



# LEAD MOUNTED TRANSISTORS

## NPN TRANSISTORS / TO-92

OPERATING/STORAGE TEMPERATURE RANGE  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$

Type Number	$V_{CE0}$	$h_{FE} @ V_{CE}/I_C$		$V_{CE SAT} @ I_C/I_B$		$I_{CES} @ V_{CE}$		$f_T @ V_{CE}/I_C$		$C_{OB} @ V_{CB}$	
	Volts		V/mA	max.V	mA/mA	max.nA	V	MHz	V/mA	max.pF	V
PN2222A	40	100-300	10/150	1.0	500/50	10 <sup>(1)</sup>	60	min.300	20/20	8.0	10
2N3904	40	100-300	1/10	0.3	50/5	50 <sup>(2)</sup>	30	min.300	20/10	4	5
2N4401	40	100-300	1/150	0.75	500/50	100 <sup>(3)</sup>	35	min.250	10/20	6.5	5
ITTA05	60	min.50	1/100	0.25	100/10	100 <sup>(1)</sup>	60	min.100	2/10	—	—
ITTA06	80	min.50	1/100	0.25	100/10	100 <sup>(1)</sup>	80	min.100	2/10	—	—
2N5551	160	80-250	5/10	0.25	50/5	50 <sup>(1)</sup>	120	min.100	10/10	6.0	10
MPSA42	300	40min.	10/30	0.5	20/2	100 <sup>(1)</sup>	200	min.50	20/10	4.0	20

(1)  $I_{CBO} @ V_{CB}$

(2)  $I_{CEV}$  at  $V_{EB} = 3V$

(3)  $I_{CEV}$  at  $V_{EB} = 0.4V$

## NPN TRANSISTORS - EUROPEAN TYPES / TO-92

Type Number	$V_{CE0}$	$h_{FE} @ V_{CE}/I_C$		$V_{CE SAT} @ I_C/I_B$		$I_{CES} @ V_{CE}$		$f_T @ V_{CE}/I_C$		$C_{OB} @ V_{CB}$	
	Volts		V/mA	max.V	mA/mA	max.nA	V	MHz	V/mA	max.pF	V
BC337	45	100-630	1/100	0.7	500/50	100	45	100	5/10	typ.12	10
BC337-16	45	100-250	1/100	0.7	500/50	100	45	100	5/10	typ.12	10
BC337-25	45	160-400	1/100	0.7	500/50	100	45	100	5/10	typ.12	10
BC337-40	45	250-630	1/100	0.7	500/50	100	45	100	5/10	typ.12	10
BC547A	45	110-220	5/2	0.6	100/5	15	50	300	5/10	6.0	10
BC547B	45	200-450	5/2	0.6	100/5	15	50	300	5/10	6.0	10
BC547C	45	420-800	5/2	0.6	100/5	15	50	300	5/10	6.0	10
3C548A	30	110-220	5/2	0.6	100/5	15	30	300	5/10	6.0	10
3C548B	30	200-450	5/2	0.6	100/5	15	30	300	5/10	6.0	10
3C548C	30	420-800	5/2	0.6	100/5	15	30	300	5/10	6.0	10
BF420	300 <sup>(1)</sup>	min.50	20/25	0.6	30/5	10 <sup>(2)</sup>	200	min.60	10/10	—	—
BF422	250	min.50	20/25	0.6	30/5	10 <sup>(2)</sup>	200	min.60	10/10	—	—

(1)  $V_{CER}$

(2)  $I_{CBO} @ V_{CB}$

## NPN DARLINGTON AMPLIFIERS / TO-92

Type Number	$V_{CE0}$	$h_{FE} @ V_{CE}/I_C$		$V_{CE SAT} @ I_C/I_B$		$I_{CBO} @ V_{CB}$		$f_T @ V_{CE}/I_C$		$V_{BE(ON)} @ V_{CE}/I_C$	
	Volts		V/mA	max.V	mA/mA	max.nA	V	MHz	V/mA	max.V	V/mA
MPSA13	30	10000	5/100	1.5	100/0.1	100	30	125	5/10	2.0	5/100
MPSA14	30	20000	5/100	1.5	100/0.1	100	30	125	5/10	2.0	5/100

NOTE: See "2N" Types Outline Drawings for PIN Connections

## PNP TRANSISTORS / TO-92

OPERATING/STORAGE TEMPERATURE RANGE  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$

Type Number	$V_{CE0}$	$h_{FE} @ V_{CE}/I_C$		$V_{CE SAT} @ I_C/I_B$		$I_{CES} @ V_{CE}$		$f_T @ V_{CE}/I_C$		$C_{OB} @ V_{CB}$	
	Volts		V/mA	max.V	mA/mA	max.nA	V	MHz	V/mA	max.pF	V
PN2907A	60	100-300	10/150	1.6	500/50	10 <sup>(1)</sup>	50	min.200	20/50	8	10
2N3906	40	100-300	1/10	0.4	50/5	50 <sup>(2)</sup>	30	min.250	20/10	4.5	5
2N4403	40	100-300	1/150	0.75	500/50	100 <sup>(3)</sup>	35	min.200	10/20	8.5	5
ITTA55	60	min.50	1/100	0.25	100/10	100 <sup>(1)</sup>	60	min.100	2/10	—	—
ITTA56	80	min.50	1/100	0.25	100/10	100 <sup>(1)</sup>	80	min.100	2/10	—	—
2N5401	150	40-200	10/1	0.20	10/1	50 <sup>(1)</sup>	120	min.100	10/10	6.0	10
MPSA92	300	40min.	10/10	0.5	20/2	250 <sup>(1)</sup>	200	min.50	20/10	8.0	20

(1)  $I_{CBO} @ V_{CB}$

(2)  $I_{CEV}$  at  $V_{EB} = 3V$

(3)  $I_{CEV}$  at  $V_{EB} = 0.4V$