

NPN Transistors



Medium Power

Type No.	Case Style	V _{CB0} (V) Min	V _{CER} * V _{CEO} (V) Min	V _{EB0} (V) Min	I _{CB0} * (mA) Max	V _{CB} (V)	I _{FE} Min Max @ I _C & V _{CE} (mA) & (V)	V _{CE(SAT)} (V) & V _{BE(SAT)} (V) @ I _C (mA) Min Max	C _{ob} (pF) Max	f _T (MHz) @ I _C (mA) Min Max	t _{off} (ns) Max	NF (dB) Max	Test Conditions	Process No.
2N1699	TO-39	120	60	5	2	60	40 120 150 10	5.0 1.3 150 10	20	50	50			12
2N1613 also Avail. JAN/TX/V Versions	TO-5	75	35	7	10	60	20 500 10 10 40 120 150 10 35 10 10 20 100 μA 10	1.5 1.3 150 10	25	60	50	12	(Note 1)	12
2N1711	TO-5	75	35	7	10	60	40 500 10 10 100 300 150 10 75 10 10 35 100 μA 10 20 10 μA 10	1.5 1.3 150 10	25	70	50	8	(Note 1)	12
2N1890	TO-39	100	60	7	10	75	100 300 150 10	1.2 0.9 50 10 5.0 1.3 150	15	60	50			12
2N1893 also Avail. JAN/TX/V Versions	TO-39	100	80	7	10	90	40 120 150 10 35 10 10 20 0.1 10	1.2 0.9 50 10 5.0 1.3 150	15	50	50			12
2N2102	TO-39	120	65	7	2	60	10 0.01 10 20 0.1 10 35 10 10 40 120 150 10 25 500 10 10 1A 10	0.5 1.1 150 10	15	60	50			12
2N2192	TO-39	60	40	5	10	30	15 0.01 10 75 0.1 10 100 300 10 10 70 150 10 35 500 10 15 1A 10	0.35 1.3 150 10	10	50	50			12

Medium Power (Continued)

Type No.	Case Style	V _{CB0} (V) Min	V _{CER} * V _{CEO} (V) Min	V _{EB0} (V) Min	I _{CB0} * I _{CB0} (mA) Max	I _{CB0} * I _{CB0} (mA) Max	h _{FE} @ I _C & V _{CE} (V) Min Max	V _{CE(SAT)} (V) & V _{BE(SAT)} (V) Min Max	I _C (mA) Max	C _{ob} (pF) Max	f _T (MHz) Min Max	I _C (mA) Max	t _{off} (ns) Max	NF (dB) Max	Test Conditions	Process No.
2N2192A	TO-39	60	40	5	10	30	15 75 100 300 70 150 10 35 500 10 15 1A 10	0.25 1.3 150 50	0.01 0.1 10 10 10 10 10 10 10 10 10 10 10	20	50	50			12	
2N2193	TO-39	80	50	8	10	80	15 30 40 120 30 150 10 20 500 10 15 1A 10	0.35 1.3 150 50	0.01 0.1 10 10 10 10 10 10 10 10 10 10 10	20	50				12	
2N2193A	TO-39	80	50	8	10	60	15 30 40 120 30 150 1 20 500 10 15 1A 10	0.25 1.3 150 50	0.1 10 10 10 10 10 10 10 10 10 10 10 10	20	50				12	
2N2243	TO-39	120	80	7	10	60	15 30 40 120 150 10 30 150 1 15 500 10	0.35 1.3 150 50	0.1 10 10 10 10 10 10 10 10 10 10 10 10	15	50				12	
2N2243A	TO-39	120	80	7	10	60	15 30 40 120 150 10 30 150 1 15 500 10	0.25 1.3 150 50	0.1 10 10 10 10 10 10 10 10 10 10 10 10	15	50				12	
2N3019 also Avail. JAN/TX/V Versions	TO-39	140	80	7	10	90	50 90 100 300 50 500 10 15 1A 10	0.2 1.1 150 50	0.1 10 10 10 10 10 10 10 10 10 10 10 10	12	100			T-27-01	12	

