_{EB} = 7\text{V}$ $I_C = 0$			10		
$V_{CE(sat)}^{(1)}$	Collector-Emitter Saturation Voltage	$I_C = 50\text{mA}$ $I_B = 4\text{mA}$			0.5		
$V_{BE(sat)}^{(1)}$	Base-Emitter Saturation Voltage	$I_C = 50\text{mA}$ $I_B = 4\text{mA}$			1.3		
$h_{FE}^{(1)}$	Forward-current transfer ratio	$I_C = 0.2\text{mA}$ $V_{CE} = 10\text{V}$	10				
		$I_C = 2\text{mA}$ $V_{CE} = 10\text{V}$	30				
		$I_C = 20\text{mA}$ $V_{CE} = 10\text{V}$	40		160		
		$T_A = -55^\circ\text{C}$	15				
DYNAMIC CHARACTERISTICS							
h_{fe}	Small signal forward-current transfer ratio	$I_C = 5\text{mA}$ $V_{CE} = 10\text{V}$ $f = 1.0\text{KHz}$	25				
$ h_{fe} $	Magnitude of Common-Emitter Small-Signal Short-Circuit forward Current, Transfer Ratio	$I_C = 10\text{mA}$ $V_{CE} = 10\text{V}$ $f = 5\text{MHz}$	3		15	MHz	
C_{obo}	Output Capacitance	$V_{CB} = 10\text{V}$ $I_E = 0$ $f = 1.0\text{MHz}$			10	pF	
C_{ibo}	Input Capacitance	$V_{EB} = 5\text{V}$ $I_C = 0$ $f = 1.0\text{MHz}$			75	pF	
t_{on}	Turn-On Time	$I_C = 20\text{mA}$ $V_{CC} = 200\text{V}$ $I_{B1} = 2\text{mA}$			1.0	μs	
t_{off}	Turn-Off Time	$I_C = 20\text{mA}$ $V_{CC} = 200\text{V}$ $I_{B1} = -I_{B2} = 2\text{mA}$			10		

Notes

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

SILICON PLANAR EPITAXIAL NPN TRANSISTOR

2N3439C3A, 2N3439C3B, 2N3439C3C
2N3440C3A, 2N3440C3B, 2N3440C3C

2N3440C3A, 2N3440C3B, 2N3440C3C ($T_A = 25^\circ\text{C}$ unless otherwise stated)							
ELECTRICAL CHARACTERISTICS							
Symbols	Parameters	Test Conditions	Min.	Typ	Max.	Units	
I_{CEO}	Collector Cut-Off Current	$V_{CE} = 200\text{V}$ $I_B = 0$			2	μA	
I_{CBO}	Collector Cut-Off Current	$V_{CB} = 300\text{V}$ $I_E = 0$			5		
		$V_{CB} = 250\text{V}$ $I_E = 0$			2		
			$T_A = 150^\circ\text{C}$				
I_{CEX}	Collector Cut-Off Current	$V_{CE} = 300\text{V}$ $V_{BE} = -1.5\text{V}$			5		
I_{EBO}	Emitter Cut-Off Current	$V_{EB} = 7\text{V}$ $I_C = 0$			10		
$V_{CE(sat)}^{(1)}$	Collector-Emitter Saturation Voltage	$I_C = 50\text{mA}$ $I_B = 4\text{mA}$			0.5		
$V_{BE(sat)}^{(1)}$	Base-Emitter Saturation Voltage	$I_C = 50\text{mA}$ $I_B = 4\text{mA}$			1.3		
$h_{FE}^{(1)}$	Forward-current transfer ratio	$I_C = 0.2\text{mA}$ $V_{CE} = 10\text{V}$	10				
		$I_C = 2\text{mA}$ $V_{CE} = 10\text{V}$	30				
		$I_C = 20\text{mA}$ $V_{CE} = 10\text{V}$	40		160		
			$T_A = -55^\circ\text{C}$	15			
DYNAMIC CHARACTERISTICS							
h_{fe}	Small signal forward-current transfer ratio	$I_C = 5\text{mA}$ $V_{CE} = 10\text{V}$ $f = 1.0\text{KHz}$	25				
$ h_{fe} $	Magnitude of Common-Emitter Small-Signal Short-Circuit forward Current, Transfer Ratio	$I_C = 10\text{mA}$ $V_{CE} = 10\text{V}$ $f = 5\text{MHz}$	3		15	MHz	
C_{obo}	Output Capacitance	$V_{CB} = 10\text{V}$ $I_E = 0$ $f = 1.0\text{MHz}$			10	pF	
C_{ibo}	Input Capacitance	$V_{EB} = 5\text{V}$ $I_C = 0$ $f = 1.0\text{MHz}$			75	pF	
t_{on}	Turn-On Time	$I_C = 20\text{mA}$ $V_{CC} = 200\text{V}$ $I_{B1} = 2\text{mA}$			1.0	μs	
t_{off}	Turn-Off Time	$I_C = 20\text{mA}$ $V_{CC} = 200\text{V}$ $I_{B1} = -I_{B2} = 2\text{mA}$			10		

