



SURFACE-MOUNT NPN POWER DARLINGTON TRANSISTORS

D72Y1.5D1,2

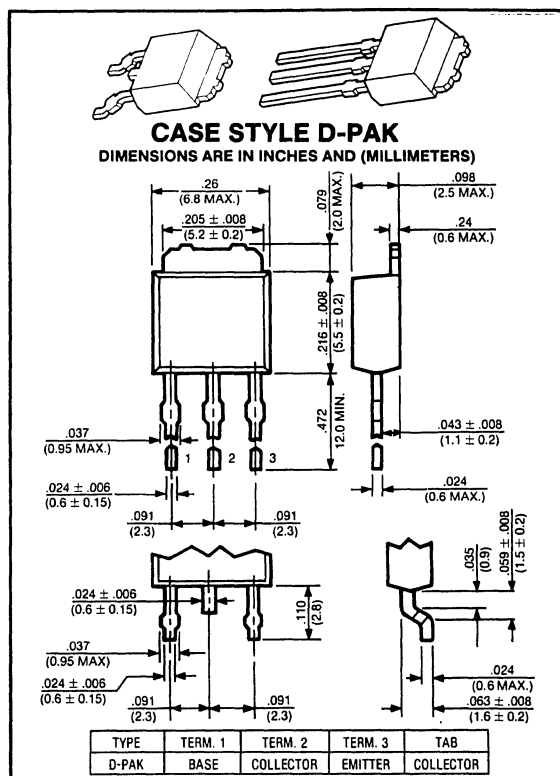
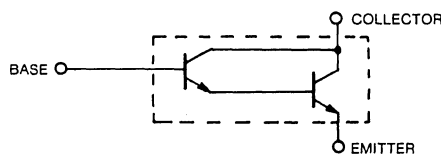
**30 VOLTS
1.5 AMP, 10 WATTS**

Designed for pulse motor drive, hammer drive applications, switching applications, power amplifier applications.

Features:

- High DC Current Gain
: $h_{FE} = 4000(\text{Min.})$ ($V_{CE} = 2V$, $I_C = 150\text{mA}$)
- Low Saturation Voltage
: $V_{CE(\text{sat})} = 1.5V$ (Max.) ($I_C = 1A$, $I_B = 1\text{mA}$)
- Suffix "2" designates lead formed version
- See page 840 for mounting and handling considerations.

EQUIVALENT CIRCUIT



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

RATING	SYMBOL	D72Y1.5D1,2	UNITS
Collector-Emitter Voltage	V_{CEO}	30	Volts
Collector-Base Voltage	V_{CBO}	30	Volts
Emitter Base Voltage	V_{EBO}	10	Volts
Collector Current — Continuous	I_C	1.5	A
Base Current — Continuous	I_B	0.15	A
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ @ $T_C = 25^\circ\text{C}$	P_D	1.0 10	Watts
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

thermal characteristics⁽¹⁾

Maximum Lead Temperature for Soldering Purposes: $\frac{1}{8}$ " from Case for 5 Seconds	T_L	235	$^\circ\text{C}$
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(1) See page 841 for thermal considerations.

electrical characteristics (T_A = 25° C) (unless otherwise specified)

CHARACTERISTIC	SYMBOL	MIN	TYP	MAX	UNIT
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off characteristics

Collector-Emitter Breakdown Voltage (I _C = 10mA, I _B = 0)	V _{(BR)CEO}	30	—	—	Volts
Collector Cutoff Current (V _{CB} = 30V, I _E = 0)	I _{CBO}	—	—	10	μA
Emitter Cutoff Current (V _{EB} = 10V, I _C = 0)	I _{EBO}	—	—	-10	μA

second breakdown

Second Breakdown with Base Forward Biased	FBSOA	SEE FIGURE 10			
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on characteristics

DC Current Gain (I _C = 150mA, V _{CE} = 2V)	h _{FE}	4000	—	—	—
Collector-Emitter Saturation Voltage (I _C = 1A, I _B = 1mA)	V _{CE(sat)}	—	—	1.5	V
Base-Emitter Saturation Voltage (I _C = 1A, I _B = 1mA)	V _{BE(sat)}	—	—	2.2	Volts

switching characteristics

Turn-on Time	V _{CC} = 15V I _{B1} = -I _{B2} = 1mA Duty Cycle ≤ 1%	t _{on}	—	0.18	—	μs
Storage Time		t _{stg}	—	0.6	—	
Fall Time		t _f	—	0.3	—	

