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 Http://www.100y.com.tw

6-Ampere P-N-P Darlington Power Transistors

Complementary to the D44D Series

-40, -60, and -80 Volts, 30 Watts
 Gain of 2000 at -1 A

Features:

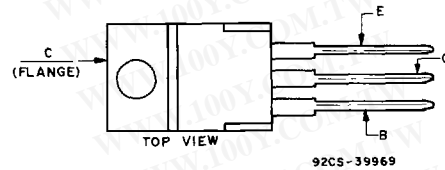
- Operates from IC without predriver

Applications:

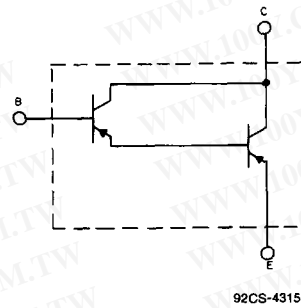
- Solenoid Driver
- Lamp Driver
- Relay Substitute
- Switching Regulator
- Inverter/Converter

The D45D-series p-n-p Darlington power transistors are designed for general purpose switching of multi-ampere loads directly from low-level logic circuitry. The monolithic base-to-emitter resistors have been deleted from the structure to enhance the gain characteristics. These devices feature minimum gains of 2000.

TERMINAL DESIGNATIONS



JEDEC TO-220AB



Schematic diagram for all types.

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POWER TRANSISTORS

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	-0.5	-0.5	-0.5	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 _{θJA}	60	60	60	°C/W
Thermal Resistance, Junction to Case	R _{θJC}	4.2	4.2	4.2	°C/W
Maximum Lead Temperature for Soldering Purposes: 1/8" from Case for 5 Seconds	T _L	260	260	260	°C

D45D Series

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

CHARACTERISTIC	SYMBOL	MIN	TYP	MAX	UNIT
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OFF CHARACTERISTICS⁽¹⁾

Collector-Emitter Breakdown Voltage ($I_C = -50\text{mA}$)	D45D1,2 D45D3,4 D45D5,6	$V_{CE(BR)}$	-40 -60 -80	— — —	— — —	Volts
Collector Cut-off Current ($V_{CE} = \text{Rated } V_{CES}$) ($V_{CE} = \text{Rated } V_{CES}$; $V_{BE} = 0.4\text{V}$)	$T_C = 25^\circ\text{C}$ $T_C = 125^\circ\text{C}$	I_{CES} I_{CEV}	— —	— —	-10 -5	μA
Emitter Cutoff Current ($V_{EB} = -5\text{V}$)		I_{EBO}	—	—	-10	μA

SECOND BREAKDOWN

Second Breakdown with Base Forward Biased	FBSOA	SEE FIGURE 5
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ON CHARACTERISTICS⁽¹⁾

DC Current Gain ($I_C = -1\text{A}$, $V_{CE} = -2\text{V}$)		h_{FE}	2,000	5,000	—	—
Collector-Emitter Saturation Voltage ($I_C = -3\text{A}$, $I_B = -3\text{mA}$) ($I_C = -5\text{A}$, $I_B = -5\text{mA}$)	D45D2,4,6 only	$V_{CE(sat)}$	— —	— —	-1.5 -2.0	V V
Base-Emitter Saturation Voltage ($I_C = -5\text{A}$, $I_B = -5\text{mA}$)		$V_{BE(sat)}$	—	—	-2.5	Volts

DYNAMIC CHARACTERISTICS

Collector Capacitance ($V_{CB} = -10\text{V}$, $f = 1\text{MHz}$)	C_{CBO}	—	—	75	pF
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SWITCHING CHARACTERISTICS

Resistive Load						
Delay Time + Rise Time	$I_C = -3\text{A}$, $I_{B1} = I_{B2} = -3\text{mA}$ $V_{CC} = 40\text{V}$, $t_p = 25 \mu\text{sec}$	$t_d + t_r$	—	0.35	—	μs
Storage Time		t_s	—	0.4	—	
Fall Time		t_f	—	0.3	—	

(1) Pulse Test: $PW \leq 300\text{ms}$ Duty Cycle $\leq 2\%$.

