

Conversion of Bipolar Metal Can to Plastic

Metal P/N	Plastic Equivalent	Electrical Equivalency*	Process	Metal P/N	Plastic Equivalent	Electrical Equivalency*	Process
2N697	2N4400	A	13	2N2905	TN2905	E	63
2N706	MPS706	E	21	2N2905A	TN2905A	E	63
2N708	PN3646	N	22	2N2906	PN2906	E	63
2N718	2N4400	A	13	2N2906A	PN2906A	E	63
2N722	PN2906	N	63	2N2907	PN2907	E	63
2N744	PN2369	N	21	2N2907A	PN2907A	E	63
2N753	PN2369	N	21	2N3009	PN3646	N	22
2N760A	2N4409	N	07	2N3011	PN2369	N	21
2N834	MPS834	E	21	2N3012	PN3640	A	65
2N869A	PN3640	A	65	2N3013	PN3646	E	22
2N915	MPS6565	A	27	2N3019	TN3019	E	12
2N917	PN3563	E	43	2N3020	TN3020	E	12
2N918	PN918	E	43	2N3053	2N3053	E	12
2N929	2N4409	N	07	2N3117	2N5210	N	07
2N930	PN930	E	07	2N3133	MPS3703	N	63
2N956	PN2222A	N	19	2N3134	PN3645	N	63
2N995A	PN3640	A	65	2N3135	MPS3703	N	63
2N1132	PN2906	N	63	2N3136	PN3645	N	63
2N1613	PN2221A	N	19	2N3250	2N3905	A	66
2N1711	PN2222A	N	19	2N3251	2N3906	A	66
2N2218	TN2218	E	19	2N3300	2N4401	A	13
2N2218A	TN2218A	E	19	2N3301	2N4400	A	13
2N2219	TN2219	E	19	2N3302	2N4401	A	13
2N2219A	TN2219A	E	19	2N3304	PN3639	A	65
2N2221	PN2221	E	19	2N3440	TN3440	E	36
2N2221A	PN2221A	E	19	2N3724	TN3724	E	25
2N2222	PN2222	E	19	2N3725	TN3725	E	25
2N2222A	PN2222A	E	19	2N3944	2N3903	N	23
2N2369	PN2369	E	21	2N3947	2N3904	N	23
2N2369A	PN2369A	E	21	2N3962	2N5086	N	62
2N2483	2N5209	N	07	2N3964	2N5087	N	62
2N2484	2N5210	N	07	2N3965	2N5087	N	62
2N2604	2N5086	N	62	2N4033	TN4033	E	67
2N2605	2N5086	N	62	2N4036	TN4036	E	67
2N2894	PN3640	A	65	2N4037	TN4037	E	67
2N2894A	PN3639	A	65	2N4208	PN3640	N	65
2N2904	TN2904	E	63	2N4209	PN3640	N	65
2N2904A	TN2904A	E	63				

* E = Exact electrical equivalent

N = Near electrical equivalent

A = Approximate electrical equivalent

Note: On "N" and "A" categories please refer to device specification section for deviation from metal can specifications.

This list is for use when an alternative to a metal can transistor is needed.

To facilitate conversions on the most popular types National is offering the "PN" series, TO-92 devices that use the same die type and are screened to same electrical specifications. The TO-92 transistors produced by National Semiconductor are the most advanced Plastic Transistors ever manufactured. They utilize epoxy B encapsulation and a copper lead frame to give a power dissipation of up to 625 mW @ $T_A = 25^\circ\text{C}$. These transistors provide electrical performance and reliability equivalent to their metal can versions in most applications where T_J does not exceed 150°C .

The same situation is applicable to the "TN" series, except that the National-originated TO-237 (TO-92 +) case outline is used, which permits power dissipation of up to 1.0W @ $T_A = 25^\circ\text{C}$.

PNP Transistors



LOW LEVEL AMPS

Type No.	Case Style	VCBO (V) Min	VCEO (V) Min	VEBO (V) Min	ICBO (nA) @ VCB (V) Max	hFE @ IC (mA) & VCE (V) Min Max	VCE(SAT) (V) Max	VBE(SAT) (V) Min Max	IC (mA) @ VCE (V) Min Max	Cob (pF) Max	fT (MHz) Min Max	toff (ns) Max	NF (dB) Max	Test Conditions	Process No.
2N2604	TO-46	60	45	6	10 45	350 10 5 60 0.5 5 40 120 0.01 5	0.5	0.7 0.9		10	6 30	0.5	3	1	62
2N2605	TO-46	60	45	6	10 45	600 10 5 150 0.5 5 100 300 0.01 5	0.5	0.7 0.9		10	6 30	0.5	3	2	62
2N3547	TO-18	60	60	6	25 45	75 10 5 100 500 1 5 60 0.1 5	1.0	1.0		10	8 45	1	5	1	62
2N3548	TO-18	60	45	6	10 45	600 10 5 150 0.1 5 100 300 0.01 5	1.0	1.0		10	8 60 150	1	4	1	62
2N3549	TO-18	60	60	6	10 45	800 10 5 200 1 5 150 0.1 5 100 500 0.01 5	1.0	1.0		10	8 60 150	1	4	1	62
2N3550	TO-18	60	45	8	1 45	800 10 5 300 1 5 250 0.1 5 200 600 0.01 5 125 0.001 5	0.5	0.7 0.9		5	8 60 150	1	4	1	62
2N3799	TO-18	60	60	5	10 50	300 0.1 5 300 900 0.5 5 300 0.1 5 225 0.01 5 75 0.001 5	0.25 0.8 0.2 0.7			1 0.1	4 30	0.5	2.5	3	62
2N4058	TO-92 (94)	30	30	6	100 20	100 400 0.1 5	0.7			10			5	3	62
2N4059	TO-92 (94)	30	30	6	100 20	45 660 1 5	0.7			10					62
2N4061	TO-92 (94)	30	30	6	100 20	90 330 1 5	0.7			10					62
2N4062	TO-92 (94)	30	30	6	100 20	180 660 1 5	0.7			10					62
2N4248	TO-92 (92)	Same as PN4248, see page 2-7 for explanation													62
2N4249	TO-92 (92)	Same as PN4249, see page 2-7 for explanation													62
2N4250	TO-92 (92)	Same as PN4250, see page 2-7 for explanation													62