SYMBOLS & CODES EXPLAINED

IN TYPE No. CROSS-INDEX & TECHNICAL SECTIONS

△ ☑ % Indicators of separate manufacturers producing same type number (non-JEDEC) whose characteristics are not the same. This manufacturer-identifying symbol (assigned by D.A.T.A.) is an integral part of the type number (in Type No. Cross Index, Technical Data Sections) to avoid the possibility of confusing the devices of one manufacturer with the devices of others.

RT ... Replacement Type; consult manufacturer.

SYMBOLS & CODES COMMON TO MORE THAN ONE TECHNICAL SECTION

LINE No.

- ▼ – New Type
- ♦ – Revised Specifications
- # – Non-JEDEC Type manufactured outside U.S.A.

TYPE No.

- † – Switching type, also listed in Section 12
- ∅ – Chopper, also listed in Section 13, Category 10
- * – These types also included elsewhere with other characteristics. See Type No. Cross Index for alternate line no.
- § – Radiation Resistant Devices, also listed in Section 13, Category 13.

STRUCTURE (All Sections Except 6 & 7)

A	–	Alloy
AN	–	Annular
D	–	Diffused or drift
DM	–	Diffused mesa
E	–	Epitaxial
EA	–	Epitaxial annular
EM	–	Epitaxial mesa
F	–	Fused
G	–	Grown
GA	–	Gallium Arsenide
H	–	Hometaxial
MA	–	Mico alloy
MD	–	Micro alloy diffused
ME	–	Mesa
MOS	–	Metal oxide silicon
PA	–	Precision alloy
PC	–	Point contact
PD	–	Precision alloy diffused
PE	–	Planar epitaxial
PL	–	Planar
S	–	Surface barrier
*	–	Matched pair
△	–	Switching, other uses
☑	–	Chopper, other uses
∅	–	Noise figure 8db or below
†	–	Plastic package
%	–	Overlay

2. GERMANIUM PNP | 3. GERMANIUM NPN | 4. SILICON PNP | 5. SILICON NPN--Low Power Transistors

LINE No.	TYPE No.	1 MAX. COLL. DISS. @25°C (W)	2 fab (Hz)	DERATE IN FREE AIR W/°C	T E M A X P	ABS MAX RATINGS @25°C BVcbo (V)	BVceo (V)	BVebo (V)	Ic (A)	MAX. Icbo @MAX Vcb (A)	TYPICAL 'h' PARAMETERS BIAS Vcb (V)	Ie (A)	hfe	COMMON EMITTER hoe (mhos)	hie (Ω)	hre X.0001	Cob (F)	STRUCTURE	DWG #L Y200 s/a TO200 Ser.	C E A D E
		1	2	3	4	5			6	7	8	9	10	11	12	13	14	15		

1

∅ – With infinite heat sink
Following symbols indicate temperature at which derating starts:
† – 40°C ☑ – 60°C $ – 100°C
* – 45°C § – 70°C ♦ – Min.
# – 50°C △ – 85°C

2

† – $f_{\alpha e}$
§ – Gain bandwidth product (f_t)
* – Maximum frequency of oscillation
∅ – Figure of merit (frequency for unity power gain)
△ – Minimum
☑ – Maximum

3

∅ – With infinite heat sink

4

*	– 50-65°C	A	– Ambient
∅	– 70-80°C	C	– Case
#	– 85-100°C	J	– Junction
♦	– 110-125°C	S	– Storage
†	– 130-135°C		
$	– 140-165°C		
§	– 170-200°C		
▼	– Over 200°C		

5

– BV_{CEX} or punch-through
∅ – BV_{CES} ☑ – $BV_{ceo(sus)}$
§ – BV_{CER} * – Pulsed
$ – Indicates min. valves given for BV_{cbo}, BV_{ceo}, and BV_{ebo}.

6

– Pulsed or Peak
$ – Minimum

7

∅ – At V_{CB} < Max. V_{CB} (See Mfr. Spec.)
– I_{CEX} $ – Typical
§ – I_{CES} * – I_{CER}
† – At Temp. > 25°C △ – I_{CEO}
♦ – At Temp. 25°C Case

8

∅ – V_{CE}

9

∅ – I_C △ – I_B

10

† – h_{FE} △ – Minimum
# – Pulsed ☑ – Maximum
§ – h_{FC}
* – Available in selected ranges

11 12 13

b – h parameters are h_{ob}, h_{ib}, h_{rb}
☑ – Maximum

14

☑ – Maximum $ – C_{cb} † – C_{re}

15

$ – Tetrode
# – Radiation Resistant Device (Also See Above)

2. GERMANIUM PNP - LOW POWER TRANSISTORS

IN ORDER OF (1) MAX COLLECTOR DISSIPATION (2) fab & (3) TYPE No.

