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Device	Package type	Applications	Absolute maximum ratings						Electrical characteristics (T <sub>a</sub> = 25 °C)								
			V <sub>CB0</sub> (V)	V <sub>CEO</sub> (V)	V <sub>EB0</sub> (V)	I <sub>C</sub> (A)	P <sub>C</sub> (W)	T <sub>J</sub> (°C)	I <sub>CB0</sub> max @ V <sub>CB</sub>		h <sub>FE</sub> @ V <sub>CE</sub> · I <sub>C</sub>			f <sub>T</sub> @ V <sub>CE</sub> · I <sub>C</sub>			
									I <sub>CB0</sub> max (μA)	V <sub>CB</sub> (V)	h <sub>FE</sub>	V <sub>CE</sub> (V)	I <sub>C</sub> (A)	f <sub>T</sub> (MHz)	V <sub>CE</sub> (V)	I <sub>C</sub> (A)	
2SB1223	TO220ML	General-purpose driver	70	60	6	4.0	20.0§	150	100.0	40	5000	2	2.0	20	5	2.0	
2SD1825	TO220ML	General-purpose driver	70	60	6	4.0	20.0§	150	100.0	40	5000	2	2.0	20	5	2.0	
2SB1224	TO220ML	General-purpose driver	70	60	6	7.0	25.0§	150	100.0	40	5000	2	3.5	20	5	3.5	
2SD1826	TO220ML	General-purpose driver	70	60	6	7.0	25.0§	150	100.0	40	5000	2	3.5	20	5	3.5	
2SB1225	TO220ML	General-purpose driver	70	60	6	10.0	30.0§	150	100.0	40	5000	2	5.0	20	5	5.0	
2SD1827	TO220ML	General-purpose driver	70	60	6	10.0	30.0§	150	100.0	40	5000	2	5.0	20	5	5.0	
2SB1226	TO220ML	General-purpose driver	110	100	6	3.0	20.0§	150	100.0	80	4000	3	1.5	20	5	1.5	
2SD1828	TO220ML	General-purpose driver	110	100	6	3.0	20.0§	150	100.0	80	4000	3	1.5	20	5	1.5	
2SB1227	TO220ML	General-purpose driver	110	100	6	5.0	25.0§	150	100.0	80	4000	3	2.5	20	5	2.5	
2SD1829	TO220ML	General-purpose driver	110	100	6	5.0	25.0§	150	100.0	80	4000	3	2.5	20	5	2.5	
2SB1228	TO220ML	General-purpose driver	110	100	6	8.0	30.0§	150	100.0	80	4000	3	4.0	20	5	4.0	
2SD1830	TO220ML	General-purpose driver	110	100	6	8.0	30.0§	150	100.0	80	4000	3	4.0	20	5	4.0	
2SB912	TO3PB	General-purpose driver	70	60	6	10.0	60.0§	150	100.0	40	5000	2	5.0	20	5	5.0	
2SD1229	TO3PB	General-purpose driver	70	60	6	10.0	60.0§	150	100.0	40	5000	2	5.0	20	5	5.0	
2SB883	TO3PB	General-purpose driver	70	60	6	15.0	70.0§	150	100.0	40	5000	2	7.0	20	5	7.0	
2SD1193	TO3PB	General-purpose driver	70	60	6	15.0	70.0§	150	100.0	40	5000	2	7.0	20	5	7.0	
2SB913	TO3PB	General-purpose driver	110	100	6	8.0	60.0§	150	100.0	80	4000	3	4.0	20	5	4.0	
2SD1230	TO3PB	General-purpose driver	110	100	6	8.0	60.0§	150	100.0	80	4000	3	4.0	20	5	4.0	
2SB887	TO3PB	General-purpose driver	110	100	6	10.0	70.0§	150	100.0	80	4000	3	5.0	20	5	5.0	
2SD1197	TO3PB	General-purpose driver	110	100	6	10.0	70.0§	150	100.0	80	4000	3	5.0	20	5	5.0	
2SC3664	TO3PB	High-voltage switch	800	400	5	20.0	150.0§	150	1000.0	800	> 80	5	20.0	-	-	-	
2SB1388	TO3PML	General-purpose driver	110	100	6	10.0	45.0§	150	100.0	80	4000	3	5.0	20	5	5.0	
2SD2093	TO3PML	General-purpose driver	110	100	6	10.0	45.0§	150	100.0	80	4000	3	5.0	20	5	5.0	
2SC4119	TO3PBL	High-voltage switch	1500	800	5	15.0	250.0§	150	100.0	800	> 25	5	15.0	-	-	-	

\* Ceramic mount (250 mm<sup>2</sup> × 0.8 mm)  
 † C-B Zener diode (60 ±10 V)  
 ‡ C-B Zener diode (90 ±10 V)

§ T<sub>a</sub> = 25 °C  
 Notes: Listed by package type and arranged in order of increasing V<sub>CEO</sub>. IC  
 FLP packages have standard radial taping

