



Medium Power

Type No.	Case Style	V <sub>CB0</sub> (V) Min	V <sub>CE0</sub> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CES</sub> <sup>*</sup>		h <sub>FE</sub> @ I <sub>C</sub> & V <sub>CE</sub>				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.			
					I <sub>CB0</sub> (nA) Max	V <sub>CB</sub> (V)	Min	Max	Min	Max			Min	Max					Min	Max	
2N4030	TO-39	60	60	5	50	50	15	1A	5	1.0	1A	20	100	400	50	400		(Note 3)	67		
							25	500	5	0.5	500										
							40	100	5	0.15	0.9									150	
							30	120	0.1	5											
2N4031	TO-39	80	80	5	50	60	10	1A	5	0.5	500	20	100	400	50	400		(Note 3)	67		
							25	500	5	0.15	0.9									150	
							40	120	100	5											
							30	0.1	5												
2N4032	TO-39	60	60	5	50	50	40	1A	5	1.0	1A	20	150	500	50	400		(Note 3)	67		
							70	500	5	0.5	500										
							100	300	100	5	0.15									0.9	150
							75	0.1	5												
2N4033 also Avail. JAN/TX/V Versions	TO-39	80	80	5	50	60	25	1A	5	0.5	500	20	150	500	50	400		(Note 3)	67		
							70	500	5	0.15	0.9									150	
							100	300	100	5											
							75	0.1	5												
2N4036	TO-39	90	85	7	20	60	20	500	10	0.6	1.4	30	60	50	700		(Note 4)	67			
							40	140	150	10											
							20	0.1	10												
2N4037	TO-39	60	40	7	250	60	50	250	150	10	1.4	30	60	50				67			
							15	1	10												
2N4314	TO-39	90	65		250	60	50	250	150	10	1.4	30	60	50				67			
							15	1	10												
2N4354		Same as PN4354																67			
2N4355		Same as PN4355																67			
2N4356		Same as PN4356																67			

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### Medium Power (Continued)

Type No.	Case Style	V <sub>CB0</sub>	V <sub>CE0</sub>	V <sub>EB0</sub>	I <sub>CES</sub> *		h <sub>FE</sub>				V <sub>CE(SAT)</sub> & V <sub>BE(SAT)</sub>			C <sub>OB</sub> (pF) Max	f <sub>T</sub>		t <sub>OFF</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.				
		(V) Min	(V) Min	(V) Min	I <sub>CBO</sub> (nA) Max	V <sub>CB</sub> (V) Max	Min	Max	I <sub>C</sub> (mA) & (V)	V	V	I <sub>C</sub> (mA) Max	Min		Max	Min					Max			
MPSA55	TO-92 (92)		60	4	100	60	50	100	1	0.25		100		50	100					67				
MPSA56	TO-92 (92)		80	4	100	80	50	100	1	0.25		100		50	100					67				
MPS4354	TO-92 (92)	Same as PN4354																		67				
MPS4355	TO-92 (92)	Same as PN4355																		67				
MPS4356	TO-92 (92)	Same as PN4356																		67				
MPS6562	TO-92 (92)	25	25	5	100	20	50	200	500	1	0.5		500	30	60	10				67				
PN4354	TO-92 (92)	60	60	5	50	50	30	500	10	0.15	0.9	150	30	100	500	50	400	3	14/15	67				
							40	100	10															
							50	500	10	0.5	1.1	500												
							40	1	10															
							25	0.1	10															
PN4355	TO-92 (92)	60	60	5	50	50	75	500	10	0.15	0.9	150	30	100	500	50	400	3	14/15	67				
							75	100	10															
							100	400	10	0.5	1.1	500												
							75	1	10															
							60	0.1	10															
PN4356	TO-92 (92)	80	80	5	50	50	30	500	10	0.15	0.9	150	30	100	500	50	400	3	14/15	67				
							40	100	10															
							50	250	10	0.5	1.1	500												
							40	1	10															
							25	0.1	10															
PN5855	TO-92 (92)	60	60	5	100	40	50	300	150	10	0.4	1.3	15	15	100	50		4		67				
							50	10	10															
							50	500	10															
							15	1A	10															