NPN Transistors



NPN Transistors

Medium Power (Continued)															
Type No.	Case Style	VCBO (V) Min	V _{GER} [*] V _{CEO} (V) Min	V _{EB0} (V) Min	I _{CS} [*] I _{CB0} (mA) Max	V _{CB} (V)	h _{FE} @ I _C (mA) & V _{CE} (V)	V _{CE(SAT)} (V) & V _{BE(SAT)} (V)	I _C (mA) @ V _{BE(SAT)} (V)	C _{ob} (pF) Max	f _T (MHz) @ I _C (mA)	t _{off} (ns) Max	NF (dB) Max	Test Conditions	Process No.
2N3020	TO-39	140	80	7	10	90	30 100 0.1 10 40 120 10 10 40 120 150 10 30 100 500 10 15 1A 10	0.2	1.1 150	12	80	50			12
2N3053	TO-39	60	40	5	250	30	25 150 2.5 10 50 250 150 10	1.4	1.7 150	15	100	50			12
2N3107	TO-39	100	60	7	10	60	35 0.1 10 100 300 150 10 40 500 10	0.25	1.1 150	20	70	50	1000	(Notes 5 & 6)	12
2N3108	TO-39	100	60	7	10	60	20 0.1 10 40 120 150 10 25 500 10	0.25	1.1 150	20	60	50	600	(Notes 5 & 6)	12
2N3109	TO-39	80	40	7	10*	60	35 0.1 10 100 300 150 10 40 500 10	0.25	1.1 150	25	70	50	1000	(Notes 5 & 6)	12
2N3110	TO-39	80	40	7	10*	60	20 0.1 10 40 120 150 10 25 500 10	0.25	1.1 150	25	60	50	600	(Notes 5 & 6)	12
2N3568		Same as PN3568													12
2N3665	TO-39	120	80	10	50*	60	30 10 10 40 120 150 10 25 500 10	0.5	1.2 150	12	60	50			12
2N3666	TO-39	120	80	10	50*	60	70 10 10 100 300 150 10 50 500 10	0.5	1.2 150	12	60	50			12
2N3700	TO-18	140	80	7	10	90	50 1 10 90 10 10 100 300 150 10 50 500 10 15 1A 10	0.2	1.1 150	12	100 200 5	5			12

T-27-01

Medium Power (Continued)

Type No.	Case Style	V _{CB0} (V) Min	V _{CER} * V _{CEO} (V) Min	V _{EBO} (V) Min	I _{CS} * I _{CB0} (mA) Max	h _{FE} I _C & V _{CE} (mA) (V)	V _{CE(SAT)} (V) Max	V _{BE(SAT)} (V) Min	I _C (mA) Max	C _{ob} (pF) Max	f _T (MHz) Min	f _T (MHz) Max	t _{off} (ns) Max	NF (dB) Max	Test Conditions	Process No.
2N3701	TO-18	140	80	7	10	40 120 150 10 40 120 10 10 30 100 0.1 10 30 100 500 10 15 1 10	0.2	150	12	12	80	50				12
2N3945	TO-39	70	50	8	40	25 10 10 40 250 150 10 20 500 10	0.5	1.2 150 1.8 500	12	12	60	50				12
2N4945	TO-92 (92)	80	80	5	50	40 120 150 1 40 30	0.25	150			60	900 50				12
MPSA05	TO-92 (92)		60	4	100	50 10 1 50 100 1	0.25	100			100	100				12
MPSA06	TO-92 (92)		80	4	100	50 10 1 50 100 1	0.25	100			100	100				12
PN3568	TO-92 (92)	80	60	5	50	40 30 1 40 120 150 1	0.25	150	20	20	60	600 50				12
TN1711	TO-237 (91)	75		7	10	20 0.01 10 35 0.1 10 75 10 11 100 150 10 40 300 500 10	1.5 1.3	150 150	25							12
TN2102	TO-237 (91)	120	65	7	10	10 0.01 10 20 0.1 10 35 10 10 40 120 150 10 25 500 10 10 1A 10	0.5	1.1 150 1.1 150	15	15	60	50				12
TN3019	TO-237 (91)	140	80	7	10	50 1 10 90 10 10 100 300 150 10 50 500 10 15 1A 10	0.2 0.5	1.1 150 500	12		100	50				12

