NEC

SILICON POWER TRANSISTORS
2SC4332, 2SC4332-Z

NPN SILICON EPITAXIAL TRANSISTOR FOR HIGH-SPEED SWITCHING

The 2SC4332 and 2SC4332-Z are mold power transistors developed for high-speed switching and features a very low collector-to-emitter saturation voltage.

This transistor is ideal for use in switching regulators, DC/DC converters, motor drivers, solenoid drivers, and other low-voltage power supply devices, as well as for high-current switching.

FEATURES

- Low collector saturation voltage
  $V_{CE(sat)}$ = 0.3 V MAX. (I_C = 3 A / I_B = 0.15 A)
- Fast switching speed:
  $t_f \leq 0.3\ \mu s$ MAX. (I_C = 3 A)
- High DC current gain

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

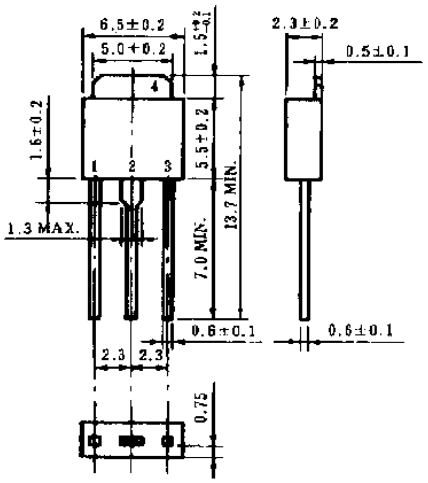
Collector to Base Voltage	V_{CBO}	100	V
Collector to Emitter Voltage	V_{CEO}	60	V
Base to Emitter Voltage	V_{EBO}	7.0	V
Collector Current (DC)	$I_{C(DC)}$	5.0	A
Collector Current (pulse)	$I_{C(pulse)}$ Note1	10	A
Base Current (DC)	$I_{B(DC)}$	2.5	A
Total Power Dissipation	P_T (T_C = 25°C)	15	W
Total Power Dissipation	P_T (T_A = 25°C)	1.0 Note2, 2.0 Note3	W
Junction Temperature	T_j	150	°C
Storage Temperature	T_{stg}	–55 to +150	°C

Notes 1. PW ≤ 10 ms, duty cycle ≤ 50%

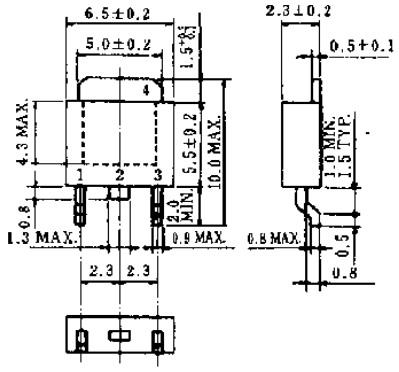
2. Printing borard mounted

3. 7.5 mm^2 x 0.7 mm, ceramic board mounted

PACKAGE DRAWING (Unit: mm)



MP-3



MP-3Z

Electrode Connection
1. Base
2. Collector
3. Emitter
4. Fin (collector)

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Document No. D16430EJ1V0DS00 (1st edition)
Date Published October 2002 NS CP(K)
Printed in Japan

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ELECTRICAL CHARACTERISTICS (T_A = 25°C)

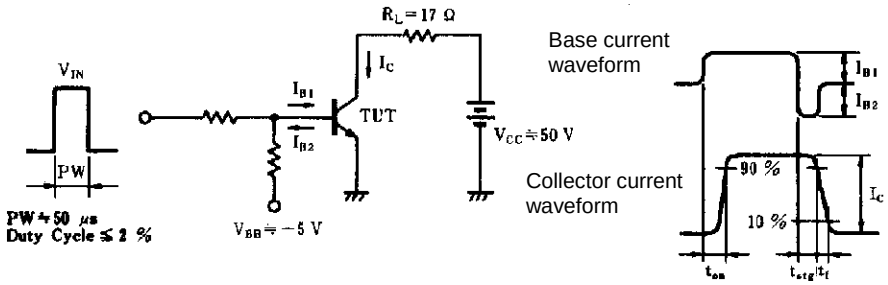
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector to Emitter Voltage	$V_{CEO(SUS)}$	I_C = 3.0 A, I_B = 0.3 A, L = 1 mH	60			V
Collector to Emitter Voltage	$V_{CEX(SUS)}$	I_C = 3.0 A, I_{B1} = $-I_{B2}$ = 0.3 A, $V_{BE(OFF)}$ = –1.5 V, L = 180 μH, clamped	60			V
Collector Cut-off Current	I_{CBO}	V_{CE} = 60 V, I_E = 0			10	μA
Collector Cut-off Current	I_{CER}	V_{CE} = 60 V, R_{BE} = 51 Ω, T_A = 125°C			1.0	mA
Collector Cut-off Current	I_{CEX1}	V_{CE} = 60 V, $V_{BE(OFF)}$ = –1.5 V			10	μA
Collector Cut-off Current	I_{CEX2}	V_{CE} = 60 V, $V_{BE(OFF)}$ = –1.5 V, T_A = 125°C			1.0	mA
Emitter Cut-off Current	I_{EBO}	V_{EB} = 5.0 V, I_C = 0			10	μA
DC Current Gain	h_{FE1} Note	V_{CE} = 2.0 V, I_C = 0.5 A	100			
DC Current Gain	h_{FE2} Note	V_{CE} = 2.0 V, I_C = 1.0 A	100		400	
DC Current Gain	h_{FE3} Note	V_{CE} = 2.0 V, I_C = 3.0 A	60			
Collector Saturation Voltage	$V_{CE(sat)1}$ Note	I_C = 3.0 A, I_B = 0.15 A			0.3	V
Collector Saturation Voltage	$V_{CE(sat)2}$ Note	I_C = 4.0 A, I_B = 0.2 A			0.5	V
Base Saturation Voltage	$V_{BE(sat)1}$ Note	I_C = 3.0 A, I_B = 0.15 A			1.2	V
Base Saturation Voltage	$V_{BE(sat)2}$ Note	I_C = 4.0 A, I_B = 0.2 A			1.5	V
Collector Capacitance	C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1.0 MHz		130		pF
Gain Bandwidth Product	f_T	V_{CE} = 10 V, I_E = –0.5 A		150		MHz
Turn-on Time	t_{on}	I_C = 3.0 A, R_L = 16.7 Ω, I_{B1} = $-I_{B2}$ = 0.15 A, V_{CC} ≒ 50 V Refer to the test circuit.			0.3	μs
Storage Time	t_{stg}				1.5	μs
Fall Time	t_f				0.3	μs

Note Pulse test PW ≤ 350 μs, duty cycle ≤ 2%

h_{FE} CLASSIFICATION

Marking	M	L	K
h_{FE2}	100 to 200	150 to 300	200 to 400

SWITCHING TIME (t_{on}, t_{stg}, t_f) TEST CIRCUIT



[MEMO]

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