

1 Absolute maximum ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-base voltage ($I_E = 0$)	100	V
V_{CEO}	Collector-emitter voltage ($I_B = 0$)	100	V
V_{EBO}	Emitter-base voltage ($I_C = 0$)	5	V
I_C	Collector current	10	A
I_{CM}	Collector peak current	20	A
I_B	Base current	0.5	A
P_{TOT}	Total dissipation at $T_{case} = 25\text{ °C}$	125	W
T_{STG}	Storage temperature	-65 to 150	°C
T_J	Max. operating junction temperature	150	°C

Note: For PNP type voltage and current are negative.

Table 3. Thermal data

Symbol	Parameter	Value	Unit
R_{thJC}	Thermal resistance junction-case max	1	°C/W

2 Electrical characteristics

$T_{\text{case}} = 25\text{ }^{\circ}\text{C}$; unless otherwise specified.

Table 4. Electrical characteristics

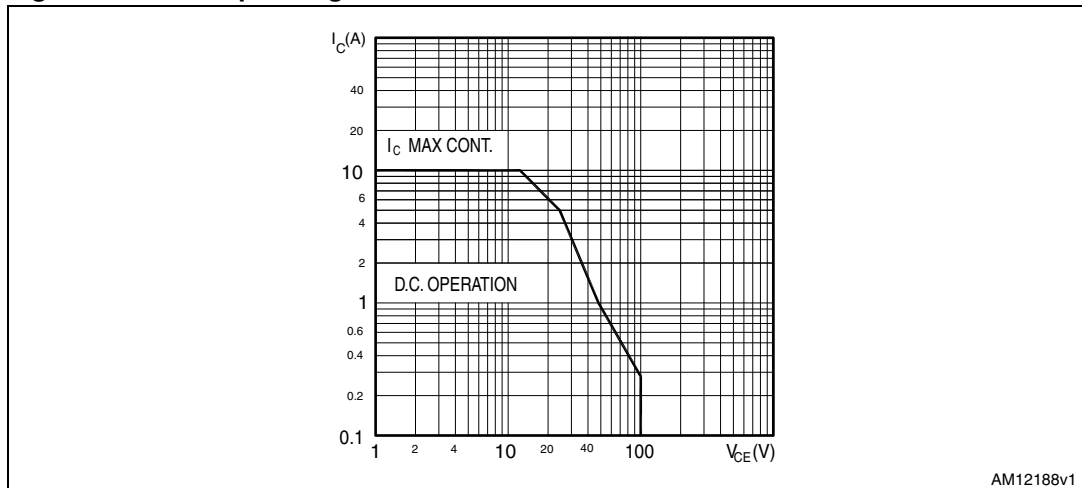
Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector cut-off current ($I_{\text{E}} = 0$)	$V_{\text{CB}} = 100\text{ V}$			1	mA
I_{CEO}	Collector cut-off current ($I_{\text{B}} = 0$)	$V_{\text{CE}} = 50\text{ V}$			2	mA
I_{EBO}	Emitter cut-off current ($I_{\text{C}} = 0$)	$V_{\text{EB}} = 5\text{ V}$			2	mA
$V_{\text{CEO(sus)}}^{(1)}$	Collector-emitter sustaining voltage ($I_{\text{B}} = 0$)	$I_{\text{C}} = 30\text{ mA}$	100			V
$V_{\text{CE(sat)}}^{(1)}$	Collector-emitter saturation voltage	$I_{\text{C}} = 5\text{ A}$ $I_{\text{B}} = 10\text{ mA}$ $I_{\text{C}} = 10\text{ A}$ $I_{\text{B}} = 40\text{ mA}$			2 3	V V
$V_{\text{BE(on)}}^{(1)}$	Base-emitter on voltage	$I_{\text{C}} = 10\text{ A}$ $V_{\text{CE}} = 4\text{ V}$			3	V
$h_{\text{FE}}^{(1)}$	DC current gain	$I_{\text{C}} = 5\text{ A}$ $V_{\text{CE}} = 4\text{ V}$ $I_{\text{C}} = 10\text{ A}$ $V_{\text{CE}} = 4\text{ V}$	1000 500			
t_{on} t_{off}	Resistive load Turn-on time Turn-off time	$I_{\text{C}} = 10\text{ A}$ $R_{\text{L}} = 3\text{ }\Omega$ $I_{\text{B1}} = -I_{\text{B2}} = 40\text{ mA}$		0.9 4		μs μs

1. Pulse test: pulse duration $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.

For PNP type voltage and current are negative.