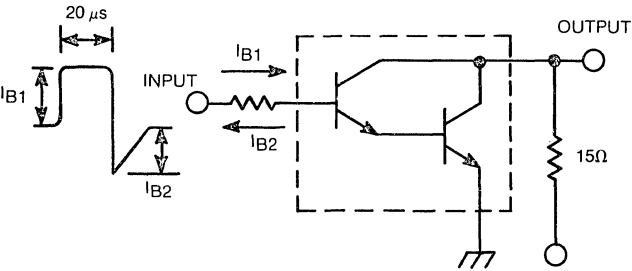


FIG. 1 SWITCHING TIME TEST CIRCUIT

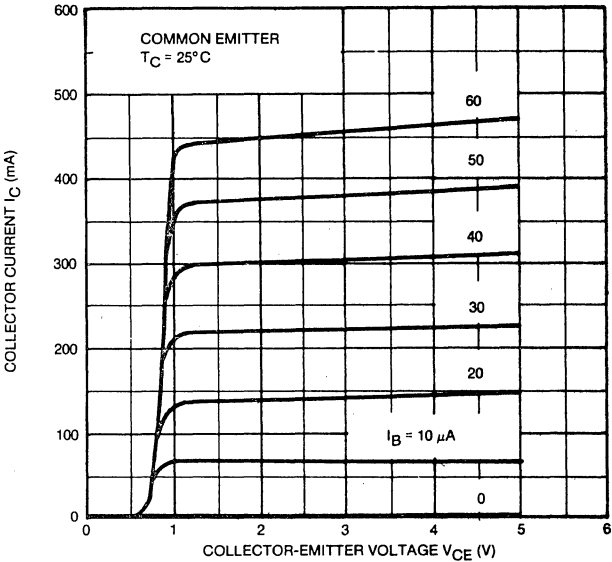


FIG. 2 I_C - V_{CE}

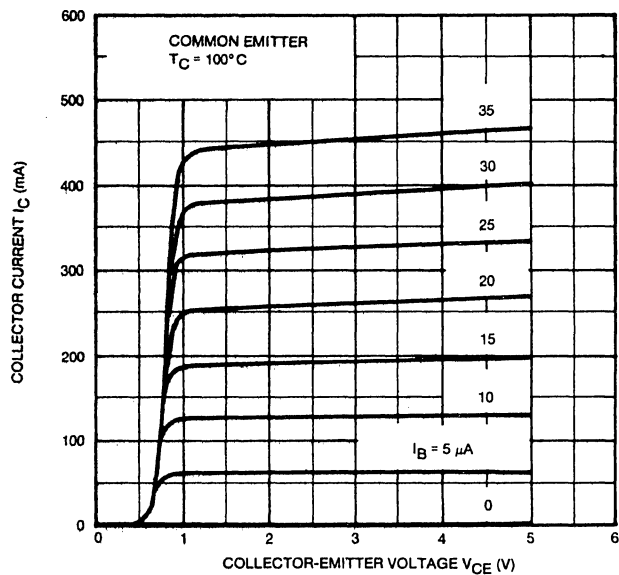


FIG. 3 $I_C - V_{CE}$

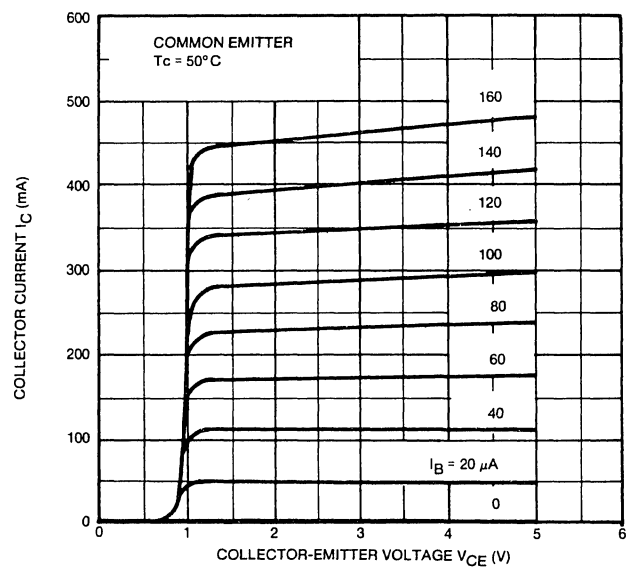


FIG. 4 $I_C - V_{CE}$

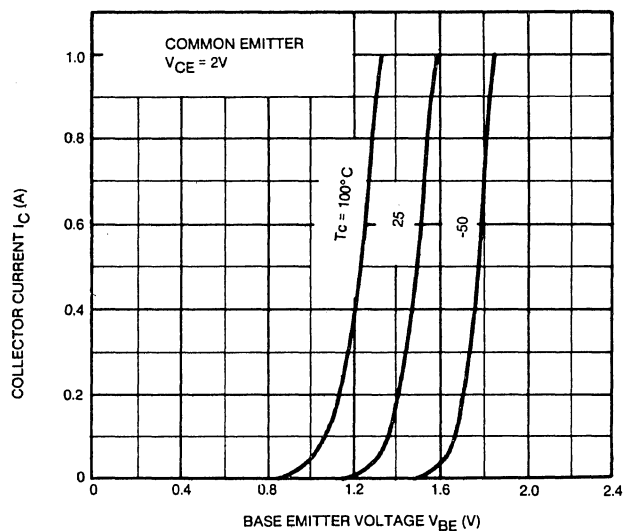


FIG. 5 $I_C - V_{BE}$

