

NPN Transistors



Medium Power

Type No.	Case Style	V <sub>CB0</sub> (V) Min	V <sub>CER</sub> <sup>*</sup> V <sub>CEO</sub> (V) Min	V <sub>EBO</sub> (V) Min	ICES <sup>*</sup> I <sub>CBO</sub> (mA) Max	h <sub>FE</sub> Min	I <sub>C</sub> & V <sub>CE</sub> (mA) & (V)	V <sub>CE(SAT)</sub> (V) & V <sub>BE(SAT)</sub> (V) Max	I <sub>C</sub> @ (mA) Min Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min Max	I <sub>C</sub> (mA) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
2N699	TO-39	120	60	5	2	40	120 150 10	5.0	1.3 150	20	50	50				12
2N1613 also Avail. JAN/TX/V Versions	TO-5	75	35	7	10	20	500 10 10 40 120 150 10 35 10 10 20 100 μA 10	1.5	1.3 150	25	60	50		12	(Note 1)	12
2N1711	TO-5	75	35	7	10	40	500 10 10 100 300 150 10 75 10 10 35 100 μA 10 20 10 μA 10	1.5	1.3 150	25	70	50		8	(Note 1)	12
2N1890	TO-39	100	60	7	10	100	300 150 10	1.2 5.0	0.9 50 1.3 150	15	60	50				12
2N1893 also Avail. JAN/TX/V Versions	TO-39	100	80	7	10	40	120 150 10 35 10 10 20 0.1 10	1.2 5.0	0.9 50 1.3 150	15	50	50				12
2N2102	TO-39	120	65	7	2	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	15	60	50				12
2N2192	TO-39	60	40	5	10	15	0.01 10 75 0.1 10 100 300 10 10 70 150 10 10 35 500 10 15 1A 10	0.35	1.3 150	10	50	50				12

Medium Power (Continued)

Type No.	Case Style	V <sub>CB0</sub> (V) Min	V <sub>CER</sub> * V <sub>CEO</sub> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CS</sub> * I <sub>CB0</sub> (mA) Max	h <sub>FE</sub> @ I <sub>C</sub> & V <sub>CE</sub> (mA) (V)	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> (V) Min	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) @ I <sub>C</sub> (mA)		t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
											Min	Max				
2N2192A	TO-39	60	40	5	10	15	0.25	1.3	150	20	50	50				12
						75										
2N2193	TO-39	80	50	8	10	30	0.35	1.3	150	20	50	50				12
						40										
2N2193A	TO-39	80	50	8	10	15	0.25	1.3	150	20	50	50				12
						30										
2N2243	TO-39	120	80	7	10	15	0.35	1.3	150	15	50	50				12
						40										
2N2243A	TO-39	120	80	7	10	15	0.25	1.3	150	15	50	50				12
						30										
2N3019 also Avail. JAN/TX/V Versions	TO-39	140	80	7	10	50	0.2	1.1	150	12	100	50				12
						100										

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Type No.	Case Style	V <sub>CB0</sub> (V) Min	V <sub>CE0</sub> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CS</sub> <sup>*</sup> I <sub>CB0</sub> (mA) Max	I <sub>CB0</sub> (mA) Max	h <sub>FE</sub> @ I <sub>C</sub> & V <sub>CE</sub> (V) Min Max	V <sub>CE(SAT)</sub> (V) & V <sub>BE(SAT)</sub> (V) @ I <sub>C</sub> (mA) Max Min	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min Max	t <sub>off</sub> (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 10 0.5 500	120 150 500	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 10	150 500	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 1.0 2.0 1A	20 150 10 1A	20	70 50	1000	7	(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 1.0 2.0 1A	20 150 10 1A	20	60 50	600	7	(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 1.0 2.0 1A	20 150 10 1A	25	70 50	1000	7	(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 1.0 2.0 1A	20 150 10 1A	25	60 50	600	7	(Notes 5 & 6)	12
2N3568		Same as PN3568													
2N3665	TO-39	120	80	10	50*	60	30 10 10 40 120 150 10 25 500 10	0.5 1.2 150 12 1.8 500	10 150 500	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 1.8 500	10 150 500	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 0.5 500	10 150 500	12	100 200 5				12

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Medium Power (Continued)

