2-Ampere Silicon P-N-P Power Transistors

Complementary to the D40K Series

Features:

- Operates from IC without predriver

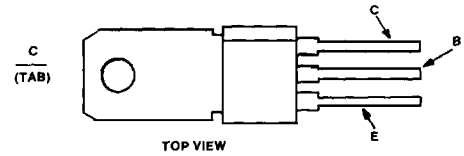
Applications:

- Switching regulator
- Lamp driver
- Touch switch
- Solenoid driver

The D41K-series of silicon p-n-p Darlington power transistors are designed for general-purpose amplifier and medium-speed switching circuits. The high gain of these devices makes it possible for them to be driven directly from integrated circuits. The monolithic base-to-emitter resistors have been deleted from the structure to enhance the gain characteristics. These devices feature minimum gains of 10,000.

These devices are supplied in the JEDEC TO-202AB plastic package.

TERMINAL DESIGNATIONS



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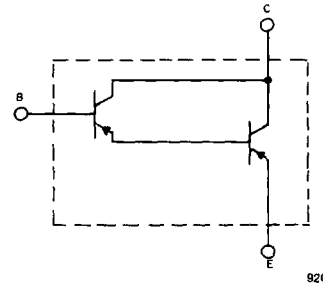
JEDEC TO-202AB



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Schematic diagram for all types.

MAXIMUM RATINGS (T_A = 25° C) (unless otherwise specified)

RATING	SYMBOL	D41K1,3	D41K2,4	UNITS
Collector-Emitter Voltage	V_{CEO}	-30	-50	Volts
Collector-Emitter Voltage	V_{CES}	-30	-50	Volts
Emitter Base Voltage	V_{EBO}	-13	-13	Volts
Collector Current — Continuous Peak(1)	I_C I_{CM}	-2 -3	-2 -3	A A
Base Current — Continuous	I_B	-0.2	-0.2	A
Total Power Dissipation @ T_A = 25°C @ T_C = 25°C	P_D	1.67 10	1.67 10	Watts
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to +150	-55 to +150	°C

THERMAL CHARACTERISTICS

Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	75	75	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	12.5	12.5	°C/W
Maximum Lead Temperature for Soldering Purposes: ⅛" from Case for 5 Seconds	T_L	260	260	°C

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

D41K Series

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

CHARACTERISTIC		SYMBOL	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS[1]						
Collector-Emitter Voltage (I_C = -10mA)	D41K1,3 D41K2,4	V_{CEO}	-30 -50	— —	— —	Volts
Collector Cut-off Current (V_{CE} = Rated V_{CES})		I_{CES}	—	—	-0.5	μA
Emitter Cutoff Current (V_{EB} = -13V)		I_{EBO}	—	—	-0.1	μA
ON CHARACTERISTICS[1]						
DC Current Gain (I_C = -200mA, V_{CE} = -5V)		h_{FE}	10K	—	—	—
(I_C = -1.5A, V_{CE} = -5V) (I_C = -1A, V_{CE} = -5V)	D41K1,2 D41K3,4	h_{FE}	1K 1K	— —	— —	— —
Collector-Emitter Saturation Voltage (I_C = -1.5A, I_B = -3mA) (I_C = -1.0A, 1_B = -2mA)	D41K1,2 D41K3,4	$V_{CE(sat)}$	— —	— —	-1.5 -1.5	Volts
Base-Emitter Saturation Voltage (I_C = -1.5A, I_B = -3mA) (I_C = -1A, I_B = -2mA)	D41K1,2 D41K3,4	$V_{BE(sat)}$	— —	— —	-2.5 -2.5	Volts
DYNAMIC CHARACTERISTICS						
Collector Capacitance (V_{CB} = -10V, f = 1MHz)		C_{CBO}	—	9	15	pF
Current-Gain — Bandwidth Product (I_C = -20mA, V_{CE} = -5V)		f_T	—	100	—	MHz

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

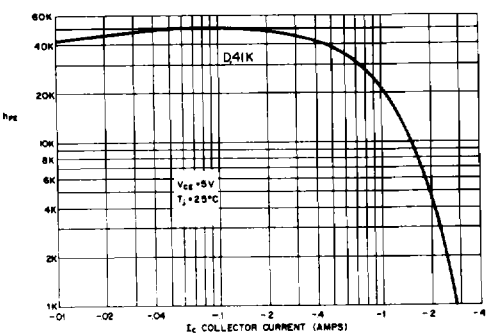

FIG. 1 TYPICAL h_{FE} vs. I_C

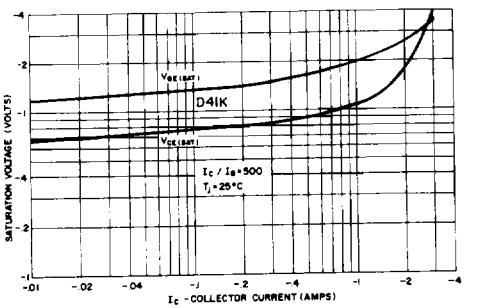

FIG. 2 TYPICAL C_{CBO} vs. VOLTAGE

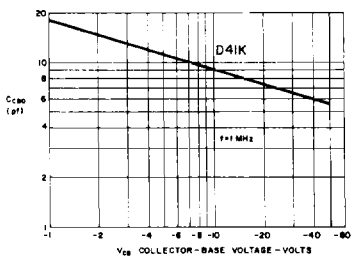

FIG. 3 TYPICAL SATURATION VOLTAGE