

## 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.

#### 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

#### 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	$I_C$	15	Adc
–Peak (Note 1)	$I_{CM}$	20	
Total Power Dissipation @ $T_C = 25^\circ\text{C}$	$P_D$	83	W
Derate above 25°C		0.67	W/°C
Operating and Storage Junction Temperature Range	$T_J, T_{stg}$	-55 to 150	°C

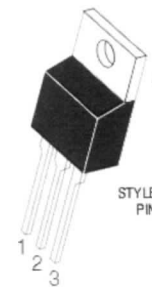
#### THERMAL CHARACTERISTICS

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.

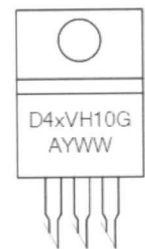
1. Pulse Width 6.0 ms, Duty Cycle 50%.

### 15 A COMPLEMENTARY SILICON POWER TRANSISTORS 80 V, 83 W



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



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

## D44VH10 (NPN), D45VH10 (PNP)

### ELECTRICAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
----------------	--------	-----	-----	-----	------

#### OFF CHARACTERISTICS

Collector-Emitter Sustaining Voltage (Note 2) ( $I_C = 25\text{ mA}$ , $I_B = 0$ )	$V_{CE(sus)}$	80	-	-	Vdc
Collector-Emitter Cutoff Current ( $V_{CE} = \text{Rated } V_{CEV}$ , $V_{BE(off)} = 4.0\text{ Vdc}$ ) ( $V_{CE} = \text{Rated } V_{CEV}$ , $V_{BE(off)} = 4.0\text{ Vdc}$ , $T_C = 100^\circ\text{C}$ )	$I_{CEV}$	-	-	10 100	Adc
Emitter Base Cutoff Current ( $V_{EB} = 7.0\text{ Vdc}$ , $I_C = 0$ )	$I_{EBO}$	-	-	10	Adc

#### ON CHARACTERISTICS (Note 2)

DC Current Gain ( $I_C = 2.0\text{ Adc}$ , $V_{CE} = 1.0\text{ Vdc}$ ) ( $I_C = 4.0\text{ Adc}$ , $V_{CE} = 1.0\text{ Vdc}$ )	$h_{FE}$	35 20	-	-	-
Collector-Emitter Saturation Voltage ( $I_C = 8.0\text{ Adc}$ , $I_B = 0.4\text{ Adc}$ ) ( $I_C = 8.0\text{ Adc}$ , $I_B = 0.8\text{ Adc}$ ) ( $I_C = 15\text{ Adc}$ , $I_B = 3.0\text{ Adc}$ , $T_C = 100^\circ\text{C}$ )	$V_{CE(sat)}$	-	-	0.4 1.0 0.8 1.5	Vdc
Base-Emitter Saturation Voltage ( $I_C = 8.0\text{ Adc}$ , $I_B = 0.4\text{ Adc}$ ) ( $I_C = 8.0\text{ Adc}$ , $I_B = 0.8\text{ Adc}$ ) ( $I_C = 8.0\text{ Adc}$ , $I_B = 0.4\text{ Adc}$ , $T_C = 100^\circ\text{C}$ ) ( $I_C = 8.0\text{ Adc}$ , $I_B = 0.8\text{ Adc}$ , $T_C = 100^\circ\text{C}$ )	$V_{BE(sat)}$	-	-	1.2 1.0 1.1 1.5	Vdc

#### DYNAMIC CHARACTERISTICS

Current Gain Bandwidth Product ( $I_C = 0.1\text{ Adc}$ , $V_{CE} = 10\text{ Vdc}$ , $f = 20\text{ MHz}$ )	$f_T$	-	50	-	MHz
Output Capacitance ( $V_{CB} = 10\text{ Vdc}$ , $I_C = 0$ , $f_{test} = 1.0\text{ MHz}$ )	$C_{ob}$	-	120 275	-	pF

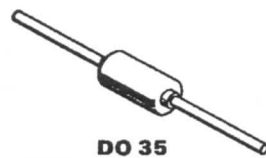
#### SWITCHING CHARACTERISTICS

Delay Time	( $V_{CC} = 20\text{ Vdc}$ , $I_C = 8.0\text{ Adc}$ , $I_{B1} = I_{B2} = 0.8\text{ Adc}$ )	$t_d$	-	-	50	ns
Rise Time		$t_r$	-	-	250	
Storage Time		$t_s$	-	-	700	
Fall Time		$t_f$	-	-	90	

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

**D0201YR DIAC**

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

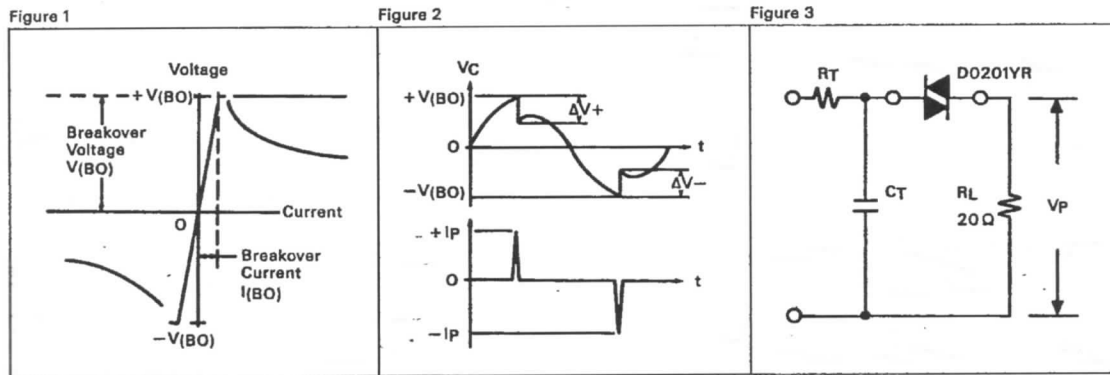


**Absolute Maximum Ratings**  $T_A = 25^\circ\text{C}$  unless otherwise noted

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 $\mu\text{s}$ pulse, 120 Hz repetition Figure 2
Operating Temperature		$T_j$	-40		125	$^\circ\text{C}$	
Storage Temperature		$T_{stg}$	-40		125	$^\circ\text{C}$	
Soldering Temperature		$T_{sld}$			250	$^\circ\text{C}$	1.6 mm from case, 10 s max.

**Electrical Characteristics**  $T_A = 25^\circ\text{C}$  unless otherwise noted

Parameter	Symbol	Min.	Max.	Unit	Test Conditions
Break-Over Voltage Symmetry	$\Delta V_{BO}$		3	V	
Break-Over Current	$I_{BO}$		50	$\mu\text{A}$	$C_T = 27 \text{ nF}$ see Figure 3
Peak Output Voltage	$V_p$	5		V	$C_T = 0.1 \mu\text{F}$ see Figure 3



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.