T-27-01

NPN Transistors



NPN Transistors

Medium Power (Continued)

Type No.	Case Style	VCBO (V) Min	VCER* VCEO (V) Min	VEBO (V) Min	ICES* ICBO @ (nA) Max	VCE @ VCB (V)	hFE @ IC & VCE (V)		VCE(SAT) (V) & VBE(SAT) (V) Min Max	IC (mA) @ IC (mA) Min Max	Cob (pF) Max	fT (MHz) @ IC (mA) Min Max		toff (ns) Max	NF (dB) Max	Test Conditions	Process No.
							Min	Max				Min	Max				
TN3020	TO-237 (91)	140	80	7	10	90	100 1 10	0.2	1.1	150	12	80	50				12
TN3053	TO-237 (91)	60	40	5	250	30	150 2.5 10	1.4	1.7	150	15	100	50				12
PN3566	TO-92 (92)	40	30	5	50	20	600 10 10	1.0		100	25	4	100 30				13
PN3567	TO-92 (92)	80	40	5	50	40	120 150 1	0.25		150	20	60	600 50				13
PN3569	TO-92 (92)	80	40	5	50	40	300 150 1	0.25		150	20	60	600 50				13
2N3566		Same as PN3566															
2N3567		Same as PN3567															
2N3569		Same as PN3569															
2N2657	TO-39	80	50	8	100	60	15 5A 6 40 120 1A 2	0.5 3.0	1.5 2.5	1A 5A	150	20	200 15	15		2	34
2N2658	TO-39	100	80	8	100	60	15 5A 6 40 120 1A 2	0.5 3.0	1.5 2.5	1A 5A		20	200 15	15		2	34
2N2890	TO-39	100	80	5	50 μA	60	25 2A 5 30 90 1A 2 20 100 2	0.5	1.2	1A	70	30	200 15	15		3	34
2N2891	TO-39	100	80	5	50 μA	60	50 300 50 10 35 100 80 150 1A 2 40 2A 8	0.5 0.75	1.2 1.3	1A 2A	70	30	200 15	15		3	34

T-27-01

Medium Power (Continued)

Type No.	Case Style	V _{CB0} (V) Min	V _{CER} * V _{CEO} (V) Min	V _{EB0} (V) Min	I _{CS} * I _{CB0} (mA) Max	V _{CB} (V)	h _{FE} @ I _C & V _{CE} (mA) (V) Min Max	V _{CE(SAT)} (V) & V _{BE(SAT)} (V) @ I _C (mA) Max Min	C _{ob} (pF) Max	f _T (MHz) @ I _C (mA) Min Max	t _{off} (ns) Max	NF (dB) Max	Test Conditions	Process No.
2N5148	TO-39		80		1 μA	60	20 50 5 30 90 1A 5 15 2A 5 5 3A 5	0.46 1.2 0.85 1.5	70	60 200				34
2N5150	TO-39		80		1 μA	60	60 50 5 70 200 1A 5 30 2A 5 15 3A 5	0.46 1.2 5.0 3A	70	60 200				34
2N5336	TO-39		80		10 μA	80	30 600 2 30 120 2A 2 20 5A 2	0.7 1.2 1.2 1.8		30 500	2200		7	34
2N5338	TO-39		100		10 μA	100	30 600 2 30 120 2A 2 20 5A 2	0.7 1.2 1.2 1.8		30 500	2200		7	34
2N3439	TO-39	450	350	7	20 μA	360	40 160 20 10	0.5 1.3	10	15 10			10	36
2N3440	TO-39		250		20 μA*	300	40 160 20 10							36
2N6591	TO-202 (55)	150	150	5	200	100	40 250 10 10 40 200 100 10	0.8 200						36
2N6592	TO-202 (55)	200	200	5	200	150	30 250 10 10 40 200 100 10	0.8 200						36
2N6593	TO-202 (55)	250	250	5	200	200	30 250 10 10 30 200 100 10	0.8 200						36
2N6720	TO-237 (91)	175	150	6	1 μA	150	25 50 10 30 100 10 15 250 10 10 50 500 10	0.5 100		30 300 50				36
2N6721	TO-237 (91)	225	200	6	1 μA	200	25 50 10 30 100 10 15 250 10 10 50 500 10	0.5 100		30 300 50			T-27-01	36

