New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922
(212) 227-6005
FAX: (973) 376-8960

D45D Series

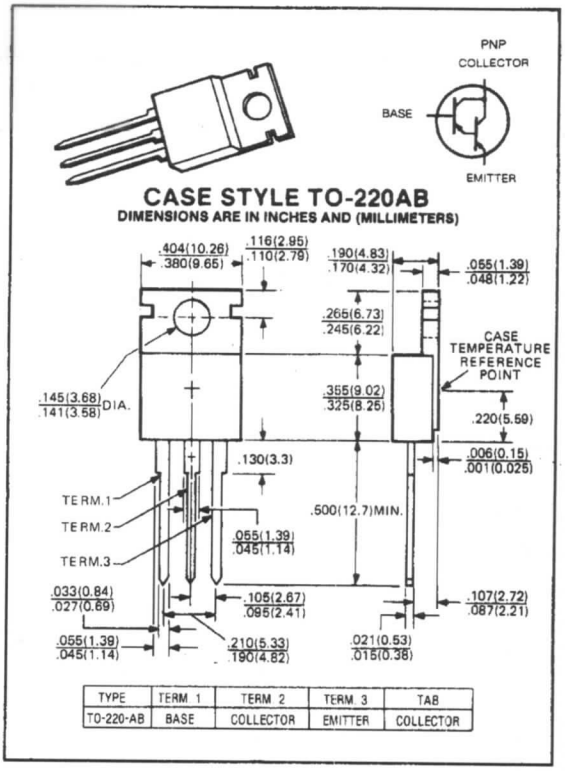
-40 - (-80) VOLTS
-6 AMP, 30 WATTS

VERY HIGH GAIN PNP POWER DARLINGTON TRANSISTORS

COMPLEMENTARY TO THE D44D SERIES

Applications:

- Solenoid Driver
- Lamp Driver
- Relay Substitute
- Switching Regulator
- Inverter/Converter



TYPE	TERM 1	TERM 2	TERM 3	TAB
TO-220-AB	BASE	COLLECTOR	EMITTER	COLLECTOR

maximum ratings (T_A = 25°C) (unless otherwise specified)

RATING	SYMBOL	D45D1,2	D45D3,4	D45D5,6	UNITS
Collector-Emitter Voltage	V_{CEO}	-40	-60	-80	Volts
Collector-Emitter Voltage	V_{CES}	-50	-70	-90	Volts
Emitter Base Voltage	V_{EBO}	-5	-5	-5	Volts
Collector Current — Continuous	I_C	6	6	6	A
Base Current — Continuous	I_B	.5	.5	.5	A
Total Power Dissipation @ T_A = 25°C @ T_C = 25°C	P_D	2.1 30	2.1 30	2.1 30	Watts
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to +150	-55 to +150	-55 to +150	°C

thermal characteristics

Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	60	60	60	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	4.2	4.2	4.2	°C/W
Maximum Lead Temperature for Soldering Purposes: ⅛" from Case for 5 Seconds	T_L	260	260	260	°C

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.

Quality Semi-Conductors

electrical characteristics (T_C = 25°C) (unless otherwise specified)

CHARACTERISTIC		SYMBOL	MIN	TYP	MAX	UNIT
off characteristics[1]						
Collector-Emitter Breakdown Voltage (I_C = -50mA)	D45D1,2 D45D3,4 D45D5,6	$V_{CEO(BR)}$	-40 -60 -80	— — —	— — —	Volts
Collector Cut-off Current (V_{CE} = Rated V_{CES}) (V_{CE} = Rated V_{CES}, V_{BE} = -0.4V)	T_C = 25°C T_C = 125°C	I_{CES} I_{CEV}	— —	— —	-10 -5	μA
Emitter Cutoff Current (V_{EB} = -5V)		I_{EBO}	—	—	-10	μA
second breakdown						
Second Breakdown with Base Forward Biased		FBSOA	SEE FIGURE 5			
on characteristics						
DC Current Gain (I_C = -1A, V_{CE} = -2V)		h_{FE}	2,000	5,000	—	—
Collector-Emitter Saturation Voltage (I_C = -3A, I_B = -3mA) (I_C = -5A, I_B = -5mA)	D45D2,4,6 only	$V_{CE(sat)}$	— —	— —	-1.5 -2.0	V V
Base-Emitter Saturation Voltage (I_C = -5A, I_B = -5mA)		$V_{BE(sat)}$	—	—	-2.5	Volts
dynamic characteristics						
Collector Capacitance (V_{CE} = 10V, f = 1MHz)		C_{CBO}	—	—	-75	pF
switching characteristics						
Resistive Load						
Delay Time + Rise Time	I_C = -3A, I_{B1} = I_{B2} = -3mA	$t_d + t_r$	—	0.35	—	μs
Storage Time	V_{CC} = 40V, t_p = 25 μsec	t_s	—	0.4	—	
Fall Time		t_f	—	0.3	—	

(1) Pulse Test: PW ≤ 300ms Duty Cycle ≤ 2%.

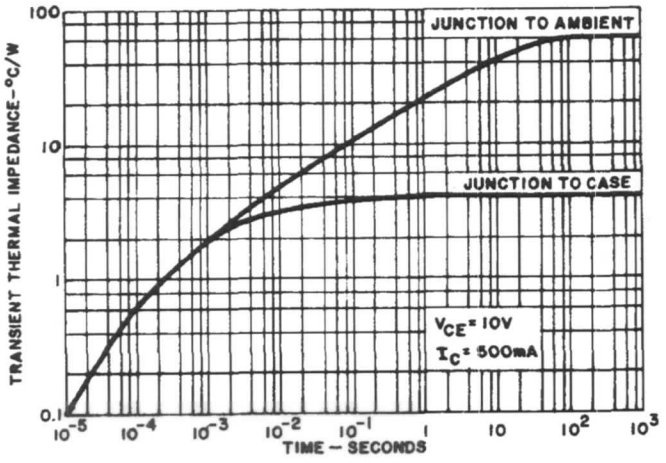


FIG. 1
MAXIMUM TRANSIENT THERMAL IMPEDANCE

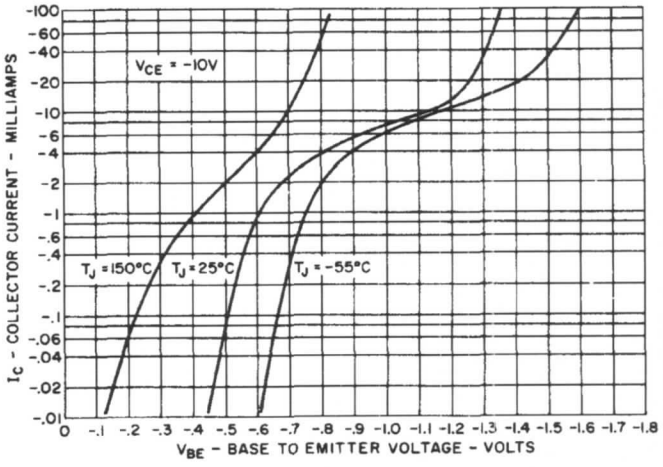


FIG. 2
TYPICAL TRANSCONDUCTANCE CHARACTERISTICS