LINE No.	3 TYPE No.	1 MAX. COLL. DISS. @25°C (W)	2 fab (Hz)	DERATE IN FREE AIR W/°C	T M A X	E M P	ABS MAX RATINGS @25°C BVcbo (V)	BVceo (V)	BVebo (V)	Ic (A)	MAX. Icbo @MAX Vcb (A)	TYPICAL 'h' PARAMETERS BIAS Vcb (V)	BIAS Ie (A)	hfe	COMMON EMITTER hoe (mhos)	hie (Ω)	hre X.0001	Cob (F)	STRUC -TURE	DWG # Y200 s/a TO200 Ser.	L E A D	C O D E
1	TI320	100m	400k△				30			50m	20u	5.0Ø	1.0m	34 †	850nb	38	5.4		A	R44		
2	2N199	100m	500k	1.5m	#		30		6.0	30m	5.0uØ	5.0	1.0m	25				40p				
3	GT758	100m	500k	2.0m	#S		20		15	200m	25u	4.5	1.0m	15	700nb	30	3.0	14p	A△	TO5		
4	OC71N	100m	500k	2.2m	ØJ		30			10m	5.0u	2.0	3.0m	47	80	800	5.4		A	TO1	A	
5	TI321	100m	500k△				30			50m	20u	5.0Ø	1.0m	95 †	830nb	38	8.0		A	R44		
6	2N198	100m	600k	1.5m	#		30		6.0	30m	5.0uØ	5.0	1.0m	40				40p				
7	2N197	100m	700k	1.5m	#		30		6.0	30m	5.0uØ	5.0	1.0m	50				40p				
8	2N196	100m	800k	1.5m	#		30		6.0	30m	5.0uØ	5.0	1.0m	65				40p				
9#	2SB134	100m	800k	1.7	#J		30	30 Ø	15	100m	10uØ	1.5Ø	500u	70	19u	3.2k	5.3		AØ	TO1	A	
10#	2SB135	100m	800k	1.7m	#J		30	30 Ø	15	100m	10uØ	6.0Ø	1.0m	70	21u	2.1k	3.2		A	TO1	A	
11#	2SB135A	100m	.80M	1.7m	#J		110	110 Ø	12	50m	10uØ	1.0Ø	10m	50 †					A	TO1	A	
12	2N195	100m	1.0M	1.5m	Ø		15		6.0	30m	3.0uØ	5.0	1.0m	180				40p				
13	2N200	100m	1.0M	1.5m	#		36		12	100m	4.0uØ	5.0	1.0m	45				40p				
14#	2SB110	100m	1.0M	1.4m	ØJ		25		10	50m	10uØ	6.0Ø	1.0m	30	50ub	30	2.5	15p	A	TO1		
15#	2SB111	100m	1.0M	1.4m	ØJ		25		10	50m	10uØ	6.0Ø	1.0m	45	50ub	30	2.5	15p	A	TO1		
16#	2SB112	100m	1.0M	1.4m	ØJ		25		10	50m	10uØ	6.0Ø	1.0m	60	50ub	30	2.5	15p	A	TO1		
17#	2SB113	100m	1.0M	1.4m	ØJ		25		10	50m	10uØ	6.0Ø	1.0m	80	50ub	30	2.5	15p	A	TO1		
18#	2SB100	100m	1.2M	2.5m	ØJ		30		10	50m	10uØ	6.0Ø	1.0m	60	300nb	30	2.5		AØ	TO5		
19	CK754	100m	1.2M	1.7m	#J			10	20	100m		6.0	1.0m	300					A			
20#	2SB114	100m	1.5M	1.4m	ØJ		25		10	50m	10uØ	1.0Ø	20mØ	65 †				15p	A	TO1		
21#	2SB115	100m	1.5M	1.4m	ØJ		25		10	50m	10uØ	1.0Ø	20mØ	85 †				15p	A	TO1		
22#	2SB116	100m	1.5M	1.4m	ØJ		25		10	50m	10uØ	1.0Ø	20mØ	110 †				15p	A	TO1		
23#	2SB117	100m	1.5M	1.4m	ØJ		25		10	50m	10uØ	1.0Ø	20mØ	140 †				15p	A	TO1		
24	2N30	100m	2.0M		*A		30		50	7.0m		25Ø	.50mØ	17 §					PC			
