PNP Transistors

SATURATED SWITCHES

Type No.	Case Style	V_{CBO} (V) Min	V_{CEO} (V) Min	V_{EBO} (V) Min	I_{CES}* I_{CBO} (nA) @ V_{CB} (V) Max	h_{FE} Min	h_{FE} Max	@ I_C (mA)	& V_{CE} (V)	$V_{CE(SAT)}$ (V) & Max	$V_{BE(SAT)}$ (V) Min	$V_{BE(SAT)}$ (V) Max	@ I_C (mA)	C_{ob} (pF) Max	f_T (MHz) Min	f_T (MHz) Max	@ I_C (mA)	t_{off} (ns) Max	NF (dB) Max	Test Conditions	Process No.
2N869	TO-52	25		5	10 @ 15	20	120	10	5	1.0		1.0	10	9	100		10				64
2N869A	TO-52	25	18	5	10 @ 15	25		100	1	0.15	0.78	0.98	10	6	400		10	80		1	64
						40	120	30	0.5												
						30		10	0.3												
						40	120	10	5	0.2	0.85	1.2	30								
2N995	TO-52	20	15	4	5 @ 15	35	140	20	1	0.2		0.95	20	10	100		10				64
2N995A	TO-52	20	15	4	5 @ 15	25		100	1	0.2		0.95	20	6	100		10	90		2	64
						25		50	1												
						25		20	1	0.5		1.7	100								
						35	140	1	1												
2N2894	TO-52	12	12	4	10* @ 6	25		100	1	0.15	0.78	0.98	10	6	400		30	90		2	64
						40	150	30	0.5	0.2	0.85	1.2	30								
						30		10	0.3	0.5		1.7	100								
2N2894A	TO-52	12	12	4.5	50* @ 10	30		100	1	0.13	0.78	0.92	10	4.5	800		30	25		3	64
						40	120	30	0.5	0.19	0.85	1.15	30								
						30		10	0.3	0.45	1	1.5	100								
						20		1	0.5												
2N3012	TO-52	12	12	4	80* @ 6	20		100	1	0.15	0.78	0.98	10	6	400		30	75		2	64
						30	120	30	0.5	0.2	0.85	1.2	30								
						25		10	0.3	0.5		1.7	100								
2N3209	TO-52	20	20	4	80* @ 10	15		100	1	0.15	0.78	0.98	10	5	400		30	90		2	64
						30	120	30	0.5	0.2	0.85	1.2	30								
						20		10	3	0.6		1.7	100								
2N3248	TO-52	15	12	5		25		100	1	0.125	0.6	0.9	10	8	250		20	100		5	64
						35		50	1												
						50		10	1	0.25	0.7	1.1	50								
						50		1	1												
						50	150	0.1	1	0.4		1.3	100								
2N3249	TO-52	15	12	5		35		100	1	0.125	0.6	0.9	10	8	300		20	100		5	64
						75		50	1												
						100		10	1	0.25	0.7	1.1	50								
						100		1	1												
						100	300	0.1	1	0.45		1.3	100								
2N3545	TO-52	20	20	5	10 @ 10	30		100	1	0.2	0.6	0.85	10	8	250		10	90		8	64
						35		50	1	0.3		1.1	50								
						40	120	10	1	0.5		1.3	100								
						30		1	1												

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SATURATED SWITCHES (Continued)

