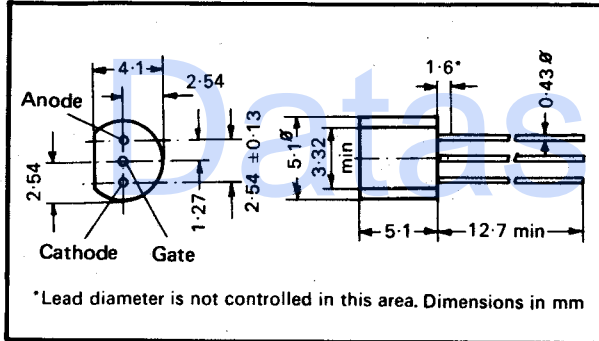
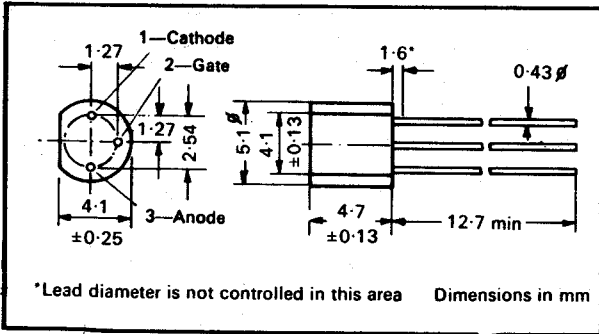


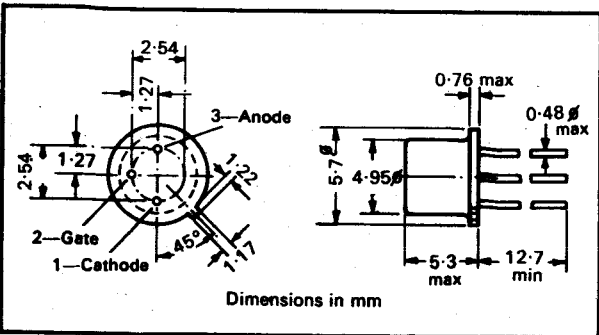
Case Outlines



TO-92



TO-18 Silect



TO-18

1-6A Up to 65W TO-220AB Plastic Packages

Device Type	Polarity	Max Ratings at T _{case} = 25°C					Characteristics T _{case} = 25°C						ft min. MHz
		V _{CB0} V	V _{CE0} V	V _{EB0} V	cont. IC A	P _{tot} W	hFE			V _{CE(sat)}			
							IC	min.	max.	IC	IB	max.	
TIP29	NPN	40	40	5	1	30	0.2	40	—	1.0	0.125	0.7	3
TIP29A	NPN	60	60	5	1	30	0.2	40	—	1.0	0.125	0.7	3
TIP29B	NPN	80	80	5	1	30	0.2	40	—	1.0	0.125	0.7	3
TIP29C	NPN	100	100	5	1	30	0.2	40	—	1.0	0.125	0.7	3
TIP30	PNP	40	40	5	1	30	0.2	40	—	1.0	0.125	0.7	3
TIP30A	PNP	60	60	5	1	30	0.2	40	—	1.0	0.125	0.7	3
TIP30B	PNP	80	80	5	1	30	0.2	40	—	1.0	0.125	0.7	3
TIP30C	PNP	100	100	5	1	30	0.2	40	—	1.0	0.125	0.7	3
TIP31	NPN	40	40	5	3	40	1.0	25	—	3.0	0.375	1.2	3
TIP31A	NPN	60	60	5	3	40	1.0	25	—	3.0	0.375	1.2	3
TIP31B	NPN	80	80	5	3	40	1.0	25	—	3.0	0.375	1.2	3
TIP31C	NPN	100	100	5	3	40	1.0	25	—	3.0	0.375	1.2	3
TIP32	PNP	40	40	5	3	40	1.0	25	—	3.0	0.375	1.2	3
TIP32A	PNP	60	60	5	3	40	1.0	25	—	3.0	0.375	1.2	3
TIP32B	PNP	80	80	5	3	40	1.0	25	—	3.0	0.375	1.2	3
TIP32C	PNP	100	100	5	3	40	1.0	25	—	3.0	0.375	1.2	3
TIP41	NPN	40	40	5	6	65	3.0	15	75	6	0.6	1.5	3
TIP41A	NPN	80	80	5	6	65	3.0	15	75	6	0.6	1.5	3
TIP41B	NPN	80	80	5	6	65	3.0	15	75	6	0.6	1.5	3
TIP41C	NPN	100	100	5	6	65	3.0	15	75	6	0.6	1.5	3
TIP42	PNP	40	40	5	6	65	3.0	15	75	6	0.6	1.5	3
TIP42A	PNP	60	60	5	6	65	3.0	15	75	6	0.6	1.5	3
TIP42B	PNP	80	80	5	6	65	3.0	15	75	6	0.6	1.5	3
TIP42C	PNP	100	100	5	6	65	3.0	15	75	6	0.6	1.5	3