25#	322T1	100m	2.0M	2.0m			20	20	5.0	100m	16u	1.0	5.0m	25 △					A	TO1		
26	AC107M	100m	2.0M§					15		5.0m		5.0Ø	.30mØ	60					Ø	TO5		
27#	ASY61/TK33	100m	2.0M§△				20		.60		8.0u			25 †△				30p	D			
28#	TK21A	100m	2.0M	4.0m	*J		30		30			30	.50mØ	23					AB			
29#	TK26A	100m	2.0M	4.0m	*J		30		30			.50Ø	20m	23					AB			
30#	2SB443A	100m	2.5M	1.7m	#J		18	18 Ø	12	10m	10uØ	6.0Ø	1.0m	110	43u	3.0k	6.5		AØ	TO1	A	
31#	2SB444A	100m	2.5M	1.7m	#J		18	18 Ø	12	10m	7.0uØ	6.0Ø	1.0m	120	50u	3.3k	6.8		AØ	TO1	A	
32#	323T1	100m	2.5M	2.0m			20	20	5.0	100m	16u	1.0	5.0m	40 △					A	TO1		
33#	TK24A	100m	2.5M	4.0m	*J		30		30			.50Ø	40m	32					AB			
34#	TK27A	100m	2.5M	4.0m	*J		30		30			.50Ø	40m	32					AB			
35	2N31	100m	3.0M		*A		30		50	7.0m	800uØ								PC△			
36#	2SB443	100m	3.0M				18	18 Ø	12	10m	10u	6.0Ø	1.0mØ	150	53u	3.9k	7.4		A	TO1		
37#	2SB444	100m	3.0M				18	18 Ø	12	10m	7.0uØ	6.0Ø	1.0mØ	160	59u	3.9k	7.7		A	TO1		
38#	324T1	100m	3.0M	2.0m			20	20	5.0	100m	16u	1.0	5.0m	65 △					A	TO1		
39#	OC3H	100m	3.0M△	1.7m	#S		15	12	10		2.0uØ	6.0	1.0m	50 △				14p	A	TO9		
40#	OC4H	100m	3.0M△	1.7m	#S		15	12	10		2.0uØ	6.0	1.0m	80 △				14p	A	TO9		
41#	2SB443B	100m	3.5M	1.7m	#J		18	18 Ø	12	10m	10uØ	6.0Ø	1.0m	190	63u	4.8k	8.3		AØ	TO1	A	
42#	2SB444B	100m	3.5M	1.7m	#J		18	18 Ø	12	10m	7.0uØ	6.0Ø	1.0m	200	68u	5.2k	8.7		AØ	TO1	A	
43#	325T1	100m	3.5M	2.0m			20	20	5.0	100m	16u	1.0	5.0m	90 △					A	TO1		
44#	GET883	100m	3.5M	1.7m	#J		15		10	10m	5.0u	6.0	1.0m	50					A†	TO5		
45#	326T1	100m	4.0M	2.0m			20	20	5.0	100m	16u	1.0	5.0m	140 △					A	TO1		
46	2N53	100m	5.0M		*A		50		50	8.0m				.67					PC△			
47	4JD1A73	100m	5.0M		#S			2.0	5.0	50m	6.0uØ	5.0	1.0m	32				12				
48	AF202	100m*	5.0M§	2.2m	#J		25		.30	30m	.40uØ	10Ø	3.0mØ	85					ME	R96		
49	AF202S	100m*	5.0M§	2.2m	#J		32		.30	30m	.40uØ	10Ø	3.0mØ	85					ME	R96		
50#	TK20A	100m	6.3M	4.0m	*J		30		30			4.5Ø	1.0m	43					A			
51#	GET884	100m	7.5M	1.7m	#J		15		10	10m	5.0u	6.0	1.0m	70					A†	TO5		
52	2N1684	100m	8.0M	1.3m	#		25		12	100m	20u							15p	A	u1		
53	2N1782	100m	8.0M	1.3m	#		30		20	100m		.35Ø	200m	30 †				15p	A△	u1		
54#	OC3K	100m	8.0M△	1.7m	#S		15	10	10		2.0uØ	6.0	1.0m	50 △				14p	A	TO9		
55#	OC4K	100m	8.0M△	1.7m	#S		15	10	10		2.0uØ	6.0	1.0m	80 △				14p	A	TO9		
