

# JANHCE2N5152, JANHCE2N5154 JANKCE2N5152, JANHCE2N5154

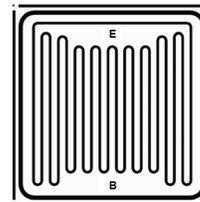


## NPN Power Silicon Transistor Die

Rev. V1

### Features

- Available in commercial JANHCE and JANKCE MIL-PRF-19500/544
- Rad Tolerant to 100K rads (Si)
- Ideal for High Current Switching Applications



### Electrical Characteristics ( $T_A = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Collector - Emitter Breakdown Voltage	$I_C = 100 \text{ mA dc}, I_B = 0$	$V_{(BR)CEO}$	V dc	80	—
Emitter - Base Cutoff Current	$V_{EB} = 4.0 \text{ Vdc}, I_C = 0$	$I_{EBO1}$	$\mu\text{A dc}$	—	1.0
	$V_{EB} = 5.5 \text{ Vdc}, I_C = 0$	$I_{EBO2}$	mA dc	—	1.0
Collector - Emitter Cutoff Current	$V_{CE} = 60 \text{ V dc}, V_{BE} = 0$	$I_{CES1}$	$\mu\text{A dc}$	—	1.0
	$V_{CE} = 100 \text{ V dc}, V_{BE} = 0$	$I_{CES2}$	mA dc	—	1.0
Collector - Emitter Cutoff Current	$V_{CE} = 40 \text{ Vdc}, I_B = 0$	$I_{CEO}$	$\mu\text{A dc}$	—	50
Forward Current Transfer Ratio	$I_C = 50 \text{ mA dc}, V_{CE} = 5.0 \text{ Vdc}$ 2N5152, 2N5152L 2N5154, 2N5154L	$h_{FE1}$		20 50	
	$I_C = 2.5 \text{ A dc}, V_{CE} = 5.0 \text{ Vdc}$ 2N5152, 2N5152L 2N5154, 2N5154L	$h_{FE2}$	-	30 70	90 200
	$I_C = 5.0 \text{ A dc}, V_{CE} = 5.0 \text{ Vdc}$ 2N5152, 2N5152L 2N5154, 2N5154L	$h_{FE3}$		20 40	
Collector - Emitter Saturation Voltage	$I_C = 2.5 \text{ Adc}, I_B = 250 \text{ mAdc}$	$V_{CE(SAT)1}$	V dc	—	0.75
	$I_C = 5.0 \text{ Adc}, I_B = 500 \text{ mAdc}$	$V_{CE(SAT)2}$	V dc	—	1.50
Base - Emitter Voltage (nonsaturated)	$I_C = 2.5 \text{ A dc}, V_{CE} = 5.0 \text{ Vdc}$	$V_{BE}$	V dc	—	1.45
Emitter - Base Saturation Voltage	$I_C = 2.5 \text{ A dc}, I_B = 250 \text{ mA dc}$	$V_{BE(SAT)1}$	V dc	—	1.45
	$I_C = 5.0 \text{ A dc}, I_B = 500 \text{ mA dc}$	$V_{BE(SAT)2}$	V dc	—	2.20
Collector-Emitter Cutoff Current	$T_C = +150^\circ\text{C}$ $V_{CE} = 60 \text{ V dc}, V_{BE} = -2 \text{ V dc}$	$I_{CEX}$	$\mu\text{A dc}$	—	25
Forward-Current Transfer Ratio	$T_C = -55^\circ\text{C}$ $V_{CE} = 5 \text{ V dc}, I_C = 2.5 \text{ A dc}$ 2N5152, 2N5152L 2N5154, 2N5154L	$h_{FE4}$		15 25	

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## Electrical Characteristics ( $T_A = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Test Conditions	Symbol	Units	Min.	Max.
<b>Dynamic Characteristics</b>					
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio	$I_C = 500 \text{ mA dc}$ , $V_{CE} = 5.0 \text{ Vdc}$ , $f = 10 \text{ MHz}$ 2N5152, 2N5152L 2N5154, 2N5154L	$ h_{fe} $	-	6 7	—
Common-Emitter, Small-Signal, Short-Circuit, Forward-Current Transfer Ratio	$I_C = 100 \text{ mA dc}$ , $V_{CE} = 5.0 \text{ Vdc}$ , $f = 1 \text{ kHz}$ 2N5152, 2N5152L 2N5154, 2N5154L	$h_{FE}$	-	20 50	—
Open-Circuit Output Capacitance	$V_{CB} = 10 \text{ Vdc}$ , $I_E = 0$ , $f = 1 \text{ MHz}$	$C_{obo}$	pF	—	250

## Absolute Maximum Ratings ( $T_A = +25^\circ\text{C}$ unless otherwise specified)

Ratings	Symbol	Value
Collector - Emitter Voltage	$V_{CEO}$	80 V dc
Collector - Base Voltage	$V_{CBO}$	100 V dc
Emitter - Base Voltage	$V_{EBO}$	5.5 V dc
Collector Current	$I_C$	2 A dc 10 A dc <sup>(1)</sup>
Reverse Pulse Energy <sup>(2)</sup>		15 mJ

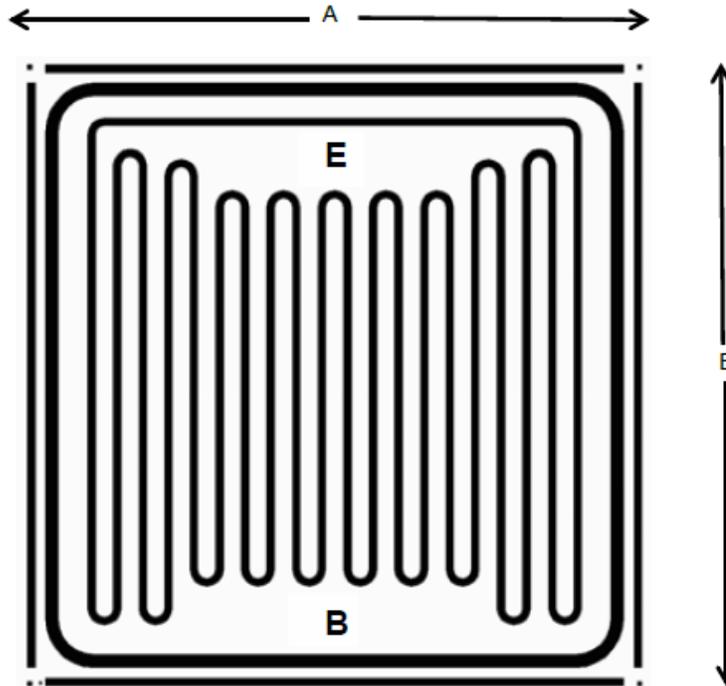
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## Outline Drawings (Die)



Backside: COLLECTOR

LTR	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
A	.118	.122	3.0	3.1

### NOTES:

- Dimensions are in inches.
- Millimeters are given for general information only.
- Unless otherwise specified, tolerance is  $\pm 0.005$  (0.13 mm).
- The physical characteristics of the die are:  
 Thickness: .014 inch (0.35 mm) nominal, tolerance is  $\pm 0.0015$  (0.04 mm).  
 Top metal: Aluminum, 54,000 Å minimum, 60,000 Å nominal.  
 Back metal: Gold 6,400 Å minimum, 8,000 Å nominal.  
 Back side: Collector.  
 Bonding pad: B = .060 x .012 inch (1.5 mm x 0.30 mm)  
 E = .050 x 0.12 inch (1.27 mm x 0.30 mm)

FIGURE 5. JANHC and JANKC (E-version) die dimensions.

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