Type No.	Case Style	V_{CBO} (V) Min	V_{CEO} (V) Min	V_{EBO} (V) Min	I_{CES}* I_{CBO} (nA) Max	@ V_{CB} (V)	h_{FE} Min	h_{FE} Max	@ I_C (mA)	& V_{CE} (V)	$V_{CE(SAT)}$ (V) Max	& $V_{BE(SAT)}$ (V) Min	$V_{BE(SAT)}$ (V) Max	@ I_C (mA)	C_{ob} (pF) Max	f_T (MHz) Min	f_T (MHz) Max	@ I_C (mA)	t_{off} (ns) Max	NF (dB) Max	Test Conditions	Process No.
2N3546	TO-52	15	12	4.5	10	10	15		100	1	0.15	0.7	0.9	10	6	700		10	30		9	64
							25		50	1	0.25	0.8	1.3	50								
							30	120	10	1	0.5		1.6	100								
							20		1	1												
2N3576	TO-52	20	15	5	10	15	10		100	1	0.15	0.75	0.95	10	4.5	400		10	50		5	64
							40	120	10	0.5	0.5		1.1	100								
2N5056	TO-52	15	15	4.5	50*	10	20		100	1	0.13	0.72	0.92	10	4.5	600		30	35		3	64
							30	100	30	0.5	0.19	0.8	1.15	30								
							20		10	0.3												
							12		1	0.5	0.45	0.95	1.5	100								
2N5057	TO-52	15	15	4.5	50*	10	30		100	1	0.13	0.72	0.92	10	4.5	800		30	35		3	64
							40	100	30	0.5	0.19	0.8	1.15	30								
							30		10	0.3	0.45	0.95	1.5	100								
							20		1	0.5												
2N3304	TO-52	6	6	4	10*	3	20		50	1	0.15	0.7	0.8	1	3.5	500		10	60		7	65
							30	120	10	0.3	0.16	0.8	1.0	10								
							15		1	0.5	0.5		1.5	50								
2N3451	TO-52	6	6	4	10*	3	20		50	1	0.16	0.8	1.0	10	5.5	500		10	60		7	65
							30	120	10	0.3	0.5		1.5	50								
2N3639	TO-92 (92)	Same as PN3639, see page 2-4 for explanation																				65
2N3640	TO-92 (92)	Same as PN3640, see page 2-4 for explanation																				65
2N4208	TO-52	12	12	4.5	10*	6	30		50	1	0.13		0.8	1	3	700		10	20		5	65
							30	120	10	0.3	0.15	0.8	0.95	10								
							15		1	0.5	0.5		1.5	50								
2N4209	TO-52	15	15	4.5	10*	8	40		50	1	0.15		0.8	1	3	850		10	20		5	65
							50	120	10	0.3	0.18	0.8	0.95	10								
							35		1	0.5	0.6		1.5	50								
2N4258	TO-92 (92)	Same as PN4258, see page 2-4 for explanation																				65
2N4258A	TO-92 (92)	Same as PN4258A, see page 2-4 for explanation																				65
2N5140	TO-92 (92)	Same as PN5140, see page 2-4 for explanation																				65

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TEST CONDITIONS:
(1) I_C = 30 mA, V_{CC} = 3V, $I_B{}^1$ = 3 mA, $I_B{}^2$ = 1.5 mA. (2) I_C = 30 mA, V_{CC} = 3V, $I_B{}^1 = I_B{}^2$ = 1.5 mA. (3) I_C = 30 mA, V_{CC} = 3V, $I_B{}^1 = I_B{}^2$ = 3 mA. (4) I_C = 500 mA, V_{CC} = 30V, $I_B{}^1 = I_B{}^2$ = 50 mA (5) I_C = 10 mA, V_{CC} = 3V, $I_B{}^1 = I_B{}^2$ = 1 mA. (6) I_C = 10 mA, V_{CC} = 1.5V, $I_B{}^1 = I_B{}^2$ = 1 mA. (7) I_C = 10 mA, V_{CC} = 1.5V, $I_B{}^1 = I_B{}^2$ = 500 μA. (8) I_C = 10 mA, V_{CC} = 2V, $I_B{}^1 = I_B{}^2$ = 1 mA. (9) I_C = 50 mA V_{CC} = 3V, $I_B{}^1 = I_B{}^2$ = 5 mA. (10) I_C = 1A, V_{CC} = 30V, $I_B{}^1 = I_B{}^2$ = 100 mA.