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NATL SEMICOND DISCRETE JLE D 6501130 0037082 0

PNP Transistors

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>CE0</sub> * I <sub>CB0</sub> @ V <sub>CB</sub>		h <sub>FE</sub> @ I <sub>C</sub> & V <sub>CE</sub>				V <sub>CE(SAT)</sub> (V) & V <sub>BE(SAT)</sub> (V) @ I <sub>C</sub>			C <sub>OB</sub> (pF) Max	f <sub>T</sub> (MHz) @ I <sub>C</sub>		t <sub>OFF</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
					(nA) Max	(V)	Min	Max	(mA)	(V)	Max	Min	Max		(mA)	Min				
PN5857	TO-92 (92)	80	80	5	100	60	50	300	150	10	0.4	1.3	15	15	100	50				67
							50		10	10										
							50		500	10										
							15		1A	10										
TN4033	TO-237 (91)	80	80	5	50	60	75		0.1	5	0.15	0.9	150	20	150	500	50			67
							100	300	100	5										
							70		500	5										
							25		1A	5										
TN4036	TO-237 (91)	90	65	7	20	60	20		0.1	10	0.65	1.4	150	30	60	50				67
							40	140	150	10										
							20		500	10										
TN4037	TO-237 (91)	60	40	7	250	60	15		1	10	1.4		150	30	60	200	50			67
							50	250	150	10										
TN4314	TO-237 (91)	90	65		250	60	15		1	10	1.4		150	30	60	50				67
							50	250	150	10										
MPSA92	TO-92 (92)	300	300	5	250	200	25		1	10	0.5	0.9	20	6	50	10				76
							40		10	10										
							25		30	10										
MPSA93	TO-92 (92)	200	200	5	250	160	25		1	10	0.4	0.9	20	8	50	10				76
							40		10	10										
							25	150	30	10										
MPSW92	TO-92 (99)	200	200	5	250	200	25		1	10	0.5	0.9	20	6	50	10				76
							40		10	10										
							25		30	10										
2N6726	TO-237 (91)	40	30	5	100	40	55		10	1	0.5		1A		50	50				77
							60		100	1										
							50	200	1A	1										
2N6727	TO-237 (91)	50	40	5	100	50	55		10	1	0.5		1A		50	500	50			77
							80		100	1										
							50	250	1A	1										
92PU51	TO-237 (91)	30	30	5	100	40	50		1A	1	0.5		1A	30	50	50				77
							60		100	1										
							55		10	1										

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**Medium Power** (Continued)

Type No.	Case Style	V <sub>CB0</sub> (V) Min	V <sub>CEO</sub> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CES</sub> <sup>*</sup>		h <sub>FE</sub>			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.
					I <sub>CB0</sub> (nA) Max	V <sub>CB</sub> (V)	Min	Max	I <sub>C</sub> (mA)	V <sub>CE</sub> (V)	Max	Min		Max	Min				
92PU51A	TO-237 (91)		40		100	50	50	1A	1	0.5		1A	30	80	50				77
							60	100	1										
							55	10	1										
NSD202	TO-202 (55)	60	45	5	100	60	25	1A	5	0.2	0.9	100	30	60	50				77
							40	500	5										
							50	150	100	5	0.4	1.2	500						
							40	10	5										
NSD203	TO-202 (55)	60	45	5	100	60	30	1A	5	0.2	0.9	100	30	60	50				77
							50	500	5										
							120	360	100	5	0.4	1.2	500						
							50	10	5										
NSDU51	TO-202 (55)	40	30	5	100	30	50	1A	1	0.7		1A	30	50	50				77
							60	100	1										
							55	10	1										
NSDU51A	TO-202 (85)	50	40	5	100	40	50	1A	1	0.7		1A	30	50	50				77
							60	100	1										
							55	10	1										
D41D1	TO-202 (55)		30		100*	45	10	1A	2	0.5	1.5	500							78
							50	150	100										
D41D2	TO-202 (55)		30		100*	45	20	1A	2	0.5	1.5	500							78
							120	300	100										
D41D4	TO-202 (55)		45		100*	60	10	1A	2	0.5	1.5	500							78
							50	150	100										
D41D5	TO-202 (55)		45		100*	60	20	1A	2	0.5	1.5	500							78
							120	360	100										
D41D7	TO-202 (55)		60		100*	75	10	1A	2	1.0	1.5	500							78
							50	150	100										
D41D8	TO-202 (55)		60		100*	75	20	1A	2	1.0	1.5	500							78
							120	360	100										
D41D10	TO-202 (55)		75		100*	90	10	1A	2	1.0	1.5	500							78
							50	150	100										

