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:

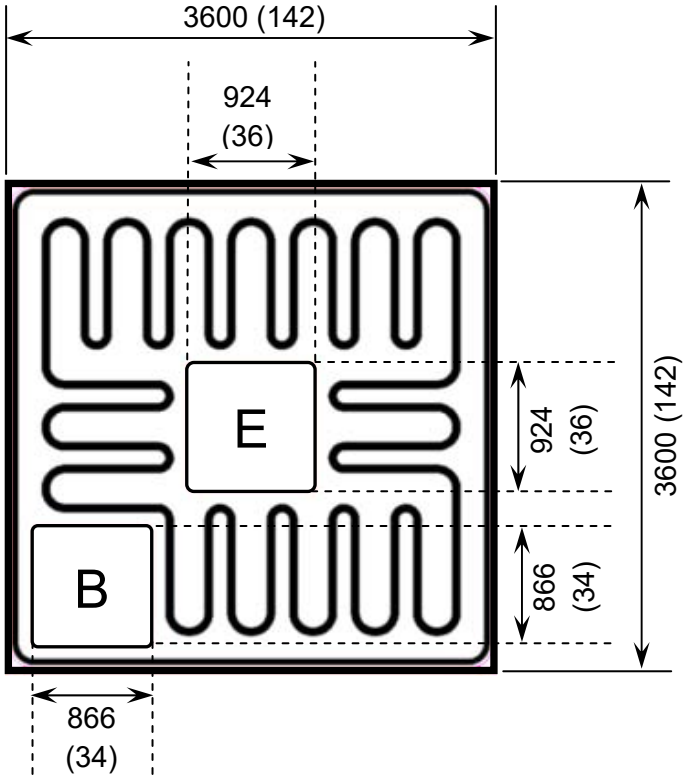
- No suffix - Commercial grade die
- "**H**" – Hi-rel grade die + MIL-STD-38534 Class H LAT
- "**K**" – Hi-rel grade die + MIL-STD-38534 Class K LAT.

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°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	°C
Storage Temperature	T_{stg}	-65 to 200	°C

Electrical Characteristics T_A = 25°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 = 200mA	60	-	-	V
	$V_{CER(SUS)}$	R_{BE} = 100Ω, I_C = 200mA	70	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_C = 0	7	-	-	V
Collector Cut-off Current	I_{CEO}	V_{CE} = 30V, I_B = 0	-	-	0.7	mA
	I_{CEX}	V_{CE} = 100V, $V_{BE(off)}$ = 1.5V	-	-	1.0	mA
	I_{CEX}[2]	V_{CE} =100V,$V_{BE(off)}$ =1.5V,T_J= 150°C	-	-	5.0	mA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 7V, I_C = 0	-	-	5.0	mA
ON CHARACTERISTICS						
Forward-Current Transfer Ratio[1]	h_{FE}	I_C = 4A, V_{CE} = 4V	20	-	70	-
		I_C = 10A, V_{CE} = 4V	5	-	-	-
Collector-Emitter Saturation Voltage[1]	$V_{CE(sat)}$	I_C = 4A, I_B = 400mA	-	-	1.1	V
		I_C = 10A, I_B = 3.3A	-	-	3.0	V
Base-Emitter On Voltage[1]	$V_{BE(on)}$	I_C = 4A, V_{CE} = 4V	-	-	1.5	V
SMALL SIGNAL CHARACTERISTICS[2]						
Transition Frequency[3]	f_T	V_{CE} = 10V, I_C = 0.5A, f_{TEST} = 1MHz	2.5	-	-	MHz
Small-Signal Current Gain	h_{fe}	V_{CE} = 4V, I_C = 1A, f = 1kHz	15	-	120	-

1. Pulsed duration = 300µs, duty cycle ≤ 2%
2. Not production testing in die form, characterized by chip design and package verification
3. $f_T = |h_{fe}| \circ f_{TEST}$