SATURATED SWITCHES (Continued)

Type No.	Case Style	V_{CBO} (V) Min	V_{CEO} (V) Min	V_{EBO} (V) Min	I_{CES}* I_{CBO} (nA) @ V_{CB} (V) Max		h_{FE} Min	h_{FE} Max	@ I_C (mA)	& V_{CE} (V)	$V_{CE(SAT)}$ (V) Max	& $V_{BE(SAT)}$ (V) Min	$V_{BE(SAT)}$ (V) Max	@ I_C (mA)	C_{ob} (pF) Max	f_T (MHz) Min	f_T (MHz) Max	@ I_C (mA)	t_{off} (ns) Max	NF (dB) Max	Test Conditions	Process No.
2N5771	TO-92 (92)	15	15	4.5	10	8	40		50	1.0	0.15		0.8	1	3	850		10	20		6	65
							50	120	10	0.3	0.18	0.8	0.95	10								
							35		1	0.5	0.6		1.5	50								
2N5910	TO-92 (92)	Same as PN5910, see below for explanation																				65
MPS3639	TO-92 (92)	Same as PN3639, see below for explanation																				65
MPS3640	TO-92 (92)	Same as PN3640, see below for explanation																				65
PN3639	TO-92 (92)	6	6	4	10*	3	20		50	1.0	0.16	0.8	1.0	10	3.5	300		10	60		7	65
							30	120	10	0.3	0.5		1.5	50								
PN3640	TO-92 (92)	12	12	4	10*	6	20		50	1.0	0.2	0.8	1.0	10	3.5	300		10	75		7	65
							30	120	10	0.3	0.6		1.5	50								
PN4258	TO-92 (92)	12	12	4.5	10*	6	30		50	1	0.15	0.7	0.95	10	3	700		10	20		6	65
							30	120	10	3												
							15		1	0.5	0.5		1.5	50								
PN4258A	TO-92 (92)	12	12	4.5	10*	6	30		50	1	0.15	0.7	0.95	10	3	700		10	18		6	65
							30	120	10	3												
							15		1	0.5	0.5		1.5	50								
PN5140	TO-92 (92)	5	5	4	50*	3	20	40	10	1	0.2		1.2	10	5	400		10	20		6	65
											0.75			50								
PN5910	TO-92 (92)	20	20	4.5	10*	10	30		50	1	0.15	0.75	0.95	10	3	700		10	20		6	65
							30	120	10	0.3												
							15		1	0.5	0.5		1.5	50								
ST5771-1	TO-92 (92)	15	15	4.5	10	8	30	150	10	0.3	0.15		0.8	1		700		10				65
							30		1	0.5	0.18	0.8	0.95	10								
							20		50	1	0.6		1.5	50								
ST5771-2	TO-92 (92)	15	15	4.5	10	8	40	150	10	0.3	0.15		0.8	1		700		10				65
							35		1	0.5	0.18	0.8	0.95	10								
							30		50	1	0.6		1.5	50								
2N3244	TO-39	40	40	5	50	30	25		750	5	0.3		1.1	150	25	175		50	185		4	70
							50	150	500	1												
							60		150	1	0.5	0.75	1.5	500								
2N3245	TO-39	50	50	5	50	50	20		1A	5	0.35		1.1	150	25	150		50	165		4	70
							30	90	500	1	0.6	0.75	1.5	500								
							35		150	1	1.2		2	1A								
2N3467	TO-39	40	40	5	100	30	40		1	5	0.3		1.0	150	25	175		50	90		4	70
							40	120	500	1												
							40		150	1	0.5	0.8	1.2	500								

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SATURATED SWITCHES (Continued)

