NEC

SILICON POWER TRANSISTOR
2SB1432

PNP SILICON EPITAXIAL TRANSISTOR (DARLINGTON CONNECTION) FOR LOW-FREQUENCY POWER AMPLIFIERS AND LOW-SPEED SWITCHING

The 2SB1432 is a Darlington power transistor that can be directly driven from the output of an IC. This transistor is ideal for OA and FA equipment such as motor and solenoid drivers.

In addition, a small resin-molded insulation type package contributes to high-density mounting and reduction of mounting cost.

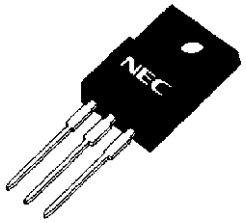
FEATURES

- High h_{FE} due to Darlington connection
  $h_{FE} \geq 1{,}000$ @$V_{CE} = -2.0$ V, $I_C = -10$ A)
- Mold package that does not require an insulation board or insulation bushing

ORDERING INFORMATION

Part No.	Package
2SB1432	Isolated TO-220

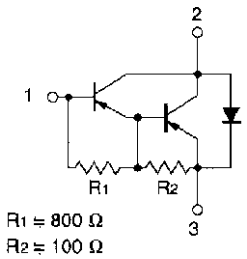
(Isolated TO-220)



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Parameter	Symbol	Conditions	Ratings	Unit
Collector to base voltage	V_{CBO}		−100	V
Collector to emitter voltage	V_{CEO}		−100	V
Emitter to base voltage	V_{EBO}		−8.0	V
Collector current (DC)	$I_{C(DC)}$		∓10	A
Collector current (pulse)	$I_{C(pulse)}$	PW ≤ 300 μs, duty cycle ≤ 10%	∓20	A
Base current (DC)	$I_{B(DC)}$		−1.0	A
Total power dissipation	P_T	T_C = 25°C	30	W
		T_A = 25°C	2.0	W
Junction temperature	T_j		150	°C
Storage temperature	T_{stg}		−55 to +150	°C

INTERNAL EQUIVALENT CIRCUIT



1. Base
2. Collector
3. Emitter

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Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.

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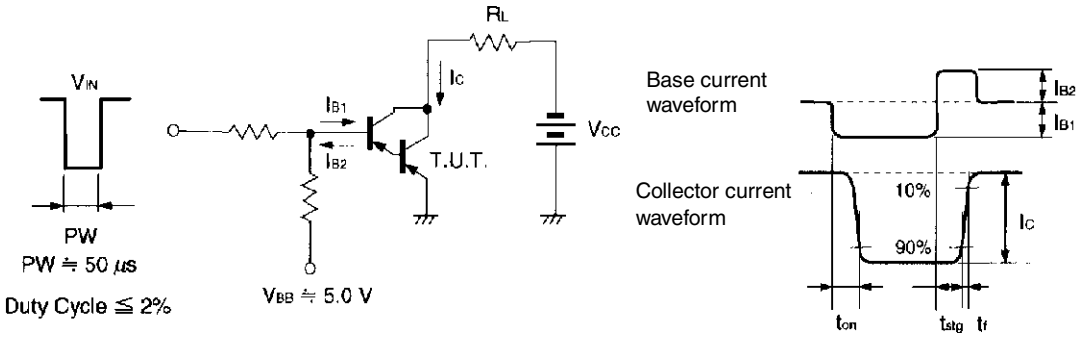
ELECTRICAL CHARACTERISTICS (T_A = 25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I_{CBO}	V_{CB} = –100 V, I_E = 0 A			–10	μA
DC current gain	h_{FE}	V_{CE} = –2.0 V, I_C = –10 A[Note]	1,000	6,000	30,000	
Collector saturation voltage	$V_{CE(sat)}$	I_C = –10 A, I_B = –25 mA[Note]		–1.1	–1.5	V
Base saturation voltage	$V_{BE(sat)}$	I_C = –10 A, I_B = –25 mA[Note]		–1.8	–2.2	V
Gain bandwidth product	f_T	V_{CE} = –5.0 V, I_C = –1.0 A		80		MHz
Collector capacitance	C_{ob}	V_{CB} = –10 V, I_E = 0 A, f = 1.0 MHz		200		pF
Turn-on time	t_{on}	I_C = –10 A, R_L = 5.0 Ω, I_{B1} = –I_{B2} = –25 mA, V_{CC} ≅ –50 V Refer to the test circuit.		1.0		μs
Storage time	t_{stg}			5.0		μs
Fall time	t_f			2.0		μs

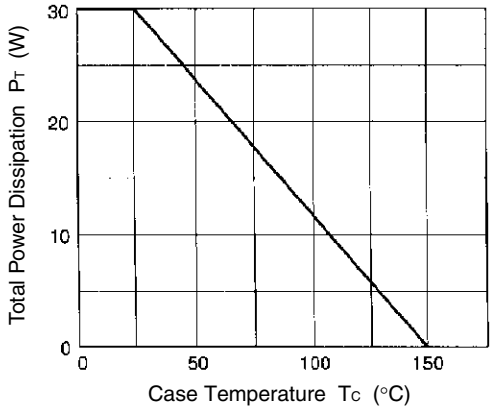
Note Pulse test PW ≤ 350 μs, duty cycle ≤ 2%

