

New Jersey Semi-Conductor Products, Inc.

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U.S.A.

**D41E Series**

**-30 - -80 VOLTS  
-2 AMP, 8 WATTS**

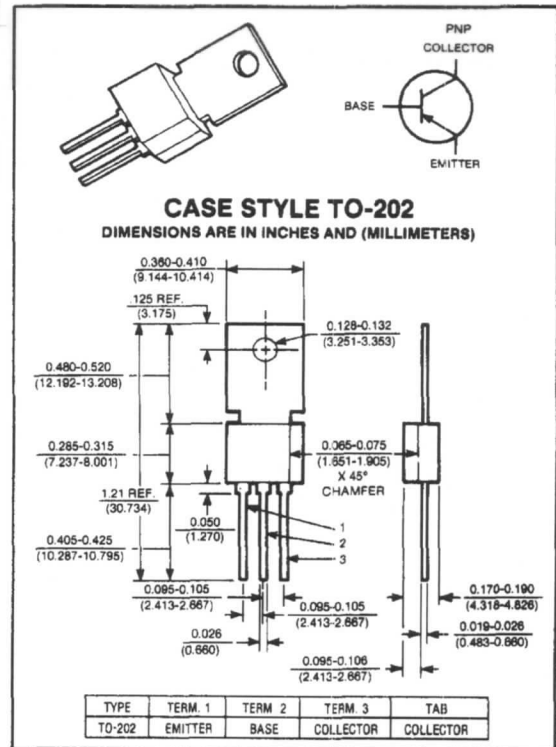
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# PNP POWER TRANSISTORS

## COMPLEMENTARY TO THE D40E SERIES

### Features:

- High free-air power dissipation
- PNP complement to D40E NPN
- Low collector saturation voltage (0.5V typ. @ 1.0A I<sub>C</sub>)
- Excellent linearity
- Fast Switching



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

RATING	SYMBOL	D41E1	D41E5	D41E7	UNITS
Collector-Emitter Voltage	$V_{CEO}$	-30	-60	-80	Volts
Collector-Emitter Voltage	$V_{CES}$	-45	-70	-90	Volts
Emitter Base Voltage	$V_{EBO}$	-5	-5	-5	Volts
Collector Current — Continuous	$I_C$	-2	-2	-2	A
Peak <sup>(1)</sup>	$I_{CM}$	-3	-3	-3	
Base Current — Continuous	$I_B$	-1	-1	-1	A
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ @ $T_C = 25^\circ\text{C}$	$P_D$	1.33 8	1.33 8	1.33 8	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	$R_{\theta JC}$	15.6	15.6	15.6	$^\circ\text{C/W}$
Maximum Lead Temperature for Soldering Purposes: 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
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off characteristics<sup>(1)</sup>

Collector-Emitter Sustaining Voltage ( $I_C = 10mA$ )	D41E1 D41E5 D41E7	$V_{CEO(sus)}$	-30 -60 -80	— — —	— — —	Volts
Collector Cutoff Current ( $V_{CE} = \text{Rated } V_{CES}$ )		$I_{CES}$	—	—	-0.1	$\mu A$
Emitter Cutoff Current ( $V_{EB} = 5V$ )		$I_{EBO}$	—	—	-0.1	$\mu A$

second breakdown

Second Breakdown with Base Forward Biased	FBSOA	SEE FIGURE 1
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on characteristics

DC Current Gain ( $I_C = -100mA, V_{CE} = -2V$ ) ( $I_C = -1A, V_{CE} = -2V$ )	$h_{FE}$ $h_{FE}$	50 10	— —	— —	— —
Collector-Emitter Saturation Voltage ( $I_C = -1.0A, I_B = -0.1A$ )	$V_{CE(sat)}$	—	—	1.0	Volts
Base-Emitter Saturation Voltage ( $I_C = 1.0mA, I_B = 0.1A$ )	$V_{BE(sat)}$	—	—	-1.3	Volts

dynamic characteristics

Collector Capacitance ( $V_{CB} = -10V, f = 1MHz$ )	$C_{CBO}$	—	13	—	pF
Current-Gain Bandwidth Product ( $I_C = -100mA, V_{CE} = -10V$ )	$f_T$	—	175	—	MHz

switching characteristics

Resistive Load						
Delay Time + Rise Time	$I_C = -1A, I_{B1} = I_{B2} = -0.1A$ $V_{CC} = 30V, t_p = 25 \mu sec$	$t_d + t_r$	—	180	—	nS
Storage Time		$t_s$	—	250	—	
Fall Time		$t_f$	—	110	—	

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

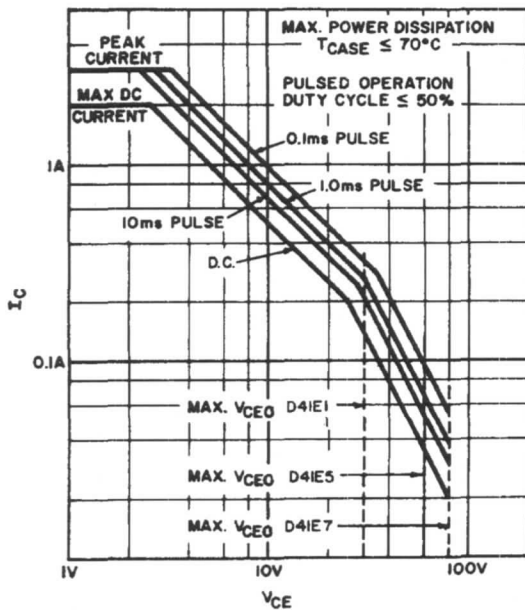


FIG. 1 SAFE REGION OF OPERATION

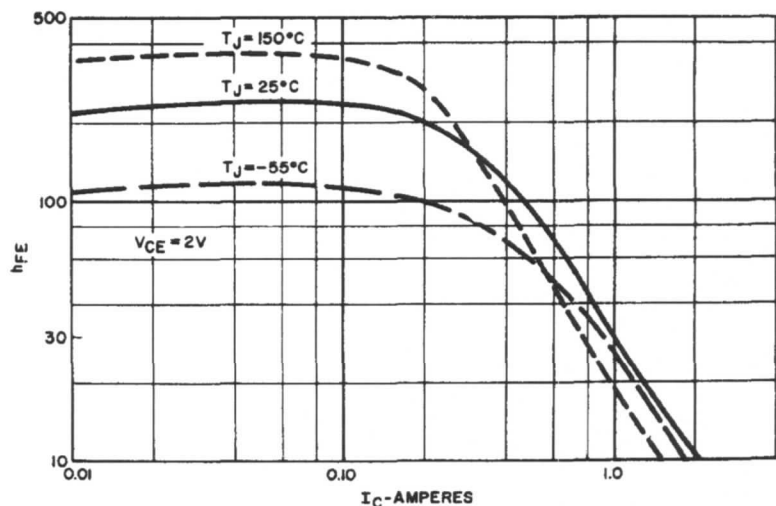


FIG. 2 TYPICAL  $H_{FE}$  VS  $I_C$