

HIGH-VOLTAGE N-P-N & P-N-P POWER TYPES

I_C to 30 A ... f_T to 20 MHz ... P_T to 175 W

$I_C = 1$ A max. $P_T = 20$ W max. (Plastic TO-5)	$I_C = 1$ A max. $P_T = 10$ W max. (TO-39)*	$I_C = -1$ A max. $P_T = 10$ W max. (TO-39)*	I_C peak = 5 A $P_T = 35$ W max. (TO-66)	I_C peak = -5 A $P_T = 35$ W max. (TO-66)	$I_C = 10$ A peak $P_T = 45$ W max. (TO-66)**	$I_C = 10$ A peak $P_T = 125$ W max. (TO-3)		
32 x 32 ^A	42 x 42	42 x 42	103 x 103	124 x 124	130 x 130	130 x 130		
Family Designation								
2N6177 [N-P-N]	2N3439 [N-P-N]	2N5415 [P-N-P]	2N3585 [N-P-N]		2N6213 [P-N-P]	2N6079 [N-P-N]	2N5840 [N-P-N]	
2N6175 "Plastic 2N3440" $V_{CE(sus)} = 300$ V $V_{CE(sus)} = 300$ V $h_{FE} = 30-190$ @ 20 mA $f_T = 20$ MHz min.	2N3440 $V_{CE(sus)} = 300$ V $h_{FE} = 40-160$ @ 20 mA $f_T = 15$ MHz min.	2N5415 $V_{CE(sus)} = -200$ V $h_{FE} = 30-150$ @ -50 mA $f_T = 15$ MHz min.	BUX67 $V_{CE(sus)} = 175$ V $h_{FE} = 10-150$ @ 1 A $f_T = 15$ MHz	2N3583 $V_{CE(sus)} = 250$ V $h_{FE} = 40$ min. @ 100 mA $h_{FE} = 10$ min. @ 1 A $f_T = 15$ MHz min.	BUX66 $V_{CE(sus)} = -175$ V $h_{FE} = 10-150$ @ -1 A $f_T = 15$ MHz	2N6211 $V_{CE(sus)} = -250$ V $h_{FE} = 10-100$ @ -1 A $f_T = 20$ MHz min.	2N6078 $V_{CE(sus)} = 275$ V $h_{FE} = 12-70$ @ 1.2 A $t_r = 0.3 \mu s$ typ. $t_f = 0.3 \mu s$ typ.	RCA 410# $V_{CE(sus)} = 200$ V $h_{FE} = 30-90$ @ 1 A $t_r = 0.35 \mu s$ typ. $t_f = 0.15 \mu s$ typ.
CT File No. 508 E	CT File No. 64 E	CT File No. 336 E	871	File No. 138	870	File No. 507	File No. 492	File No. 509
2N6176 $V_{CE(sus)} = 350$ V $h_{FE} = 30-150$ @ 20 mA $f_T = 20$ MHz min.	2N3439 $V_{CE(sus)} = 400$ V $h_{FE} = 40-160$ @ 20 mA $f_T = 15$ MHz min.	2N5416 $V_{CE(sus)} = -350$ V $h_{FE} = 30-120$ @ -50 mA $f_T = 15$ MHz min.	BUX67A $V_{CE(sus)} = 275$ V $h_{FE} = 10-150$ @ 1 A $f_T = 15$ MHz	2N3584 $V_{CE(sus)} = 300$ V $h_{FE} = 40$ min. @ 100 mA $h_{FE} = 25-100$ @ 1 A $f_T = 15$ MHz min.	BUX66A $V_{CE(sus)} = -275$ V $h_{FE} = 10-150$ @ -1 A $f_T = 15$ MHz	2N6212 $V_{CE(sus)} = -325$ V $h_{FE} = 10-100$ @ -1 A $f_T = 20$ MHz min.	2N6077 $V_{CE(sus)} = 300$ V $h_{FE} = 12-70$ @ 1.2 A $t_r = 0.3 \mu s$ typ. $t_f = 0.3 \mu s$ typ.	RCA 411# $V_{CE(sus)} = 300$ V $h_{FE} = 30-90$ @ 1 A $t_r = 0.35 \mu s$ typ. $t_f = 0.15 \mu s$ typ.
CT 508 E	CT 64 E	CT 336 E	871	CT 138	870	CT 507	492	510
2N6177 "Plastic 2N3439" $V_{CE(sus)} = 400$ V $h_{FE} = 30-150$ @ 50 mA $f_T = 20$ MHz min.	BF257 $V_{CE(sus)} = 160$ V $h_{FE} = 25$ min. @ 30 mA	BFT19,A,B $V_{CE(sus)} = 200-400$ V $h_{FE} = 25$ min. @ 30 mA/10 V $f_T = 15$ MHz $P_T = 5$ W	BUX67B $V_{CE(sus)} = 325$ V $h_{FE} = 10-150$ @ 1 A $f_T = 15$ MHz	2N3585 $V_{CE(sus)} = 400$ V $h_{FE} = 40$ min. @ 100 mA $h_{FE} = 25-100$ @ 1 A $f_T = 15$ MHz min.	BUX66B $V_{CE(sus)} = -325$ V $h_{FE} = 10-150$ @ -1 A $f_T = 15$ MHz	2N6213 $V_{CE(sus)} = -375$ V $h_{FE} = 10-100$ @ -1 A $f_T = 20$ MHz min.	2N6079 $V_{CE(sus)} = 375$ V $h_{FE} = 12-50$ @ 1.2 A $t_r = 0.3 \mu s$ typ. $t_f = 0.3 \mu s$ typ.	RCA 413# $V_{CE(sus)} = 325$ V $h_{FE} = 20-80$ @ 0.5 A $t_r = 0.35 \mu s$ typ. $t_f = 0.15 \mu s$ typ.
508 E		683	871	CT 138	870	CT 507	492	511
	BF258 $V_{CE(sus)} = 250$ V $h_{FE} = 25$ min. @ 30 mA	BFT28,A,B,C $V_{CE(sus)} = 150-300$ V $h_{FE} = 20$ min. @ 10 mA/10 V $f_T = 15$ MHz $P_T = 5$ W	BUX67C $V_{CE(sus)} = 375$ V $h_{FE} = 10-150$ @ 1 A $f_T = 15$ MHz	2N4240 $V_{CE(sus)} = 400$ V $h_{FE} = 40$ min. @ 100 mA $h_{FE} = 30-150$ @ 750 mA $f_T = 15$ MHz min.	BUX66C $V_{CE(sus)} = -375$ V $h_{FE} = 10-150$ @ -1 A $f_T = 15$ MHz	2N6214 $V_{CE(sus)} = -425$ V $h_{FE} = 10-100$ @ -1 A $f_T = 20$ MHz min.	40851 $V_{CE(sus)} = 375$ V $h_{FE} = 12$ min. @ 1.2 A $t_r = 0.3 \mu s$ typ. $t_f = 0.3 \mu s$ typ.	RCA 423# $V_{CE(sus)} = 325$ V $h_{FE} = 30-90$ @ 1 A $t_r = 0.35 \mu s$ typ. $t_f = 0.15 \mu s$ typ.
		815	871	138	870	507	498	512
	BF259 $V_{CE(sus)} = 300$ V $h_{FE} = 25$ min. @ 30 mA			40850 $V_{CE(sus)} = 400$ V $h_{FE} = 25$ min. @ 750 mA $f_T = 15$ MHz min.				RCA 431# $V_{CE(sus)} = 325$ V $h_{FE} = 15-35$ @ 2.5 A $t_r = 0.35 \mu s$ typ. $t_f = 0.4 \mu s$ typ.
				498				513

