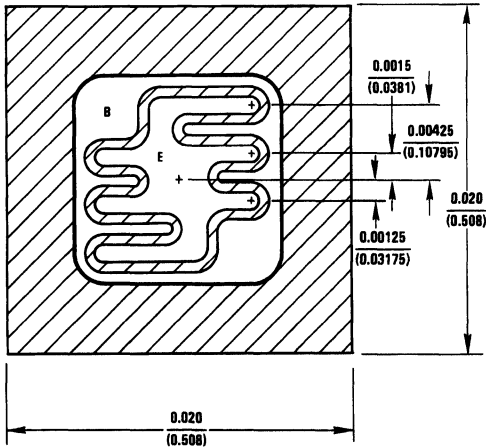


NPN Transistors

Medium Power (Continued)

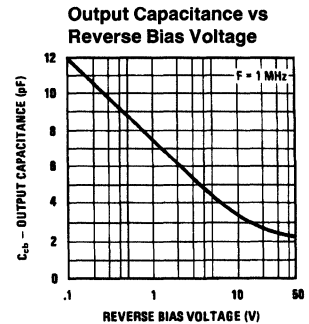
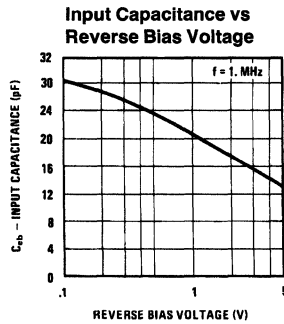
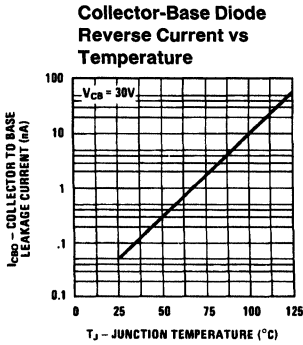
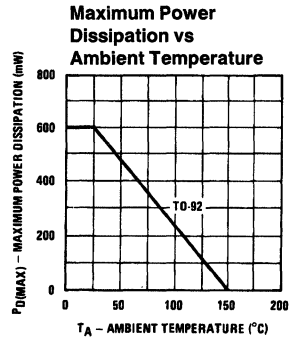
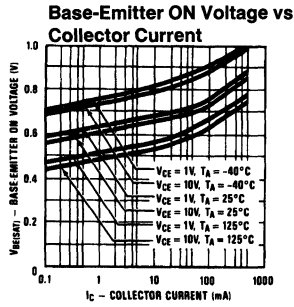
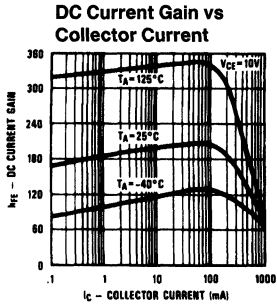
Type No.	Case Style	V _{CB0} (V) Min	V _{CER} ⁺ V _{CEO} (V) Min	V _{EBO} (V) Min	I _{CES} ⁺ I _{CB0} (nA) @ V _{CB} (V)		h _{FE} @ I _C (mA) & V _{CE} (V)				V _{CE(SAT)} (V) & V _{BE(SAT)} (V) @ I _C (mA)		C _{ob} (pF) Max	f _T (MHz) @ I _C (mA)		t _{off} (ns) Max	NF (dB) Max	Test Conditions	Process No.		
					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	
							40	120	10	10											
							40	120	150	10	0.5		500								
							30	100	500	10											
							15		1A	10											
TN3053	TO-237 (91)	60	40	5	250	30	25	150	2.5	1.4	1.7	150	15	100	50					12	
							50	250	150	10											
PN3566	TO-92 (92)	40	30	5	50	20	150	600	10	10	1.0		100	25	4	100	30				13
							80		2	10											
PN3567	TO-92 (92)	80	40	5	50	40	40	120	150	1	0.25		150	20	60	600	50				13
							40		30	1											
PN3569	TO-92 (92)	80	40	5	50	40	100	300	150	1	0.25		150	20	60	600	50				13
							100		30	1											
2N3566		Same as PN3566																	13		
2N3567		Same as PN3567																	13		
2N3569		Same as PN3568																	13		
2N2657	TO-39	80	50	8	100	60	15	5A	6	0.5	1.5	1A	150	20	200	15			2	34	
							40	120	1A	2	3.0	2.5	5A								
2N2658	TO-39	100	80	8	100	60	15	5A	6	0.5	1.5	1A		20	200	15			2	34	
							40	120	1A	2	3.0	2.5	5A								
2N2890	TO-39	100	80	5	50 μA	60	25	2A	5	0.5	1.2	1A	70	30	200	15			3	34	
							30	90	1A	2											
							20		100	2											
2N2891	TO-39	100	80	5	50 μA	60	50	300	50	10	0.5	1.2	1A	70	30	200	15		3	34	
							35		100												
							80	150	1A	2	0.75	1.3	2A								
							40		2A	8											



