

Epitaxial-Base, Silicon N-P-N and P-N-P VERSAWATT Transistors

General-Purpose Medium-Power Types for Switching and Amplifier Applications

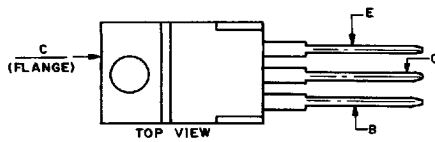
Features:

- Low saturation voltages
- Complementary n-p-n and p-n-p types
- Maximum safe-area-of-operation curves specified for dc operation

The 2N6106-2N6111, 2N6288-2N6293, and 2N6473-2N6476 are epitaxial-base silicon transistors supplied in a VERSAWATT package. The 2N6288-2N6293, 2N6473, and 2N6474* are n-p-n complements of p-n-p types 2N6106-2N6111, 2N6475, and 2N6476*, respectively. All these transistors are intended for a wide variety of medium-power switching and amplifier applications, such as series and shunt regulators and driver and output stages of high-fidelity amplifiers.

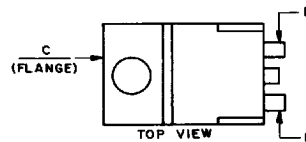
The 2N6289, 2N6291, and 2N6293 n-p-n types and 2N6106, 2N6108, and 2N6110 p-n-p devices fit into TO-213AA sockets. The remaining types are supplied in the JEDEC TO-220AB straight-lead version of the VERSAWATT package. All of these devices are also available on special order in a variety of lead-form configurations.

- *Formerly RCA Dev. Nos. TA7784, TA8323, TA7783, TA8232, TA7782, TA8231, TA8444, and TA8723, respectively.
- †Formerly RCA Dev. Nos. TA8210, TA7741, TA8211, TA7742, TA8212, TA7743, TA8445, and TA8722, respectively.



92CS-39969

JEDEC TO-220AB



92CS-40186

JEDEC TO-220AA

Boca Semiconductor Corp.
BSC

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MAXIMUM RATINGS, Absolute-Maximum Values:

	N-P-N		P-N-P		V	
	2N6288 2N6289	2N6290 2N6291	2N6292 2N6293	2N6473 2N6474		
V_{CE0}	40	60	80	110	130	V
$V_{CEX}(SUS)$ $R_{\theta\theta} = 100 \Omega, V_{\theta\theta} = 0 V$	40	60	80	110	130	V
$V_{CE0}(SUS)$	30	50	70	100	120	V
V_{EBO}	5		5			V
$I_C (T_C \leq 106^\circ C)$	7		4			A
$I_E (T_C \leq 130^\circ C)$	3		2			A
P_T	40		16			W
$T_C \leq 25^\circ C$	40		16			W
$T_C > 25^\circ C \leq 100^\circ C$	Derate linearly 0.32					W/°C
$T_C > 25^\circ C$	1.8					W
$T_A \leq 25^\circ C$	Derate linearly 0.0144					W/°C
$T_A > 25^\circ C$	-65 to 150					°C
T_{stg}, T_J	235					°C
T_L						°C
At distances $\geq 1/8$ in. (3.17 mm) from case for 10 s max.						°C

*In accordance with JEDEC registration data.

‡For p-n-p devices, voltage and current values are negative.

