Silicon NPN Transistor

2N3055H

Power Linear and Switching

90V / 15A

DATASHEET

OEM –SGS Ates

Source: SGS Ates Databook 1977

Datasheet Rev. 2.0 – 09/19 – data without warranty / liability

BDX 10 /2N 3055H
BDX 10C/2N 3055C

HOMETAXIAL* NPN

POWER LINEAR AND SWITCHING APPLICATIONS

The BDX 10/2N 3055H and the BDX 10C/2N 3055C are single diffused «hometaxial*» silicon NPN transistors in Jedec TO-3 metal case. They are useful for power switching circuits, series and shunt regulator output stages and high fidelity amplifiers.
Designed to assure freedom from second breakdown at maximum ratings.

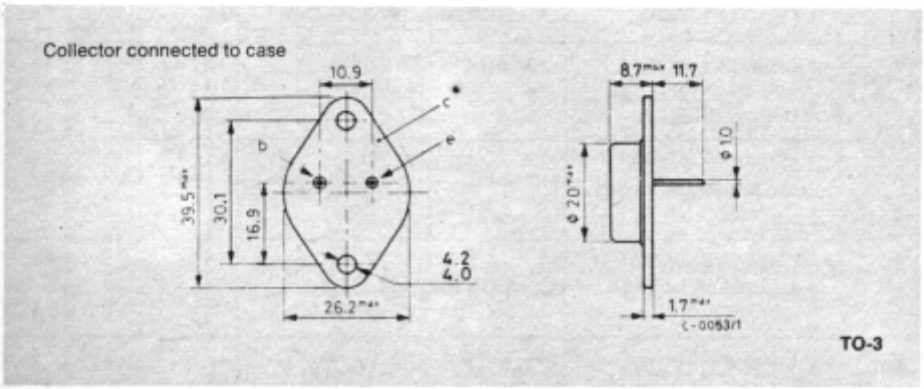
* Hometaxial types employ a structure in which the base region has homogeneous resistivity silicon material in the axial direction (emitter-to-collector).

ABSOLUTE MAXIMUM RATINGS

		BDX10C 2N3055C	BDX10 2N3055H
V_{CBO}	Collector-base voltage ($I_E = 0$)	80V	100V
V_{CEV}	Collector-emitter voltage ($V_{BE} = -1.5$ V)	70V	90V
V_{CER}	Collector-emitter voltage ($R_{BE} \leq 100\ \Omega$)	—	70V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	60V	
V_{EBO}	Emitter-base voltage ($I_C = 0$)	7V	
I_C	Collector current	15A	
I_B	Base current	7A	
P_{tot}	Total power dissipation at $T_{case} \leq 25°C$	115W	
T_{stg}	Storage temperature	-65 to 200 °C	
T_j	Junction temperature	200 °C	

MECHANICAL DATA

Dimensions in mm



BDX 10 /2N 3055H
BDX 10C/2N 3055C

THERMAL DATA

$R_{th\ j\text{-}case}$	Thermal resistance junction-case	max	1.5	°C/W

ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CEV}	Collector cutoff current (V_{BE} = -1.5 V)	for **BDX10/2N 3055H**				
		V_{CE} = 100V			5	mA
		V_{CE} = 100V T_{case} = 150°C			30	mA
		for **BDX10C/2N 3055C**				
		V_{CE} = 80V			5	mA
		V_{CE} = 80V T_{case} = 150°C			30	mA
I_{CEO}	Collector cutoff current (I_B = 0)	V_{CE} = 30V			0.7	mA
I_{EBO}	Emitter cutoff current (I_C = 0)	V_{EB} = 7 V			1	mA
$V_{CEV\ (sus)}$*	Collector-emitter sustaining voltage (V_{BE} = -1.5V)	I_C = 100mA				
		for **BDX10/2N 3055H**	90			V
		for **BDX10C/2N 3055C**	70			V
$V_{CER\ (sus)}$*	Collector-emitter sustaining voltage (R_{BE} = 100Ω)	for **BDX10/2N 3055H**				
		I_C = 200mA	70			V
$V_{CEO\ (sus)}$*	Collector-emitter sustaining voltage (I_B = 0)	I_C = 200mA	60			V
$V_{CE\ (sat)}$*	Collector-emitter saturation voltage	I_C = 4 A I_B = 400mA			1	V
		for **BDX10/2N 3055H**				
		I_C = 10A I_B = 3.3A			3	V
V_{BE}*	Base-emitter voltage	I_C = 4 A V_{CE} = 4 V			1.5	V