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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>CS</sub> * I <sub>CB0</sub> (nA) @ V <sub>CB</sub> (V) Max	h <sub>FE</sub> @ I <sub>C</sub> & V <sub>CE</sub>				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.	
						Min	Max	Min	Max			Min	Max	Min					Max
D41D11	TO-202 (55)		75		100* 90	20	1A	2	1.0	1.5	500							78	
D41D13	TO-202 (55)		75		100* 90	50	150	100	2	1.0	1.5	500						78	
D41D14	TO-202 (55)		75		100* 90	120	360	100	2	1.0	1.5	500						78	
D41E1	TO-202 (55)		30		100* 40	10	1A	2	1.0	1.3	1A							78	
D41E5	TO-202 (55)		60		100* 70	10	1A	2	1.0	1.3	1A							78	
D41E7	TO-202 (55)		80		100* 90	10	1A	2	1.0	1.3	1A							78	
NSDU52	TO-202 (55)	60	40	5	100 40	30	500	10	0.4	1.3	150	20	150	20				78	
2N6554	TO-202 (55)	60	60	5	100 40	25	500	1	1.0	1A	18	75	250	100				78	
						60	250	1											
						80	300	50											1
						80	10	1											0.5
2N6555	TO-202 (55)	60	60	5	100 60	25	500	1	1.0	1A	18	78	250	100				78	
						60	250	1											
						80	300	50											1
						60	10	1											0.8
2N6556	TO-202 (55)	100	100	5	100 80	25	500	1	1.0	1A	18	75	250	100				78	
						60	250	1											
						80	300	50											1
						60	10	1											0.5

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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>CES</sub> * I <sub>CB0</sub> (nA) Max	V <sub>CB</sub> (V)	h <sub>FE</sub> @ I <sub>C</sub> & V <sub>CE</sub>			V <sub>CE(SAT)</sub> (V) & V <sub>BE(SAT)</sub> (V) @ I <sub>C</sub>			C <sub>OB</sub> (pF) Max	f <sub>T</sub> (MHz) @ I <sub>C</sub>		t <sub>OFF</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
							Min	Max	(mA)	(V)	Max	Min		Max	(mA)				
2N6706	TO-237 (90)	60	45	5	100	60	40	50	2	1.0	1A		50	50				78	
							40	250	250										2
							25		500										2
2N6709	TO-237 (90)	80	60	5	100	80	40	50	2	1.0	1A		50	50			78		
							40	250	250									2	
							25		500									2	
2N6710	TO-237 (90)	100	80	5	100	100	40	50	2	1.0	1A		50	50			78		
							40	250	250									2	
							25		500									2	
MPS6727	TO-92 (99)	50	40	5	100	50	60	100	1	0.5	1.2	1A	30					78	
NSD6180	TO-202 (55)		75		500	80	10	1A	2	0.5	1.2	500	30	50	50			78	
							40	250	500										2
							30		50										2
NSD6181	TO-202 (55)		50		500	60	10	1A	2	0.5	1.2	500	30	50	50			78	
							40	250	500										2
							30		50										2
NSDU55	TO-202 (55)	60	60	4	100	60	20	500	1	0.35		250	30	50	200			78	
							50	250	1										
							80	50	1										
PE8550	TO-92 (92)	30	25	6	100	20	50	200	10	0.15	0.9	200	40	100	50			78	
							65	200	100										1
							65	200	500										1
							40	200	1A										1
TN4234	TO-237 (91)	40	40	7	0.1 mA	40	40	100	1	0.6	1.5	1A	100				78		
							30	150	250									1	
							20		500									1	
							10		1A									1	
TN4235	TO-237 (91)	60	60	7	0.1 mA	60	40	100	1	0.6	1.5	1A	100				78		
							30	150	250									1	
							20		500									1	
							20		500									1	
							10		1A									1	