## Transistors with Built-in Resistors

Device	Package type	Applications	Absolute maximum ratings						Electrical characteristics (T <sub>a</sub> = 25 °C)								
			V <sub>CB0</sub> (V)	V <sub>CEO</sub> (V)	V <sub>EB0</sub> (V)	I <sub>C</sub> (mA)	P <sub>C</sub> (mW)	T <sub>J</sub> (°C)	I <sub>CB0</sub> max @ V <sub>CB</sub>		h <sub>FE</sub> @ V <sub>CE</sub> · I <sub>C</sub>			f <sub>T</sub> @ V <sub>CE</sub> · I <sub>C</sub>			
									I <sub>CB0</sub> max (μA)	V <sub>CB</sub> (V)	h <sub>FE</sub>	V <sub>CE</sub> (V)	I <sub>C</sub> (mA)	f <sub>T</sub> (MHz)	V <sub>CE</sub> (V)	I <sub>C</sub> (mA)	
2SA1676	MCP	Switch (R1 = 47 kΩ, R2 = 47 kΩ)	50	50	10	100	150	150	0.1	40	> 50	5	5	200	10	5	
2SC4396	MCP	Switch (R1 = 47 kΩ, R2 = 47 kΩ)	50	50	10	100	150	150	0.1	40	> 50	5	5	250	10	5	
2SA1677	MCP	Switch (R1 = 22 kΩ, R2 = 22 kΩ)	50	50	10	100	150	150	0.1	40	> 50	5	5	200	10	5	
2SC4397	MCP	Switch (R1 = 22 kΩ, R2 = 22 kΩ)	50	50	10	100	150	150	0.1	40	> 50	5	5	250	10	5	
2SA1678	MCP	Switch (R1 = 10 kΩ, R2 = 10 kΩ)	50	50	10	100	150	150	0.1	40	> 50	5	10	200	10	5	
2SC4398	MCP	Switch (R1 = 10 kΩ, R2 = 10 kΩ)	50	50	10	100	150	150	0.1	40	> 50	5	10	250	10	5	
2SA1722	MCP	Switch (R1 = 2.2 kΩ, R2 = 10 kΩ)	50	50	6	100	150	150	0.1	40	> 50	5	10	200	10	5	
2SC4498	MCP	Switch (R1 = 2.2 kΩ, R2 = 10 kΩ)	50	50	6	100	150	150	0.1	40	> 50	5	10	250	10	5	
2SA1341	CP	Switch (R1 = 47 kΩ, R2 = 47 kΩ)	50	50	10	100	200	150	0.1	40	> 50	5	5	200	10	5	
2SA1342	CP	Switch (R1 = 22 kΩ, R2 = 22 kΩ)	50	50	10	100	200	150	0.1	40	> 50	5	5	200	10	5	
2SA1343	CP	Switch (R1 = 46 kΩ, R2 = 23 kΩ)	50	50	10	100	200	150	0.1	40	> 50	5	5	200	10	5	
2SA1344	CP	Switch (R1 = 10 kΩ, R2 = 10 kΩ)	50	50	10	100	200	150	0.1	40	> 50	5	10	200	10	5	
2SA1496	CP	Switch (R1 = 10 kΩ, R2 = N/A)	50	50	5	100	200	150	0.1	40	> 100	5	10	200	10	5	
2SA1502	CP	Switch (R1 = 2.2 kΩ, R2 = 10 kΩ)	50	50	6	100	200	150	0.1	40	> 50	5	10	200	10	5	
2SA1508	CP	Switch (R1 = 47 kΩ, R2 = N/A)	50	50	5	100	200	150	0.1	40	> 100	5	10	200	10	5	
2SA1510	CP	Switch (R1 = 4.7 kΩ, R2 = N/A)	50	50	5	100	200	150	0.1	40	> 100	5	10	200	10	5	
2SA1518	CP	Switch (R1 = 10 kΩ, R2 = 10 kΩ)	50	50	10	500	200	150	0.1	40	> 50	5	10	200	10	5	
2SA1519	CP	Switch (R1 = 4.7 kΩ, R2 = 4.7 kΩ)	50	50	6	500	200	150	0.1	40	> 50	5	20	200	10	5	
2SA1520	CP	Switch (R1 = 2.2 kΩ, R2 = 10 kΩ)	50	50	6	500	200	150	0.1	40	> 50	5	10	200	10	5	
2SA1521	CP	Switch (R1 = 2.2 kΩ, R2 = 2.2 kΩ)	50	50	6	500	200	150	0.1	40	> 50	5	50	200	10	5	
2SA1563	CP	Switch (R1 = 10 kΩ, R2 = 47 kΩ)	50	50	6	100	200	150	0.1	40	> 70	5	5	200	10	5	
2SA1571	CP	Switch (R1 = N/A, R2 = 47 kΩ)	50	50	5	100	200	150	0.1	40	> 80	5	10	200	10	5	
2SA1573	CP	Switch (R1 = N/A, R2 = 22 kΩ)	50	50	5	100	200	150	0.1	40	> 70	5	10	200	10	5	
2SA1581	CP	Switch (R1 = 2.2 kΩ, R2 = N/A)	50	50	5	100	200	150	0.1	40	> 100	5	10	200	10	5	
2SA1589	CP	Switch (R1 = 22 kΩ, R2 = N/A)	50	50	5	100	200	150	0.1	40	> 140	5	10	200	10	5	
2SA1597	CP	Switch (R1 = 4.7 kΩ, R2 = 47 kΩ)	50	50	6	100	200	150	0.1	40	> 70	5	5	200	10	5	
2SA1653	CP	Switch (R1 = 4.7 kΩ, R2 = 10 kΩ)	50	50	6	100	200	150	0.1	40	> 50	5	10	200	10	5	
2SA1655	CP	Switch (R1 = 4.7 kΩ, R2 = 4.7 kΩ)	50	50	6	100	200	150	0.1	40	> 30	5	10	200	10	5	
2SC3395		7 kΩ)	50	50	10	100	200	150	0.1	40	> 50	5	5	250	10	5	