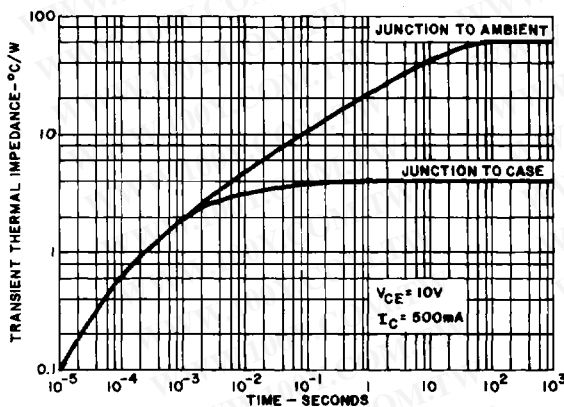


FIG. 1 MAXIMUM TRANSIENT THERMAL IMPEDANCE

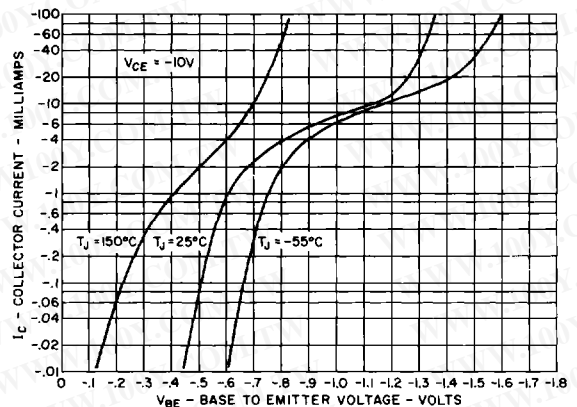


FIG. 2 TYPICAL TRANSCONDUCTANCE CHARACTERISTICS

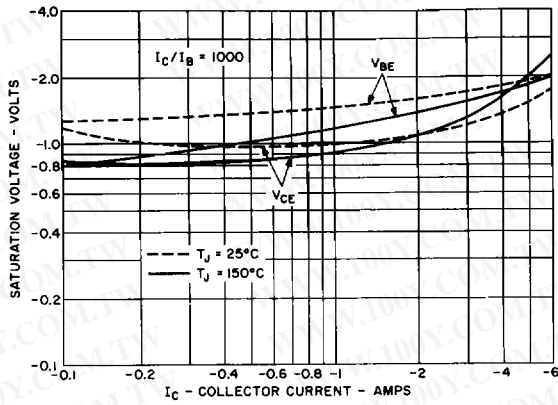


FIG. 3 TYPICAL SATURATION VOLTAGE CHARACTERISTICS

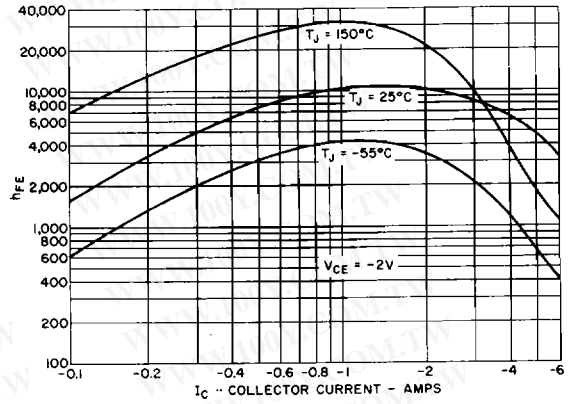


FIG. 4 TYPICAL h_{FE} VS. I_C

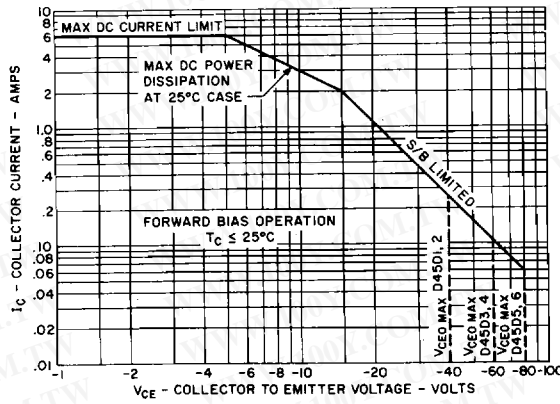


FIG. 5 SAFE REGION OF OPERATION

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