



STC04IE170HV

Emitter Switched Bipolar Transistor
ESBT® 1700 V - 4 A - 0.15 Ω

Features

$V_{CS(ON)}$	I_C	$R_{CS(ON)}$
0.6 V	4 A	0.15 Ω

- High voltage / high current Cascode configuration
- Low equivalent on resistance
- Very fast-switch, up to 150 kHz
- Squared RBSOA, up to 1700 V
- Very low C_{ISS} driven by $R_G = 47 \Omega$
- Very low turn-off cross over time

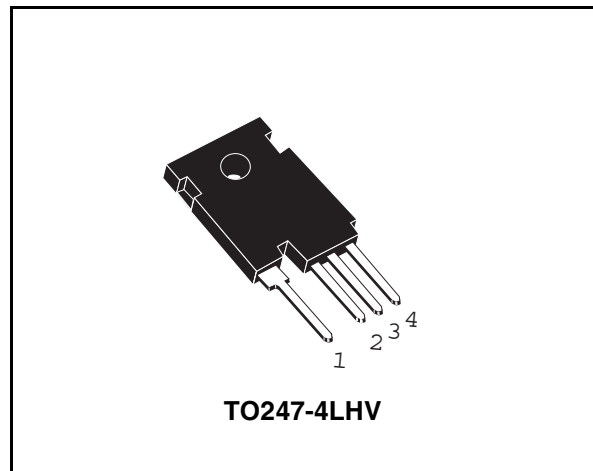
Application

- Flyback / forward SMPS
- Buck-boost converter

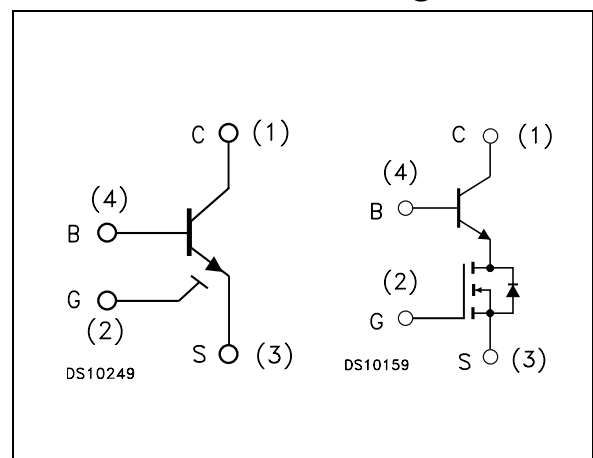
Description

The STC04IE170HV is manufactured in Monolithic ESBT Technology, aimed to provide best performance in High Frequency / High Voltage Applications. It is designed for use in Gate Driven based topologies.

DATA BRIEF



Internal Schematic Diagrams



Order Codes

Part Number	Marking	Package	Packing
STC04IE170HV	C04IE170HV	TO247-4LHV	TUBE

1 Absolute maximum ratings

Table 1. Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
$V_{CS(SS)}$	Collector-source voltage ($V_{BS} = V_{GS} = 0\text{ V}$)	1700	V
$V_{BS(OS)}$	Base-source voltage ($I_C = 0, V_{GS} = 0\text{ V}$)	30	V
$V_{SB(OS)}$	Source-base voltage ($I_C = 0, V_{GS} = 0\text{ V}$)	17	V
V_{GS}	Gate-source voltage	± 17	V
I_C	Collector current	4	A
I_{CM}	Collector peak current ($t_p < 5\text{ ms}$)	15	A
I_B	Base current	2	A
I_{BM}	Base peak current ($t_p < 1\text{ ms}$)	4	A
P_{tot}	Total dissipation at $T_c = 25^\circ\text{C}$	TBD	W
T_{stg}	Storage temperature	-40 to 150	$^\circ\text{C}$
T_J	Max. operating junction temperature	150	$^\circ\text{C}$

1.1 Thermal data

Table 2. Thermal Data

Symbol	Parameter	Value	Unit
$R_{thj-case}$	Thermal resistance junction-case	Max TBD	$^\circ\text{C/W}$

2 Electrical Characteristics

Table 3. Electrical Characteristics ($T_{CASE} = 25^{\circ}C$; unless otherwise specified)

