D44H Series (NPN), D45H Series (PNP)

Complementary Silicon Power Transistors

These series of plastic, silicon NPN and PNP power transistors can be used as general purpose power amplification and switching such as output or driver stages in applications such as switching regulators, converters and power amplifiers.

Features

- Low Collector−Emitter Saturation Voltage
- Fast Switching Speeds
- Complementary Pairs Simplifies Designs
- These Devices are Pb−Free and are RoHS Compliant*

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector−Emitter Voltage D44H8, D45H8 D44H11, D45H11	V_{CEO}	 60 80	Vdc
Emitter Base Voltage	V_{EB}	5.0	Vdc
Collector Current − Continuous	I_C	10	Adc
Collector Current − Peak (Note 1)	I_{CM}	20	Adc
Total Power Dissipation @ $T_C = 25°C$ @ $T_A = 25°C$	P_D	 70 2.0	W
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−55 to +150	°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 $\leq$ 6.0 ms, Duty Cycle $\leq$ 50%.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction−to−Case	$R_{\theta JC}$	1.8	°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

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

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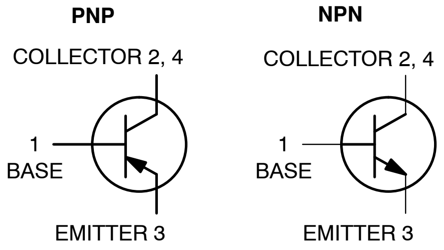
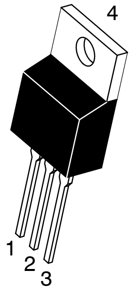
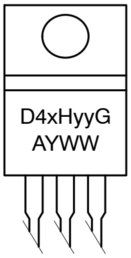
10 AMP COMPLEMENTARY SILICON POWER TRANSISTORS 60, 80 VOLTS





TO−220AB
CASE 221A−09
STYLE 1

MARKING DIAGRAM



D4xHyy = Device Code
x = 4 or 5
yy = 8 or 11
A = Assembly Location
Y = Year
WW = Work Week
G = Pb−Free Package

ORDERING INFORMATION

Device	Package	Shipping†
D44H8G	TO−220 (Pb−Free)	50 Units/Rail
D44H11G	TO−220 (Pb−Free)	50 Units/Rail
D45H8G	TO−220 (Pb−Free)	50 Units/Rail
D45H11G	TO−220 (Pb−Free)	50 Units/Rail

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector−Emitter Sustaining Voltage (I_C = 30 mAdc, I_B = 0 Adc)	D44H8, D45H8 D44H11, D45H11	$V_{CEO(sus)}$	60 80	– –	– –	Vdc
Collector Cutoff Current (V_{CE} = Rated V_{CEO}, V_{BE} = 0)		I_{CES}	–	–	10	μA
Emitter Cutoff Current (V_{EB} = 5.0 Vdc)		I_{EBO}	–	–	10	μA
ON CHARACTERISTICS						
DC Current Gain (V_{CE} = 1.0 Vdc, I_C = 2.0 Adc) (V_{CE} = 1.0 Vdc, I_C = 4.0 Adc)		h_{FE}	 60 40	 – –	 – –	–
Collector−Emitter Saturation Voltage (I_C = 8.0 Adc, I_B = 0.4 Adc)		$V_{CE(sat)}$	–	–	1.0	Vdc
Base−Emitter Saturation Voltage (I_C = 8.0 Adc, I_B = 0.8 Adc)		$V_{BE(sat)}$	–	–	1.5	Vdc
DYNAMIC CHARACTERISTICS						
Collector Capacitance (V_{CB} = 10 Vdc, f_{test} = 1.0 MHz)	D44H Series D45H Series	C_{cb}	– –	90 160	– –	pF
Gain Bandwidth Product (I_C = 0.5 Adc, V_{CE} = 10 Vdc, f = 20 MHz)	D44H Series D45H Series	f_T	– –	50 40	– –	MHz
SWITCHING TIMES						
Delay and Rise Times (I_C = 5.0 Adc, I_{B1} = 0.5 Adc)	D44H Series D45H Series	$t_d + t_r$	– –	300 135	– –	ns
Storage Time (I_C = 5.0 Adc, I_{B1} = I_{B2} = 0.5 Adc)	D44H Series D45H Series	t_s	– –	500 500	– –	ns
Fall Time (I_C = 5.0 Adc, I_{B1} = 102 = 0.5 Adc)	D44H Series D45H Series	t_f	– –	140 100	– –	ns

