



STC08IE150HV

Emitter Switched Bipolar Transistor
ESBT® 1500 V - 8 A - 0.10 Ω

Features

$V_{CS(ON)}$	I_C	$R_{CS(ON)}$
0.8 V	8 A	0.10 Ω

- High voltage / high current Cascode configuration
- Low equivalent on resistance
- Very fast-switch, up to 150 kHz
- Squared rboas, up to 1500 V
- Very low C_{ISS} driven by $R_G = 47 \Omega$
- Very low turn-off cross over time
- In compliance with the 2002/93/EC European Directive

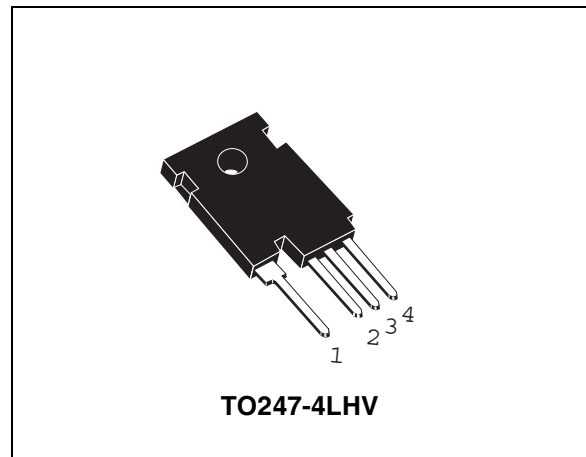
Applications

- Aux SMPS for three phase mains
- Sepic PFC

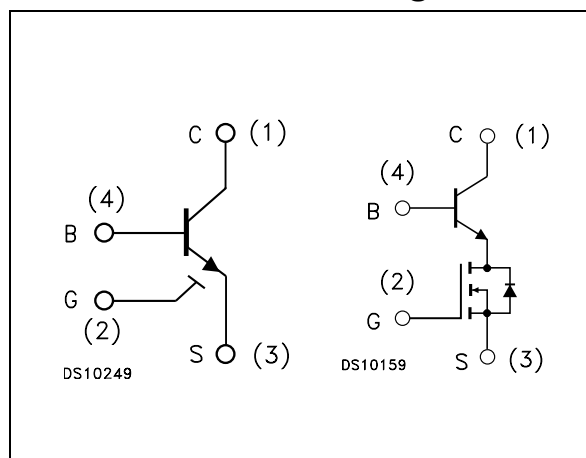
Description

The STC08IE150HV 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.

PRELIMINARY DATA



Internal Schematic Diagram



Order Codes

Part Number	Marking	Package	Packaging
STC08IE150HV	C08IE150HV	TO247-4LHV	TUBE

1 Absolute Maximum Ratings

Table 1. Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
$V_{CS(SS)}$	Collector-source voltage ($V_{BS} = V_{GS} = 0\text{ V}$)	1500	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	8	A
I_{CM}	Collector peak current ($t_P < 5\text{ ms}$)	24	A
I_B	Base current	6	A
I_{BM}	Base peak current ($t_P < 1\text{ ms}$)	12	A
P_{tot}	Total dissipation at $T_C = 25^\circ\text{C}$	208	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	0.6	$^\circ\text{C/W}$