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

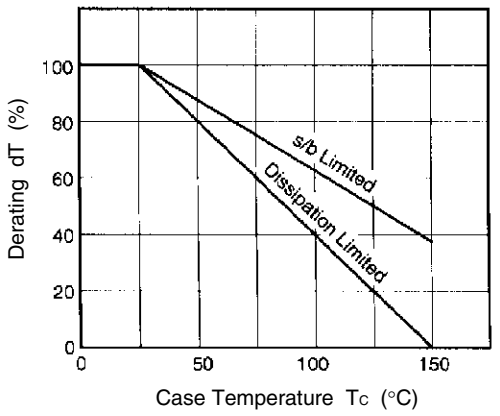


TYPICAL CHARACTERISTICS (T_A = 25°C)

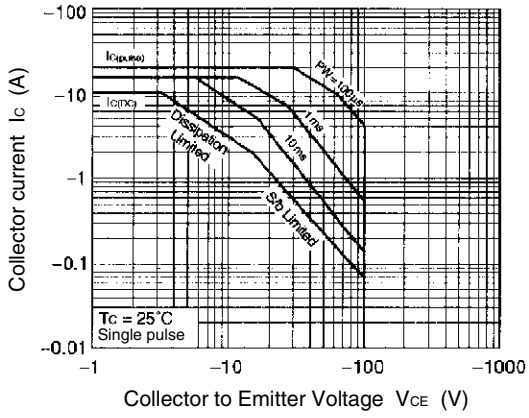
TOTAL POWER DISSIPATION vs. CASE TEMPERATURE



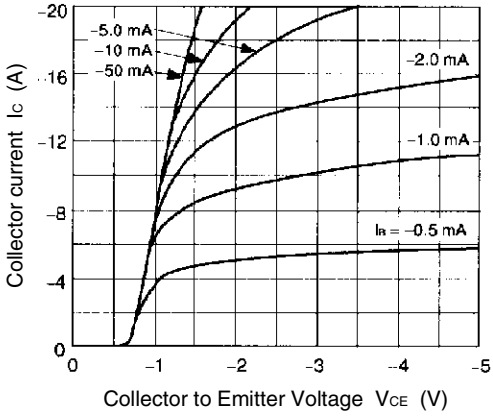
DERATING CURVE OF SAFE OPERATING AREA



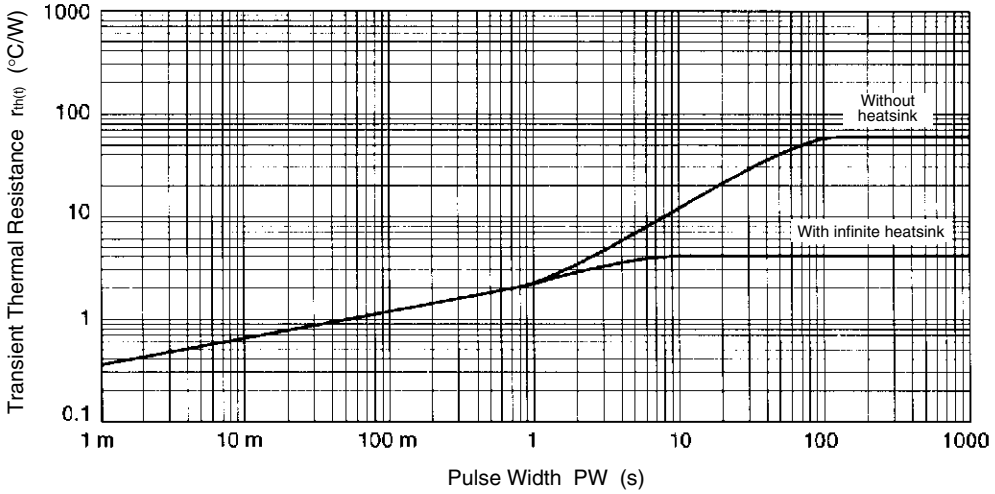
FORWARD BIAS SAFE OPERATING AREA



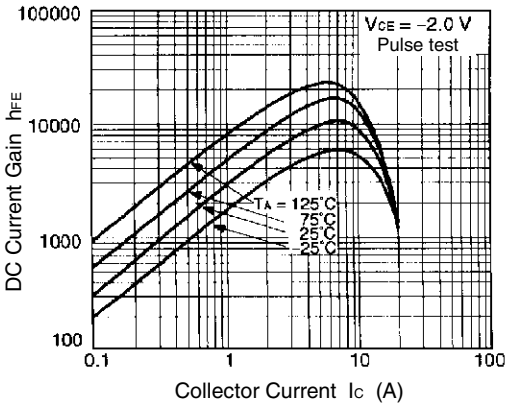
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



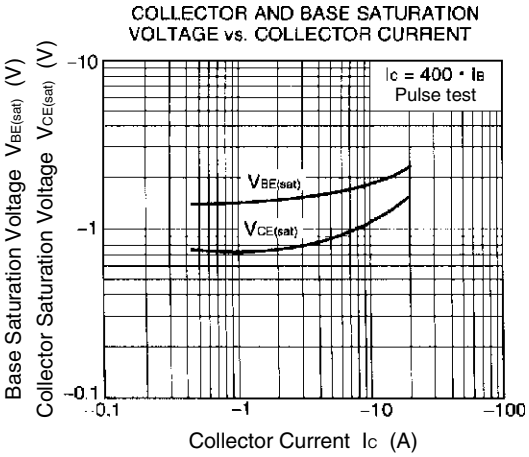
TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH



DC CURRENT GAIN vs. COLLECTOR CURRENT



COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



PACKAGE DRAWING (UNIT: mm)

Isolated TO-220 (MP-45F)