

3-Ampere Silicon P-N-P Power Transistors

Complementary to the D42C Series

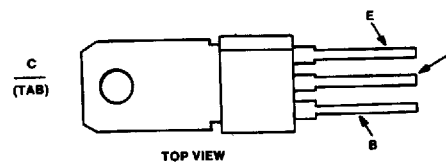
Features:

- High free-air power dissipation
- Low collector saturation voltage (-0.5V typ. @ -3A I_C)
- Excellent linearity
- Fast switching

The D43C-series of silicon p-n-p power transistors are designed for various specific and general purpose applications, such as: output and driver stages of amplifiers operating at frequencies from DC to greater than 1 MHz; series, shunt and switching regulators; and low and high frequency inverters/converters.

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

TERMINAL DESIGNATIONS



92CS-43473

JEDEC TO-202AB

POWER

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

RATING	SYMBOL	D43C1, 2, 3	D43C4, 5, 6	D43C7, 8, 9	D43C10, 11, 12	UNITS
Collector-Emitter Voltage	V_{CEO}	-30	-45	-60	-80	Volts
Collector-Emitter Voltage	V_{CES}	-40	-55	-70	-90	Volts
Emitter Base Voltage	V_{EBO}	-5	-5	-5	-5	Volts
Collector Current — Continuous	I_C	-3	-3	-3	-3	A
Peak ⁽¹⁾	I_{CM}	-5	-5	-5	-5	A
Base Current — Continuous	I_B	-2	-2	-2	-2	A
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ @ $T_C = 25^\circ\text{C}$	P_D	2.1 12.5	2.1 12.5	2.1 12.5	2.1 12.5	Watts
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-55 to +150	-55 to +150	-55 to +150	-55 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	60	60	60	60	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	10	10	10	10	$^\circ\text{C/W}$
Maximum Lead Temperature for Soldering Purposes: 1/8" from Case for 5 Seconds	T_L	+260	+260	+260	+260	$^\circ\text{C}$

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

CHARACTERISTIC		SYMBOL	MIN	TYP	MAX	UNIT
HARRIS SEMICONDUCTOR						
OFF CHARACTERISTICS⁽¹⁾						
Collector-Emitter Sustaining Voltage (I _C = -100mA)	D43C1, 2, 3 D43C4, 5, 6 D43C7, 8, 9 D43C10, 11, 12	V _{CEO(sus)}	-30 -45 -60 -80	—	—	Volts
Collector Cutoff Current (V _{CE} = Rated V _{CE})		I _{CE}	—	—	-10	μA
Emitter Cutoff Current (V _{EB} = -5V)		I _{EB}	—	—	-100	μA

SECOND BREAKDOWN

Second Breakdown with Base Forward Biased	FBSOA	SEE FIGURE 3
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ON CHARACTERISTICS⁽¹⁾

DC Current Gain (I _C = -200mA, V _{CE} = -1V)	D43C1, 4, 7, 10 D43C2, 5, 8, 11 D43C3, 6, 9, 12	h _{FE}	25 40 40	—	—	—
(I _C = -1A, V _{CE} = -1V)	D43C1, 4, 7, 10	h _{FE}	10	—	—	—
(I _C = -2A, V _{CE} = -1V)	D43C2, 5, 8, 11 D43C3, 6, 9, 12	h _{FE}	20	—	—	—
Collector-Emitter Saturation Voltage (I _C = -1A, I _B = -50mA)	D43C1, 4, 7, 10	V _{CE(sat)}	—	—	-0.5	Volts
(I _C = -1A, I _B = -100mA)	D43C2, 5, 8, 11 D43C3, 6, 9, 12	V _{CE(sat)}	—	—	-0.5	Volts
Base-Emitter Saturation Voltage (I _C = -1A, I _B = -100mA)	D43C1, 4, 7, 10	V _{BE(sat)}	—	—	-1.3	Volts

DYNAMIC CHARACTERISTICS

Collector Capacitance (V _{CB} = -10V, f = 1MHz)		C _{CB0}	—	—	125	pF
Current-Gain — Bandwidth Product (I _C = -20mA, V _{CE} = -4V)		f _T	—	40	—	MHz

SWITCHING CHARACTERISTICS

Resistive Load						
Delay Time + Rise Time	I _C = -1A, I _{B1} = I _{B2} = -0.1A	t _d + t _r	—	50	—	nS
		Storage Time	—	500	—	—
Fall Time	V _{CC} = 30V, t _p = 25 μsec	t _f	—	50	—	—