Type No.	Case Style	V <sub>CB0</sub> (V) Min	V <sub>CER</sub> <sup>*</sup> V <sub>CEO</sub> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CS</sub> <sup>*</sup> I <sub>CB0</sub> (mA) Max	V <sub>CB</sub> (V)	h <sub>FE</sub> Min	I <sub>C</sub> (mA) Min	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> (V) Min	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min	f <sub>T</sub> (MHz) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
2N3701	TO-18	140	80	7	10	90	40	120	0.2	1.5	150	12	80	50				12
2N3945	TO-39	70	50	8	40	60	25	10	0.5	1.2	150	12	60	50				12
2N4945	TO-92 (92)	80	80	5	50	40	40	120	0.25	1.8	500		60	900	50			12
MPSA05	TO-92 (92)		60	4	100	60	50	10	0.25		100		100	100				12
MPSA06	TO-92 (92)		80	4	100	80	50	10	0.25		100		100	100				12
PN3568	TO-92 (92)	80	60	5	50	40	40	120	0.25		150	20	60	600	50			12
TN1711	TO-237 (91)	75		7	10	60	20	0.01	1.5		150	25						12
TN2102	TO-237 (91)	120	65	7	10	60	35	0.1	1.3		150							12
TN3019	TO-237 (91)	140	80	7	10	90	75	10	0.5	1.1	150	15	60	50				12
							100	300	0.5		500		100					T-27-01
							50	500										
							10	1A										
							50	1	0.2	1.1	150	12	100	50				12
							90	10										
							100	300										
							50	500										
							15	1A										

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Medium Power (Continued)

Type No.	Case Style	V <sub>CEO</sub> (V)		V <sub>CER</sub> (V)		V <sub>BE0</sub> (V)		I <sub>CS</sub> <sup>*</sup> (mA)		I <sub>CB0</sub> (mA)		I <sub>C</sub> & V <sub>CE</sub> (V)		V <sub>CE(SAT)</sub> (V) & V <sub>BE(SAT)</sub> (V)		I <sub>C</sub> (mA)		C <sub>ob</sub> (pF)		f <sub>T</sub> (MHz)		I <sub>C</sub> (mA)		t <sub>off</sub> (ns)		NF (dB)		Test Conditions	Process No.
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max		
TN3020	TO-237 (91)	140		80		7		10	90			30	100	1	10	0.2	1.1	150	12			80	50						12
TN3053	TO-237 (91)	60		40		5		250	30			25	150	2.5	10	1.4	1.7	150	15			100	50						12
PN3566	TO-92 (92)	40		30		5		50	20			150	600	10	10	1.0		100	25			4	100	30					13
PN3567	TO-92 (92)	80		40		5		50	40			40	120	150	1	0.25		150	20			60	600	50					13
PN3569	TO-92 (92)	80		40		5		50	40			100	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	40	5A	6	0.5	1.5	1A	150			20	200	15					34
2N2658	TO-39	100		80		8		100	60			15	5A	6	0.5	1.5	1A					20	200	15					34
2N2890	TO-39	100		80		5		50	60			25	30	2A	5	0.5	1.2	1A	70			30	200	15					34
2N2891	TO-39	100		80		5		50	60			50	300	50	10	0.5	1.2	1A	70			30	200	15					34

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

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Medium Power (Continued)																		
Type No.	Case Style	V <sub>CE0</sub> (V) Min	V <sub>CE0</sub> (V) Min	V <sub>BE0</sub> (V) Min	I <sub>CS</sub> <sup>*</sup> I <sub>CS0</sub> ( $\mu$ A) Max	h <sub>FE</sub> Min	I <sub>C</sub> (mA) Max	V <sub>CE</sub> (V) Max	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> (V) Max	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min	f <sub>T</sub> (MHz) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
2N6722	TO-237 (91)	275	250	6	1 $\mu$ A	25	50	10	0.5		100		30	300				36
2N6723	TO-237 (91)	325	300	6	1 $\mu$ A	25	50	10	0.5		100		30	300				36
92PU36	TO-237 (91)	175	150	6	1 $\mu$ A	25	50	10	0.5		100							36
92PU36A	TO-237 (91)	225	200	6	1 $\mu$ A	25	50	10	0.5		100							36
92PU36B	TO-237 (91)	275	250	6	1 $\mu$ A	25	50	10	0.5		100							36
92PU36C	TO-237 (91)	325	300	6	1 $\mu$ A	25	50	10	0.5		100							36
D40P1	TO-202 (55)		120		10 $\mu$ A	20	2	10	1.0		100	15	10					36
D40P3	TO-202 (55)		180		10 $\mu$ A	20	2	10	1.0	1.5	100	15	10					36
D40P5	TO-202 (55)		225		10 $\mu$ A	20	2	10	1.0	1.5	100	15	10					36

