



semitron hot line

discrete devices

TOLL FREE NUMBER 800-777-3960

germanium transistors cont'd

T-33-01

germanium power transistors — (cont'd)

Type	Polarity	Power Dissipation @ 25°C (watts)	T _J (°C)	BV _{CEO} (volts)	BV _{CE} (volts)	h _{FE} @ I _C			V _{CE} (SAT) @ I _C		f _T (MHz)	Case Style
						(Min.)	(Max.)	(Amps)	(volts)	(Amps)		
		NOTE 1	NOTE 2							NOTE 3	NOTE 4	
2N514A	PNP	80 (C)	95	60	60 (X)	—	—	—	1.25	25	—	TO-41
2N514B	PNP	80 (C)	95	80	80 (X)	—	—	—	1.25	25	—	TO-41
2N538	PNP	34 (J)	95	80	60 —	20	50	2.0	—	—	—	MT-36
2N538A	PNP	34 (J)	95	80	60 —	20	50	2.0	0.6	2.0	—	MT-36
2N539	PNP	34 (J)	95	80	55 —	30	75	2.0	0.6	2.0	—	MT-36
2N539A	PNP	11 (J)	95	80	55 —	30	75	2.0	0.6	2.0	—	MT-36
2N540	PNP	34 (J)	95	80	55 —	45	113	2.0	0.6	2.0	—	MT-36
2N540A	PNP	34 (J)	95	80	55 —	45	113	2.0	0.6	2.0	—	MT-36
2N553	PNP	35 (C)	95	80	—	40	80	0.5	0.9	3.0	—	TO-3
2N554	PNP	40 (J)	90	—	—	—	—	—	—	—	—	TO-3
2N555	PNP	10 (J)	90	40	—	—	—	—	—	—	5.0 (B)	TO-3
2N561	PNP	50 (A)	100	80	50 (O)	20	50	4.0	—	—	—	TO-3
2N574	PNP	180 (J)	100	60	55 (O)	9.0	22	10	0.2	10	—	MT-7
2N574A	PNP	180 (J)	100	80	60 (O)	9.0	22	10	0.2	10	—	MT-7
2N575	PNP	180 (J)	100	60	50 (O)	19	42	10	0.5	25	—	MT-7
2N618	PNP	90 (C)	95	80	60 (S)	60	140	1.0	0.8	2.0	—	TO-3
2N627	PNP	90 (C)	100	40	30 (S)	10	30	10	1.0	10	—	TO-3
2N628	PNP	90 (C)	100	60	45 (S)	10	30	10	1.0	10	—	TO-3
2N629	PNP	90 (C)	100	80	60 (S)	10	30	10	1.0	10	—	TO-3
2N630	PNP	90 (C)	100	100	75 (S)	10	30	10	1.0	10	—	TO-3
2N637	PNP	60 (C)	100	—	35 (R)	30	60	3.0	1.5	3.0	—	TO-3
2N637A	PNP	60 (C)	100	—	65 (R)	30	60	3.0	1.5	3.0	—	TO-3
2N637B	PNP	60 (C)	100	—	75 (R)	30	60	3.0	1.5	3.0	—	TO-3
2N638	PNP	60 (C)	100	—	35 (R)	20	40	3.0	2.0	3.0	—	TO-3
2N638A	PNP	60 (C)	100	—	65 (R)	20	40	3.0	2.0	3.0	—	TO-3
2N638B	PNP	60 (C)	100	—	75 (R)	20	40	3.0	2.0	3.0	—	TO-3
2N663	PNP	35 (C)	100	50	25 (O)	25	75	0.5	1.0	3.0	15 (E)	TO-3
2N665	PNP	35 (C)	95	80	40 (O)	40	80	0.5	0.9	3.0	20 (E)	TO-3
2N669	PNP	62.5 (C)	100	40	30 (S)	—	250	0.5	—	—	3.0 (E)	TO-3
2N677	PNP	90 (C)	100	50	30 (S)	20	60	10	1.0	10	—	TO-41
2N677A	PNP	90 (C)	100	60	40 (S)	20	60	10	1.0	10	—	TO-41
2N677B	PNP	90 (C)	100	90	70 (S)	20	60	10	1.0	10	—	TO-41
2N677C	PNP	90 (C)	100	100	80 (S)	20	60	10	1.0	10	—	TO-41
2N678	PNP	90 (C)	100	50	20 (O)	50	100	10	1.0	10	—	TO-41
2N678A	PNP	90 (C)	100	60	30 (O)	50	100	10	1.0	10	—	TO-41
2N678B	PNP	90 (C)	100	90	60 (O)	50	100	10	1.0	10	—	TO-41
