

Silicon NPN Transistor

40251

high current power

50V / 15A

DATASHEET

OEM –SGS Ates

Source: SGS Ates Databook 1977

HOMETAXIAL* NPN

BDX 13
40251

HIGH CURRENT POWER APPLICATIONS

The BDX 13/40251 is a single diffused «hometaxial» silicon NPN transistor in Jedec TO-3 metal case. It is intended for a wide variety of high power applications **because of very low collector saturation voltage up to 8 A.**

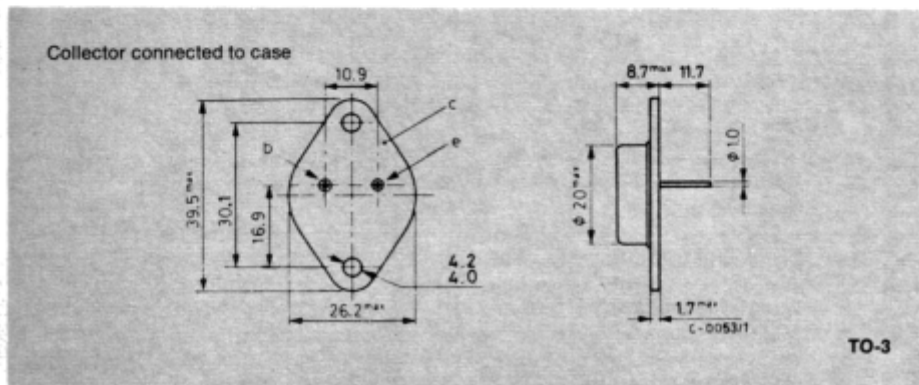
* Hometaxial types employ a structure in which the base region has homogeneous resistivity silicon material in the axial direction (emitter-to-collector).

ABSOLUTE MAXIMUM RATINGS

V_{CBO}	Collector-base voltage ($I_E = 0$)	50	V
V_{CEV}	Collector-emitter voltage ($V_{BE} = -1.5$ V)	50	V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	40	V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	5	V
I_C	Collector current	15	A
I_B	Base current	7	A
P_{tot}	Total power dissipation at $T_{case} \leq 25^\circ\text{C}$	117	W
T_{stg}	Storage temperature	-65 to 200	$^\circ\text{C}$
T_J	Junction temperature	200	$^\circ\text{C}$

MECHANICAL DATA

Dimensions in mm



BDX 13
40251

THERMAL DATA

$R_{th\ j-case}$	Thermal resistance junction-case	max	1.5	°C/W
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ELECTRICAL CHARACTERISTICS ($T_{case} = 25\text{ °C}$ unless otherwise specified)

Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CEV}	Collector cutoff current ($V_{BE} = -1.5\text{ V}$)	$V_{CE} = 40\text{ V}$ $V_{CE} = 40\text{ V}$		2 10	mA mA
I_{EBO}	Emitter cutoff current ($I_C = 0$)	$V_{EB} = 5\text{ V}$		10	mA
$V_{CBO(sus)}$ *	Collector-base sustaining voltage ($I_E = 0$)	$I_C = 100\text{ mA}$	50		V
$V_{CEV(sus)}$ *	Collector-emitter sustaining voltage ($V_{BE} = -1.5\text{ V}$)	$I_C = 100\text{ mA}$	50		V
$V_{CEO(sus)}$ *	Collector-emitter sustaining voltage ($I_B = 0$)	$I_C = 200\text{ mA}$	40		V
$V_{CE(sat)}$ *	Collector-emitter saturation voltage	$I_C = 8\text{ A}$ $I_B = 0.8\text{ A}$		1.5	V
V_{BE} *	Base-emitter voltage	$I_C = 8\text{ A}$ $V_{CE} = 4\text{ V}$		2.2	V
h_{FE} *	DC current gain				
	Gr. 4	$I_C = 500\text{ mA}$ $V_{CE} = 4\text{ V}$	20	50	—
	Gr. 5	$I_C = 500\text{ mA}$ $V_{CE} = 4\text{ V}$	35	75	—
	Gr. 6	$I_C = 500\text{ mA}$ $V_{CE} = 4\text{ V}$	60	145	—
	Gr. 7	$I_C = 500\text{ mA}$ $V_{CE} = 4\text{ V}$	120	250	—
		$I_C = 8\text{ A}$ $V_{CE} = 4\text{ V}$	15	60	—
h_{FE1}/h_{FE2} *	Matched pair	$I_C = 500\text{ mA}$ $V_{CE} = 4\text{ V}$		1.6	—
f_T	Transition frequency	$I_C = 1\text{ A}$ $V_{CE} = 4\text{ V}$	0.8		MHz
$I_{s/b}$ **	Second breakdown collector current	$V_{CE} = 39\text{ V}$	3		A

* Pulsed: pulse duration = 300 μs , duty cycle = 1.5%

** Pulsed: 1s, non repetitive pulse