



NPN Transistor Bare Die – 2N3055

Rev 1.0
22/08/23

Bipolar Power Transistor in bare die form
Complement to PNP MJ2955

Features:

- Collector current up to 15A
- High DC Current Gain, $h_{FE} = 20-70$ @ $I_C = 4A$
- Low $V_{CE(sat)} = 1.1V$ Max @ $I_C = 4A$
- Solderable back metal
- High Reliability tested grades for Military + Space

Ordering Information:

The following part suffixes apply:

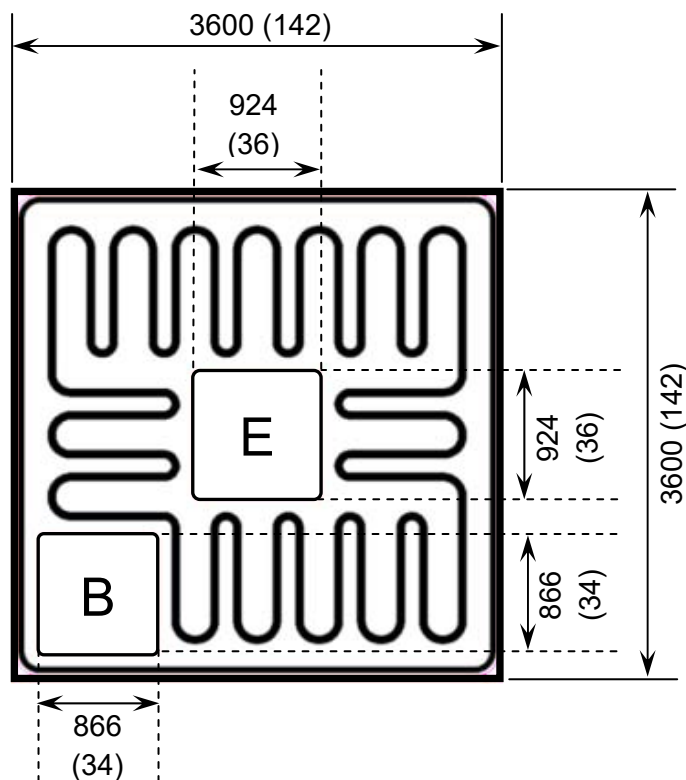
- No suffix - Commercial grade die
- “H” – Hi-rel grade die + MIL-STD-38534 Class H LAT
- “K” – Hi-rel grade die + MIL-STD-38534 Class K LAT.

LAT = Lot acceptance Test.

For information on Hi-Rel LAT flows please see below.

www.siliconsupplies.com/bare-die-lot-qualification

Die Dimensions in μm (mils)



DIE BACK = COLLECTOR

Supply Formats:

- Default – Die in Waffle Pack (100 per tray capacity)
- Sawn Wafer on Tape – Specific request
- Unsawn Wafer – Specific request
- With additional electrical selection – Specific request
- Sawn as pairs or adjacent pair pick – Specific request

Mechanical Specification

Die Size (Excluding Saw Street)	3600 x 3600 142 x 142	μm mils
Emitter Pad Size	924 x 924 36 x 36	μm mils
Base Pad Size	866 x 866 34 x 34	μm mils
Die Thickness	250 (± 25) 9.84 (± 1)	μm mils
Top Metal Composition	Al	
Back Metal Composition	Ti/Ni/Ag	





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Absolute Maximum Ratings $T_A = 25^\circ\text{C}$ unless otherwise stated

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	100	V
Collector-Emitter Voltage	V_{CEO}	60	V
	V_{CER}	70	V
Emitter-Base Voltage	V_{EBO}	7	V
Collector Current - Continuous	I_C	15	A
Base Current	I_B	7	A
Junction Temperature	T_J	200	$^\circ\text{C}$
Storage Temperature	T_{stg}	-65 to 200	$^\circ\text{C}$

Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise stated

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_E = 0$	100	-	-	V
Collector-Emitter Sustaining Voltage ¹	$V_{CEO(SUS)}$	$I_B = 0, I_C = 200\text{mA}$	60	-	-	V
	$V_{CER(SUS)}$	$R_{BE} = 100\Omega, I_C = 200\text{mA}$	70	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_C = 0$	7	-	-	V
Collector Cut-off Current	I_{CEO}	$V_{CE} = 30\text{V}, I_B = 0$	-	-	0.7	mA
	I_{CEX}	$V_{CE} = 100\text{V}, V_{BE(off)} = 1.5\text{V}$	-	-	1.0	mA
	I_{CEX}^2	$V_{CE} = 100\text{V}, V_{BE(off)} = 1.5\text{V}, T_J = 150^\circ\text{C}$	-	-	5.0	mA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 7\text{V}, I_C = 0$	-	-	5.0	mA
ON CHARACTERISTICS						
Forward-Current Transfer Ratio ¹	h_{FE}	$I_C = 4\text{A}, V_{CE} = 4\text{V}$	20	-	70	-
		$I_C = 10\text{A}, V_{CE} = 4\text{V}$	5	-	-	-
Collector-Emitter Saturation Voltage ¹	$V_{CE(sat)}$	$I_C = 4\text{A}, I_B = 400\text{mA}$	-	-	1.1	V
		$I_C = 10\text{A}, I_B = 3.3\text{A}$	-	-	3.0	V
Base-Emitter On Voltage ¹	$V_{BE(on)}$	$I_C = 4\text{A}, V_{CE} = 4\text{V}$	-	-	1.5	V
SMALL SIGNAL CHARACTERISTICS²						
Transition Frequency ³	f_T	$V_{CE} = 10\text{V}, I_C = 0.5\text{A}, f_{TEST} = 1\text{MHz}$	2.5	-	-	MHz
Small-Signal Current Gain	h_{fe}	$V_{CE} = 4\text{V}, I_C = 1\text{A}, f = 1\text{kHz}$	15	-	120	-

1. Pulsed duration = 300 μs , duty cycle $\leq 2\%$

2. Not production testing in die form, characterized by chip design and package verification

3. $f_T = |h_{fe}| \circ f_{TEST}$

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