13 Multi Transistors

Dual Bipolar

MATCHING SELECTOR				RATINGS			CHARACTERISTICS			
UNMATCHED	HFE 20% VBE 5 mV	HFE 10% VBE 3 mV	POL	BVCBO	BVCEO	PTOT	HFE min.	HFE max.	AT IC	CASE
		2N2060†	NPN	100V	60V	0.6W	30	90	100 μA	TO-5LP
	2N2223**	2N2223A†	NPN	100V	60V	0.6W	25	150	100 μA	TO-5LP
2N2641	2N2640*	2N2639†	NPN	45V	45V	0.6W	50	300	10 μA	TO-5LP
2N2644	2N2643*	2N2642†	NPN	45V	45V	0.6W	100	300	10 μA	TO-5LP
2N2913	2N2917	2N2915	NPN	45V	45V	0.5W	60	240	10 μA	TO-5LP
2N2914	2N2918	2N2916	NPN	45V	45V	0.5W	150	600	10 μA	TO-5LP
		2N2919	NPN	60V	60V	0.5W	60	240	10 μA	TO-5LP
		2N2920	NPN	60V	60V	0.5W	150	600	10 μA	TO-5LP
2N2972	2N2976	2N2974	NPN	45V	45V	0.3W	60	240	10 μA	TO-18
2N2973	2N2977	2N2975	NPN	45V	45V	0.3W	150	600	10 μA	TO-18
		2N3680	NPN	60V	50V	0.6W	150	600	10 μA	TO-5LP
2N3349‡	2N3348*	2N3347†	PNP	60V	45V	0.6W	40	300	10 μA	TO-5LP
2N3352‡	2N3351*	2N3350†	PNP	60V	45V	0.6W	100	300	10 μA	TO-5LP
2N3806	2N3808	2N3810	PNP	60V	60V	0.6W	150	450	100 μA	TO-5LP
2N3807	2N3809	2N3811	PNP	60V	60V	0.6W	300	900	100 μA	TO-5LP
2N4854			COMP.	60V	40V	0.6W	100	300	150 mA	TO-5LP
2N4855			COMP.	60V	40V	0.64W	40	120	150 mA	TO-5LP

NOTES:
* VBE MATCH 10 mV.
** VBE MATCH 15 mV.
† VBE MATCH 5 mV.
‡ HFE MATCH 40%, VBE MATCH 20 mV.

Dual J-Fet

Type No.	Pol	BVGSS min. V	IGSS max nA	Vp max. V	Yfs min. μ mho	Yfs max. μ mho	Ciss max. pF	Yfs %	Matching VGS (1-2) mV	ΔVGS (1-2) μV/ C
TIS25*	N	50	0.25	6	1500	25	8	5	5	70
TIS26*	N	50	0.25	6	1500	25	8	10	10	140
TIS27*	N	50	0.25	6	1500	25	8	20	15	240
2N5045†	N	50	0.25	4.6	1500	25	8	5	5	80
2N5046†	N	50	0.25	4.5	1500	25	8	10	10	160
2N5047†	N	50	0.25	4.5	1500	25	8	20	15	240
2N5545†	N	50	0.1	4.5	1500	25	6	3	5	10
2N5546†	N	50	0.1	4.6	1500	25	6	5	10	20
2N5547†	N	50	0.1	4.5	1500	25	6	10	15	40

*6-PIN-TO5 †6-PIN-TO18

Monolithic Dual J Fets

Type No.	Case	Pol	BVGSS min. V	IGSS max. pA	Yfs min. mS	Ciss max. pF	en at 100 kHz max. nV.Hz-½	ΔVGS max. mV
BFQ44	TO-71	N	25	50	9.0	18.0	1.7	25
BFQ45	TO-71	N	25	50	9.0	18.0	1.7	50
BFQ46	TO-99	N	30	0.2	60.0	0.45	17.0	10
BFQ47	TO-99	N	30	0.2	60.0	0.45	17.0	25
BFQ48	TO-99	N	30	0.2	60.0	0.45	17.0	50
BFQ49A	TO-71	N	30	3	0.8	7.0	6.0	10
BFQ49B	TO-71	N	30	3	0.8	7.0	6.0	25
BFQ49C	TO-71	N	30	5	0.8	7.0	6.0	50