2 Electrical Characteristics

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

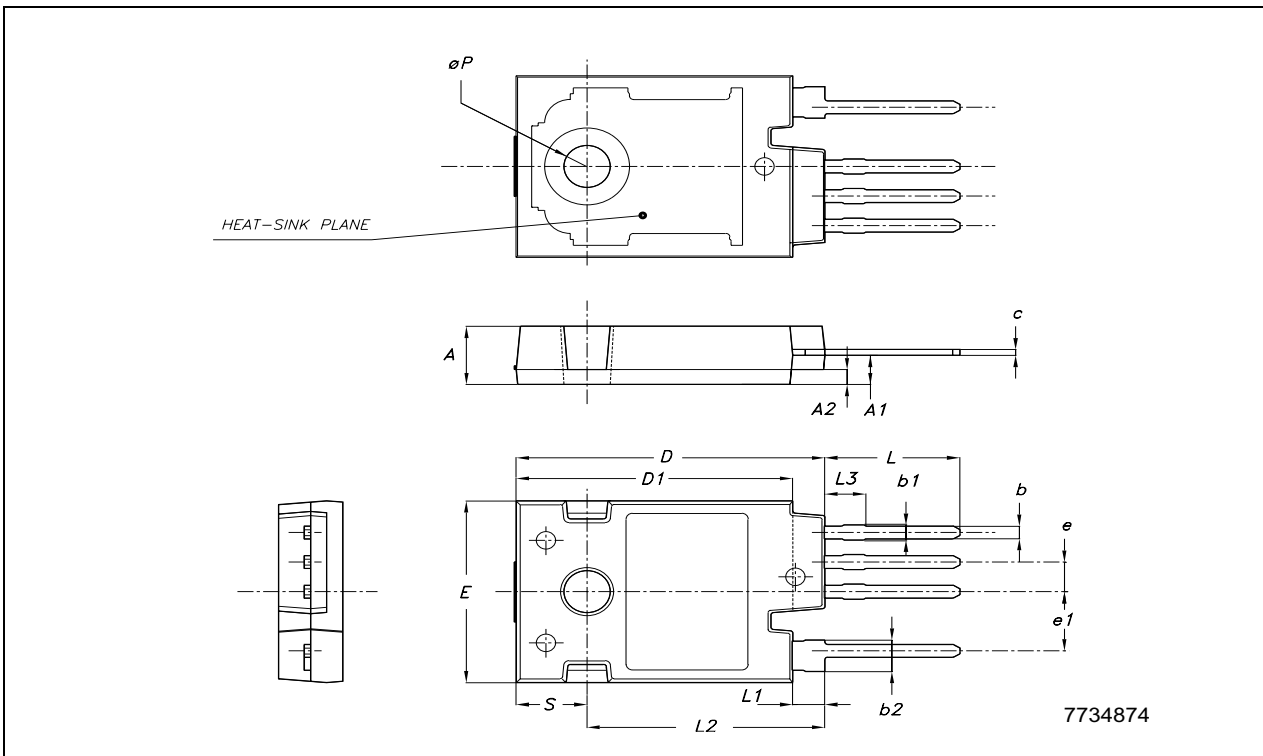
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CS(SS)}$	Collector-source current ($V_{BS} = V_{GS} = 0$)	$V_{CE} = 1500V$			100	μA
$I_{BS(OS)}$	Base-source current ($I_C = 0, V_{GS} = 0V$)	$V_{BS(OS)} = 30V$			10	μA
$I_{SB(OS)}$	Source-base current ($I_C = 0, V_{GS} = 0$)	$V_{SB(OS)} = 17V$			100	μA
$I_{GS(OS)}$	Gate-source leakage	$V_{GS} = \pm 17V$			100	nA
$V_{CS(ON)}$	Collector-source ON voltage	$V_{GS} = 10V \quad I_C = 8A \quad I_B = 1.6A$ $V_{GS} = 10V \quad I_C = 3A \quad I_B = 0.3A$		1 0.7	1.5 1.2	V V
h_{FE}	DC current gain	$V_{GS} = 10V \quad V_{CS} = 1V \quad I_C = 8A$ $V_{GS} = 10V \quad V_{CS} = 1V \quad I_C = 3A$	4.5 9	6 11		
$V_{BS(ON)}$	Base-source ON voltage	$V_{GS} = 10V \quad I_C = 8A \quad I_B = 1.6A$ $V_{GS} = 10V \quad I_C = 2A \quad I_B = 0.3A$		1.6 1.1	2 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	$V_{CS} = 25V \quad f = 1MHz$ $V_{GS} = V_{CB} = 0V$		810		pF
$Q_{GS(tot)}$	Gate-source charge	$V_{CS} = 15V \quad V_{GS} = 10V$ $V_{CB} = 0V \quad I_C = 1.4A$		45.6		nC
t_s t_f	INDUCTIVE LOAD Storage time Fall time	$V_{GS} = 10V \quad R_G = 47\Omega$ $V_{Clamp} = 1200V \quad t_p = 4\mu s$ $I_C = 4A \quad I_B = 0.8A$		690 10		ns ns
t_s t_f	INDUCTIVE LOAD Storage time Fall time	$V_{GS} = 10V \quad R_G = 47\Omega$ $V_{Clamp} = 1200V \quad t_p = 4\mu s$ $I_C = 4A \quad I_B = 0.4A$		340 10		ns ns
$V_{CS(dyn)}$	Collector-source dynamic voltage (500ns)	$V_{CC} = V_{Clamp} = 600V$ $V_{GS} = 10V \quad I_C = 2A$ $I_B = 0.4A \quad R_G = 47\Omega$ $t_{peak} = 500ns \quad I_{Bpeak} = 4A$		2.8		V
$V_{CS(dyn)}$	Collector-source dynamic voltage (1 μs)	$V_{CC} = V_{Clamp} = 600V$ $V_{GS} = 10V \quad I_C = 2A$ $I_B = 0.4A \quad R_G = 47\Omega$ $t_{peak} = 500ns \quad I_{Bpeak} = 4A$		1.7		V
V_{CSW}	Maximum collector-source voltage switched without snubber	$R_G = 47\Omega \quad h_{FE} = 5$ $I_C = 8A$	1500			V

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

TO247-4LHV 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	
∅P	3.55		3.65
S		5.50	



4 Revision History

Date	Revision	Changes
30-Jan-2006	1	Initial release.
01-Dec-2006	2	The document has been reformatted

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