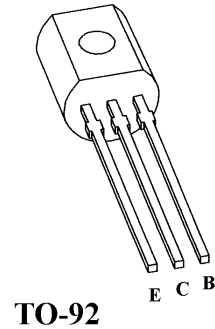


NPN SILICON POWER TRANSISTOR BC643

- ♦ 1A Continuous Collector Current
- ♦ 2A Peak Collector Current
- ♦ 100V Collector-Emmitter Voltage
- ♦ Custom selections available



Absolute maximum ratings at 25°C case temperature (unless otherwise noted)

RATING	SYMBOL	VALUE	UNIT
Collector-Base Voltage ($I_e=0$)	V_{CBO}	100	V
Collector-Emmitter Voltage ($I_b=0$)	V_{CEO}	100	V
Emitter-base voltage (reverse)	V_{EBO}	5	V
Continuous collector current	I_C	1	A
Peak collector current (max 300 μ s, duty cycle 2%)	I_{CM}	2	A
Continuous base current	I_B	0.4	A
Continuous device dissipation at max 25°C free air temperature (see note 1)	P_{tot}	0.8	W
Continuous device dissipation at max 25°C free air temperature (see note 2)	P_{tot}	0.5	W
Unclamped inductive load energy (see note 3)	$\frac{1}{2}LI_C^2$	15	mJ
Operating junction temperature range	T_j	-65 to +150	°C
Storage temperature range	T_{stg}	-65 to +150	°C
Lead temperature 3.2 mm from case for 10 seconds	T_L	250	°C

NOTES

1. Valid only if the collector lead is no longer than 3.2mm and the collector lead is soldered to a heat conducting pad of minimum 10x10mm Derate linearly to 150°C free air temperature at the rate of 6.4mW/°C.
2. Derate linearly to 150°C free air temperature at the rate of 4 mW/°C
3. This rating is based on the capability of the transistor to operate safely in a circuit of: L=20 mH, $I_{B(on)}=20mA$, $R_{BE} = 270$ ohm, $V_{BE(off)} = 0$, $R_S = 0.1$ ohm, $I_{CC} = 600mA$., duty max 1%.

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Electrical characteristics at 25°C case temperature

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
$V_{(BR)CEO}$ Collector-emitter breakdown voltage	$I_C = 30 \text{ mA}$ $I_B = 0$ (see note 4)	100	120		V
I_{CES} Collector-emitter cut-off current	$V_{CE} = 100\text{V}$ $V_{BE} = 0$		0.01	200	μA
I_{CEO} Collector cut-off current	$V_{CE} = 100\text{V}$ $I_B = 0$		0.01	300	μA
I_{EBO} Emitter cut-off current	$V_{EB} = 5\text{V}$ $I_C = 0$			1	mA
h_{FE} Forward current transfer ratio	$V_{CE} = 4\text{V}$ $I_C = 100\text{mA}$ $V_{CE} = 4\text{V}$ $I_C = 1.0\text{A}$ (see notes 4 and 5)	30 15	100 60		
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = 100\text{mA}$ $I_C = 1\text{A}$ (see notes 4 and 5)			0.7	V
V_{be} Base-emitter voltage	$V_{ce} = 4\text{V}$ $I_C = 1\text{A}$ (see notes 4 and 5)			1.3	V
h_{fe} Small signal forward current transfer ratio	$V_{CE} = 10\text{V}$ $I_C = 200\text{mA}$ $f = 1 \text{ kHz}$	20			

NOTES

4. Measured in pulse mode $t_p=300\mu\text{s}$, duty cycle $<2\%$
5. To be measured using sense contacts for base and emitter.

Thermal characteristics

PARAMETER	MIN	TYP	MAX	UNIT
$R_{\theta JC}$ Junction to free air thermal resistance (see note 1)			156	$^{\circ}\text{C/W}$
$R_{\theta JA}$ Junction to free air thermal resistance			250	$^{\circ}\text{C/W}$

Resistive-load-switching characteristics at 25°C case temperature

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{on} Turn-on time	$I_C = 200\text{mA}$ $I_{B(on)} = 20\text{mA}$ $I_{B(off)} = -20\text{mA}$		0.3		μs
t_{off} Turn-off time	$V_{BE(off)} = -4 \text{ V}$ $R_L = 150 \text{ ohm}$ $t_p = 20 \mu\text{s}$		1		μs