NPN Transistors

3

NPN Transistors

Medium Power (Continued)																	
Type No.	Case Style	V _{CB0} (V) Min	V _{CER} * V _{CE0} (V) Min	V _{EBO} (V) Min	ICES* ICBO (mA) Max	V _{CB} (V)	h _{FE} @ I _C & V _{CE} (V) Min Max	I _C (mA) Min Max	V _{CE(SAT)} (V) Max	V _{BE(SAT)} (V) Min Max	I _C (mA) Min Max	C _{ob} (pF) Max	f _T (MHz) Min Max	t _{off} (ns) Max	NF (dB) Max	Test Conditions	Process No.
2N6722	TO-237 (91)	275	250	6	1 μA	250	25 30 15 10	50 100 250 500	0.5		100		30 300				36
2N6723	TO-237 (91)	325	300	6	1 μA	300	25 30 15 10	50 100 250 500	0.5		100		30 300				36
92PU36	TO-237 (91)	175	150	6	1 μA	150	25 30 15 10	50 100 250 500	0.5		100						36
92PU36A	TO-237 (91)	225	200	6	1 μA	200	25 30 15 10	50 100 250 500	0.5		100						36
92PU36B	TO-237 (91)	275	250	6	1 μA	250	25 30 15 10	50 100 250 500	0.5		100						36
92PU36C	TO-237 (91)	325	300	6	1 μA	300	25 30 15 10	50 100 250 500	0.5		100						36
D40P1	TO-202 (55)		120		10 μA	200	20 40	2 80	1.0		100	15	10				36
D40P3	TO-202 (55)		180		10 μA	250	20 40	2 80	1.0	1.5	100	15	10				36
D40P5	TO-202 (55)		225		10 μA	300	20 40	2 80	1.0	1.5	100	15	10				36

T-27-01

Medium Power (Continued)

Type No.	Case Style	V _{CE0} (V) Min	V _{CE0} (V) Min	V _{CE0} (V) Min	V _{EB0} (V) Min	I _{CE0} (mA) Max	I _{CE0} (mA) Max	I _{FE} @ I _C & V _{CE} (mA) Min	I _{FE} @ I _C & V _{CE} (mA) Max	V _{CE(SAT)} (V) Max	V _{BE(SAT)} (V) Min	I _C (mA) Max	C _{ob} (pF) Max	f _T (MHz) Min	f _T (MHz) Max	t _{off} (ns) Max	NF (dB) Max	Test Conditions	Process No.
NSD36	TO-202 (55)	175	150	6	150	1 μA	50	25	100	0.5		50	15	10					36
NSD36A	TO-202 (55)	225	200	6	200	1 μA	50	25	100	0.5		50	15	10					36
NSD36B	TO-202 (55)	275	250	6	250	1 μA	50	25	100	0.5		50	15	10					36
NSD36C	TO-202 (55)	325	300	6	300	1 μA	50	25	100	0.5		50	15	10					36
NSD3439	TO-202 (55)		350			20 μA	2	30	100	0.5	1.3	10	20	15					36
NSD3440	TO-202 (55)		250			500 μA	2	30	100	0.5	1.3	10	20	15					36
TN3440	TO-237 (91)		250			20 μA	2	30	100	0.5	1.3	10		15					36
2N6714	TO-237 (91)	40	30	5	40	100	10	55	100	0.5		100		50	500			T-27-01	37
92PU01	TO-237 (91)		30	5	40	100	10	60	100	0.5	1A	50	30	100					37
D40D1	TO-202 (55)		30			100*	10	50	100	0.5	1.5	500							37

