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D40K2
Silicon NPN Transistor
Darlington Power Amplifier
TO–202 Type Package

Description:

The D40K2 is a silicon NPN Darlington transistor in a TO–202 type package designed for amplifier and driver applications where high gain is an essential requirement, low power lamp and relay drivers and power drivers for high–current applications such as voltage regulators.

Features:

- Low Collector–Emitter Saturation Voltage: $V_{CE(sat)}$ = 1.5V Max @ I_C = 1.5A
- TO–202 Type Package: 2W Free Air Dissipation @ T_A = +25°C

Absolute Maximum Ratings:

Collector–Emitter Voltage, V_{CEO} 50V
Collector–Emitter Voltage, V_{CES} 50V
Emitter–Base Voltage, V_{EBO} 13V
Colllector Current, I_C
  Continuous 2A
  Peak (Note 1) 3A
Continuous Base Current, I_B 100mA
Total Power Dissipation (T_A = +25°C), P_D 1.67W
  Derate Above 25°C (Note 2) . . . . . 13.3mW/°C
Total Power Dissipation (T_C = +25°C), P_D 10W
  Derate Above 25°C . . . . . 80mW/°C
Operating Junction Temperature Range, T_J . . . . . –55° to +150°C
Storage Temperature Range, T_{stg} . . . . . –55° to +150°C
Thermal Resistance, Junction–to–Ambient, R_{thJA} . . . . . 75°C/W
Thermal Resistance, Junction–to–Case, R_{thJC} . . . . . 12.5°C/W

Note 1. Pulse Width ≤ 25ms, Duty Cycle ≤ 50%.
Note 2. The actual power dissipation capability of the TO202 type package is 2W @ T_A = +25°C.

Electrical Characteristics: (T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector−Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 10mA, Note 3	50	–	–	V
Collector Cutoff Current	I_{CBO}	V_{CB} = 50V, I_E = 0, T_J = +150°C	–	–	20	μA
	I_{CES}	V_{CE} = 50V, V_{BE} = 0	–	–	0.5	μA
Emitter Cutoff Current	I_{EBO}	V_{EB} = 13V, I_C = 0	–	–	100	nA
ON Characteristics (Note 4)						
DC Current Gain	h_{FE}	I_C = 200mA, V_{CE} = 5V	10000	–	–	
		I_C = 1.5A, V_{CE} = 5V	1000	–	–	
Collector−Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 1.5A, I_B = 3mA	–	–	1.5	V
Base−Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 1.5A, I_B = 3mA	–	–	2.5	V
Dynamic Characteristics						
Collector Capacitance	C_{cb}	V_{CB} = 10V, I_E = 0, f = 1MHz	–	–	10	pF
High Frequency Current Gain	$\|h_{fe}\|$	I_C = 20mA, V_{CE} = 5V, f = 100MHz	1.0	–	–	

Note 3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.