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**Medium Power** (Continued)

Type No.	Case Style	V <sub>CB0</sub> (V) Min	V <sub>CE0</sub> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CB0</sub> (mA) Max	V <sub>CB</sub> (V)	I <sub>CB0</sub> (mA) Max	I <sub>CE</sub> (mA) Min	I <sub>CE</sub> (mA) Max	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> (V) Min	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min	f <sub>T</sub> (MHz) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
NSD36	TO-202 (55)	175	150	6	1 μA	150	1	25	50	0.5		50	15	10					36
NSD36A	TO-202 (55)	225	200	6	1 μA	200	1	25	50	0.5		50	15	10					36
NSD36B	TO-202 (55)	275	250	6	1 μA	250	1	25	50	0.5		50	15	10					36
NSD36C	TO-202 (55)	325	300	6	1 μA	300	1	25	50	0.5		50	15	10					36
NSD3439	TO-202 (55)		350		20 μA	300	20	30	2	0.5	1.3	50	20	15					36
NSD3440	TO-202 (55)		250		500 μA	200	500	30	2	0.5	1.3	50	20	15					36*
TN3440	TO-237 (91)		250		20 μA	250	20	30	2	0.5	1.3	50		15					36
2N6714	TO-237 (91)	40	30	5	100	40	100	55	10	0.5		100		50	500				37
92PU01	TO-237 (91)		30	5	100	40	100	55	10	0.5		1A	30	100					37
D40D1	TO-202 (55)		30		100*	45	100*	50	150	0.5	1.5	500							37

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Type No.	Case Style	V <sub>CB0</sub> (V) Min	V <sub>CER</sub> * V <sub>CEO</sub> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CB0</sub> * (mA) Max	V <sub>CB</sub> (V)	I <sub>CB0</sub> * (mA) Max	I <sub>CE</sub> & V <sub>CE</sub> (V)	V <sub>CE(SAT)</sub> (V) & V <sub>BE(SAT)</sub> (V) Max	I <sub>C</sub> (mA) Min	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min	f <sub>T</sub> (MHz) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.	
D40D2	TO-202 (55)		30		100*	45	100*	120 360 100 20 1A	0.5	150 360 100 20 1A	1.5 500								37
D40D3	TO-202 (55)		30		100*	45	100*	290 100 10 1A	1.5	290 100 10 1A	500								37
D40E1	TO-202 (55)		30		100*	40	100*	50 100 2 10 1A 2	1.0	50 100 2 10 1A 2	1.3 1A								37
D42C1	TO-202 (56)		30		1 μA	30	1 μA	25 200 1 10 1A 1	0.5	25 200 1 10 1A 1	1.3 1A	30							37
D42C2	TO-202 (56)		30		1 μA	30	1 μA	40 120 200 1 20 1A 1	0.5	40 120 200 1 20 1A 1	1.3 1A	30							37
D42C3	TO-202 (56)		30		1 μA	30	1 μA	40 200 1 20 2A 1	0.5	40 200 1 20 2A 1	1.3 1A	30							37
NSDU01	TO-202 (55)	40	30	5	100	30	100	55 10 1 60 100 1 50 1A 1	0.5	55 10 1 60 100 1 50 1A 1	1.2 1A	30	50	50					37
92PU01A	TO-237 (91)		40	5	100	50	100	55 10 1 60 100 1 50 1A 1	0.5	55 10 1 60 100 1 50 1A 1	1A	30	100	50					38 *
92PU05	TO-237 (91)	60	100	4	100	80	100	80 50 1 50 250 1 20 500 1	0.35	80 50 1 50 250 1 20 500 1	250	30	50	200					38
D40D4	TO-202 (55)		45		100*	60	100*	50 150 100 10 1A	0.5	50 150 100 10 1A	1.5 500								38
D40D5	TO-202 (55)		45		100*	60	100*	120 360 100 10 1A	0.5	120 360 100 10 1A	1.5 500								38
D40D6	TO-202 (55)		45		100*	60	100*	50 150 100 10 1A	1.0	50 150 100 10 1A	1.5 500								38
D40D7	TO-202 (55)		60		100*	60	100*	50 150 100 10 1A	1.0	50 150 100 10 1A	1.5 500								38
D40D8	TO-202 (55)		60		100*	75	100*	120 360 100 2 10 1A 2	1.0	120 360 100 2 10 1A 2	1.5 500								38