10-25A Up to 125W TO3 Plastic Package

Device Type	Polarity	Max Ratings at T _{case} = 25°C					Characteristics T _{case} = 25°C						ft min. MHz
		V _{CB0} V	V _{CE0} V	V _{EB0} V	cont. IC A	P _{tot} W	hFE			V _{CE(sat)}			
							IC	min.	max.	IC	IB	max.	
TIP33	NPN	40	40	5	10	80	3	20	100	10	2.5	4	3
TIP33A	NPN	80	80	5	10	80	3	20	100	10	2.5	4	3
TIP33B	NPN	80	80	5	10	80	3	20	100	10	2.5	4	3
TIP33C	NPN	100	100	5	10	80	3	20	100	10	2.5	4	3
TIP34	PNP	40	40	5	10	80	3	20	100	10	2.5	4	3
TIP34A	PNP	60	60	5	10	80	3	20	100	10	2.5	4	3
TIP34B	PNP	80	80	5	10	80	3	20	100	10	2.5	4	3
TIP34C	PNP	100	100	5	10	80	3	20	100	10	2.5	4	3
TIP35	NPN	40	40	5	25	125	15	10	50	25	5	4	3
TIP35A	NPN	60	60	5	25	125	15	10	50	25	5	4	3
TIP35B	NPN	80	80	5	25	125	15	10	50	25	5	4	3
TIP35C	NPN	100	100	5	25	125	15	10	50	25	5	4	3
TIP36	PNP	40	40	5	25	125	15	10	50	25	5	4	3
TIP36A	PNP	60	60	5	25	125	15	10	50	25	5	4	3
TIP36B	PNP	80	80	5	25	125	15	10	50	25	5	4	3
TIP36C	PNP	100	100	5	25	125	15	10	50	25	5	4	3
TIP3655	NPN	100	70	7	15	90	4	20	70	4	0.4	1.1	3
TIP2955	PNP	100	70	7	15	90	4	20	70	4	0.4	1.1	3

Plastic High Voltage Power TO-220AB Plastic

Device Type	Cont IC A	V _{CE0} V	hFE		V _{CE} V	V _{CE(sat)} max. @ IC		25°C P _{tot} W	
			min.	max.		A	V		
TIP47	1	250	30	150	0.3	10	1	1	40
TIP48	1	300	30	150	0.3	10	1	1	40
TIP49	1	350	30	150	0.3	10	1	1	40
TIP50	1	400	30	150	0.3	10	1	1	40

Plastic High Voltage Power TO-3 Plastic

Device Type	Cont IC A	V _{CE0} V	hFE		V _{CE} V	V _{CE(sat)} max. @ IC		25°C P _{tot} W	
			min.	max.		A	V		
TIP51	3	250	30	150	0.3	10	1.5	3	100
TIP52	3	300	30	150	0.3	10	1.5	3	100
TIP53	3	350	30	150	0.3	10	1.5	3	100
TIP54	3	400	30	150	0.3	10	1.5	3	100
*BU124	10	†350	12	—	4	10	0.5	4	50
*BU124A	10	†400	12	—	4	10	0.5	4	50

† V_{CE0}
* FAST TURN OFF t_f = 0.8 μsec max.

Complementary Darlington Plastic Package

Device Type	Polarity	V _{CB0} V	V _{CE0} V	V _{EB0} V	Ratings at T _{case} = 25°C						V _{CE(sat)} IC IB V		
					hFE		cont. IC A	P _{tot} W	Package				
					min.	max.							
TIP110	NPN	60	60	5	2	500	—	2	50	TO-220AB	—	—	
TIP111	NPN	80	80	5	2	500	—	2	50	TO-220AB	—	—	
TIP112	NPN	100	100	5	2	500	—	2	60	TO-220AB	—	—	
TIP115	PNP	60	60	5	2	500	—	2	50	TO-220AB	—	—	
TIP116	PNP	80	80	5	2	500	—	2	50	TO-220AB	—	—	
TIP117	PNP	100	100	5	2	500	—	2	50	TO-220AB	—	—	
TIP120	NPN	60	60	5	3	1000	—	5	65	TO-220AB	—	—	
TIP121	NPN	80	80	5	3	1000	—	5	65	TO-220AB	—	—	
TIP122	NPN	100	100	5	3	1000	—	5	65	TO-220AB	—	—	
TIP125	PNP	60	60	5	3	1000	—	5	65	TO-220AC	—	—	
TIP126	PNP	80	80	5	3	1000	—	5	65	TO-220AB	—	—	
TIP127	PNP	100	100	5	3	1000	—	5	65	TO-220AB	—	—	
TIP130	NPN	60	60	5	4	1000	15000	8	70	TO-220AB	—	—	
TIP131	NPN	80	80	5	4	1000	15000	8	70	TO-220AB	—	—	
TIP132	NPN	100	100	5	4	1000	15000	8	70	TO-220AB	—	—	
TIP135	PNP	60	60	5	4	1000	15000	8	70	TO-220AB	—	—	
TIP136	PNP	80	80	5	4	1000	15000	8	70	TO-220AB	—	—	
TIP137	PNP	100	100	5	4	1000	15000	8	70	TO-220AB	—	—	
TIP140	NPN	60	60	5	10	500	—	10	125	TO3	—	—	
TIP141	NPN	80	80	5	10	500	—	10	125	TO3	—	—	
TIP142	NPN	100	100	5	10	500	—	10	125	TO3	—	—	
TIP145	PNP	60	60	5	10	500	—	10	125	TO3	—	—	
TIP146	PNP	80	80	5	10	500	—	10	125	TO3	—	—	
TIP147	PNP	100	100	5	10	500	—	10	125	TO3	—	—	
TIP160A	NPN	200	200	5	5	200	—	5	125	TO3	—	—	
TIP161A	NPN	300	300	5	5	200	—	5	125	TO3	—	—	
TIP162A	NPN	400	400	5	5	200	—	5	125	TO3	—	—	
BU180*	NPN	320	—	8	—	—	—	10	80	TO3	4	0.02	1.5
BU180A*	NPN	400	—	8	—	—	—	10	80	TO3	4	0.02	1.5

* FAST TURN OFF t_f = 0.5 μsec typ.
Δ HIGH FORWARD AND REVERSE ENERGY (122.5 mJ and 1.8 mJ)