^APellet size—values shown are edge dimensions in thousands-of-an-inch (mils)

* Available with:

- a. flange for easy heat sinking $R_{\theta JC} = 15^\circ$ C/W
- b. free-air radiator $R_{\theta JA} = 45^\circ$ C/W

** Available with free-air radiator $R_{\theta JA} = 30^\circ$ C/W

Type with a factory-attached heat clip

File No. (e.g. File No 508 E), where shown, relates to the data bulletin.

CT—Complementary Type available, see matrix on Complementary-Pair Power Types.

For new equipment design only—not recommended for retrofit.

2N6033 FAMILY [n-p-n] (silicon)

$f_T = 50 \text{ MHz min}; P_T = 140 \text{ W max}$

DESCRIPTION

2N TYPES

- 2N6032 High-Current, High-Speed Switch
 2N6033 High-Current, High-Speed Switch

$V_{CE0(sus)}$ V	$V_{CER(sus)}$ V	$V_{CEV(sus)}$ V	h_{FE}		I_{CER-mA}			$V_{CE(sat)-V}$			V_{BE-V}		
			I_C A	V_{CE} V	Temp. 25	150	V_{CE} V	I_C A	I_B A	I_C A	I_C A		
90	110	120▲	10-50	50	2.6	12■	15●	110	1.3	50	5	2	50
120	140	150▲	10-50	40	2	10■	10●	135	1	40	4	2	40