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Type No.	Case Style	V <sub>CB0</sub> (V) Min	V <sub>CER</sub> <sup>*</sup> V <sub>CEO</sub> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CS</sub> <sup>*</sup> I <sub>CB0</sub> (mA) Max	V <sub>CB</sub> (V)	h <sub>FE</sub> @ I <sub>C</sub> & V <sub>CE</sub> (mA) (V)	V <sub>CE(SAT)</sub> (V) & V <sub>BE(SAT)</sub> (V) @ I <sub>C</sub> (mA)	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) @ I <sub>C</sub> (mA)	t <sub>off</sub> (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	30	50				38
MPS6717	TO-226 (99)	80	80	5	100	60	80 50 20	0.35		50 500	200			38
MPSW01	TO-226 (99)		40	5	100	50	55 60 50	0.5	30	100	50			38
NSD102	TO-202 (55)	60	45	5	100	60	40 50 40 25	0.2 0.4	30	60	50			38
NSD103	TO-202 (55)	60	45	5	100	60	50 120 50 30	0.2 0.4	30	60	50			38
NSD6179	TO-202 (55)		50		500 μA	60	30 40 10	0.5 1.2						38
NSDU01A	TO-202 (55)	50	40	5	100	40	55 60 50	0.5 1.2	30	50	50			38

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Type No.	Case Style	V <sub>CB0</sub> (V) Min	V <sub>CE</sub> * V <sub>CEO</sub> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CS</sub> * I <sub>CB0</sub> (mA) Max	I <sub>FE</sub> @ I <sub>C</sub> & V <sub>CE</sub> (mA) Min Max	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> (V) Min Max	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
NSDU05	TO-202 (55)	60	60	4	100	80 50 1 50 250 1 20 500 1	0.35	250	30	50	200				38
NSE181	TO-202 (56)		60		100	50 250 10 1 30 500 1 12 1A 1.5	0.3	500		50	200				38
2N6553	TO-202 (55)	100	100	5	100	60 10 1 80 250 50 1 60 250 1 25 500 1	1.0	1A		75	250 100				39
2N6717	TO-237 (91)	80	80	5	100	80 50 1 50 250 250 1 20 500 1	0.35	250		50	500 200				39
2N6718	TO-237 (91)	100	100	5	100	80 50 1 50 250 250 1 20 500 1	0.35	350		50	500 200				39
2N6731	TO-237 (91)	100	80	5	100	100 10 2 100 300 350 2	0.35	350		50	500 200				39
92PU06	TO-237 (91)	80	80	4	100	20 500 500 1 50 250 250 1 80 50 50 1	0.35	250	30	50	200				39
92PU07	TO-237 (91)	100	100	4	100	80 50 1 50 250 1 20 500 1	0.35	250	30	50	200				39
92PU100	TO-237 (91)	100	80		100	20 10 5 50 150 100 5 10 1A 5	0.35	350	20	50	100				39
D40D10	TO-202 (55)		75		100*	50 150 100 2 10 1A 2	1.0	500							39
D40D11	TO-202 (55)		75		100*	120 360 100 2 10 1A 2	1.0	500							39

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Medium Power (Continued)