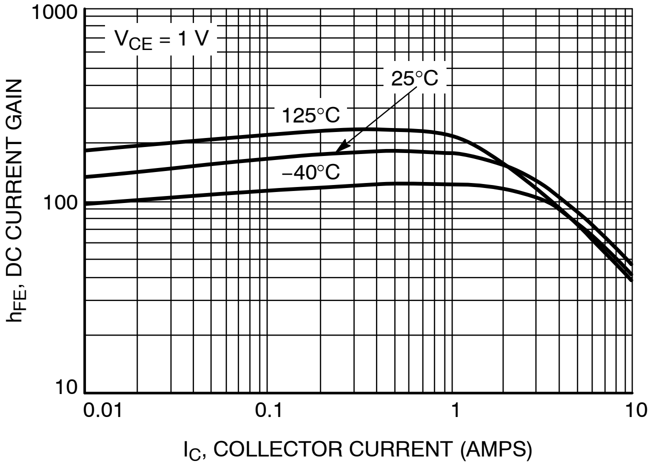


Figure 1. D44H11 DC Current Gain

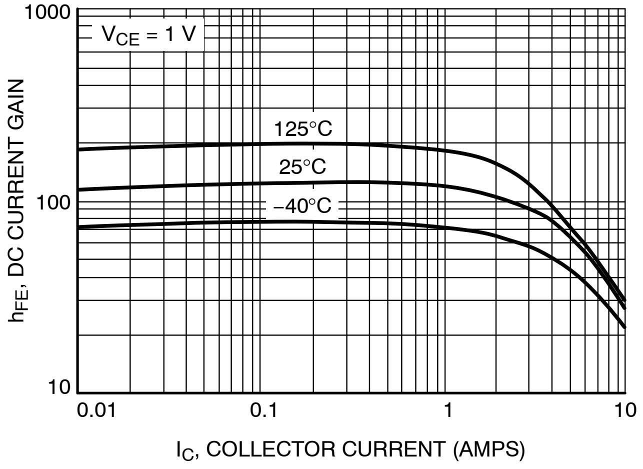


Figure 2. D45H11 DC Current Gain

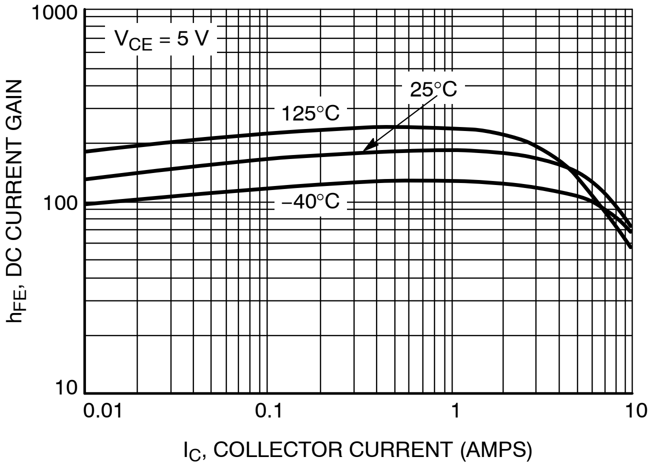


Figure 3. D44H11 DC Current Gain

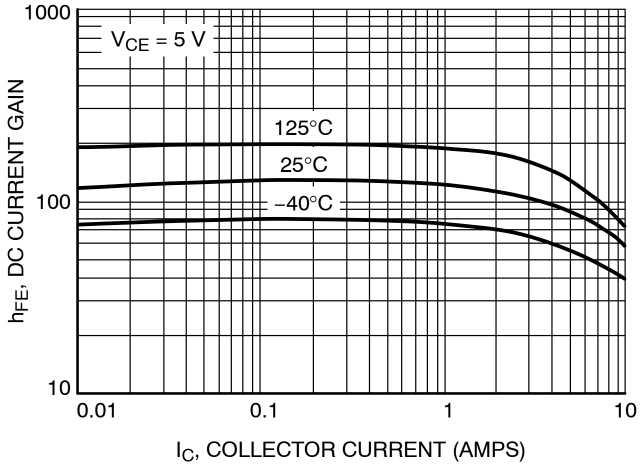


Figure 4. D45H11 DC Current Gain

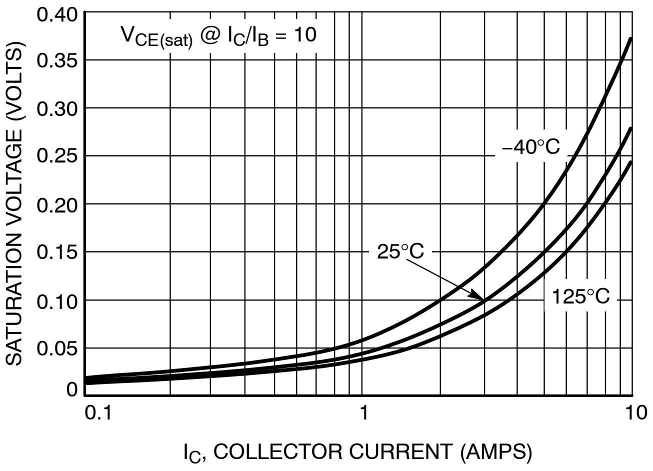


Figure 5. D44H11 ON−Voltage

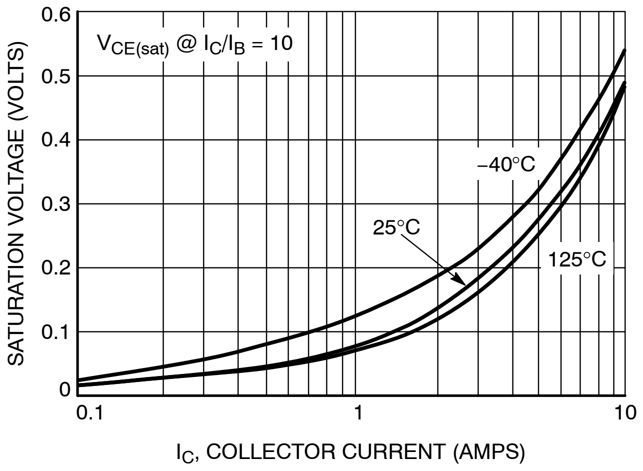


