

Power Transistors

Bipolar

Table 1. High Voltage Switching Power Transistors

$V_{CE0} \geq 200 \text{ V}$

Devices are listed in descending order of $V_{CE0(sus)}$ and I_{CCont}

$V_{CE0(sus)}$ Volts Min	I_{CCont} Amps Max	V_{CEV} Volts Min	Device Type NPN unless otherwise noted	h_{FE} Min/Max	@ I_C Amp	Resistive Switching			f_T MHz Min	P_D (Case) Watts @ 25°C	Case JEDEC/MOT
						t_s μs Max	t_f μs Max	@ I_C Amp			
900	2	1800	MJE1320	3 min	1	4 typ	0.8 typ	1		80	TO-220/221A
850	20	1200	MJ10025##★	50/600	20	5	1.8	10		250	TO-204/1
	3	1500 1500	MJE16034 MJH16034	4 min 4 min	3 3	2 2	1.5 1.5	2 2		80 125	TO-220/221A TO-218/340
800	10	1400 1500 1500	MJ8505★ MJ16018★ MJH16018★	7.5 min 4 min 4 min	1.5 5 5	4 4.5 typ 4.5 typ	2 0.2 typ 0.2 typ	5 5 5		175 150 125	TO-204/1 TO-204/1 TO-218/340
	5	1400 1400	MJ8503★ MJE8503★	7.5 min 7.5 min	1 1	4 4	2 2	2.5 2.5		150 80	TO-204/1 TO-220/221A
	2.5	1400 1400	MJ8501★ MJE8501★	7.5 min 7.5 min	0.5 0.5	4 4	2 2	1 1		125 65	TO-204/1 TO-220/221A
	20	1000	MJ10024##★	50/600	20	5	1.8	10		250	TO-204/1
	8	1500 1500	MJ12005,D MJH12005	5 min 5 min	5 5		0.4 typ 0.4 typ	5 5	4 typ 4 typ	100 100	TO-204/1 TO-218/340
	5	1500 1500	MJ12004★ MJH12004★	2.5 min 2.5 min	4.5 4.5		1 1	4.5 4.5	4 typ 4 typ	100 100	TO-204/1 TO-204/1
750	4	1500	MJ12003	2.5 min	3		1	3	4 typ	100	TO-204/1
	3	1500 1500	MJE16032 MJH16032	4 min 4 min	3 3	2 2	1.5 1.5	2 2		80 125	TO-220/221A TO-218/340
	2.5	1500 1500	MJ12002★ MJE12007★	1.11 min 1.1 min	2 2		1 1	2 2	4 typ 4 typ	75 65	TO-204/1 TO-220/221A
	40	1000	BUT35##	15 min	24	4	1.2	24		250	TO-204/197
	20	1000	BUT15##	15 min	12	2.5	0.8	12		175	TO-204/1
	10	1200	MJ8504★	7.5 min	1.5	4	2	5		175	TO-204/1
700	8	1400 1500 1500	MJ10011# BU508,A BU508D,AD	20 min 2.25 min 2.25 min	4 4.5 4.5	8 typ 8 typ	1 0.5 typ 0.5 typ	4 4.5 4.5	7 7	80 125 125	TO-204/1 TO-218/340 TO-218/340
	5	1200 1200 1500 1500	MJ8502★ MJE8502★ BU208A BU208D	7.5 min 7.5 min 2.25 min 2.25 min	1 1 4.5 4.5	4 4 8 typ	2 2 0.4 typ 0.6 typ	2.5 2.5 4.5 4.5	4 typ	125 80 90 60	TO-204/1 TO-220/221A TO-204/1 TO-204/1
	2.5	1200	MJE8500★	7.5 min	0.5	4	2	1		65	TO-220/221A
600	10	700	MJ10014##★	10/250	10	2.5	0.8	10		175	TO-204/1
550	8	1200	BUT47C	8 min	2		4*	4	12	100	TO-220/221A
500	50	750 850	MJ10016##★ BUT34##	10 min 15 min	40 32	2.5 3	1 1.5	20 32		250 250	TO-204/197 TO-204/197
	25	850	BUT14##	15 min	16	2.8	0.8	16		175	TO-204/1

