BUS50

SWITCHMODE Series NPN Silicon Power Transistors

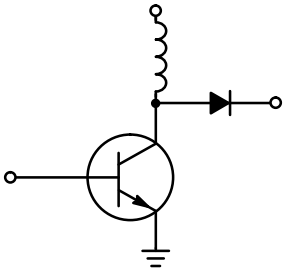
70 AMPERES NPN SILICON POWER TRANSISTOR 125 VOLTS (BVCEO) 350 WATTS 200 V (BVCES)

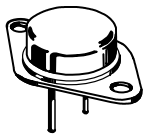
The BUS50 transistor is designed for low voltage, high–speed, power switching in inductive circuits where fall time is critical. It is particularly suited for battery switchmode applications such as:

- Switching Regulators
- Inverters
- Solenoid and Relay Drivers
- Motor Controls

Fast Turn–Off Times
300 ns Inductive Fall Time – 25°C (Typ)

Operating Temperature Range – 65 to + 200°C





CASE 197A–05
TO–204AE

MAXIMUM RATINGS

Rating	Symbol	BUS50	Unit
Collector–Emitter Voltage	$V_{CEO(sus)}$	125	Vdc
Collector–Emitter Voltage	V_{CEV}	200	Vdc
Emitter Base Voltage	V_{EB}	7	Vdc
Collector Current — Continuous — Peak (1) — Overload	I_C I_{CM} I_{OI}	70 140	Adc
Base Current — Continuous — Peak (1)	I_B I_{BM}	20	Adc
Total Power Dissipation — T_C = 25°C — T_C = 100°C Derate above 25°C	P_D	350 200 2	Watts W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	– 65 to + 200	°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	0.5	°C/W
Maximum Lead Temperature for Soldering Purposes: 1/8″ from Case for 5 Seconds	T_L	275	°C

(1) Pulse Test: Pulse Width = 5 ms, Duty Cycle ≦10%.

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REV 7

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ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

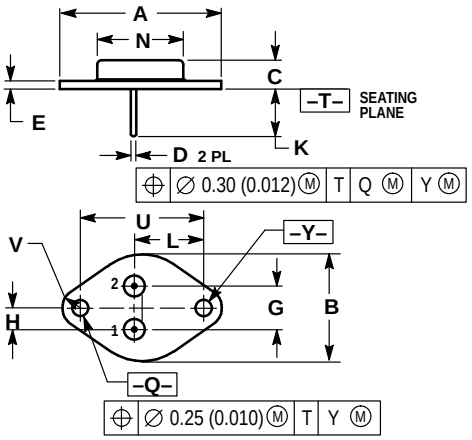
Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS[1]				
Collector–Emitter Sustaining Voltage (I_C = 200 mA, I_B = 0, L = 25 mH)	$V_{CEO(sus)}$	125		Vdc
Collector Cutoff Current at Reverse Bias (V_{CE} = 200 V, V_{BE} = –1.5 V) (V_{CE} = 200 V, V_{BE} = –1.5 V, T_C = 125°C)	I_{CEX}		0.2 2	mAdc
Collector–Emitter Cutoff Current (V_{CE} = 125 V)	I_{CEO}		1	mAdc
Emitter Cutoff Current (V_{EB} = 7 V)	I_{EBO}		0.2	mAdc
ON CHARACTERISTICS[1]				
DC Current Gain (I_C = 5 A, V_{CE} = 4 V) (I_C = 50 A, V_{CE} = 4 V)	h_{FE}	20 15		
Collector–Emitter Saturation Voltage (I_C = 35 A, I_B = 2 A) (I_C = 70 A, I_B = 7 A)	$V_{CE(sat)}$		1 1.2	Vdc
Base–Emitter Saturation Voltage (I_C = 35 A, I_B = 2 A) (I_C = 70 A, I_B = 7 A)	$V_{BE(sat)}$		1.8 2	Vdc

SWITCHING CHARACTERISTICS (Resistive Load) t_{on} and (Inductive Load) t_{sv}, t_{fi}

Turn–On Time	I_C = 70 A, I_{B1} = 7 A $V_{BE(off)}$ = −5 V (V_{CC} = 125 V)	t_{on}		1.2	μs
Storage Time		t_{sv}		1.5	
Fall Time		t_{fi}		0.3	

[1] Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2%.

PACKAGE DIMENSIONS



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	1.530 REF		38.86 REF	
B	0.990	1.050	25.15	26.67
C	0.250	0.335	6.35	8.51
D	0.057	0.063	1.45	1.60
E	0.060	0.070	1.53	1.77
G	0.430 BSC		10.92 BSC	
H	0.215 BSC		5.46 BSC	
K	0.440	0.480	11.18	12.19
L	0.665 BSC		16.89 BSC	
N	0.760	0.830	19.31	21.08
Q	0.151	0.165	3.84	4.19
U	1.187 BSC		30.15 BSC	
V	0.131	0.188	3.33	4.77

STYLE 1:
PIN 1. BASE
2. EMITTER
CASE: COLLECTOR

CASE 197A–05
TO–204AE (TO–3)
ISSUE J

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