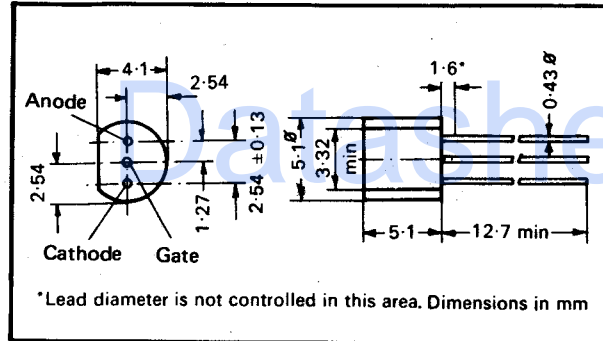
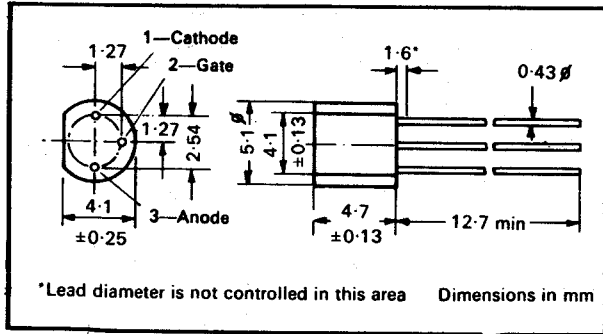


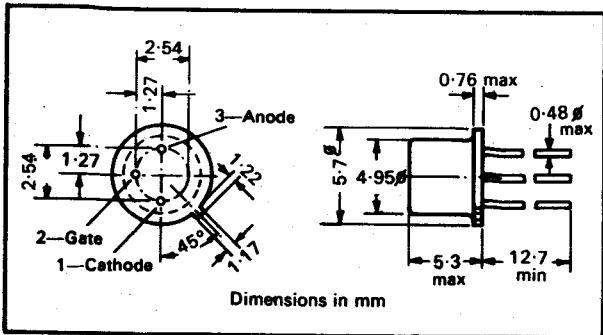
Case Outlines



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 _{CEO}	V _{CE0}	V _{EB0}	cont. IC A	P _{tot} W	hFE			V _{CE(sat)}				
							IC A	min.	max.	IC A	IB V	max. V		
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 _{CEO}	V _{CE0}	V _{EB0}	cont. IC A	P _{tot} W	hFE			V _{CE(sat)}				
							IC A	min.	max.	IC A	IB V	max. V		
TIP33	NPN	40	40	5	10	80	3	20	100	10	2.5	4	3	
TIP33A	NPN	60	60	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 _{CEO} V	hFE		V _{CE(sat)}		25°C P _{tot} W		
			min.	max.	max. @ IC A	IC A			
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 _{CEO} V	hFE		V _{CE(sat)}		25°C P _{tot} W		
			min.	max.	max. @ IC A	IC A			
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_{CEO}
* FAST TURN OFF t_f = 0.8 μsec max.

Complementary Darlington Plastic Package

Device Type	Polarity	V _{CEO}	V _{CE0}	V _{EB0}	hFE		cont. IC A		Ratings at T _{case} = 25°C		V _{CE(sat)}		
					min.	max.	IC A	P _{tot} W	Package	IC A	IB V	V	
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-220AB	—	—	
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)