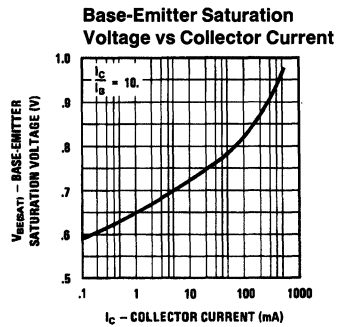
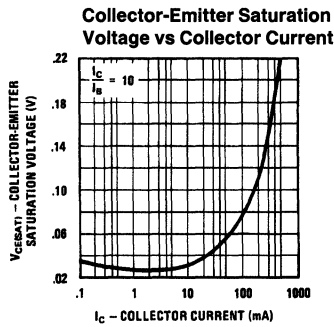
TL/G/10034-16

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

Symbol	Conditions	Min	Typ	Max	Units
t_{ON}	$I_C = 150\text{ mA}, I_{B1} = 15\text{ mA}$		35		ns
t_{OFF}	$I_C = 150\text{ mA}, I_{B2} = 15\text{ mA}$		250		ns
h_{fe}	$I_C = 20\text{ mA}, V_{CE} = 20\text{V}, f = 100\text{ MHz}$	2.0	3.0		
NF (spot)	$I_C = 100\text{ }\mu\text{A}, V_{CE} = 10\text{V}, R_S = 1\text{ k}\Omega, f = 1\text{ kHz}$		2.0		dB
C_{ob}	$V_{CB} = 10\text{V}, f = 1\text{ MHz}$		4.5	8.0	pF
C_{ib}	$V_{EB} = 0.5\text{V}, f = 1\text{ MHz}$			35	pF
h_{FE}	$V_{CE} = 1.0\text{V}, I_C = 1.0\text{ mA}$ $V_{CE} = 1.0\text{V}, I_C = 10\text{ mA}$ $V_{CE} = 1.0\text{V}, I_C = 100\text{ mA}$ $V_{CE} = 1.0\text{V}, I_C = 500\text{ mA}$	30 40 50 25	150	300	
$V_{CE(SAT)}$	$I_C = 150\text{ mA}, I_B = 15\text{ mA}$ $I_C = 500\text{ mA}, I_B = 50\text{ mA}$			0.2 0.5	V V
$V_{BE(SAT)}$	$I_C = 150\text{ mA}, I_B = 15\text{ mA}$ $I_C = 500\text{ mA}, I_B = 50\text{ mA}$			1.0 1.2	V V
BV_{CBO}	$I_C = 100\text{ }\mu\text{A}$	60			V
BV_{CEO}	$I_C = 10\text{ mA}$	35			V
BV_{EBO}	$I_C = 10\text{ }\mu\text{A}$	6.0			V
I_{CBO}	$V_{CB} = 40\text{V}$			100	nA
I_{EBO}	$V_{EB} = 4\text{V}$			100	nA



TL/G/10034-17



TL/G/10034-18