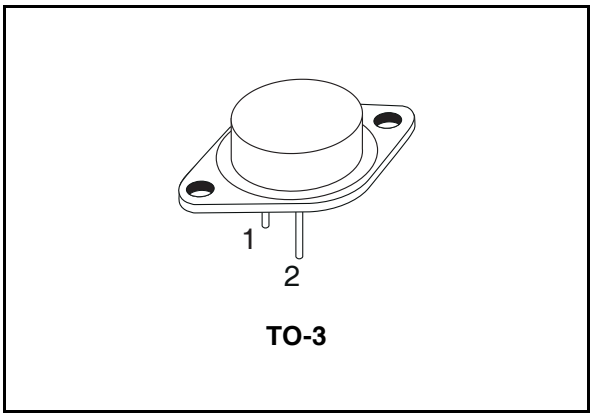
High power NPN silicon transistor

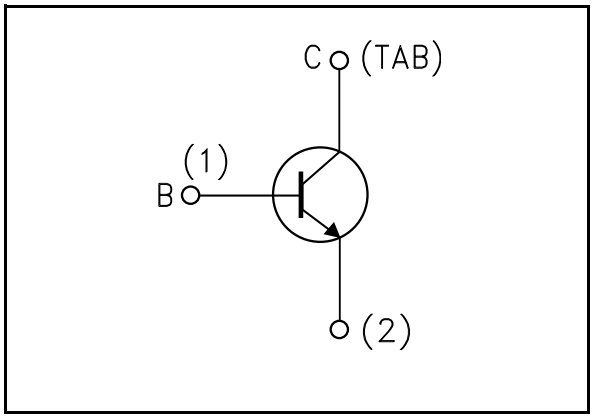
Description

The device is a silicon planar NPN transistor mounted in Jedec TO-3 metal case. It is intended for linear amplifiers and inductive switching applications.



TO-3

Internal schematic diagram



1 Electrical ratings

Table 1. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CEO}	Collector-emitter voltage (I_B = 0)	100	V
V_{CEV}	Collector-emitter voltage (V_{BE} = -1.5V)	100	V
V_{CBO}	Collector-base voltage (I_E = 0)	120	V
V_{EBO}	Emitter-base voltage (I_C = 0)	7	V
I_C	Collector current	20	A
I_{CM}	Collector peak current (t_P < 5ms)	30	A
I_B	Base current	5	A
I_{BM}	Base peak current (t_P < 1ms)	15	A
P_{tot}	Total dissipation at $T_c \leq 25°C$	150	W
T_{stg}	Storage temperature	-65 to 200	°C

2 Electrical characteristics

(T_{case} = 25°C unless otherwise specified)

Table 3. Electrical characteristics

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CEV}	Collector cut-off current (V_{BE} = -1.5V)	V_{CB} = 100V V_{CB} = 100V T_j = 150°C			5 10	mA mA
I_{CEO}	Collector cut-off current (I_B = 0)	V_{CB} = 100V			10	mA
I_{CBO}	Collector cut-off current (I_E = 0)	V_{CB} = 100V			5	mA
I_{EBO}	Emitter cut-off current (I_C = 0)	V_{CB} = 7V			5	mA
$V_{CEO(sus)}$ (1)	Collector-emitter sustaining voltage (I_B = 0)	I_C = 0.2A	100			V
$V_{CEV(sus)}$ (1)	Collector-emitter sustaining voltage (V_{EB} = -1.5V)	I_C = 0.2A	120			V
$V_{CER(sus)}$ (1)	Collector-emitter sustaining voltage (R_{BE} = 100Ω)	I_C = 0.2A	120			V
$V_{CE(sat)}$ (1)	Collector-emitter saturation voltage	I_C = 9A I_B = 0.8A I_C = 20A I_B = 4.0A			1.4 4	V V
V_{BE} (1)	Base-emitter voltage	I_C = 9A V_{CE} = 4V			2.2	V
h_{FE} (1)	DC current gain	I_C = 9A V_{CE} = 4V I_C = 20A V_{CE} = 4V	15 5		60	
$I_{s/b}$	Second Breakdown Collector Current	V_{CE} = 60V t = 1s (non repetitive)	3			A

1. Pulsed: Pulse duration = 300 μs, duty cycle ≤ 2 %