Type No.	Case Style	V_{CBO} (V) Min	V_{CEO} (V) Min	V_{EBO} (V) Min	I_{CES}* I_{CBO} (nA) Max	@ V_{CB} (V)	h_{FE} Min	h_{FE} Max	@ I_C (mA)	& V_{CE} (V)	$V_{CE(SAT)}$ (V) Max	& $V_{BE(SAT)}$ (V) Min	$V_{BE(SAT)}$ (V) Max	@ I_C (mA)	C_{ob} (pF) Max	f_T (MHz) Min	f_T (MHz) Max	@ I_C (mA)	t_{off} (ns) Max	NF (dB) Max	Test Conditions	Process No.
2N3468	TO-39	50	50	5	100	30	20		1	5	0.35		1.0	150	25	150		50	90		4	70
							25	75	500	1												
							25		150	1	0.6	0.8	1.2	500								
NS3762	TO-39	40	40	5			30		1.5A	5	0.9		1.4	1A	18	180		50	115		10	70
							30	120	1A	1.5	0.5		1.2	500								
							35		500	1	0.22		1.0	150								
							40		150	1	0.15		0.8	10								
							35		10	1												
NS3763	TO-39	60	60	5			20		1.5A	5	0.9		1.4	1A	18	180		50	115		10	70
							20	80	1A	1.5	0.5		1.2	500								
							35		500	1	0.22		1.0	150								
							40		150	1	0.15		0.8	10								
							35		10	1												
2N5022	TO-39	50	50	5	100*	30	25		1A	5	0.2		1.0	100	25	170		50	90		4	70
							25	100	500	1	0.4	0.8	1.4	500								
							15		100	1	0.8		1.75	1A								
2N5023	TO-39	30	30	5	100*	20	40		1A	5	0.17		1.0	100	25	200		50	90		4	70
							40	100	500	1	0.35	0.8	1.4	500								
							30		100	1	0.7		1.75	1A								
DH3467CD	Ceramic DIP (40)	40	40	5	100	30	40		1A	5	1.0		1.6	1A	25	175		50	90		4	70
							40	120	500	1	0.5	0.8	1.2	500								
							40		150	1	0.3		1.0	150								
DH3467CN	Molded DIP (39)	40	40	5	100	30	40		1A	5	1.0		1.6	1A	25	175		50	90		4	70
							40	120	500	1	0.5	0.8	1.2	500								
							40		150	1	0.3		1.0	150								
DH3468CD	Ceramic DIP (40)	50	50	5	100	30	20		1A	5	1.2		1.6	1A	25	150		50	90		4	70
							25	75	500	1	0.6	0.8	1.2	500								
							25		150	1	0.35		1.0	150								
DH3468CN	Molded DIP (39)	50	50	5	100	30	20		1A	5	1.2		1.6	1A	25	150		50	90		4	70
							25	75	500	1	0.6	0.8	1.2	500								
							25		150	1	0.36		1.0	150								

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TEST CONDITIONS:

(1) I_C = 30 mA, V_{CC} = 3V, $I_B{}^1$ = 3 mA, $I_B{}^2$ = 1.5 mA. (2) I_C = 30 mA, V_{CC} = 3V, $I_B{}^1 = I_B{}^2$ = 1.5 mA. (3) I_C = 30 mA, V_{CC} = 3V, $I_B{}^1 = I_B{}^2$ = 3 mA. (4) I_C = 500 mA, V_{CC} = 30V, $I_B{}^1 = I_B{}^2$ = 50 mA (5) I_C = 10 mA, V_{CC} = 3V, $I_B{}^1 = I_B{}^2$ = 1 mA. (6) I_C = 10 mA, V_{CC} = 1.5V, $I_B{}^1 = I_B{}^2$ = 1 mA. (7) I_C = 10 mA, V_{CC} = 1.5V, $I_B{}^1 = I_B{}^2$ = 500 μA. (8) I_C = 10 mA, V_{CC} = 2V, $I_B{}^1 = I_B{}^2$ = 1 mA. (9) I_C = 50 mA V_{CC} = 3V, $I_B{}^1 = I_B{}^2$ = 5 mA. (10) I_C = 1A, V_{CC} = 30V, $I_B{}^1 = I_B{}^2$ = 100 mA.