2N678C	PNP	90 (C)	100	100	70 (O)	50	100	10	1.0	10	—	TO-41
2N1011	PNP	35 (C)	95	80	80 (S)	30	75	3.0	1.5	3.0	20 (E)	TO-3
2N1021	PNP	50 (C)	95	100	100 (X)	23	70	1.0	1.0	5.0	—	TO-3
2N1021A	PNP	150 (C)	100	100	50 (O)	30	90	5.0	0.5	5.0	200 (T)	TO-3
2N1022	PNP	50 (C)	95	120	120 (X)	23	70	5.0	1.0	5.0	—	TO-3
2N1022A	PNP	150 (C)	100	120	55 (O)	30	90	5.0	0.5	5.0	200 (T)	TO-3
2N1031	PNP	90 (C)	100	50	30 (S)	20	60	10	1.0	10	10 (E)	TO-41
2N1031A	PNP	90 (C)	100	60	40 (S)	20	60	10	1.0	10	10 (E)	TO-41
2N1031B	PNP	90 (C)	100	90	70 (S)	20	60	10	1.0	10	10 (E)	TO-41
2N1031C	PNP	90 (C)	100	100	80 (S)	20	60	10	1.0	10	10 (E)	TO-41
2N1032	PNP	90 (C)	100	50	30 (S)	50	10	10	1.0	10	25 (E)	TO-41
2N1032A	PNP	90 (C)	100	60	40 (S)	50	100	10	1.0	10	25 (E)	TO-41
2N1032B	PNP	90 (C)	100	90	70 (S)	50	100	10	1.0	10	25 (E)	TO-41
2N1032C	PNP	90 (C)	100	100	80 (S)	50	100	10	1.0	10	25 (E)	TO-41
2N1038	PNP	20 (C)	95	40	40 (V)	20	60	1.0	0.25	1.0	18 (E)	TO-5
2N1099	PNP	50 (C)	95	80	70 (S)	35	70	5.0	0.7	12	—	TO-36
2N1100	PNP	50 (C)	95	100	65 (O)	25	50	5.0	0.7	12	—	TO-36
2N1120	PNP	45 (C)	95	80	70 (S)	20	50	10	1.0	10	30 (E)	TO-41
2N1136	PNP	—	100	60	35 (R)	50	100	3.0	1.0	3.0	—	TO-3
2N1136A	PNP	—	100	90	35 (R)	50	100	3.0	1.0	3.0	4.0 (E)	TO-3
2N1136B	PNP	—	100	100	75 (R)	50	100	3.0	1.0	3.0	4.0 (E)	TO-3
2N1137	PNP	—	100	60	25 (O)	75	150	3.0	1.0	3.0	—	TO-3
2N1137A	PNP	—	100	90	55 (O)	75	150	3.0	1.0	3.0	—	TO-3
2N1137B	PNP	—	100	100	65 (O)	75	150	3.0	1.0	3.0	—	TO-3
2N1138	PNP	—	100	60	25 (O)	100	200	3.0	1.0	3.0	—	TO-3
2N1138A	PNP	—	100	90	55 (O)	100	200	3.0	1.0	3.0	—	TO-3
2N1138B	PNP	—	100	100	65 (O)	100	200	3.0	1.0	3.0	—	TO-3
2N1146	PNP	87 (C)	95	40	20 (O)	60	150	5.0	1.0	15	0.15*(E)	TO-3
2N1146A	PNP	87 (C)	95	60	30 (O)	60	150	5.0	1.0	15	0.15*(E)	TO-3
2N1146B	PNP	87 (C)	95	80	40 (O)	60	150	5.0	1.0	15	0.15*(E)	TO-3
2N1146C	PNP	87 (C)	95	100	50 (O)	60	150	5.0	1.0	15	0.15*(E)	TO-3
2N1147	PNP	87 (C)	95	40	20 (O)	60	150	5.0	1.0	15	0.15*(E)	TO-41
2N1147A	PNP	87 (C)	95	60	30 (O)	60	150	5.0	1.0	15	0.15*(E)	TO-41
2N1147B	PNP	87 (C)	95	80	40 (O)	60	150	5.0	1.0	15	0.15*(E)	TO-41
2N1147C	PNP	87 (C)	95	100	50 (O)	60	150	5.0	1.0	15	0.15 (E)	TO-41
2N1157	PNP	187 (J)	100	60	45 (O)	38	84	10	0.8	40	75 (T)	MT-7
2N1157A	PNP	187 (J)	100	80	50 (O)	38	84	10	0.8	40	75 (T)	MT-7
2N1159	PNP	35 (C)	95	80	60 (O)	30	75	3.0	1.0	3.0	—	TO-3
2N1160	PNP	35 (C)	95	80	60 (O)	20	50	5.0	1.0	5.0	—	TO-3

