New Jersey Semi-Conductor Products, Inc.

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D44VH10 (NPN), D45VH10 (PNP)

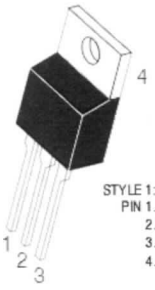
Complementary Silicon Power Transistors

These complementary silicon power transistors are designed for high–speed switching applications, such as switching regulators and high frequency inverters. The devices are also well–suited for drivers for high power switching circuits.

15 A
COMPLEMENTARY SILICON POWER TRANSISTORS
80 V, 83 W

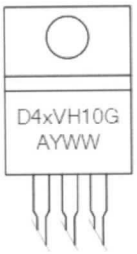
Features

- Fast Switching –
  t_f = 90 ns (Max)
- Key Parameters Specified @ 100°C
- Low Collector–Emitter Saturation Voltage –
  $V_{CE(sat)}$ = 1.0 V (Max) @ 8.0 A
- Complementary Pairs Simplify Circuit Designs



STYLE 1:
PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

MARKING DIAGRAM



TO–220AB

x = 4 or 5
A = Assembly Location
Y = Year
WW = Work Week

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector–Emitter Voltage	V_{CEO}	80	Vdc
Collector–Emitter Voltage	V_{CEV}	100	Vdc
Emitter Base Voltage	V_{EB}	7.0	Vdc
Collector Current –Continuous –Peak (Note 1)	I_C I_{CM}	15 20	Adc
Total Power Dissipation @ T_C = 25°C Derate above 25°C	P_D	83 0.67	W W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	–55 to 150	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	R_{JC}	1.5	°C/W
Thermal Resistance, Junction to Ambient	R_{JA}	62.5	°C/W
Maximum Lead Temperature for Soldering Purposes: 1/8" from Case for 5 Seconds	T_L	275	°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. Pulse Width 6.0 ms, Duty Cycle 50%.

D44VH10 (NPN), D45VH10 (PNP)

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector–Emitter Sustaining Voltage (Note 2) (I_C = 25 mAdc, I_B = 0)		$V_{CEO(sus)}$	80	–	–	Vdc
Collector–Emitter Cutoff Current (V_{CE} = Rated V_{CEV}, $V_{BE(off)}$ = 4.0 Vdc) (V_{CE} = Rated V_{CEV}, $V_{BE(off)}$ = 4.0 Vdc, T_C = 100°C)		I_{CEV}	 – –	 – –	 10 100	Adc
Emitter Base Cutoff Current (V_{EB} = 7.0 Vdc, I_C = 0)		I_{EBO}	–	–	10	Adc
ON CHARACTERISTICS (Note 2)						
DC Current Gain (I_C = 2.0 Adc, V_{CE} = 1.0 Vdc) (I_C = 4.0 Adc, V_{CE} = 1.0 Vdc)		h_{FE}	 35 20	 – –	 – –	–
Collector–Emitter Saturation Voltage (I_C = 8.0 Adc, I_B = 0.4 Adc) (I_C = 8.0 Adc, I_B = 0.8 Adc) (I_C = 15 Adc, I_B = 3.0 Adc, T_C = 100°C)	 D44VH10 D45VH10 D44VH10 D45VH10	$V_{CE(sat)}$	 – – – –	 – – – –	 0.4 1.0 0.8 1.5	Vdc
Base–Emitter Saturation Voltage (I_C = 8.0 Adc, I_B = 0.4 Adc) (I_C = 8.0 Adc, I_B = 0.8 Adc) (I_C = 8.0 Adc, I_B = 0.4 Adc, T_C = 100°C) (I_C = 8.0 Adc, I_B = 0.8 Adc, T_C = 100°C)	 D44VH10 D45VH10 D44VH10 D45VH10	$V_{BE(sat)}$	 – – – –	 – – – –	 1.2 1.0 1.1 1.5	Vdc
DYNAMIC CHARACTERISTICS						
Current Gain Bandwidth Product (I_C = 0.1 Adc, V_{CE} = 10 Vdc, f = 20 MHz)		f_T	–	50	–	MHz
Output Capacitance (V_{CB} = 10 Vdc, I_C = 0, f_{test} = 1.0 MHz)	 D44VH10 D45VH10	C_{ob}	 – –	 120 275	 – –	pF
SWITCHING CHARACTERISTICS						
Delay Time	(V_{CC} = 20 Vdc, I_C = 8.0 Adc, I_{B1} = I_{B2} = 0.8 Adc)	t_d	–	–	50	ns
Rise Time		t_r	–	–	250	
Storage Time		t_s	–	–	700	
Fall Time		t_f	–	–	90	

2. Pulse Test: Pulse Width 300 s, Duty Cycle 2%.

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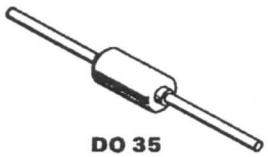
D0201YR DIAC

The D0201 bidirectional trigger diode is a low cost PNPN element suitable for triggering TRIAC's. These parts are fabricated using TAG's high performance glassivated process and are intended for high volume applications.



DO 35

Absolute Maximum Ratings $T_A = 25\,°C$ unless otherwise noted

Parameter	Part Nr.	Symbol	Min.	Nom.	Max.	Unit	Test Conditions
Break-Over Voltage	**D0201YR**	V_{BO}	29	32	35	V	
Peak Current		I_P			2	A	10 µs pulse, 120 Hz repetition Figure 2
Operating Temperature		T_j	−40		125	°C	
Storage Temperature		T_{stg}	−40		125	°C	
Soldering Temperature		T_{sld}			250	°C	1.6 mm from case, 10 s max.

Electrical Characteristics $T_A = 25\,°C$ unless otherwise noted

Parameter	Symbol	Min.	Max.	Unit	Test Conditions
Break-Over Voltage Symmetry	ΔV_{BO}		3	V	
Break-Over Current	I_{BO}		50	µA	$C_T = 27$ nF see Figure 3
Peak Output Voltage	V_p	5		V	$C_T = 0.1$ µF see Figure 3

Figure 1

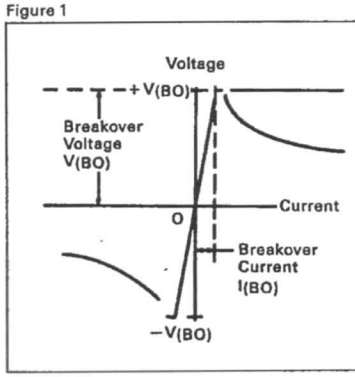


Figure 2

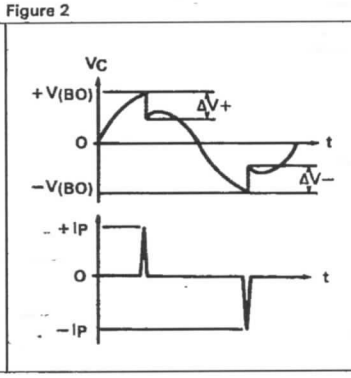


Figure 3