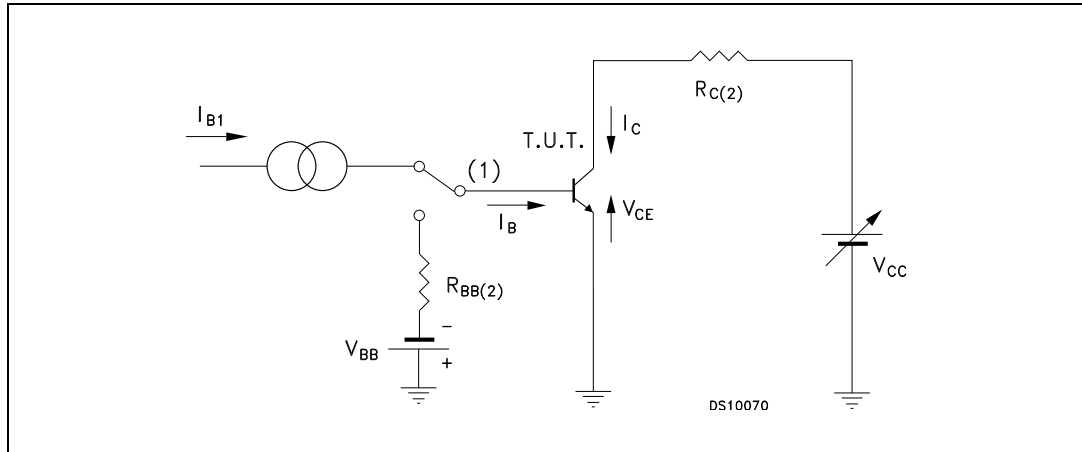
3 Electrical characteristics (curve)

Figure 2. Safe operating area



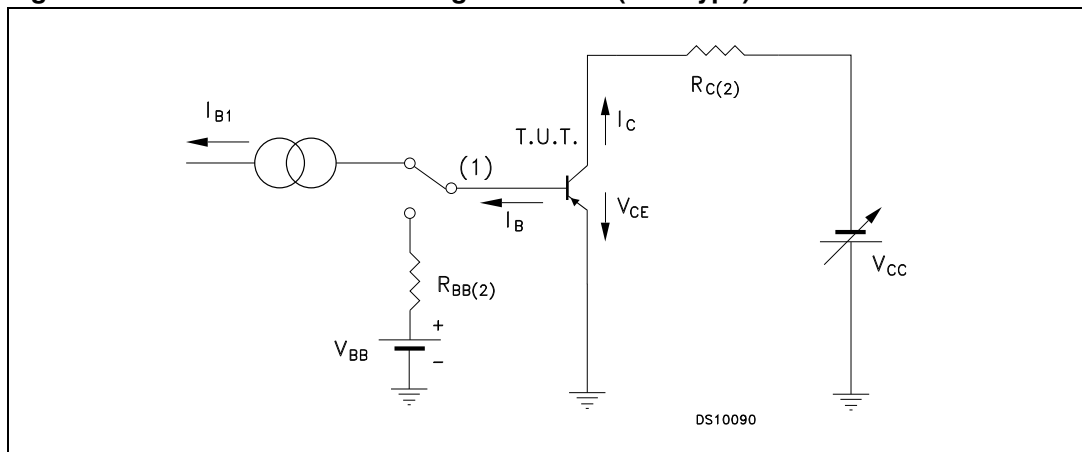
4 Test circuits

Figure 3. Resistive load switching test circuit (NPN type)



1. Fast electronic switch
2. Non-inductive resistor

Figure 4. Resistive load switching test circuit (PNP type)