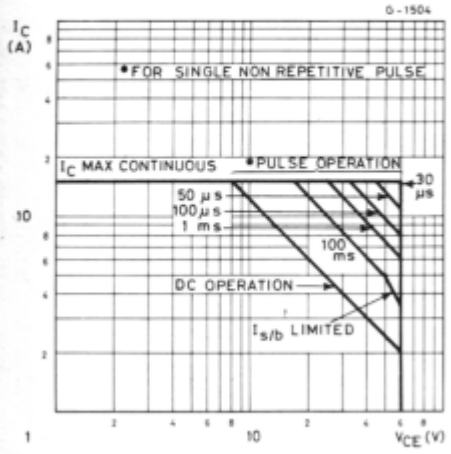
BDX 10 /2N 3055H
BDX 10C/2N 3055C

ELECTRICAL CHARACTERISTICS (continued)

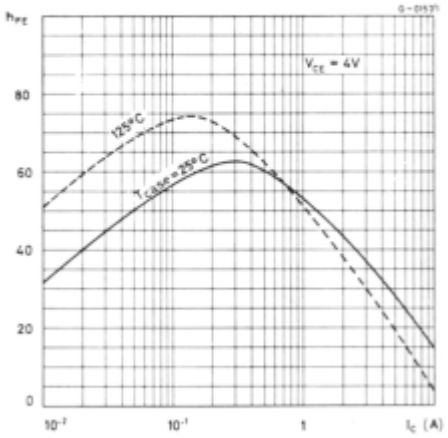
Parameter		Test conditions	Min.	Typ.	Max.	Unit
h_{FE}*	DC current gain	for **BDX10/2N 3055H**				
	Gr. 4	I_C = 500mA V_{CE} = 4 V	20		50	—
	Gr. 5	I_C = 500mA V_{CE} = 4 V	35		75	—
	Gr. 6	I_C = 500mA V_{CE} = 4 V	60		145	—
	Gr. 7	I_C = 500mA V_{CE} = 4 V	120		250	—
		I_C = 4 A V_{CE} = 4 V	20		70	—
		I_C = 10 A V_{CE} = 4 V	5			—
		for **BDX10C/2N 3055C**				
		I_C = 500mA V_{CE} = 4 V	20		250	—
		I_C = 2 A V_{CE} = 2 V	20		160	—
		I_C = 4 A V_{CE} = 4 V	12			—
h_{FE1}/h_{FE2}	Matched pair	I_C = 500mA V_{CE} = 4 V			1.6	—
f_T	Transition frequency	I_C = 1 A V_{CE} = 4 V	800			kHz
$I_{s/b}$**	Second breakdown collector current	V_{CE} = 60 V	1.95			A

* Pulsed: pulse duration = 300 μs, duty cycle = 1.5%
** Pulsed: 1 s, non repetitive pulse

Safe operating areas

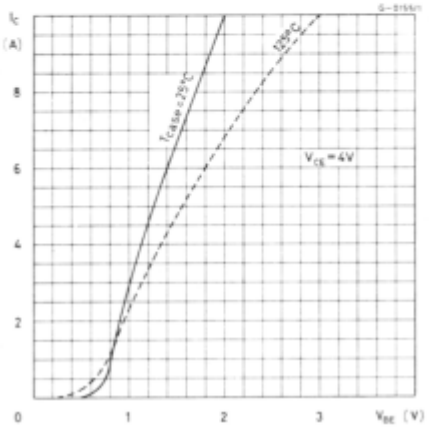


DC current gain

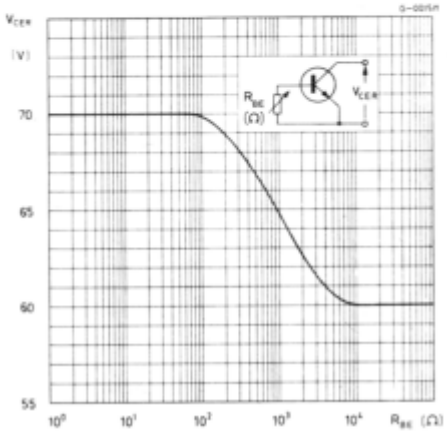


BDX 11 / 2N 3442
BDX 12 / 2N 4347

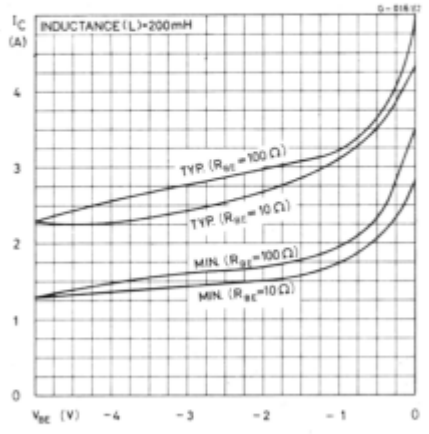
DC transconductance



Collector-emitter breakdown voltage



Reverse-bias second breakdown characteristics



Thermal-cycle rating chart