56#	OC5K	100m	8.0M△	1.7m	#S		15	10	10		2.0uØ	6.0	1.0m	120 △				14p	A	TO9		
57#	TK25A	100m	10.M	4.0m	*J		20		20			4.5Ø	1.0m	63				17p	AB△			
58#	TK34C	100m	10M	2.0m	ØJ		20	6.0		15	250m	10uØ	0.0	100mØ	60 †				A△	R47a		
59	2N624	100m	12M△	1.3m	#J		30	20 Ø			10m	30u	10Ø	2.0m	20 △			3.0pØ	D	R4	G	
60	2N1784	100m	12.M	1.3m	#		30		12	100m	25u	.35Ø	10m	40 †				15p	A△	u1		
61#	OC3N	100m	15.M△	1.7m	#S		15	8.0	10		2.0uØ	6.0	1.0m	50 △				14p	A	TO9		
62#	OC4N	100m	15.M△	1.7m	#S		15	8.0	10		2.0uØ	6.0	1.0m	80 △				14p	A	TO9		
63#	OC5N	100m	15.M△	1.7m	#S		15	8.0	10		2.0uØ	6.0	1.0m	120 △				14p	A	TO9		
64	GT1607	100m	18.M	1.7m	#S		10				25u	5.0Ø	1.0m	60 △				14p	A	TO9		
65#	AFY15	100m	20.M		#		22	12	8.0	50m	10u	6.0Ø	.50mØ	80				10p	A	R60		
66#	OC4-O	100m	21.M△	1.7m	#S		15	6.0	10		2.0uØ	6.0	1.0m	80 △				14p	A	TO9		
67#	OC5-O	100m	21.M△	1.7m	#S		15	6.0	10		2.0uØ	6.0	1.0m	120 △				14p	A	TO9		
68#	OC40	100m	21.M△	1.7m	#S		15	6.0	10		2.0uØ	6.0	1.0m	80 △				14p	A	TO9		
69#	OC50	100m	21.M△	1.7m	#S		15	6.0	10		2.0uØ	6.0	1.0m	120 △				14p	A	TO9		
70#	2SA228	100m	30.M		ØJ		80		.50	10m	50u	6.0	1.0m	70				20p	D	TO17		
71#	NKT618	100m	30.M△		ØJ		50	50 Ø	1.0	30m	10uØ	4.5Ø	1.0mØ	35 △				2.0p	ME	TO1		
72#	2SA427	100m	45.M		ØJ		20			15m	15uØ	6.0Ø	1.0mØ	60				5pØ	D	TO44		
73#	2SA428	100m	50.M		ØJ		20			15m	15uØ	6.0Ø	1.0mØ	80				5pØ	D	TO44		
74	2N1517A	100m	70M§	1.6m	Ø		40	20	1.0	10m	8.0uØ	6.0	1.0m	150	350u	43	140	2.5p	AD	TO7		
75	PADT29	100m	70.M§	588u	#J		25	15		10m	8.0uØ	6.0Ø	1.0m	150					ADØ	TO7		
76	2N2093	100m	75.M§	1.7m	#J		25	25 §	2.0	10m	50u	6.0Ø	1.0m	150	1.0u	4.0k	160	4.0p	ADØ	TO7		
77#	2G417	100m	90.M§	1.7m	#J		20	20 §	1.0	10m	8.0uØ	6.0Ø	1.0mØ	50 △				3.5pØ	AD†	TO18		
78#	2G413	100m	100M§	1.5m	#J		40		1.0	25m	50u	6.0	1.0m	100				2.5p	AD	TO18		
79	2N1699	100m	100M	1.3m			40					12Ø	1.5mØ	100								
80#	2G414	100m	120M§	1.7m	#J		20	20 §	1.0	10m	8.0uØ	6.0Ø	1.0mØ	50 △				2.3p	AD†	TO18		
81#	2G415	100m	120M§	1.7m	#J		20	20 §	1.0	10m	8.0uØ	6.0Ø	1.0mØ	50 △				2.3p	AD†	TO18		
82#	2G416	100m	120M§	1.7m	#J		20	20 §	1.0	10m	8.0uØ	6.0Ø	1.0mØ	50 △				3.5pØ	AD†	TO18		
83#	2SA362	100m	150M§	1.7m	#J		30	25 Ø	.50	30m	30u	6.0Ø	5.0m	70				3.0p	ME	TO44		