★ Designers Data Sheet characterization

Darlington ## Darlington with speed-up diode

* t_{off}

** $|h_{fe}|$ @ 1 MHz

(continued)

Table 1. High Voltage Switching Power Transistors (continued)

V _{CEO(sus)} Volts Min	I _C Cont Amps Max	V _{CEV} Volts Min	Device Type NPN unless otherwise noted	h _{FE} Min/Max	@ I _C Amp	Resistive Switching			f _T MHz Min	P _D (Case) Watts @ 25°C	Case JEDEC/MOT
						t _s μs Max	t _f μs Max	@ I _C Amp			
200	15	225 250 200 200	2N6249 BUX41 MJ11019#-PNP MJ11020#	10/50 8 min 100 min 100 min	10 8 15 15	3.5 1.5	1 0.4	10 8	2.5 8 3# 3#	175 120 175 175	TO-204/1 TO-204/1 TO-204/1 TO-204/1
	3	250	BUY49P	30 min	0.5				25	20	TO-225AA/77
125	70	200	BUS50★	15 min	40	2	0.3	40		350	TO-204 Mod/197
	50	250 160	BUV60 BUV20★	10 min 10 min	50 50	1.2 1.2	0.25 0.25	50 50	8	250	TO-204/1 TO-204 Mod/197
	25	160	BUV10★	10 min	20	1.55	0.45	15		175	TO-204/1
	20	160	BUX40★	8 min	15	1	0.25	15		120	TO-204/1
100	80	120	BUV18A	10 min	80	1.1	0.25	80	8	250	TO-204/1
90	30	120	BUX39	8 min	20	1	0.25	20	8	120	TO-204/1
80	15	100 100	D44VH-10★ D45VH-10★-PNP	20 min 20 min	4 4	0.7 0.7	0.09 0.09	8 8	50 50	83 83	TO-220/221 TO-220/221
	10	80	D44E-3#★	1000 min	5	2	0.5	10		50	TO-220/221
		80	D45E-3#★-PNP	1000 min	5	2	0.5	10		50	TO-220/221
		80	D44H-10★	20 min	4	0.5	0.14	5	50	50	TO-220/221
		80	D45H-10★-PNP	20 min	4	0.5	0.14	5	40	50	TO-220/221

★ Designers Data Sheet characterization

Darlington

Darlington with speed-up diode

* t_{off}

** |h_{FE}| @ 1 MHz

Table 2. Switchmode Technology Portfolio

DC Current Rating	Bipolar Tech- nology	RATED V _{CEO} * AND PACKAGE														
		200-350 V			400 V			450 V			500 V			700-800 V		
		TO-220	TO-204	TO-218	TO-220	TO-204	TO-218	TO-220	TO-204	TO-218	TO-220	TO-204	TO-218	TO-220	TO-204	TO-218
2-4 A	I	MJE13004	2N5838		MJE13005									MJE8500		
	II															
	III													MJE16032		MJH16032
5 A	I	2N6497				2N6543								MJE8502	MJ8502	
	II				MJE13070	MJ13070		MJE13071	MJ13070							
	III							MJE16002	MJ16002	MJH16002		MJ16002A	MJH16002A			
8 A	I	MJE13006			MJE13007	2N6545										
	II					MJ13080										
	III				MJE16080 MJE16106		MJH16106	MJE16081	MJ16006	MJH16006		MJ16006A	MJH16006A			
10-12 A	I	MJE13008			MJE13009										MJ8504	
	II		MJ13014			MJ13015										
	III														MJ16018	MJH16018
15 A	I		2N6546													
	II															
	III					MJ16110	MJH16110		MJ16010	MJH16010		MJ16010A	MJH16010A			
20 A	I		MJ13331			2N6547			MJ13334			MJ13335				
	II					MJ13100			MJ13101							
	III								MJ16014							

*Some devices listed may represent a family of devices within the voltage category, please check data sheets for voltage and gain variations.