Type No.	Case Style	V <sub>CB0</sub> (V) Min	V <sub>CE0</sub> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CB0</sub> (mA) Max	V <sub>CB</sub> (V) Max	I <sub>FE</sub> Min Max	I <sub>C</sub> (mA) Max	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> (V) Min	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min	I <sub>C</sub> (mA) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
D40D13	TO-202 (55)		75		100*	90	50 150 100 2	1.5 500	1.0	1.5								39
D40D14	TO-202 (55)		75		100*	90	120 360 100 2	1.5 500	1.0	1.5								39
D40E7	TO-202 (55)		80		100*	90	50 100 2 10 1A 2	1.3 1A	1.0	1.3								39
MPSW06	TO-226 (99)	80	80	4	100	80	80 50 1 50 250 1 20 500 1	250 30	0.35		200	30	50	200				39
NSD104	TO-202 (55)	100	80	7	100	100	20 10 5 50 150 100 5 10 1A 5	0.9 100 30 1.2 500	0.2	0.9	50	30	60	50				39
NSD105	TO-202 (55)	100	80	7	100	100	10 10 5 120 360 100 5 10 1A 5	0.9 100 30 1.2 500	0.2	0.9	50	30	60	50				39
NSD106	TO-202 (55)	140	100	7	100	140	20 10 5 50 150 100 5 25 500 5	0.9 100 30 1.2 500	0.2	0.9	50	30	60	50				39
NSD6178	TO-202 (55)		75		500 μA	80	30 50 2 40 250 500 2 10 1A 2	1.2 500	0.5	1.2								39
NSDU06	TO-202 (55)	80	80	4	100	80	80 50 1 50 250 1 20 500 1	250 30	0.35		200	30	50	200				39
NSDU07	TO-202 (55)	100	100	4	100	100	80 50 1 50 250 1 20 500 1	250 30	0.35		200	30	50	200				39
2N6711	TO-237 (90)	160	160	7	50	100	15 1 10 15 10 10 30 200 30 10				10		40	200 10				48

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Medium Power (Continued)																		
Type No.	Case Style	V <sub>CB0</sub> (V) Min	V <sub>CE0</sub> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CB0</sub> (mA) Max	I <sub>CB0</sub> (mA) Max	I <sub>CB0</sub> (mA) Max	h <sub>FE</sub> @ I <sub>C</sub> & V <sub>CE</sub> (V) Min Max	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> (V) Min Max	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min Max	I <sub>C</sub> (mA) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
2N6712	TO-237 (90)	250	250	7	50	200	15	1 10 10 10 30			10		40	200	10			48
2N6713	TO-237 (90)	300	300	7	50	250	15	1 10 10 10 30			10		40	200	10			48
2N6719	TO-237 (91)	300	300	7	100	200	25	1 10 10 10 40			15		30	300	15			48
2N6733	TO-237 (91)	200	200	6	100	160	25	1 10 10 10 40	2.0		10		50	200	10			48
2N6734	TO-237 (91)	250	250	6	100	200	25	1 10 10 10 40	2.0		10		50	200	10			48
2N6735	TO-237 (91)	300	300	6	100	260	25	1 10 10 10 40			10		50	200	10			48
92PE487	TO-237 (90)	160	160	7	50	100	15	1 10 10 10 30	1.0		30	3						48
92PE488	TO-237 (90)	250	250	7	50	100	15	1 10 10 10 30	1.0		30	3						48
92PE489	TO-237 (90)	300	300	7	50	200	15	1 10 10 10 30	1.0		30	3						48
92PU10	TO-237 (91)		300		100	200	25	1 10 10 10 40	0.75		30	3.5						48
92PU391	TO-237 (91)	200	200	6	100	160	25	1 10 10 10 40	2.0	2.0	20	2.5	50	10				48
92PU392	TO-237 (91)	250	250	6	100	200	25	1 10 10 10 40	2.0	2.0	20	2.5	50	10				48

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Medium Power (Continued)

Type No.	Case Style	V <sub>CB0</sub> (V) Min	V <sub>CER</sub> <sup>*</sup> V <sub>CEO</sub> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CB0</sub> <sup>*</sup> (mA) Max	V <sub>CB</sub> (V)	I <sub>FE</sub> @ I <sub>C</sub> & V <sub>CE</sub> (mA) Min Max	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> (V) Min Max	I <sub>C</sub> (mA) Min Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min Max	I <sub>C</sub> (mA) Min Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
92PU393	TO-237 (91)	300	300	6	100	260	25 40	2.0	2.0	20 10	2.5	50	10				48
D40N1	TO-202 (55)		250		10 μA	250	20 30 20 10 20 40 10			20		50	20				48
D40N2	TO-202 (55)		250		10 μA	250	30 60 180 20 10 30 40 10			20		50	20				48
D40N3	TO-202 (55)		300		10 μA	300	20 30 90 20 10 20 40 10			20		50	20				48
D40N4	TO-202 (55)		300		10 μA	300	30 60 180 20 10 30 40 10			20		50	20				48
MPS6733	TO-226 (89)	200	200	6	100	160	25 40 200 10 10	2.0		20		50 200	10				48
MPS6734	TO-226 (89)	250	250	6	100	200	25 40 200 10 10	2.0				50 200	10				48
MPS6735	TO-226 (89)	300	300	6	100	260	25 40 200 10 10					50 200	10				48
MPSA42	TO-92 (92)	300	300	6	100	200	25 40 10 10 40 30 10	0.5	0.9	20 3	3	50	10				48
MPSA43	TO-92 (92)	200	200	6	100	160	25 40 10 10 50 200 30 10	0.4	0.9	20 4	4	50	10				48
92PU10 MPSW10	TO-226 (99)		300		100	200	25 40 10 10 40 30 10	0.75		30	3.5						48
MPSA42 MPSW42	TO-226 (89)	300	300	6	100	200	25 40 10 10 40 30 10	0.5	0.9	20 3	3	50	10				48