1. Fast electronic switch
2. Non-inductive resistor

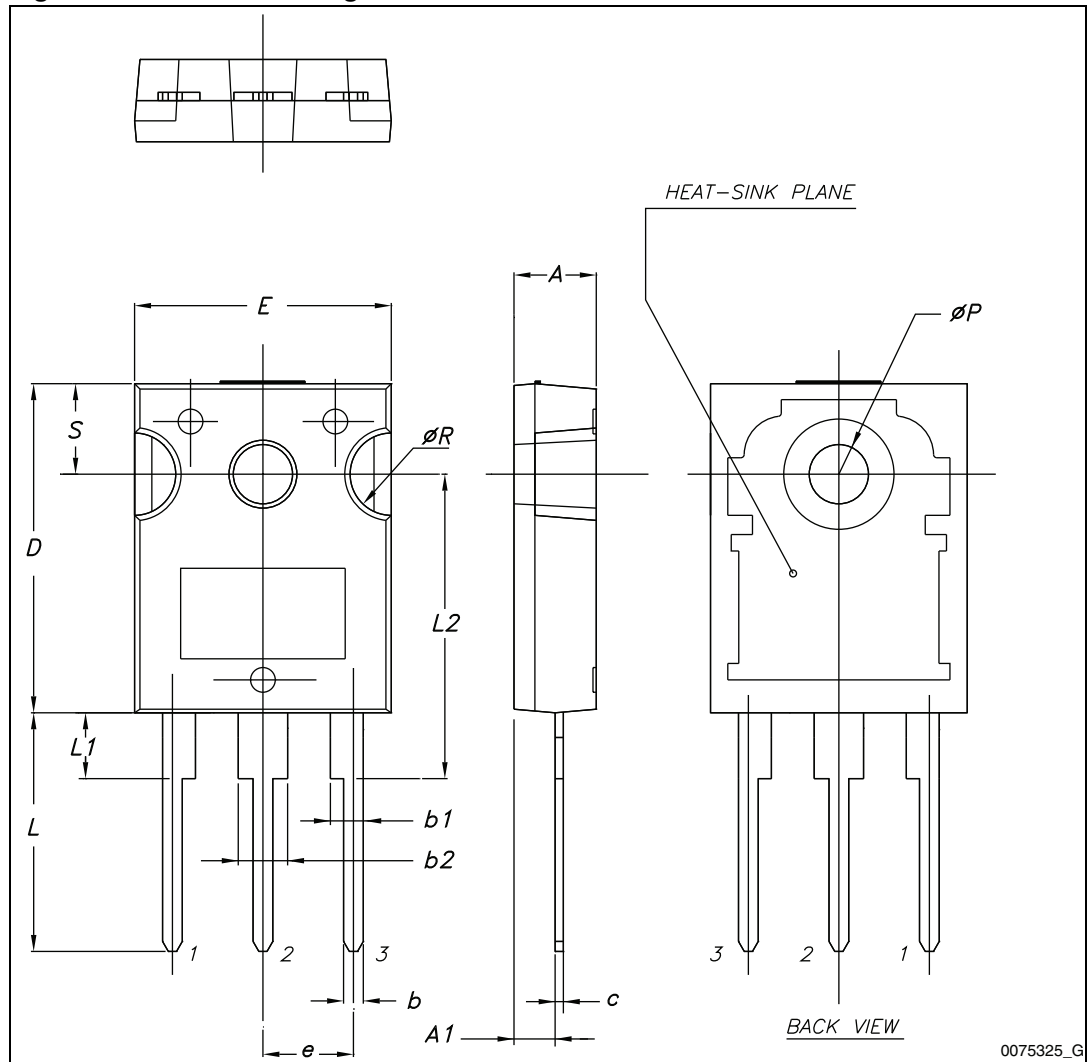
5 Package mechanical data

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Table 5. TO-247 mechanical data

Dim.	mm.		
	Min.	Typ.	Max.
A	4.85		5.15
A1	2.20		2.60
b	1.0		1.40
b1	2.0		2.40
b2	3.0		3.40
c	0.40		0.80
D	19.85		20.15
E	15.45		15.75
e	5.30	5.45	5.60
L	14.20		14.80
L1	3.70		4.30
L2		18.50	
ØP	3.55		3.65
ØR	4.50		5.50
S	5.30	5.50	5.70

Figure 5. TO-247 drawing



6 Revision history

Table 6. Document revision history

Date	Revision	Changes
15-Oct-2007	6	Package change from SOT-93 to TO-247.
12-May-2010	7	Technology change from epitaxial base to planar base island.
19-Apr-2012	8	Added: Figure 2: Safe operating area Updated: mechanical data

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