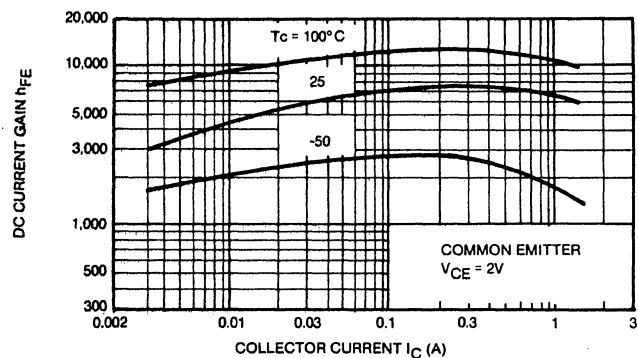


FIG. 6 $h_{FE} - I_C$

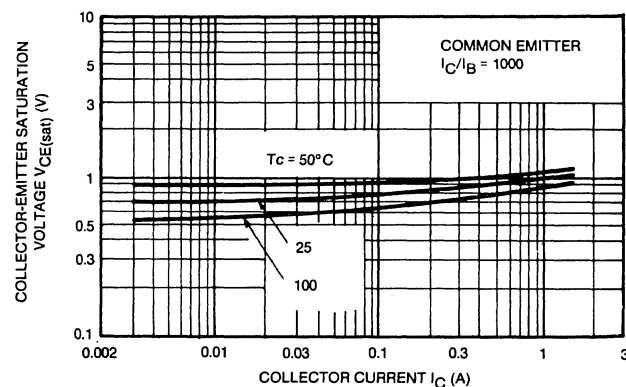


FIG. 7 $V_{CE(sat)} - I_C$

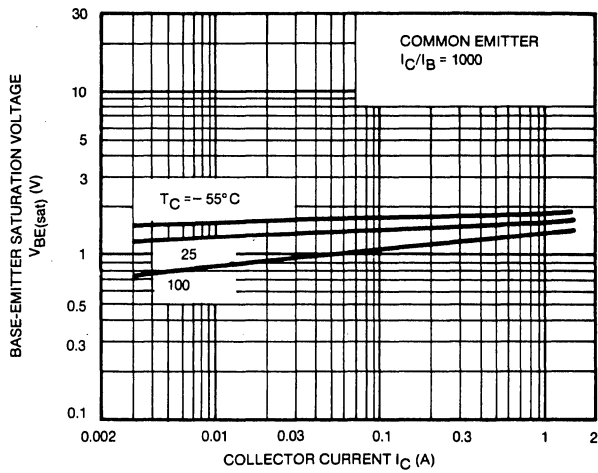


FIG. 8 $V_{BE(sat)} - I_C$

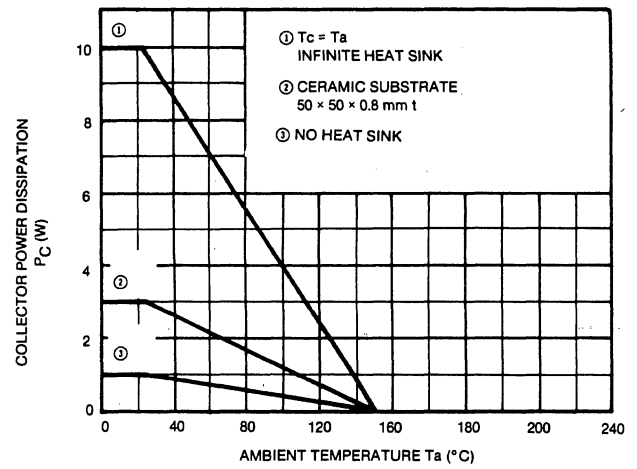


FIG. 9 $P_C - T_a$

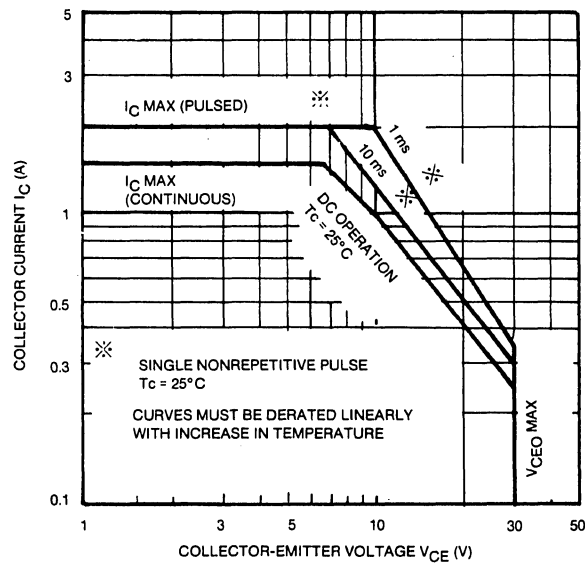


FIG. 10 SAFE OPERATING AREA