

Power Transistors and Darlington

International Rectifier's Power Transistors and Power Darlington offer state-of-the-art processes and techniques in popular device ratings. IR's unique glass passivation ensures high reliability and exceptional stability. The triple-diffused process used offers high voltage, fast switching times, and low saturation voltages.

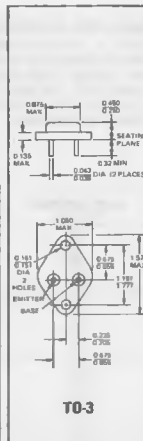
34 types of high voltage Silicon Power Transistors offer high power, high voltage, and high current ratings. Applications include inverters, choppers, deflection circuits, etc. In addition, there are 15 types of fast switching power transistors.

25 types of high voltage Monolithic Darlington offer high power, high voltage, high current and high gain. Applications include inverters, choppers, switching regulators, ignition systems, etc. In addition, there are 9 types of fast-switching Darlington.

HIGH VOLTAGE NPN POWER TRANSISTORS

$T_C = 25^\circ\text{C}$ unless otherwise specified

I_C Cont. (A)	1.0	2.0	3.0	3.0	3.0	3.0	3.0
I_C Peak (A)	4.0	5.0	5.0	5.0	5.0	7.0	7.0
V_{CE0} (V)	800	1,000	275	300	375	900	900
SERIES	IR701	IR801	2N5838	2N5838	2N5840	IR708	IR708
$V_{CE(sat)}$ min. (V) @ I_C (A)	0.10 0.10	0.10 0.10	0.25 0.25	0.20 0.20	0.20 0.20	0.50 0.50	0.50 0.50
I_{CEO} max. (mA) @ V_{CE} (V)	0.5 0.5	0.5 0.5	2.0 2.0	2.0 2.0	2.0 2.0	0.25 0.25	0.25 0.25
I_{CEV} max. (mA) @ V_{CE} (V) @ V_{BE} (V)	-- --	-- --	5.0 2.65	2.0 2.00	2.0 3.80	0.25 0.90	0.25 0.90
h_{FE} (min) @ I_C (A) @ V_{CE} (V)	20 0.150	20 0.200	8 5.0	10 2.0	10 3.0	-- --	-- --
$V_{CE(sat)}$ max. (V) @ I_C (A) @ I_B (A)	-- --	-- --	1.0 3.0	1.5 2.0	1.5 2.0	2.0 1.0	2.0 0.80
P_d (W)	50	100	100	100	100	50	50



I_C Cont. (A)	3.0	3.0	3.5	3.5	3.5	3.5	3.5	5.0	5.0
I_C Peak (A)	7.0	--	10	10	10	--	--	7.0	7.0
V_{CE0} (V)	900	--	200	400	700	700	700	400	400
SERIES	IR710	IR721	IR800 (1)	IR803 (1)	IR805 (1)	2N5862	2N5157	IR401	IR413
$V_{CE(sat)}$ min. (V) @ I_C (A)	0.50 0.50	0.50 0.50	0.20 0.18	0.25 0.18	0.25 0.18	0.25 0.18	0.25 0.18	0.25 0.18	0.25 0.18
I_{CEO} max. (mA) @ V_{CE} (V)	0.25 500	0.25 1,000	0.25 200	0.25 400	0.25 500	0.25 400	0.25 500	0.25 400	0.25 400
I_{CEV} max. (mA) @ V_{CE} (V) @ V_{BE} (V)	-- --	0.25 1,000	0.50 (2) 200	0.50 (2) 400	0.50 (2) 700	2.5 700	0.50 700	0.50 (2) 700	0.5 (2) 400
h_{FE} (min/max) @ I_C (A) @ V_{CE} (V)	10/50 0.15 5.0	(3) 7 1.0 5.0	20/60 1.8 5.0	30/90 1.8 5.0	30/90 1.8 5.0	30/90 1.8 5.0	30/90 1.8 5.0	20/100 1.0 5.0	20/80 0.5 5.0
$V_{CE(sat)}$ max. (V) @ I_C (A) @ I_B (A)	-- --	-- --	0.8 1.0	0.8 1.0	0.8 1.0	0.8 1.0	0.8 1.0	0.8 0.5	0.8 0.5
P_d (W)	50	50	00	00	00	100	100	100	100

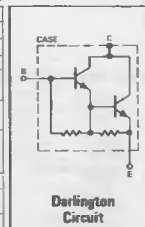
I_C Cont. (A)	5.0	5.0	5.0	5.0	7.0	7.0	7.0	7.0	7.0
I_C Peak (A)	15	15	--	10	10	10	10	10	10
V_{CE0} (V)	300	375	400	400	300	400	400	400	400
SERIES	2N5804	2N5805	2N5241	IR410	IR411	IR430	IR431	IR440	IR423
$V_{CE(sat)}$ min. (V) @ I_C (A)	0.25 0.20	0.30 0.25	0.25 0.10	0.20 0.10	0.20 0.10	0.30 0.10	0.30 0.10	0.30 0.10	0.30 0.10
I_{CEO} max. (mA) @ V_{CE} (V)	15.0 15.0	5.0 15.0	2.5 400	0.25 300	0.25 300	2.5 400	2.5 400	2.5 400	2.5 400
I_{CEV} max. (mA) @ V_{CE} (V) @ V_{BE} (V)	5.0 270	5.0 340	0.5 400	0.5 (4) 200	0.5 (4) 300	5.0 (4) 400	5.0 (4) 400	5.0 (4) 400	0.5 (4) 400
h_{FE} (min/max) @ I_C (A) @ V_{CE} (V)	10/100 5.0	10/100 4.0	15/35 5.0	30/90 5.0	30/90 5.0	15/45 2.5	15/35 2.5	15 (5) 1.0	30/90 1.0
$V_{CE(sat)}$ max. (V) @ I_C (A) @ I_B (A)	2.0 5.0	2.0 5.0	0.7 2.5	0.7 1.0	0.7 1.0	0.9 2.5	0.7 2.5	1.2 1.0	0.8 1.0
P_d (W)	110	110	125	100	100	125	125	125	125

