

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.

- Fast Switching —
 $t_f = 90 \text{ ns (Max)}$
- Key Parameters Specified @ 100°C
- Low Collector–Emitter Saturation Voltage —
 $V_{CE(sat)} = 1.0 \text{ V (Max) @ } 8.0 \text{ A}$
- 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 (1)	I_{CM}	20	
Total Power Dissipation @ $T_C = 25^\circ\text{C}$	P_D	83	Watts
Derate above 25°C		0.67	W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	–55 to 150	°C

THERMAL CHARACTERISTICS

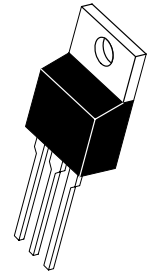
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.5	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	°C/W
Maximum Lead Temperature for Soldering Purposes: 1/8" from Case for 5 Seconds	T_L	275	°C

(2) Pulse Width $\leq 6.0 \text{ ms}$, Duty Cycle $\leq 50\%$.

NOTE: All polarities are shown for NPN transistors. For PNP transistors, reverse polarities.

NPN
D44VH
PNP
D45VH

15 AMPERE
COMPLEMENTARY
SILICON
POWER TRANSISTORS
80 VOLTS
83 WATTS



CASE 221A–09
TO–220AB

D44VH D45VH

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Sustaining Voltage (2) (I _C = 25 mA, 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	μAdc
Emitter Base Cutoff Current (V _{EB} = 7.0 Vdc, I _C = 0)	I _{EBO}	—	—	10	μAdc

ON CHARACTERISTICS (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)	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)	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)	C _{ob}	—	120 275	—	pF

SWITCHING CHARACTERISTICS

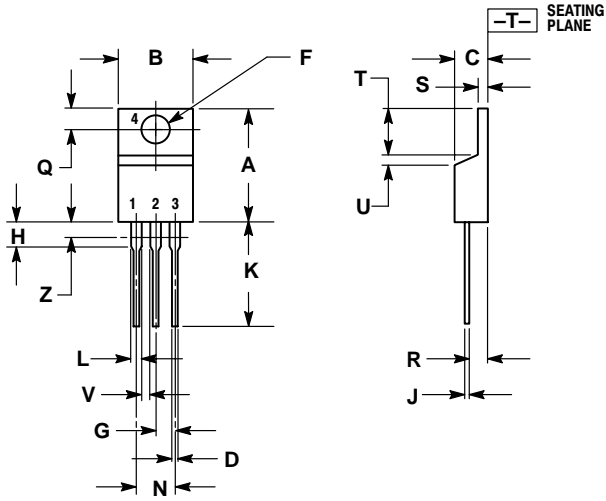
Delay Time	(V _{CC} = 20 Vdc, I _C = 8.0 Adc, I _{B1} = I _{B2} = 0.8 Adc)	t _d	—	—	50	ns
Rise Time		t _r	—	—	250	
Storage Time		t _s	—	—	700	
Fall Time		t _f	—	—	90	

(2) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.

D44VH D45VH

PACKAGE DIMENSIONS

TO-220AB CASE 221A-09 ISSUE AA




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.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.035	0.64	0.88
F	0.142	0.147	3.61	3.73
G	0.095	0.105	2.42	2.66
H	0.110	0.155	2.80	3.93
J	0.018	0.025	0.46	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	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
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	---	1.15	---
Z	---	0.080	---	2.04

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D44VH D45VH

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