84#	ASY67	100m	150M§△	3.3m	ØJ		50	50		50m	10uØ	6.0Ø	10mØ	50 †△				3.0p	AD△	TO12		
85#	2SA246	100m	155M				30		.50	30m	30u	6.0Ø	5.0m	70				2.5p	ME	TO44		
86#	2SA247†	100m	200M	1.7m	#J		10		.50	30m	5.0u	.30	20m	125 †				5.5p		TO44		
87	TI363	100m	200M	2.5m	#J		30	30	2.0	50m	3.0uØ	6.0Ø	500u	35 †△	329u	3.4k	192	2.5 Ø	ME	TO58		
88	TI364	100m	200M	2.5m	#J		30	30	2.0	50m	5.0uØ	6.0Ø	500u	20 †△	287u	2.8k	159	2.5 Ø	ME	TO58		
89	PADT30	100m	220M	1.7m	#		25		1.0	10m	10u	12	1.0m	120								
90	40268	100m	250M§△	1.3m	#J		25	15 Ø	1.0	100m	10uØ	10Ø	1.0mØ	20 †△		250		3.5pØ	DM	TO18		
91#	SFT171	100m	250M§	1.7m	#J		30	20		25m	10uØ	9.0Ø	1.5mØ	3.5 †△				2.5pØ	ME	TO33		
92#	SFT172	100m	250M§	1.7m	#J		30	20		25m	10uØ	9.0Ø	1.5mØ	3.5 †△				2.5pØ	ME	TO33		
93#	SFT173	100m	250M§	1.7m	#J		30	20		25m	10uØ	9.0Ø	1.5mØ	7.0 †△				2.5pØ	ME	TO33		
94#	SFT174	100m	250M§	1.7m	#J		30	20		25m	10uØ	9.0Ø	1.5mØ	3.5 †△				2.5pØ	ME	TO33		
95#	2G101	100m	320M§	1.7m	#J		15	15	1.0	20m	10u	5.0Ø	2.0m	20				3.5p	MEØ	TO5		
96#	2G102	100m	400M§	1.7m	#J		15	15	1.0	20m	10u	5.0	2.0m	20				3.5p	ME	TO5		
97#	2SA372†	100m	450M§	2.0m	ØJ		15	15 Ø	2.0	200m	10uØ	1.0Ø	10mØ	25 †				2.0p	EM	TO18		
98	TI445	100m	480M				25			100m	5.0uØ	10Ø	10mØ	10 †△					MEA	TO50		
99	2N694	100m	500M	1.3m	#S		30		1.0	50m		6.0Ø	2.0mØ	20	15ub	19	57	1.5p	D			
100	M2	100m	550M*	5.0m	ØJ		25		1.0	12m	20uØ			20				1.4p	ME	R23		
101	GA53194	100m	600M	1.0m	#J		30			30m	5.0uØ	9.0	10mØ	19	7.5ub	6.0	8.0	2.5p	D			
102	TI444	100m	600M				30			100m	5.0uØ	10Ø	10mØ	10 †△					MEA	TO50		
103	M1	100m	700M*	5.0m	ØJ		25		1.0	12m	20uØ			20				1.4p	ME	R23		
104	TI443	100m	750M				35			100m	5.0uØ	10Ø	10mØ	10 †△	40ub	3.6	200m		MEA	TO50		
105#	AF121S	105m*	270M§	2.3m	#J		32	32 §		10m	8.0uØ							.45p†		R90	J	
106#	2SA310	106m	650M§	3.3m	ØJ		32		.30	25m	13uØ	12	1.0m	250				700f	AD	TO7		
107#	ASY14-1	110m*		2.5m	ØJ		80	40	10	250m		.50Ø	250mØ	30 †					A	R43		
108#	ASY14-2	110m*		2.5m	ØJ		80	40	10	250m		.50Ø	250mØ	40 †					A	R43		
109#	ASY14-3	110m*		2.5m	ØJ		80	40	10	250m		.50Ø	250mØ	70 †					A	R43		
110#	OC307-1	110m*		2.5m	ØJ		32	18	10	250m		.50Ø	250mØ	30 †					A	R43		

SYMBOLS AND CODES EXPLAINED IN INTERPRETER