Power Transistors and Darlington

HIGH VOLTAGE NPN POWER DARLINGTONS

T_c = 25°C unless otherwise specified

I _c Cont. (A)	10		10		10		10		15		15	
I _c Peak (A)	15		15		15		15		20		20	
V _{CE0} (V)	120		120		400		450		500		400	
SERIES	IR1810		IR1820		IR5251		IR5252		IR5253		IR4001	
V _{CE(sat)} min. (V) @ I _c (A)	0.9 0.50		0.9 0.50		2.0 2.0		2.0 2.0		2.0 2.0		2.0 1.0	
I _{CEO} max. (mA) @ V _{CE} (V)	0.10 120		0.10 120		1.0 400		1.0 450		1.0 500		0.25 400	
h _{FE} (min.) @ I _c (A) @ V _{CE} (V)	500 3.0 1.5		200 3.0 1.5		1,000 3.0 5.0		500 3.0 5.0		140 3.0 5.0		10 3.0 5.0	
V _{CE(sat)} max. (V) @ I _c (A) @ I _B (A)	1.0 5.0 0.02		1.5 5.0 0.02		2.0 10 2.0		2.0 10 2.0		2.0 10 2.0		5.0 15 3.0	
P _d (W)	100		100		100		100		100		100	



I _c Cont. (A)	15		15		15		15		15		15	
I _c Peak (A)	20		20		20		20		20		20	
V _{CE0} (V)	400		400		400		450		500		500	
SERIES	IR5000		IR4040		IR4045		IR5001		IR4050		IR4055	
V _{CE(sat)} min. (V) @ I _c (A)	3.0 2.0		3.25 1.0		3.25 1.0		2.0 2.0		2.0 1.0		2.0 1.0	
I _{CEO} max. (mA) @ V _{CE} (V)	1.0 400		0.25 400		0.25 400		1.0 450		0.25 500		0.25 500	
h _{FE} (min.) @ I _c (A) @ V _{CE} (V)	15 15 5.0		140 3.0 5.0		8 3.0 5.0		15 3.0 5.0		140 3.0 5.0		15 3.0 5.0	
V _{CE(sat)} max. (V) @ I _c (A) @ I _B (A)	1.0 3.0 3.0		2.0 3.0 3.0		1.2 5.0 0.25		1.0 15 3.0		1.0 15 3.0		1.0 15 3.0	
P _d (W)	125		125		125		125		125		100	

I _c Cont. (A)	15		15		15		15		15		20	
I _c Peak (A)	20		20		20		20		20		25	
V _{CE0} (V)	600		600		600		700		850		1,000	
SERIES	IR4060		IR4065		IR5063		IR5064		IR5065		IR5000	
V _{CE(sat)} min. (V) @ I _c (A)	4.0 1.0		4.0 1.0		5.0 2.0		6.0 2.0		7.5 2.0		6.0 2.0	
I _{CEO} max. (mA) @ V _{CE} (V)	0.25 600		0.25 600		1.0 500		1.0 600		1.0 750		1.0 350	
h _{FE} (min.) @ I _c (A) @ V _{CE} (V)	250 3.0 5.0		8 3.0 5.0		500 3.0 5.0		15 3.0 5.0		12 3.0 5.0		14 3.0 5.0	
V _{CE(sat)} max. (V) @ I _c (A) @ I _B (A)	2.0 15 3.0		1.0 15 3.0		1.0 15 1.6		2.0 10 1.2		2.0 10 1.2		2.0 10 1.0	
P _d (W)	125		125		125		125		125		125	

FAST-SWITCHING, HIGH VOLTAGE NPN POWER DARLINGTONS*

I _c Cont. (A)	10		10		10		10		15		20	
I _c Peak (A)	15		15		15		15		20		25	
V _{CE0} (V)	400		450		500		400		450		500	
SERIES	IR6251		IR6252		IR6253		IR6000		IR6001		IR6002	
V _{CE(sat)} min. (V) @ I _c (A)	3.0 2.0		3.0 2.0		4.0 2.0		3.0 2.0		3.0 2.0		3.0 2.0	
I _{CEO} max. (mA) @ V _{CE} (V)	1.0 400		1.0 450		1.0 500		1.0 400		1.0 450		1.0 350	
h _{FE} (min.) @ I _c (A) @ V _{CE} (V)	140 3.0 5.0		100 3.0 5.0		140 3.0 5.0		100 3.0 5.0		150 3.0 5.0		80 3.0 5.0	
V _{CE(sat)} max. (V) @ I _c (A) @ I _B (A)	2.0 10 2.0		2.0 10 2.0		2.0 10 2.0		1.0 15 3.0		1.0 15 3.0		1.0 15 2.0	
P _d (W)	100		100		125		125		125		125	
t _r /t _f max. (ns) @ I _c (A)	0.25/2.5/1.0 5.0		0.25/2.5/1.0 5.0		0.25/2.5/1.0 5.0		0.4/2.5/1.0 10		0.4/2.5/1.0 10		0.4/2.5/1.0 10	