▲ $V_{CEX(sus)}$ ■ I_{CEV} ●At $V_{CE} = 100 \text{ V}$

2N6079 FAMILY [n-p-n] (silicon)

$f_T = 1 \text{ MHz min}; P_T = 45 \text{ W max}$

2N TYPES

- 2N6078 High Voltage, Fast Switch
 2N6077 High Voltage, Fast Switch
 2N6079 High Voltage, Fast Switch

250	275	275▲	12-70	1.2	1	0.05■	0.25●	250	0.5	1.2	0.2	1.6	1.2
275	300	300▲	12-70	1.2	1	5■	8●	250	0.5	1.2	0.2	1.6	1.2
350	375	375▲	12-50	1.2	1	0.5■	5●	450	0.5	1.2	0.2	1.6	1.2

OTHER TYPES

- 40851 Off-Line Switching-Regulator for Power Supplies

350	375	—	12 min.	1.2	1	0.5■	5●	450	3	4	0.8	2	4
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▲ $V_{CEX(sus)}$ ■ I_{CEV} ● I_{CEV} @ 125°C

2N6103 PLASTIC FAMILY [n-p-n] (silicon)

$f_T = 0.8 \text{ MHz min}; P_T = 75 \text{ W max}$

2N & PRO-ELECTRON TYPES

- 2N6102 Hometaxial-Base, TO-220 AA
 2N6103 Hometaxial-Base, TO-220 AB
 2N6098 Hometaxial-Base, TO-220 AA
 2N6099 Hometaxial-Base, TO-220 AB
 2N6100 Hometaxial-Base, TO-220 AA
 2N6101 Hometaxial-Base, TO-220 AB
 BD278 Hometaxial-Base, TO-220 AB
 BD278A Hometaxial-Base, TO-220 AB

40	45	—	15-60	8	4	2▲	10▲	40	2.5	16	3.2	1.7	8
40	45	—	15-60	8	4	2▲	10▲	40	2.5	16	3.2	1.7	8
60	65	—	20-80	4	4	2▲	10▲	65	2.5	10	2	1.7	4
60	65	—	20-80	4	4	2▲	10▲	65	2.5	10	2	1.7	4
70	75	—	20-80	5	4	2▲	10▲	75	2.5	10	2	1.7	5
70	75	—	20-80	5	4	2▲	10▲	75	2.5	10	2	1.7	5
45	55	—	15.75	4	4	2▲	10●	55	1	4	0.4	1.8	4
45	55	—	30 Min	2	3	2▲	10●	55	1	4	0.4	1.8	4

AUDIO TYPES

- 40884 Output, 40-W Full Comp. Univ. Amplifier

65	75	—	20-120	4	4	1	—	65	1	4	0.4	—	—
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▲ I_{CEX}

● I_{CEX} @ 50V

2N6107 PLASTIC FAMILY [p-n-p] (silicon)

$f_T = 10 \text{ MHz min}; P_T = 40 \text{ W max}$

2N & PRO-ELECTRON TYPES

- 2N6110 Epitaxial-Base, TO-220AA
 2N6111 Epitaxial-Base, TO-220AB
 2N6108 Epitaxial-Base, TO-220AA
 2N6109 Epitaxial-Base, TO-220AB
 2N6106 Epitaxial-Base, TO-220AA
 2N6107 Epitaxial-Base, TO-220AB
 BD277 Epitaxial-Base, TO-220AB

-30	-40	—	30-150	-3	-4	-0.1	-2●	-35	-1	-3	-0.3	-1.5	-3
-30	-40	—	30-150	-3	-4	-0.1	-2●	-35	1	-3	-0.3	-1.5	-3
-50	-60	—	30-150	-2.5	-4	-0.1	-2▲	-55	1	-2.5	-0.25	-1.5	-2.5
-50	-60	—	30-150	-2.5	-4	-0.1	-2▲	-55	1	-2.5	-0.25	-1.5	-2.5
-70	-80	—	30-150	-2	-4	-0.1	-2■	-75	-1	-2	-0.2	-1.5	-2
-70	-80	—	30-150	-2	-4	-0.1	-2■	-15	-1	-2	-0.2	-1.5	-2
-45	—	—	30-150	-1.75	-2	—	—	—	0.5	-1.75	0.1	-1.2	-1.75

AUDIO TYPES

- 40817 Output, 12-W Full Comp. Univ. Amplifier

—	-45	—	35-150	-2	-1	-0.5	—	-40	—	—	—	—	—
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