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
- Key Parameters Specified @ 100°C
- Low Collector-Emitter Saturation Voltage
- Complementary Pairs Simplify Circuit Designs
- These Devices are Pb-Free and are RoHS Compliant*

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	Ι _C	15	Adc
Collector Current – Peak (Note 1)	I _{CM}	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

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

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

THERMAL CHARACTERISTICS

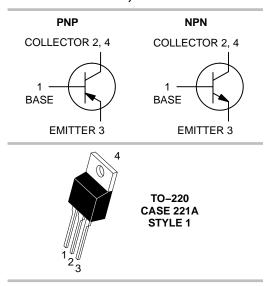
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.5	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	°C/W
Maximum Lead Temperature for Soldering Purposes: 1/8" from Case for 5 Seconds	ΤL	275	°C



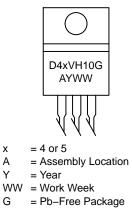
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15 A COMPLEMENTARY SILICON POWER TRANSISTORS 80 V, 83 W



MARKING DIAGRAM



ORDERING INFORMATION

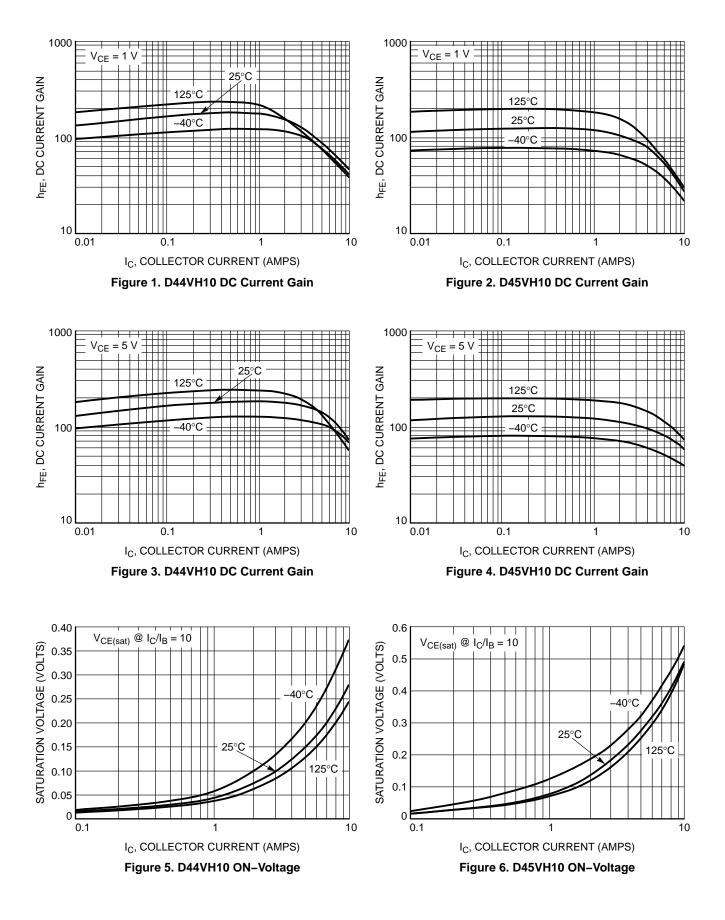
Device	Package	Shipping
D44VH10G	TO–220 (Pb–Free)	50 Units/Rail
D45VH10G	TO-220 (Pb-Free)	50 Units/Rail

*For additional information on our Pb–Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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

Characteristic	Symbol	Min	Тур	Мах	Unit	
OFF CHARACTERISTICS						
Collector–Emitter Sustaining Voltage (Note 2) $(I_C = 25 \text{ mAdc}, I_B = 0)$		80	_	_	Vdc	
	I _{CEV}	- -		10 100	μAdc	
Emitter Base Cutoff Current ($V_{EB} = 7.0 \text{ Vdc}, I_C = 0$)	I _{EBO}	_	_	10	μAdc	
ON CHARACTERISTICS (Note 2)						
DC Current Gain ($I_C = 2.0 \text{ Adc}, V_{CE} = 1.0 \text{ Vdc}$) ($I_C = 4.0 \text{ Adc}, V_{CE} = 1.0 \text{ Vdc}$)		35 – – 20 – –		-		
Collector–Emitter Saturation Voltage ($I_{C} = 8.0 \text{ Adc}, I_{B} = 0.4 \text{ Adc}$)					Vdc	
D44VH10		-	-	0.4		
(I _C = 8.0 Adc, I _B = 0.8 Adc) D45VH10 (I _C = 15 Adc, I _B = 3.0 Adc, T _C = 100°C)		-	-	1.0		
D44VH10 D45VH10		-		0.8 1.5		
Base-Emitter Saturation Voltage ($I_C = 8.0 \text{ Adc}, I_B = 0.4 \text{ Adc}$)	V _{BE(sat)}			1.0	Vdc	
D44VH10 (I _C = 8.0 Adc, I _B = 0.8 Adc) D45VH10		_	_	1.2 1.0		
$(I_C = 8.0 \text{ Adc}, I_B = 0.4 \text{ Adc}, T_C = 100^{\circ}\text{C})$ D44VH10		_	-	1.1		
(I _C = 8.0 Adc, I _B = 0.8 Adc, T _C = 100°C) D45VH10		_	_	1.5		
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 Vdc, I _C = 0, f _{test} = 1.0 MHz)	C _{ob}				pF	
D44VH10 D45VH10		-	120 275			
SWITCHING CHARACTERISTICS						
Delay Time	t _d	_	-	50	ns	
Rise Time $(V_{CC} = 20 \text{ Vdc}, I_C = 8.0 \text{ Adc}, I_{B1} = I_{B2} = 0.8 \text{ Adc})$	tr	_	-	250		
Storage Time $(VCC = 20 Vac, 1C = 0.0 Aac, 1B_1 = 1B_2 = 0.0 Aac)$	ts	-	-	700		
Fall Time	t _f	-	-	90		