* MHz

case outline drawings

TO1

TO3

TO5

TO18

TO33

TO36

TO39

TO46

TO59

TO61

TO63

TO66

TO72

TO92

F8

Y220/TO220

NOTES:

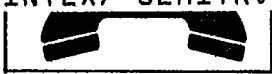
1. Refer to rules for dimensioning semiconductor product outlines included in Publication No. 76.
2. Figure "A", Axial Terminal Configuration, applicable.
3. Figure "B", Peripheral Terminal Configuration, applicable.
4. Alternate lead configurations allowed within C and D.
5. Tab contour optional within M and P.
6. Chamfer optional.
7. Position of lead to be measured .050 - .055 below seating plane.
8. Position of lead to be measured .250 - .325 from bottom of dimension E.

FIG. "A" AXIAL (NOTE 2)

FIG. "B" PERIPHERAL (NOTE 3)

SECTION X-X

PACKAGE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	Q	R	S	T	U	V	NOTES
Y220n/	.140	.045	.020	.012	.840	.340					.180	.040	.530	.040			.050	.340	.127	.100	.580	2
TO330AA	.180	.075	.045	.045	.885	.420					.210	.045	.370	.115								
Y220D	.140	.045	.020	.012	.840	.340					.180	.040	.530	.040			.050	.340	.127	.100	.580	2
TO330AB	.180	.075	.045	.045	.885	.420					.210	.045	.370	.115								
TO330B	.180	.075	.045	.045	.885	.420					.210	.045	.370	.115								
TO330C	.180	.075	.045	.045	.885	.420					.210	.045	.370	.115								



T-91-20

case outline drawings cont'd

D01-3

LEAD No. 2 .125 MAX.
LEAD No. 1 .075 MAX.
SEATING PLANE

D013

CATHODE
SEATING PLANE

D027

SEATING PLANE

D04

10-32 UNF-2A
TERM. 2
SEATING PLANE
TERM. 1

D035

SEATING PLANE

D041

SEATING PLANE

D05

1/4-28 UNF-2A
NOTE 1
NOTE 2
SEATING PLANE
TERM. 1
TERM. 2

A249

SEATING PLANE

	A	B	C	D	E	F
AA48	.150	.150	.025	.055	1.080	1.080
AA48	.150	.150	.025	.055	1.080	1.080
AA48	.150	.150	.025	.055	1.080	1.080
AA48	.150	.150	.025	.055	1.080	1.080
AA48	.150	.150	.025	.055	1.080	1.080
AA48	.150	.150	.025	.055	1.080	1.080
AA48	.150	.150	.025	.055	1.080	1.080
AA48	.150	.150	.025	.055	1.080	1.080
AA48	.150	.150	.025	.055	1.080	1.080
AA48	.150	.150	.025	.055	1.080	1.080

D07

SEATING PLANE

MILLIMETER DIMENSIONS ARE DERIVED FROM ORIGINAL INCH DIMENSIONS

SYMBOL	INCHES MIN.	INCHES MAX.	MILLIMETERS MIN.	MILLIMETERS MAX.	NOTES
ØB	.012	.023	0.458	0.558	1
ØD	.005	.007	2.16	2.71	1
C	.030	.300	5.05	7.62	1
L	1.000	-	25.40	-	1
L ₁	-	.050	-	1.27	2

C212

LEADS .002 DIA. (Ø B)
POS LEAD
AC

C223

LEADS .050 (Ø)
KBL
A C -

SPACED ON 200 (51) CENTERS
LEADS 250 (16 4) DIA

750 (119 11)
250 (16 4)
625 (15 5)
500 (12 7)

DIMENSIONS IN INCHES AND MILLIMETERS

D08

SEATING PLANE

F22

SEATING PLANE

	A	B	C	D	E	F	G	H
F22	.875	.600	.240	.240	.100	.052	.235	.240
F22A	1.00	.600	.240	.240	.100	.052	.235	.240
F22B	1.40	.600	.240	.240	.100	.052	.235	.240
F22C	1.93	1.43	.400	.250	.120	.063	.250	.250
F22D	2.40	1.80	.400	.250	.120	.063	.250	.250
F22E	2.87	2.37	.400	.250	.120	.063	.250	.250
F22F	3.34	2.84	.400	.250	.120	.063	.250	.250
F22G	3.81	3.31	.400	.250	.120	.063	.250	.250
F22H	4.28	3.78	.400	.250	.120	.063	.250	.250
F22I	4.75	4.25	.400	.250	.120	.063	.250	.250
F22J	5.22	4.72	.400	.250	.120	.063	.250	.250

D09

SEATING PLANE

D010

SEATING PLANE