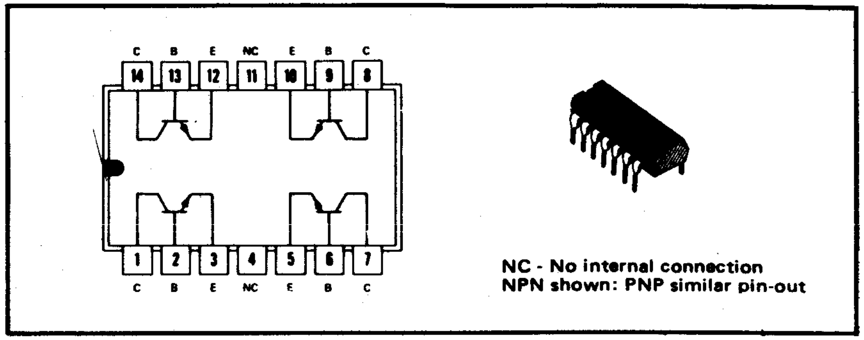
Dual MOS, P-channel

TYPE	RATINGS		CHARACTERISTICS					
	BVGSSF	PTOT W	IGSSF	" VGS V	VGS(TH)	IDSS nA	rDS(ON) Ω	VGS differential
3N207	−25	0.6	−4 pA	−25	−3 min. −6 max.	−10	400	max. 200 mV
3N208	−30	0.6	−1 nA*	−15	−3 min. −6 max.	−10	400	—

*3N208 incorporates gate protection diodes.

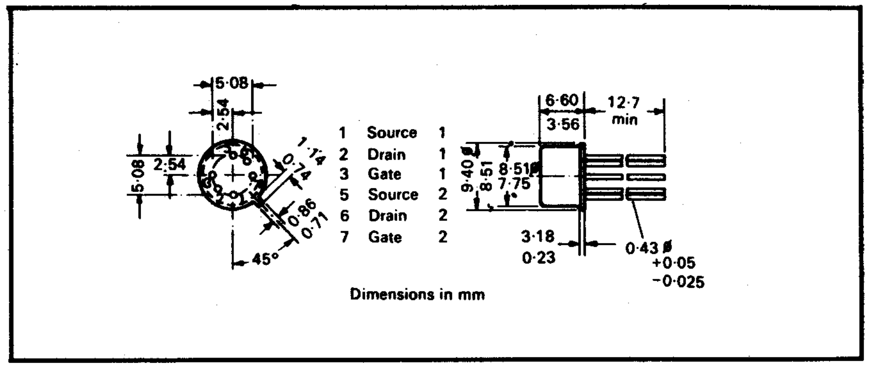
Quad Transistors (Dual-in-line Package)

TYPE	MAXIMUM RATINGS			HFE		max. VCE(SAT)	SWITCHING CHARACTERISTICS				all at IC	POL
	BVCBO	BVCEO	PTOT	min.	max.		td	tr	ts	tf		
Q2T2222	60V	30V	1.5W	100	300	0.4V	8nS (typ)	12nS (typ)	190nS (typ)	30nS (typ)	150mA	NPN
Q2T2905	60V	40V	1.5W	100	300	0.4V	10nS	40nS	80nS	30nS	150 mA	PNP
Q2T3244	40V	40V	1.5W	50	150	0.5V	15nS	35nS	140nS	45nS	500 mA	PNP
Q2T3725	60V	40V	1.5W	30	—	0.52V	ton: 35nS max.		toff: 65nS max.		500 mA	NPN
Q2T3467	40V	40V	1.5W	40	120	0.5V	10nS	30nS	60nS	30nS	500 mA	PNP



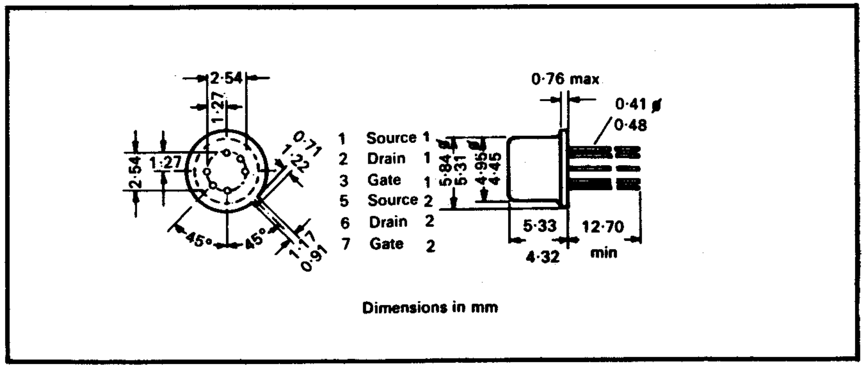
NC - No internal connection
NPN shown: PNP similar pin-out

Dual-in-line (Plastic)



Dimensions in mm

6 lead TO-5



Dimensions in mm

6 lead TO-18 (TO-71)