



VERY HIGH GAIN NPN POWER DARLINGTON TRANSISTORS

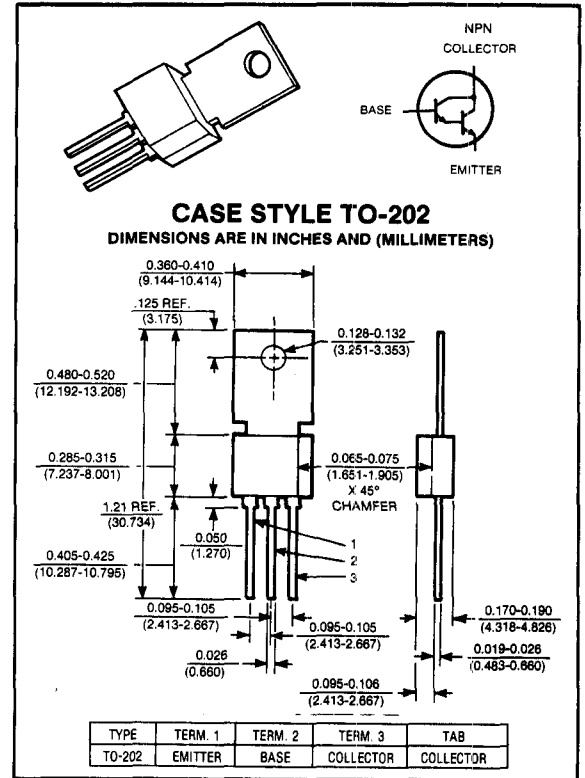
COMPLEMENTARY TO THE D41K SERIES

D40K Series

**30-50 VOLTS
2 AMP, 10 WATTS**

Applications:

- Driver
- Regulator
- Touch Switch
- I.C. Driver
- Capacitor Multiplier
- Audio Output
- Relay Substitute
- Oscillator
- Servo-Amplifier



maximum ratings ($T_A = 25^\circ\text{C}$) (unless otherwise specified)

RATING	SYMBOL	D40K1,3	D40K2,4	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	I_C	2	2	A
Peak ⁽¹⁾	I_{CM}	3	3	A
Base Current — Continuous	I_B	.2	.2	A
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ @ $T_C = 25^\circ\text{C}$	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	$^\circ\text{C}$

thermal characteristics

Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	75	75	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	12.5	12.5	$^\circ\text{C/W}$
Maximum Lead Temperature for Soldering Purposes: 1/8" from Case for 5 Seconds	T_L	260	260	$^\circ\text{C}$

(1) Pulse Test: Pulse Width = 300ms. Duty Cycle $\leq 2\%$.

electrical characteristics ($T_C = 25^\circ C$) (unless otherwise specified)

CHARACTERISTIC	SYMBOL	MIN	TYP	MAX	UNIT
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off characteristics⁽¹⁾

Collector-Emitter Sustaining Voltage ($I_C = 10mA$)	D40K1,3 D40K2,4	V_{CEO}	30 50	— —	— —	Volts
Collector Cut-off Current ($V_{CE} = \text{Rated } V_{CES}$)		I_{CES}	—	—	.5	μA
Emitter Cutoff Current ($V_{EB} = 13V$)		I_{EBO}	—	—	.1	μA

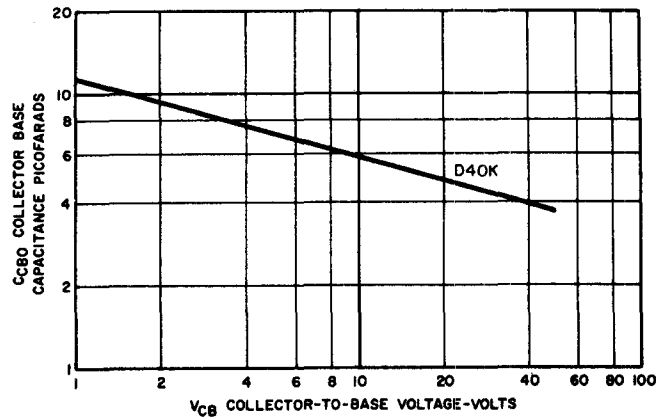
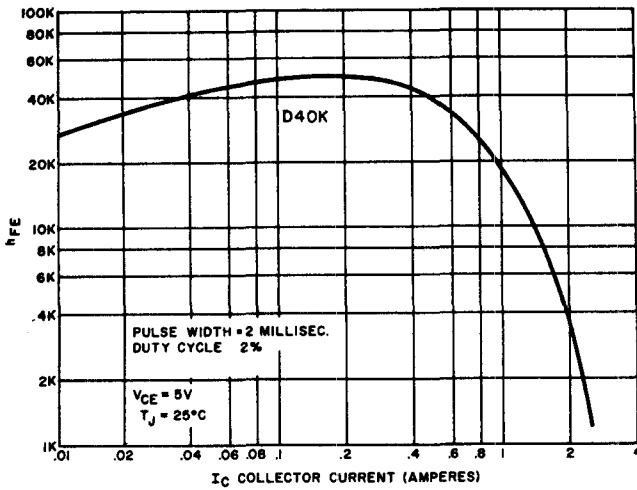
on characteristics

DC Current Gain ($I_C = 200mA, V_{CE} = 5V$)		h_{FE}	10K	—	—	—
($I_C = 1.5A, V_{CE} = 5V$) ($I_C = 1A, V_{CE} = 5V$)	D40K1,2 D40K3,4	h_{FE}	1K 1K	— —	— —	— —
Collector-Emitter Saturation Voltage ($I_C = 1.5A, I_B = 3mA$) ($I_C = 1A, I_B = 2mA$)	D40K1,2 D40K3,4	$V_{CE(sat)}$	— —	— —	1.5 1.5	V V
Base-Emitter Saturation Voltage ($I_C = 1.5A, I_B = 3mA$) ($I_C = 1A, I_B = 2mA$)	D40K1,2 D40K3,4	$V_{BE(sat)}$	— —	— —	2.5 2.5	V V

dynamic characteristics

Collector Capacitance ($I_{CE} = 10V, f = 1MHz$)	C_{CBO}	—	5	10	pF
Current-Gain — Bandwidth Product ($I_C = 20mA, V_{CE} = 5V$)	f_T	—	75	—	MHz

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



**FIG. 3
TYPICAL
SATURATION
VOLTAGE**