NPN Transistors

NPN Transistors

Medium Power (Continued)																					
Type No.	Case Style	V _{CB0} (V) Min	V _{CE0} (V) Min	V _{EB0} (V) Min	IC _{ES} [*] IC _{BO} (nA) Max	V _{CB} (V)	h _{FE} Min	h _{FE} Max	IC (mA)	V _{CE} (V)	V _{CE(SAT)} (V) Max	V _{BE(SAT)} (V) Min	IC (mA) Max	C _{ob} (pF) Max	f _T (MHz) Min	f _T (MHz) Max	t _{off} (ns) Max	NF (dB) Max	Test Conditions	Process No.	
D40D2	TO-202 (55)		30		100*	45	120	360	100	1A	0.5	1.5	500								37
D40D3	TO-202 (55)		30		100*	45	290	100	100	1A		1.5	500								37
D40E1	TO-202 (55)		30		100*	40	50	100	100	2	1.0	1.3	1A								37
D42C1	TO-202 (56)		30		1 μA	30	25	200	200	1	0.5	1.3	1A	30							37
D42C2	TO-202 (56)		30		1 μA	30	40	120	200	1	0.5	1.3	1A	30							37
D42C3	TO-202 (56)		30		1 μA	30	40	200	200	1	0.5	1.3	1A	30							37
NSDU01	TO-202 (55)	40	30	5	100	30	55	100	100	1	0.5	1.2	1A	30	50	50					37
92PU01A	TO-237 (91)		40	5	100	50	55	100	100	1	0.5	1.5	500	30	100	50					38 *
92PU05	TO-237 (91)	60	100	4	100	80	50	250	250	1	0.35		250	30	50	200					38
D40D4	TO-202 (55)		45		100*	60	50	150	100	1A	0.5	1.5	500								38
D40D5	TO-202 (55)		45		100*	60	120	360	100	1A	0.5	1.5	500								38
D40D6	TO-202 (55)		45		100*	60	50	150	100	1A	1.0	1.5	500								38
D40D7	TO-202 (55)		60		100*	60	50	150	100	1A	1.0	1.5	500								38
D40D8	TO-202 (55)		60		100*	75	120	360	100	2	1.0	1.5	500								38

T-27-01

Medium Power (Continued)

Type No.	Case Style	V _{CB0} (V) Min	V _{CER} [*] V _{CEO} (V) Min	V _{EB0} (V) Min	I _{CS} [*] I _{CB0} (nA) Max	V _{CB} (V)	h _{FE} @ I _C & V _{CE} (V) Min Max	V _{CE(SAT)} (V) & V _{BE(SAT)} (V) @ I _C (mA) Min Max	C _{ob} (pF) Max	f _T (MHz) @ I _C (mA) Min Max	t _{off} (ns) Max	NF (dB) Max	Test Conditions	Process No.
D40E5	TO-202 (55)		60		100*	70	50 10	1.0 1.3						38
D42C4	TO-202 (56)		45		1 μA	45	25 10	0.5 1.3	30					38
D42C5	TO-202 (56)		45		1 μA	45	40 20	0.5 1.3	30					38
D42C6	TO-202 (56)		45		1 μA	45	40 20	0.5 1.3	30					38
MPS6715	TO-237 TO-226 (99)		40	5	100	50	55 60 50	0.5 1A	30	50				38
MPS6717	TO-226 (99)	80	80	5	100	60	80 50 20	0.35 250 500		50 500 200				38
MPSW01	TO-226 (99)		40	5	100	50	55 60 50	0.5 1A	30	100	50			38
NSD102	TO-202 (55)	60	45	5	100	60	40 50 40 25	0.2 0.9 1.2	30	60	50			38
NSD103	TO-202 (55)	60	45	5	100	60	50 120 50 30	0.2 0.9 1.2	30	60	50			38
NSD6179	TO-202 (55)		50		500 μA	60	30 40 10	0.5 1.2					T-27-01	38
NSDU01A	TO-202 (55)	50	40	5	100	40	55 60 50	0.5 1.2	30	50	50			38