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PNP Transistors

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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>CES</sub> * I <sub>CB0</sub> (mA) @ V <sub>CB</sub> (V) Max	h <sub>FE</sub> & V <sub>CE</sub>				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.	
						Min	Max	Min	Max	Max	Min	Max		Min	Max					Min
TN4236	TO-237 (91)	80	80	7	0.1 mA	80	40	100	1	0.6	1.5	1A	100						78	
							30	150	250											1
							20		500											1
							10		1A											1
2N6728	TO-237 (91)	60	60	5	100	40	80	50	1	0.35		250		50	50				79	
							50	250	250											1
							20		500											1
2N6729	TO-237 (91)	80	80	5	100	60	80	50	1	0.35		250		50	50				79	
							50	250	250											1
							20		500											1
2N6730	TO-237 (91)	100	100	5	100	80	80	50	1	0.35		250		50	50				79	
							50	250	250											1
							20		500											1
2N6732	TO-237 (91)	100	80	5	100	80	100	10	2	0.35		350		50	50				79	
							100	300	350											2
92PU55	TO-237 (91)		60		100	40	20	500	1	0.35		250	30	50	200				79	
							50		250											1
							80		50											1
92PU56	TO-237 (91)		80		100	60	20	500	1	0.35		250	30	50	200				79	
							50		250											1
							80		50											1
92PU57	TO-237 (91)		100		100	80	20	500	1	0.35		250	30	50	200				79	
							50		250											1
							80		50											1
NSD204	TO-202 (55)	100	80	7	100	100	10	1A	5	0.2	0.9	100	30	60	50				79	
							50	150	100											5
							20		10											5
NSD205	TO-202 (55)	100	80	7	100	100	10	1A	5	0.2	0.9	100	30	60	50				79	
							120	360	100											5
							20		10											5

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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	ICES* I <sub>CB0</sub> (nA) @ V <sub>CB</sub> (V)		h <sub>FE</sub> @ I <sub>C</sub> & V <sub>CE</sub>			V <sub>CE(SAT)</sub> (V) & V <sub>BE(SAT)</sub> (V) @ I <sub>C</sub>			C <sub>OB</sub> (pF) Max	f <sub>T</sub> (MHz) @ I <sub>C</sub>		t <sub>OFF</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
					Min	Max	Min	Max	Min	Max	Min	Max		Min	Max				
NSD206	TO-202 (55)	140	100	7	100	140	25	500	5	0.2	0.9	100	30	60	50				79
							50	150	5										
							20	10	5	0.5	1.2	500							
NSDU56	TO-202 (55)	80	80	4	100	80	20	500	1	0.35		250	30	50	200				79
							50	250	1										
							80	50	1										
NSDU57	TO-202 (55)	100	100	4	100	100	20	500	1	0.35		250	30	50	200				79
							50	250	1										
							80	50	1										

#### TEST CONDITIONS:

Note 1: I<sub>C</sub> = 50 mA, V<sub>CC</sub> = 100V, I<sub>B1</sub> = I<sub>B2</sub> = 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, I<sub>B1</sub> = I<sub>B2</sub> = 50 mA.

Note 4: I<sub>C</sub> = 150 mA, V<sub>CC</sub> = 30V, I<sub>B1</sub> = I<sub>B2</sub> = 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>B1</sub> = I<sub>B2</sub> = 50 mA.

Note 7: I<sub>C</sub>/I<sub>B</sub> = 8.

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PNP Transistors