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Medium Power (Continued)																	
Type No.	Case Style	V <sub>CB0</sub> (V) Min	V <sub>CE0</sub> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CB0</sub> (mA) Max	V <sub>CB</sub> (V)	I <sub>CB</sub> (mA) Max	I <sub>CE</sub> (mA) Max	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> (V) Min	I <sub>C</sub> (mA) Max	f <sub>T</sub> (MHz) Min	f <sub>T</sub> (MHz) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
MPSA43	TO-226 (99)	200	200	6	100	160	100	1	0.4	0.9	20	50	10				48
MPSW43								10									48
NSD131	TO-202 (55)	250	250	7	100	150	100	1	1.0	0.85	20						48
NSD132	TO-202 (55)	250	250	7	100	150	100	10	1.0	0.85	20						48
NSD133	TO-202 (55)	300	300	7	100	150	100	30	1.0	0.85	20						48
NSD134	TO-202 (55)	300	300	7	100	150	100	30	1.0	0.85	20						48
NSD135	TO-202 (55)	375	375	7	100	150	100	30	1.0	0.85	20						48
NSD457	TO-202 (55)	160	160	5	50	100	50	30	1.0		30						48
NSD458	TO-202 (55)	250	250	5	50	200	50	30	1.0		30						48
NSD459	TO-202 (55)	300	300	5	50	250	50	30	1.0		30						48
NSDU10	TO-202 (55)	300	300	8	200	200	200	1	1.5	0.8	20	60					48
NSE457	TO-202 (55)	160	160	5	50	100	50	30	1.0		30						48
NSE458	TO-202 (55)	250	250	5	50	200	50	30	1.0		30						48

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**Medium Power** (Continued)

Type No.	Case Style	V <sub>CB0</sub> (V)		V <sub>CER</sub> <sup>*</sup> (V)		V <sub>EB0</sub> (V)		I <sub>CB0</sub> <sup>*</sup> (mA)		I <sub>CE</sub> <sup>*</sup> (mA)		I <sub>C</sub> & V <sub>CE</sub> (V)		V <sub>CE(SAT)</sub> (V) & V <sub>BE(SAT)</sub> (V)		f <sub>T</sub> (MHz)		t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	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	
										15	10	10										
										20	200	30	1.0	1.2	30							
										20	50	20										

**TEST CONDITIONS:**

- Note 1: I<sub>C</sub> = 50 mA, V<sub>CC</sub> = 100V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 5 mA.
- Note 2: I<sub>C</sub> = 500 μA, V<sub>CE</sub> = 10V, f = 1 kHz.
- Note 3: I<sub>C</sub> = 500 mA, V<sub>CC</sub> = 30V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 50 mA.
- Note 4: I<sub>C</sub> = 150 mA, V<sub>CC</sub> = 30V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 15 mA.
- Note 5: I<sub>C</sub> = 100 μA, V<sub>CC</sub> = 10V, f = 1 kHz.
- Note 6: I<sub>C</sub> = 500 mA, V<sub>CC</sub> = 30V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 50 mA.
- Note 7: I<sub>C</sub> = 2A, V<sub>CC</sub> = 40V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 200 mA.
- Note 8: I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 6V, f = 60 kHz.
- Note 9: I<sub>C</sub>/I<sub>B</sub> = 8.
- Note 10: I<sub>C</sub>/I<sub>B</sub> = 12.5.

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