NPN Transistors

3

NPN Transistors

Medium Power (Continued)																
Type No.	Case Style	VCBO (V) Min	VCER* VCEO (V) Min	VEBO (V) Min	ICES* ICBO (nA) Max	VCE VCB (V) Max	hFE @ IC (mA) Min Max	VCE(SAT) (V) Max	VBE(SAT) (V) Min Max	IC (mA) Max	Cob (pF) Max	fT (MHz) Min Max	t _{off} (ns) Max	NF (dB) Max	Test Conditions	Process No.
NSDU05	TO-202 (55)	60	60	4	100	60	80 50 1 250 1 500 1	0.35	250	250	30	50 200				38
NSE181	TO-202 (56)		60		100	80	50 10 1 500 1 1.5A	0.3	500	500		50 200				38
2N6553	TO-202 (55)	100	100	5	100	80	60 10 1 250 1 500 1	1.0	1A	1A		75 250 100				39
2N6717	TO-237 (91)	80	80	5	100	60	80 50 1 250 1 500 1	0.35	250	250		50 500 200				39
2N6718	TO-237 (91)	100	100	5	100	80	80 50 1 250 1 500 1	0.35	350	350		50 500 200				39
2N6731	TO-237 (91)	100	80	5	100	80	100 10 2 300 350 2	0.35	350	350		50 500 200				39
92PU06	TO-237 (91)	80	100 80	4	100	80	20 500 500 1 50 250 250 1 80 50 50 1	0.35	250	250	30	50 200				39
92PU07	TO-237 (91)	100	100	4	100	80	80 50 1 250 1 500 1	0.35	250	250	30	50 200				39
92PU100	TO-237 (91)	100	80		100	80	20 10 5 150 100 5 10 1A 5	0.35	350	350	20	50 100				39
D40D10	TO-202 (55)		75		100*	90	50 150 100 2 10 1A 2	1.0	1.5 500							39
D40D11	TO-202 (55)		75		100*	90	120 360 100 2 10 1A 2	1.0	1.5 500							39

T-27-01

Medium Power (Continued)

Type No.	Case Style	V _{CB0} (V) Min	V _{CER} * V _{CEO} (V) Min	V _{EBO} (V) Min	I _{CB0} * I _{CB0} (mA) Max	V _{CB} (V)	h _{FE} Min	I _C (mA) Max	V _{CE} (V)	V _{CE(SAT)} (V) Max	V _{BE(SAT)} (V) Min	I _C (mA) Max	C _{ob} (pF) Max	f _T (MHz) Min	I _C (mA) Max	t _{off} (ns) Max	NF (dB) Max	Test Conditions	Process No.
D40D13	TO-202 (55)		75		100*	90	50	150	2	1.0	1.5	500							39
D40D14	TO-202 (55)		75		100*	90	120	360	2	1.0	1.5	500							39
D40E7	TO-202 (55)		80		100*	90	50	100	2	1.0	1.3	1A							39
MPSW06	TO-226 (99)	80	80	4	100	80	80	50	1	0.35		250	30	50	200				39
NSD104	TO-202 (55)	100	80	7	100	100	20	10	5	0.2	0.9	100	30	60	50				39
NSD105	TO-202 (55)	100	80	7	100	100	120	360	5	0.2	0.9	100	30	60	50				39
NSD106	TO-202 (55)	140	100	7	100	140	20	10	5	0.2	0.9	100	30	60	50				39
NSD6178	TO-202 (55)		75		500 μA	80	30	50	2	0.5	1.2	500							39
NSDU06	TO-202 (55)	80	80	4	100	80	80	50	1	0.35		250	30	50	200				39
NSDU07	TO-202 (55)	100	100	4	100	100	80	50	1	0.35		250	30	50	200				39
2N6711	TO-237 (90)	160	160	7	50	100	15	1	10					40	200	10			48