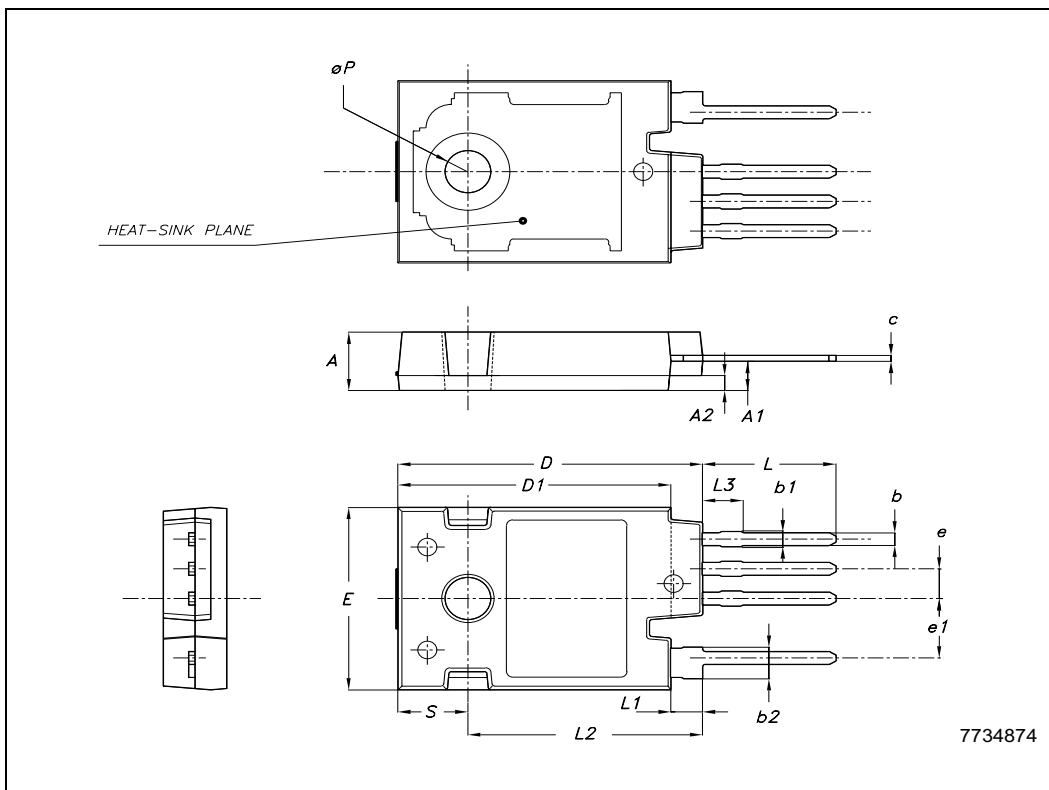
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CS(SS)}$	Collector-source current ($V_{BS} = V_{GS} = 0$)	$V_{CE} = 1700V$			100	μA
$I_{BS(OS)}$	Base-source current ($I_C = 0, V_{GS} = 0 V$)	$V_{BS(OS)} = 30 V$			10	μA
$I_{SB(OS)}$	Source-base current ($I_C = 0, V_{GS} = 0$)	$V_{SB(OS)} = 17 V$			100	μA
$I_{GS(OS)}$	Gate-source leakage	$V_{GS} = \pm 17 V$			100	nA
$V_{CS(ON)}$	Collector-source ON voltage	$V_{GS} = 10 V \quad I_C = 4 A \quad I_B = 0.8 A$ $V_{GS} = 10 V \quad I_C = 2.0 A \quad I_B = 0.2 A$		0.6 1.2	1 1.7	V V
h_{FE}	DC current gain	$V_{GS} = 10 V \quad V_{CS} = 1 V \quad I_C = 4 A$ $V_{GS} = 10 V \quad V_{CS} = 1 V \quad I_C = 2.0 A$	4 6	6 10		
$V_{BS(ON)}$	Base-source ON voltage	$V_{GS} = 10 V \quad I_C = 4 A \quad I_B = 0.8 A$ $V_{GS} = 10 V \quad I_C = 2 A \quad I_B = 0.2 A$		1.5 1.5		V V
$V_{GS(th)}$	Gate threshold voltage	$V_{BS} = V_{GS} \quad I_B = 250 \mu A$	2	3	4	V
C_{ISS}	Input capacitance	$V_{CS} = 25 V \quad f = 1 MHz$ $V_{GS} = 0$		TBD		pF
$Q_{GS(tot)}$	Gate-source charge	$V_{GS} = 10 V$		TBD		nC
t_s t_f	INDUCTIVE LOAD Storage time Fall time	TBD $t_p = 4 \mu s$		TBD TBD		ns ns

3 Package mechanical data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect . The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com

TO247-4L HV MECHANICAL DATA

DIM.	mm.		
	MIN.	TYP	MAX.
A	4.85		5.15
A1	2.20	2.50	2.60
A2		1.27	
b	0.95	1.10	1.30
b2	2.50		2.90
c	0.40		0.80
D	23.85	24	24.15
D1		21.50	
E	15.45	15.60	15.75
e	2.54		
e1	5.08		
L	10.20		10.80
L1	2.20	2.50	2.80
L2		18.50	
L3		3	
øP	3.55		3.65
S		5.50	



4 Revision history

Date	Revision	Changes
31-Mar-2006	1	Initial release.

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