Figure 6. D45H11 ON−Voltage

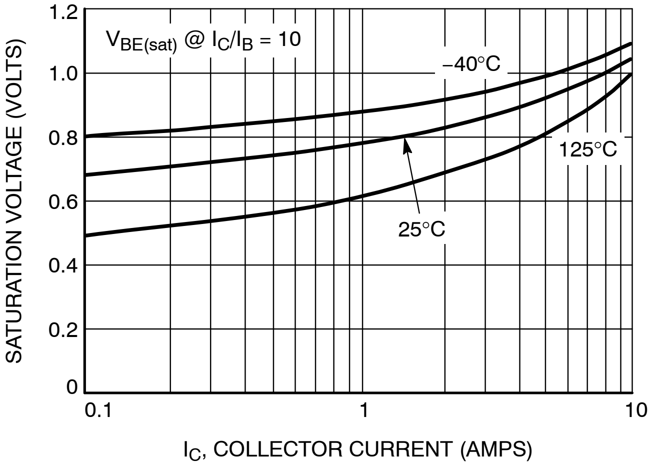


Figure 7. D44H11 ON−Voltage

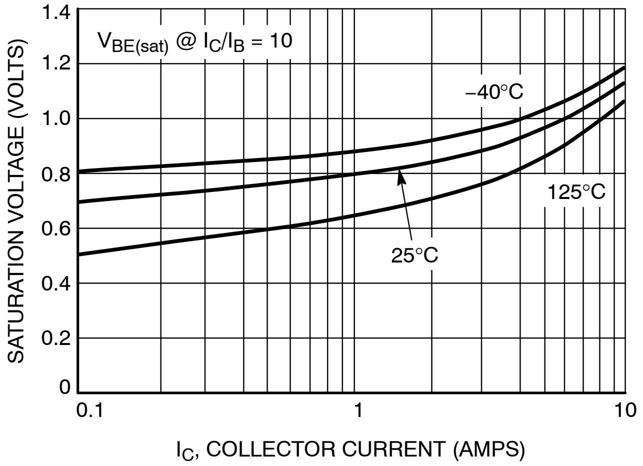


Figure 8. D45H11 ON−Voltage

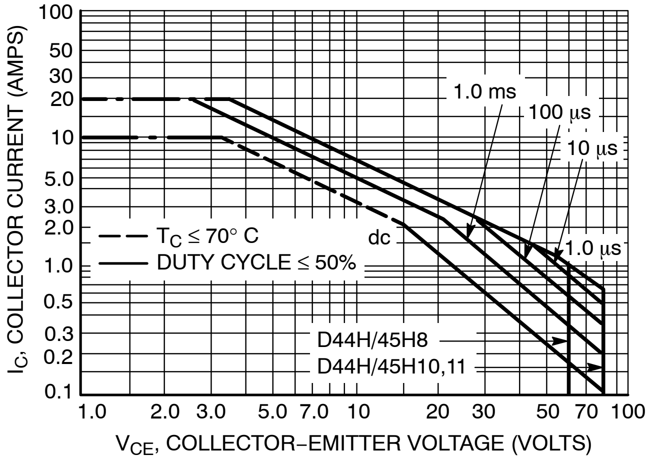


Figure 9. Maximum Rated Forward Bias Safe Operating Area

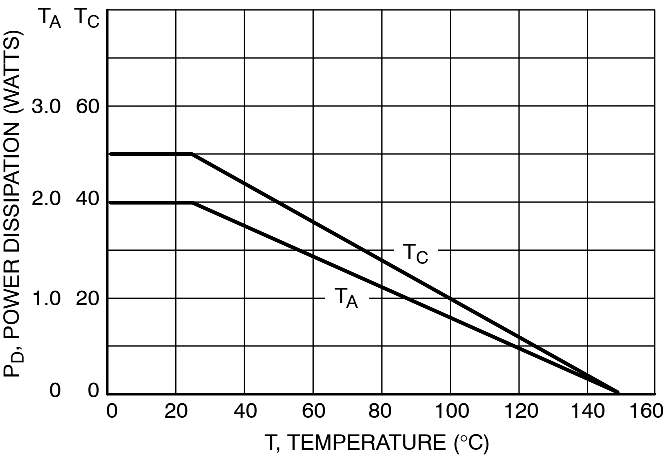


Figure 10. Power Derating

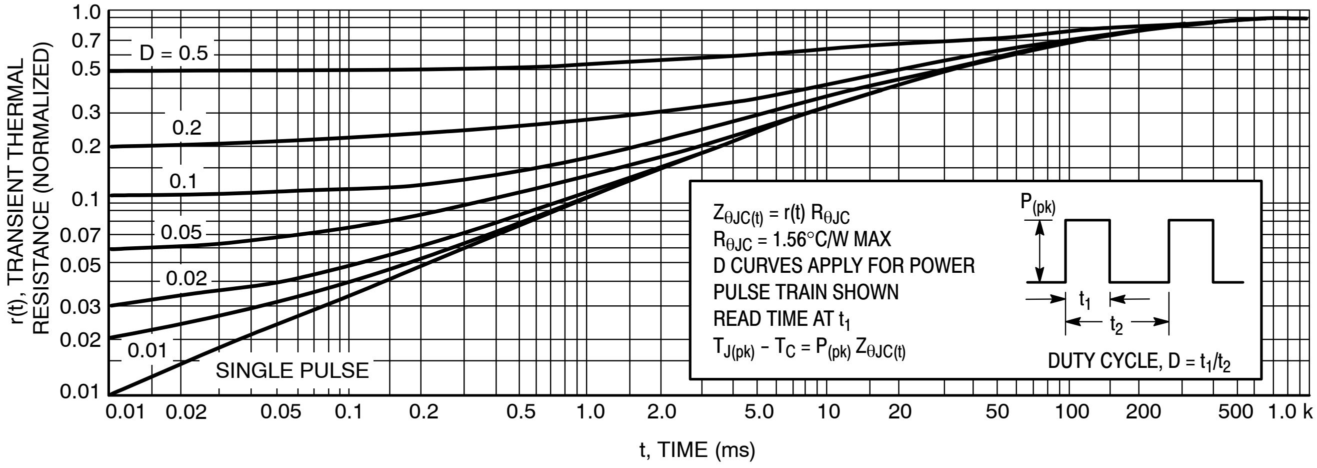
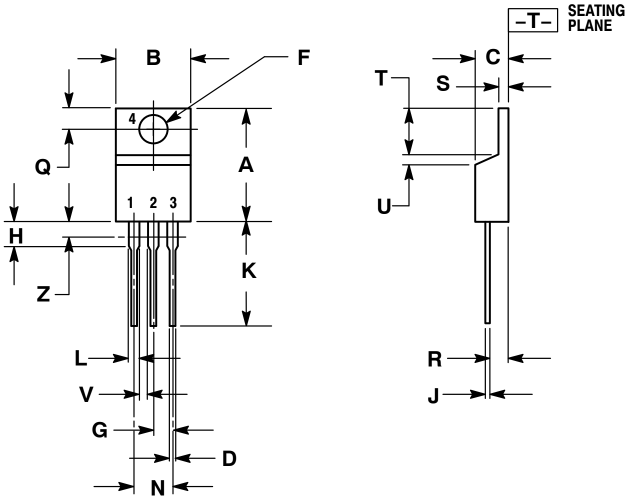


Figure 11. Thermal Response

PACKAGE DIMENSIONS

TO−220

CASE 221A−09
ISSUE AG



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		MILLIMETERS	
DIM	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	0.036	0.64	0.91
F	0.142	0.161	3.61	4.09
G	0.095	0.105	2.42	2.66
H	0.110	0.161	2.80	4.10
J	0.014	0.025	0.36	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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