T-27-01

NPN Transistors



NPN Transistors

Medium Power (Continued)																	
Type No.	Case Style	V _{CB0} (V) Min	V _{CE0} (V) Min	V _{EB0} (V) Min	I _{CS0} * (nA) Max	V _{CB} (V)	I _{CS0} * (nA) Max	h _{FE} @ I _C & V _{CE} (mA) (V)	V _{CE(SAT)} (V) & V _{BE(SAT)} (V) Max Min	I _C (mA) Max	C _{ob} (pF) Max	f _T (MHz) @ I _C (mA) Min Max	t _{off} (ns) Max	NF (dB) Max	Test Conditions	Process No.	
2N6712	TO-237 (90)	250	250	7	50	200	50	15 10 10 15 10 10 30 200 30 10				40 200 10					48
2N6713	TO-237 (90)	300	300	7	50	250	50	15 10 10 15 10 10 30 200 30 10				40 200 10					48
2N6719	TO-237 (91)	300	300	7	100	200	100	25 10 10 40 10 10 40 200 30 10				30 300 15					48
2N6733	TO-237 (91)	200	200	6	100	160	100	25 10 10 40 200 10 10	2.0	20		50 200 10					48
2N6734	TO-237 (91)	250	250	6	100	200	100	25 10 10 40 200 10 10	2.0			50 200 10					48
2N6735	TO-237 (91)	300	300	6	100	260	100	25 10 10 40 200 10 10				50 200 10					48
92PE487	TO-237 (90)	160	160	7	50	100	50	15 10 10 15 10 10 30 30 10	1.0	30	3						48
92PE488	TO-237 (90)	250	250	7	50	100	50	15 10 10 15 10 10 30 30 10	1.0	30	3						48
92PE489	TO-237 (90)	300	300	7	50	200	50	15 10 10 15 10 10 30 30 10	1.0	30	3						48
92PU10	TO-237 (91)		300		100	200	100	25 10 10 40 10 10 40 30 10	0.75	30	3.5						48
92PU391	TO-237 (91)	200	200	6	100	160	100	25 10 10 40 10 10	2.0	20	2.5	50	10				48
92PU392	TO-237 (91)	250	250	6	100	200	100	25 10 10 40 10 10	2.0	20	2.5	50	10				48

T-27-01

Medium Power (Continued)

Type No.	Case Style	V _{CB0} (V) Min	V _{CER} [*] V _{CEO} (V) Min	V _{EBO} (V) Min	I _{CB0} [*] (nA) Max	I _{CB} (V) V _{CB} (V)	h _{FE} @ I _C (mA) Min Max	I _C & V _{CE} (V)	V _{CE(SAT)} (V) & V _{BE(SAT)} (V) Min Max	I _C (mA) Min Max	C _{ob} (pF) Max	f _T (MHz) Min Max	t _{off} (ns) Max	NF (dB) Max	Test Conditions	Process No.
92PU993	TO-237 (91)	300	300	6	100	260	25 40	1 10 10	2.0	2.0 20	2.5	50				48
D40N1	TO-202 (55)		250		10 μA	250	20 30 20	4 10 10		20		50				48
D40N2	TO-202 (55)		250		10 μA	250	30 60 30	4 10 10		20		50				48
D40N3	TO-202 (55)		300		10 μA	300	20 30 20	4 10 10		20		50				48
D40N4	TO-202 (55)		300		10 μA	300	30 60 30	4 10 10		20		50				48
MPS6733	TO-226 (99)	200	200	6	100	160	25 40	1 10 10	2.0	20		50 200				48
MPS6734	TO-226 (99)	250	250	6	100	200	25 40	1 10 10	2.0			50 200				48
MPS6735	TO-226 (99)	300	300	6	100	260	25 40	1 10 10				50 200				48
MPSA42	TO-92 (92)	300	300	6	100	200	25 40	1 10 10	0.5	20	3	50				48
MPSA43	TO-92 (92)	200	200	6	100	160	25 40 50	1 10 30	0.4	20	4	50				48
92PU10 MPSW10	TO-226 (99)		300		100	200	25 40	1 10 10	0.75	30	3.5					48
MPSA42 MPSW42	TO-226 (99)	300	300	6	100	200	25 40	1 10 10	0.5	20	3	50				48

