

# NPN TRANSISTORS



**TO-92/T0-226AA**

**'2N' and 'TP' DEVICE TYPES**

**ELECTRICAL CHARACTERISTICS at  $T_A = 25^\circ\text{C}$**

Device Type	$I_C$ Max. (mA)	$V_{(BR)CBO}$ (V)	$V_{(BR)CEO}$ (V)	$V_{(BR)EBO}$ (V)	$I_{CBO}$		DC Current Gain				$V_{CE(sat)}$		$f_T$		$C_{ob}^1$ (pF)	$t_s^1$ (ns)	NF <sup>1</sup> (dB)	Pinning 1, 2, 3
					Max. (nA)	@ $V_{CB}$ (V)	$h_{FE}$ Min.	$h_{FE}$ Max.	@ $I_C$ (mA)	@ $V_{CE}$ (V)	Max. (V)	@ $I_C$ (mA)	Min. (MHz)	@ $I_C$ (mA)				
TP918	50	30	15	3.0	10	15	20	—	3.0	1.0	0.4	10	600	4.0	1.7	—	—	EBC
TP2221	500	60	30	5.0	10	50	40	120	150	10	0.4	150	250	20	8.0	—	—	EBC
TP2221A	500	75	40	6.0	10	60	40	120	150	10	0.3	150	250	20	8.0	—	—	EBC
TP2222	500	60	30	5.0	10	50	100	300	150	10	0.4	150	250	20	8.0	—	—	EBC
TP2222A	500	75	40	6.0	10	60	100	300	150	10	0.3	150	250	20	8.0	225	—	EBC
2N3414	500	25	25	5.0	100	25	75	225	2.0	4.5	0.3	50	—	—	—	—	—	ECB
2N3415	500	25	25	5.0	100	25	180	540	2.0	4.5	0.3	50	—	—	—	—	—	ECB
2N3416	500	50	50	5.0	100	50	75	225	2.0	4.5	0.3	50	—	—	—	—	—	ECB
2N3417	500	50	50	5.0	100	50	180	540	2.0	4.5	0.3	50	—	—	—	—	—	ECB
2N3904	200	60	40	6.0	50	30	100	300	10	1.0	0.2	10	300	10	4.0	—	5.0	EBC
2N4401	500	60	40	6.0	100	30	100	300	150	1.0	0.4	150	250	20	6.5	225	—	EBC
2N4424	500	40	40	5.0	100	25	180	540	2.0	4.5	0.3	50	—	—	—	—	—	ECB
2N5088	100	35	30	—	50	20	300	900	0.1	5.0	0.5	10	—	—	4.0	—	3.0	EBC
2N5089	100	30	25	—	50	15	400	1200	0.1	5.0	0.5	10	—	—	4.0	—	2.0	EBC
2N5172	500	25	25	5.0	100	25	100	500	10	10	0.25	10	—	—	10	—	—	ECB
2N5307	500	40	40	12	100	40	2k	20k	2.0	5.0	1.4	200	60	2.0	10	—	—	ECB
2N5308	500	40	40	12	100	40	7k	70k	2.0	5.0	1.4	200	60	2.0	10	—	—	ECB
TP5376	500	60	30	5.0	10	30	120	—	1.0	5.0	—	—	—	—	8.0	—	—	EBC
2N6427	500	40	40	12	50	30	10k	100k	10	5.0	1.2	50	130	10	7.0	—	10	EBC

NOTES: 1) Maximum at typical JEDEC conditions.

2)  $\mu\text{A}$ .

3)  $V_{(BR)CES}/I_{CES}$ , as applicable.

4) mA.

5)  $V_{(BR)CER}$  at  $R = 10\Omega$ .

# NPN TRANSISTORS

## TO-92/TO-226AA

### 'MPS' DEVICE TYPES

#### ELECTRICAL CHARACTERISTICS at $T_A = 25^\circ\text{C}$

Device Type	$I_C$ Max. (mA)	$V_{(BR)CBO}$ (V)	$V_{(BR)CEO}$ (V)	$V_{(BR)EBO}$ (V)	$I_{CBO}$		DC Current Gain				$V_{CE(sat)}$		$f_T$		$C_{ob}'$ (pF)	$t_s'$ (ns)	NF'	Pinning 1, 2, 3
					Max. (nA)	@ $V_{CB}$ (V)	$h_{FE}$ Min.	$h_{FE}$ Max.	@ $I_C$ (mA)	@ $V_{CE}$ (V)	Max. (V)	@ $I_C$ (mA)	Min. (MHz)	@ $I_C$ (mA)				
MPS6520	200	40	25	4.0	50	30	200	400	2.0	10	0.5	50	—	—	3.5	—	3.0	EBC
MPS6521	200	40	25	4.0	50	30	300	600	2.0	10	0.5	50	—	—	3.5	—	3.0	EBC
MPSA05	800	60	60	4.0	100	60	50	—	100	1.0	0.25	100	100	10	—	—	—	EBC
MPSA06	800	80	80	4.0	100	80	50	—	100	1.0	0.25	100	100	10	—	—	—	EBC
MPSA14	500	30 <sup>1</sup>	—	10	100	30	20k	—	100	5.0	1.5	100	125	10	—	—	—	EBC
MPSA42	500	300	300	6.0	100	200	40	—	30	10	0.5	20	50	10	3.0	—	—	EBC
MPSA43	500	200	200	6.0	100	160	40	—	30	10	0.5	20	50	10	4.0	—	—	EBC

- NOTES: 1) Maximum at typical JEDEC conditions.  
 2)  $\mu\text{A}$ .  
 3)  $V_{(BR)CBO}/\sqrt{I_{CE(sat)'}}$  as applicable.  
 4) mA.  
 5)  $V_{(BR)EBO}$  at  $R = 10\Omega$ .