

New Jersey Semi-Conductor Products, Inc.

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SPRINGFIELD, NEW JERSEY 07081
U.S.A.

D40C Series

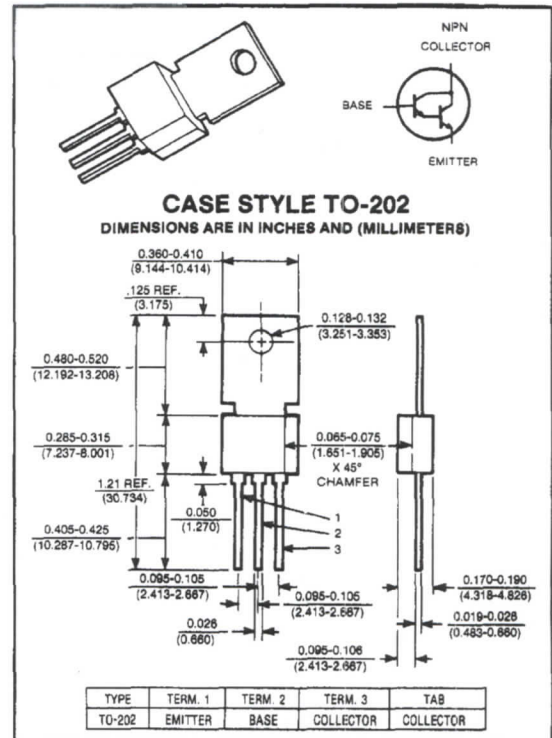
30-50 VOLTS
.5 AMP, 6.25 WATTS

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Designed for driver, regulator, touch switch, I.C. driver, audio output, relay substitute, oscillator, servo-amplifier, and capacitor multiplier applications.

Features:

- h_{FE} Min. — 10,000 and 40,000
- 1.33 Watt power dissipation at $T_A = 25^\circ$



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

RATING	SYMBOL	D40C1	D40C4	D40C7	UNITS
Collector-Emitter Voltage	V_{CEO}	30	40	50	Volts
Collector-Emitter Voltage	V_{CES}	30	40	50	Volts
Emitter Base Voltage	V_{EBO}	13	13	13	Volts
Collector Current — Continuous	I_C	.5	.5	.5	A
Peak ⁽¹⁾	I_{CM}	1.0	1.0	1.0	A
Base Current — Continuous	I_B	0.1	0.1	0.1	A
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ @ $T_C = 25^\circ\text{C}$	P_D	1.33 6.25	1.33 6.25	1.33 6.25	Watts
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to +150	-55 to +150	-55 to +150	$^\circ\text{C}$

thermal characteristics

Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	75	75	75	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	20	20	20	$^\circ\text{C/W}$
Maximum Lead Temperature for Soldering Purposes: $\frac{1}{8}$ " from Case for 5 Seconds	T_L	260	260	260	$^\circ\text{C}$

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

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Quality Semi-Conductors

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

CHARACTERISTIC	SYMBOL	MIN	TYP	MAX	UNIT
off characteristics ⁽¹⁾					
Collector-Emitter Voltage ($I_C = 10mA$)	D40C1 D40C4 D40C7	V_{CE0}	30 40 50	— — —	Volts
Collector Cut-off Current ($V_{CE} = \text{Rated } V_{CES}$)	($T_C = 25^\circ C$) ($T_C = 150^\circ C$)	I_{CES} I_{CBO}	— —	— —	μA
Emitter Cutoff Current ($V_{EB} = 13V$)		I_{EBO}	—	0.1	μA

second breakdown

Second Breakdown with Base Forward Biased	FBSOA	SEE FIGURE 2
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on characteristics

DC Current Gain ($I_C = 200mA, V_{CE} = 5V$)	h_{FE}	10K	—	60K	
Collector-Emitter Saturation Voltage ($I_C = 500mA, I_B = 0.5mA$)	$V_{CE(sat)}$	—	—	1.5	V
Base-Emitter Saturation Voltage ($I_C = 500mA, I_B = 0.5mA$)	$V_{BE(sat)}$	—	—	2.0	Volts

dynamic characteristics

Collector Capacitance ($V_{CE} = 10V, f = 1MHz$)	C_{CBO}	—	—	220	pF
Current Gain - Bandwidth Product ($I_C = 20mA, V_{CE} = 5V$)	f_T	—	75	—	MHz

switching characteristics

Resistive Load					
Delay Time + Rise Time	$I_C = 1A, I_{B1} = I_{B2} = 1mA$ $V_{CC} = 30V, t_p = 25 \mu sec$	$t_d + t_r$	—	100	ns
Storage Time		t_s	—	350	—
Fall Time		t_f	—	800	—

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

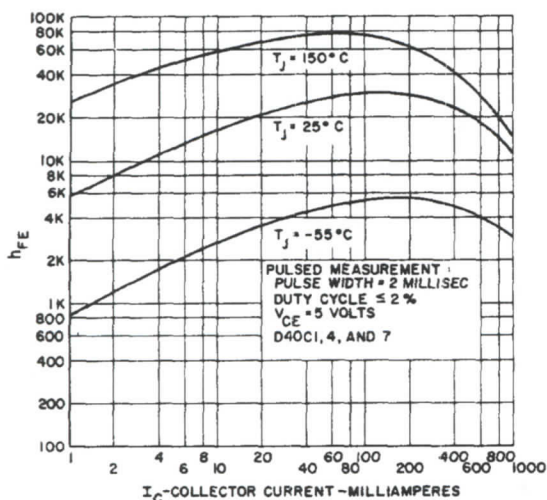


FIG 1. TYPICAL h_{FE} vs. I_C

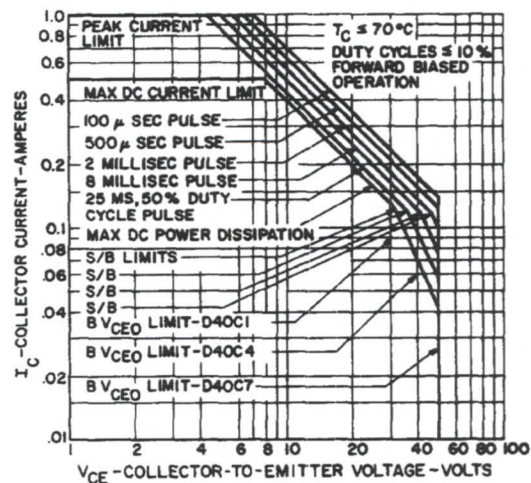


FIG. 2 SAFE REGION OF OPERATION