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

D43C SERIES

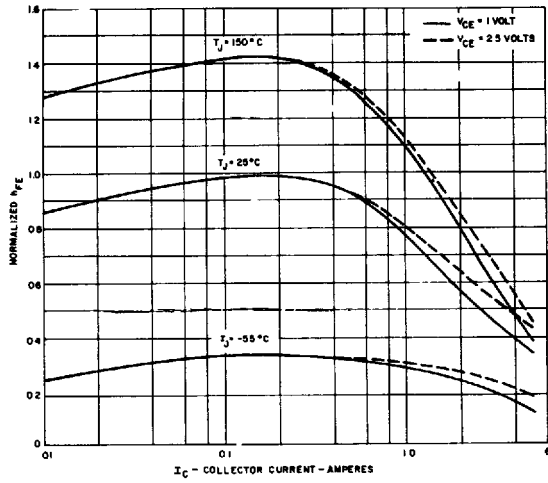


FIG. 1 TYPICAL NORMALIZED h_{FE} VS. I_C
HARRIS SEMICOND SECTOR

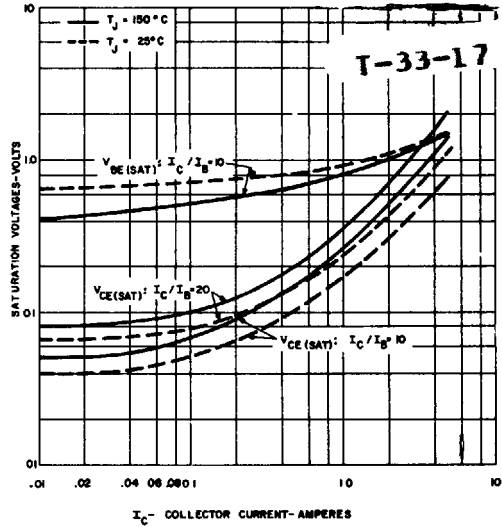


FIG. 2 TYPICAL SATURATION VOLTAGE CHARACTERISTICS

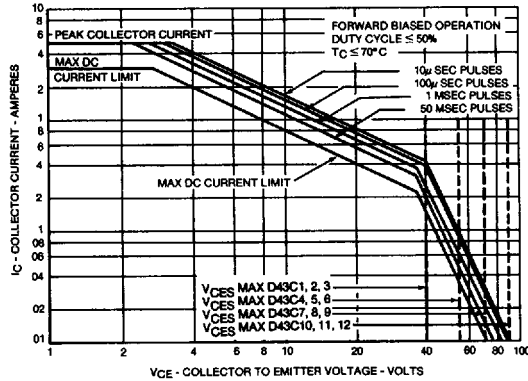


FIG. 3 SAFE REGION OF OPERATION

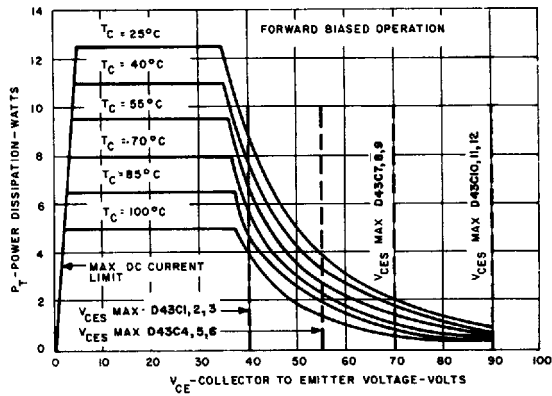


FIG. 4 MAXIMUM PERMISSIBLE DC POWER DISSIPATION

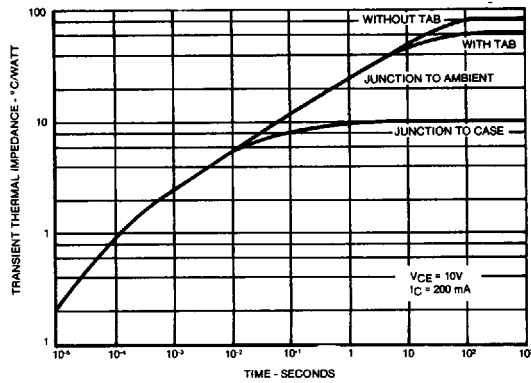


FIG. 5 MAXIMUM TRANSIENT THERMAL IMPEDANCE

POWER TRANSISTORS