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions. 2. Pulse Test: Pulse Width \leq 300 µs, Duty Cycle \leq 2%.



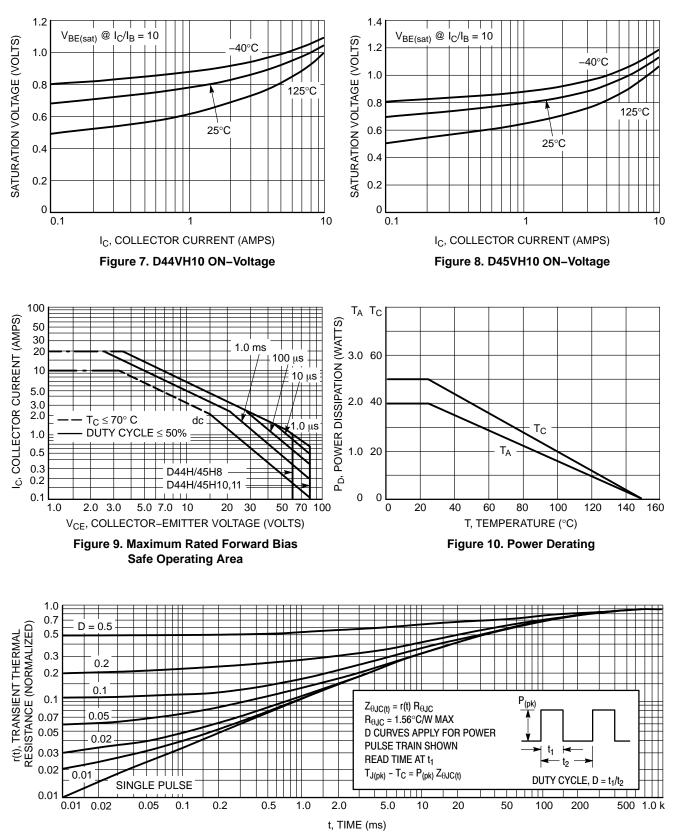
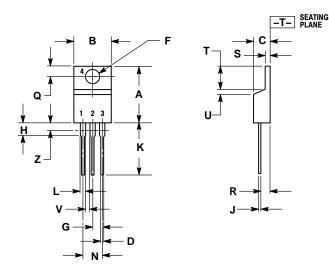


Figure 11. Thermal Response

PACKAGE DIMENSIONS

TO-220 CASE 221A-09 **ISSUE AH**



NOTES: 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982. 2. CONTROLLING DIMENSION: INCH.

3 DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED

	INCHES		MILLIN	IETERS	
DIM	MIN	MAX	MIN	MAX	
Α	0.570	0.620	14.48	15.75	
В	0.380	0.415	9.66	10.53	
С	0.160	0.190	4.07	4.83	
D	0.025	0.038	0.64	0.96	
F	0.142	0.161	3.61	4.09	
G	0.095	0.105	2.42	2.66	
Н	0.110	0.161	2.80	4.10	
J	0.014	0.024	0.36	0.61	
κ	0.500	0.562	12.70	14.27	
L	0.045	0.060	1.15	1.52	
Ν	0.190	0.210	4.83	5.33	
Q	0.100	0.120	2.54	3.04	
R	0.080	0.110	2.04	2.79	
S	0.045	0.055	1.15	1.39	
Т	0.235	0.255	5.97	6.47	
U	0.000	0.050	0.00	1.27	
۷	0.045		1.15		
Ζ		0.080		2.04	

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

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