Notes

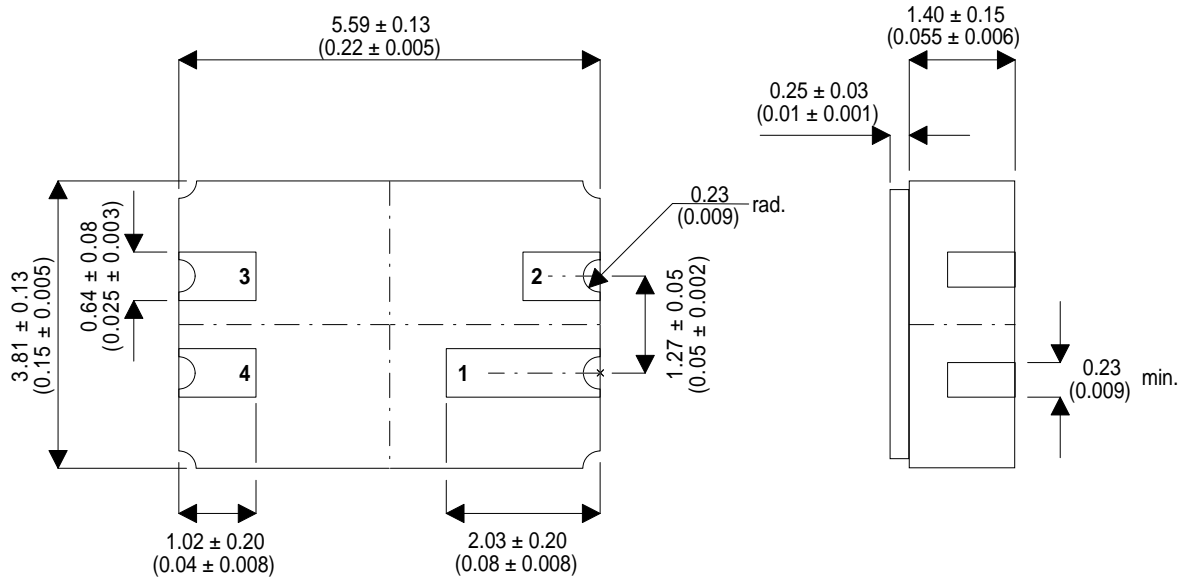
(1) Pulse Width $\leq 380\mu\text{s}$, $\delta \leq 2\%$

SILICON PLANAR EPITAXIAL NPN TRANSISTOR

2N3439C3A, 2N3439C3B, 2N3439C3C
2N3440C3A, 2N3440C3B, 2N3440C3C

MECHANICAL DATA

Dimensions in mm (inches)



LCC3 (MO-041BA)
Underside View

Package Variant Table

Variant	Pad 1	Pad 2	Pad 3	Pad 4
A	Collector	N/C	Emitter	Base
B	Collector	N/C	Base	Emitter
C	Collector	Emitter	N/C	Base

N/C = No Connection