T-27-01

NPN Transistors

3

NPN Transistors

NATL SEMICOND DISCRETE 11E D 6501130 0037058 3

Medium Power (Continued)

Type No.	Case Style	V _{CB0} (V) Min	V _{CER} [*] V _{CEO} (V) Min	V _{EBO} (V) Min	I _{CB0} [*] (mA) Max	I _{CB0} @ V _{CB} (mA) Max	h _{FE} @ I _C & V _{CE} (Min Max)	V _{CE(SAT)} (V) Max	V _{BE(SAT)} (V) Min Max	I _C (mA) Max	C _{ob} (pF) Max	f _T (MHz) Min Max	t _{off} (ns) Max	NF (dB) Max	Test Conditions	Process No.
MPSA43 MPSW43	TO-226 (99)	200	200	6	100	100	25 40 5 1 10 10 2000 30 10	0.4	0.9	20	4	50	10			48
NSD131	TO-202 (55)	250	250	7	100	100	15 15 30 1 10 10 90 30 10	1.0	0.85	20	3					48
NSD132	TO-202 (55)	250	250	7	100	100	15 30 60 1 10 10 180 30 10	1.0	0.85	20	3					48
NSD133	TO-202 (55)	300	300	7	100	100	15 15 30 1 10 10 90 30 10	1.0	0.85	20	3					48
NSD134	TO-202 (55)	300	300	7	100	100	15 30 60 1 10 10 180 30 10	1.0	0.85	20	3					48
NSD135	TO-202 (55)	375	375	7	100	100	15 30 30 1 10 10 30 10 10	1.0	0.85	20	3					48
NSD457	TO-202 (55)	160	160	5	50	50	25 30 10 30 10	1.0		30						48
NSD458	TO-202 (55)	250	250	5	50	50	25 30 10 30 10	1.0		30						48
NSD459	TO-202 (55)	300	300	5	50	50	25 30 10 30 10	1.0		30						48
NSDU10	TO-202 (55)	300	300	8	200	200	25 40 40 1 15 15 30 10 10	1.5	0.8	20	3	60				48
NSE457	TO-202 (55)	160	160	5	50	50	25 30 10 30 10	1.0		30						48
NSE458	TO-202 (55)	250	250	5	50	50	25 30 10 30 10	1.0		30						48

T-27-01

T-27-01

NPN Transistors

Medium Power (Continued)

Type No.	Case Style	V _{CB0} (V) Min	V _{CER} [*]		V _{EB0} (V) Min	I _{CB0} (mA) Max	h _{FE} @ I _C & V _{CE}		V _{CE(SAT)} (V) & V _{BE(SAT)} (V) @ I _C		C _{ob} (pF) Max	f _T (MHz) @ I _C		t _{off} (ns) Max	NF (dB) Max	Test Conditions	Process No.
			V _{CE0} (V) Min	I _{CB0} (mA) Max			Min	Max	Max	Min		Min	Max				
NSE459	TO-202 (55)	300	300	5	50	250	25	30	10	1.0							48
TN3742	TO-237 (91)	300	300	7	100	200	10	3	10	0.75	1.0	10	30	10			48

TEST CONDITIONS:

Note 1: I_C = 50 mA, V_{CC} = 100V, I_{B1} = I_{B2} = 5 mA.
 Note 2: I_C = 500 μA, V_{CE} = 10V, f = 1 kHz.
 Note 3: I_C = 500 mA, V_{CC} = 30V, I_{B1} = I_{B2} = 50 mA.
 Note 4: I_C = 150 mA, V_{CC} = 30V, I_{B1} = I_{B2} = 15 mA.

Note 5: I_C = 100 μA, V_{CC} = 10V, f = 1 kHz.
 Note 6: I_C = 500 mA, V_{CC} = 30V, I_{B1} = I_{B2} = 50 mA.
 Note 7: I_C = 2A, V_{CC} = 40V, I_{B1} = I_{B2} = 200 mA.
 Note 8: I_C = 1 mA, V_{CE} = 6V, f = 60 kHz.

Note 9: I_C/I_B = 8.
 Note 10: I_C/I_B = 12.5.