CHARACTERISTIC	VOLTAGE V dc		CURRENT A dc		2N6292 2N6293 2N6106♦ 2N6107♦		2N6290 2N6291 2N6108♦ 2N6109♦		2N6288 2N6289 2N6110♦ 2N6111♦		UNITS
	V _{CE}	V _{BE}	I _C	I _B	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
I _{CER} (R _{BE} = 100 Ω)	75				—	0.1	—	—	—	—	mA
	55				—	—	—	0.1	—	—	
	35				—	—	—	—	—	0.1	
(R _{BE} = 100 Ω, T _C = 150°C)	70				—	2	—	—	—	—	
	50				—	—	—	2	—	—	
	30				—	—	—	—	—	2	
* I _{CEX} (R _{BE} = 100 Ω)	75	-1.5			—	0.1	—	—	—	—	
	56	-1.5			—	—	—	0.1	—	—	
	37.5	-1.5			—	—	—	—	—	0.1	
(R _{BE} = 100 Ω, T _C = 150°C)	70	-1.5			—	2	—	—	—	—	
	50	-1.5			—	—	—	2	—	—	
	30	-1.5			—	—	—	—	—	2	
* I _{CEO}	60			0	—	1	—	—	—	V	
40			0	—	—	—	1	—	—		
20			0	—	—	—	—	—	1		
* I _{EBO}		-5	0		—	1	—	1	—	1	
* V _{CEO(sus)} ^b			0.1 ^a	0	70	—	50	—	30	—	
* V _{CER(sus)} ^b (R _{BE} = 100 Ω)			0.1 ^a		80	—	60	—	40	—	
* h _{FE}	4		2 ^a		30	150	—	—	—	—	
	4		2.5 ^a		—	—	30	150	—	—	
	4		3 ^a		—	—	—	—	30	150	
	4		7 ^a	2.3	—	—	2.3	—	2.3	—	
* V _{BE}	4		2 ^a		—	1.5	—	—	—	—	
	4		2.5 ^a		—	—	—	1.5	—	—	
	4		3 ^a		—	—	—	—	—	1.5	
	4		7 ^a	3	—	3	—	3	—	3	
* V _{CE(sat)}			2 ^a	0.2	—	1	—	—	—	—	
			2.5 ^a	0.25	—	—	—	1	—	—	
			3 ^a	0.3	—	—	—	—	—	1	
			7 ^a	3	—	3.5	—	3.5	—	3.5	
* h _{fe} (f = 1 MHz)	2N6288-93	4	0.5		4	—	4	—	4	—	
	2N6106-11	-4	-0.5		10	—	10	—	10	—	
* h _{fe} (f = 50 kHz)	4		0.5		20	—	20	—	20	—	
* f _T	2N6288-93	4	0.5		10	—	10	—	10	—	
	2N6106-11	-4	-0.5		10	—	10	—	10	—	
* C _{obo} (f = 1 MHz)	10 ^c		0		—	250	—	250	—	250	
R _{θJC}					—	3.125	—	3.125	—	3.125	
R _{θJA}					—	70	—	70	—	70	

^a In accordance with JEDEC registration data.

^b Pulsed: Pulse duration = 300 μs, duty factor = 0.018.

^c **CAUTION:** The sustaining voltage V_{CEO(sus)} and V_{CER(sus)} **MUST NOT** be measured on a curve tracer.

^c V_{CB} value.

♦ For p-n-p devices, voltage and current values are negative.

CHARACTERISTIC	VOLTAGE V dc		CURRENT A dc		2N6474 2N6476*		2N6473 2N6475*		UNITS	
	V _{CE}	V _{BE}	I _C	I _B	Min.	Max.	Min.	Max.		
	I _{CE} R (R _{BE} = 100 Ω)	120 100				–	0.1	–		–
(R _{BE} = 100 Ω T _C = 100°C)	120 100				–	2	–	–		
* I _{CEX} (R _{BE} = 100 Ω)	120 100	–1.5 –1.5			–	0.1	–	–		
(R _{BE} = 100 Ω, T _C = 100°C)	120 100	–1.5 –1.5			–	2	–	–		
* I _{CEO}	60 50			0 0	–	1	–	–		
* I _{EBO}		–5		0	–	1	–	1		
* V _{CEO(sus)} ^b			0.1 ^a	0	120	–	100	–	V	
V _{CER(sus)} ^b (R _{BE} = 100 Ω)			0.1 ^a		130	–	110	–		
* h _{FE}	4 2.5		1.5 ^a 4 ^a		15 2	150 –	15 2	150 –	V	
* V _{BE}	4 2.5		1.5 ^a 4 ^a		– –	2 3.5	– –	2 3.5		
* V _{CE(sat)}			1.5 ^a 4 ^a	0.15 2	– –	1.2 2.5	– –	1.2 2.5		
* h _{fe} (f = 1 MHz)									MHz	
2N6473-74	4		0.5		4	–	4	–		
2N6475-76	–4		–0.5		5	–	5	–		
* h _{fe} (f = 50 kHz)	4		0.5		20	–	20	–		
f _T									pF	
2N6473-74	4		0.5		4	–	4	–		
2N6475-76	–4		–0.5		5	–	4	–		
* C _{obd} (f = 1 MHz)	10 ^c		0		–	250	–	250	°C/W	
R _{θJC}					–	3.125	–	3.125		
R _{θJA}					–	70	–	70		

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* In accordance with JEDEC registration data

^a Pulsed: Pulse duration = 300 μs, duty factor = 0.018.

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^c V_{CB} value.

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