STC08IE150HV

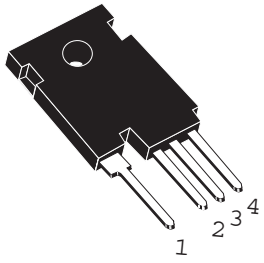
Emitter Switched Bipolar Transistor
ESBT® 1500 V - 8 A - 0.10 Ω

Features

PRELIMINARY DATA

$V_{CS(ON)}$	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 rbsoa, up to 1500 V
- Very low C_{ISS} driven by R_G = 47 Ω
- Very low turn-off cross over time
- In compliance with the 2002/93/EC European Directive

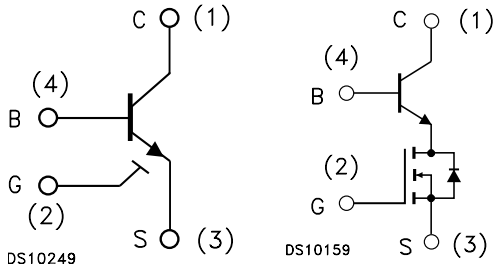


TO247-4LHV

Applications

- Aux SMPS for three phase mains
- Sepic PFC

Internal Schematic Diagram



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.

Order Codes

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

1 Absolute Maximum Ratings

Table 1. Absolute Maximum Ratingsn

Symbol	Parameter	Value	Unit
$V_{CS(SS)}$	Collector-source voltage (V_{BS} = V_{GS} = 0 V)	1500	V
$V_{BS(OS)}$	Base-source voltage (I_C = 0, V_{GS} = 0 V)	30	V
$V_{SB(OS)}$	source-base voltage (i_c = 0, v_{gs} = 0 v)	17	V
V_{GS}	Gate-source Voltage	± 17	V
I_C	Collector Current	8	A
I_{CM}	Collector peak current (t_P < 5ms)	24	A
I_B	Base current	6	A
I_{BM}	Base peak current (t_P < 1ms)	12	A
P_{tot}	Total dissipation at T_c = 25°C	208	W
T_{stg}	Storage temperature	-40 to 150	°C
T_J	Max. operating junction temperature	150	°C

1.1 Thermal Data

Table 2. Thermal Data

Symbol	Parameter		Value	Unit
$R_{thj\text{-}case}$	Thermal resistance junction-case	Max	0.6	°C/W

2 Electrical Characteristics

Table 3. Electrical Characteristics (T_{CASE} = 25°C; unless otherwise specified)

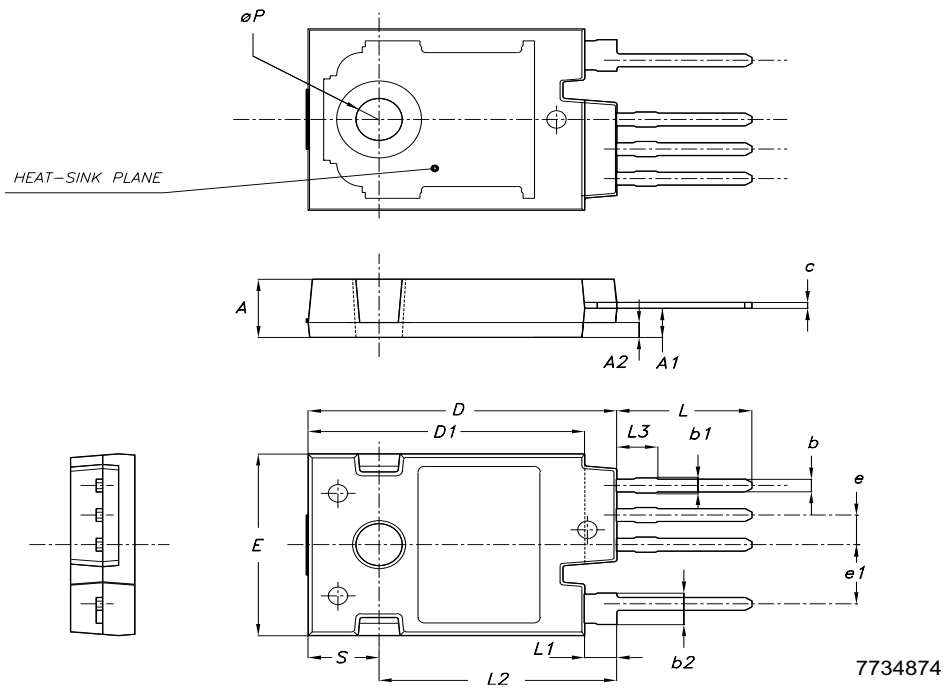
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CS(SS)}$	Collector-source current ($V_{BS} = V_{GS} = 0$)	V_{CE} = 1500V			100	µA
$I_{BS(OS)}$	Base-source current (I_C = 0, V_{GS} = 0 V)	$V_{BS(OS)}$ = 30V			10	µA
$I_{SB(OS)}$	Source-base current (I_C = 0, V_{GS} = 0)	$V_{SB(OS)}$ = 17V			100	µA
$I_{GS(OS)}$	Gate-source leakage	$V_{GS} = \pm$ 17V			100	nA
$V_{CS(ON)}$	Collector-source ON voltage	V_{GS} = 10V I_C = 8A I_B = 1.6A V_{GS} = 10V I_C = 3A I_B = 0.3A		1 0.7	1.5 1.2	V V
h_{FE}	DC current gain	V_{GS} = 10V V_{CS} = 1V I_C = 8A V_{GS} = 10V V_{CS} = 1V I_C = 3A	4.5 9	6 11		
$V_{BS(ON)}$	Base-source ON voltage	V_{GS} = 10V I_C = 8A I_B = 1.6A V_{GS} = 10V I_C = 2A I_B = 0.3A		1.6 1.1	2 1.5	V V
$V_{GS(th)}$	Gate threshold voltage	$V_{BS} = V_{GS}$ I_B = 250 µA	2	3	4	V
C_{ISS}	Input capacitance	V_{CS} =25V f =1MHz V_{GS}=V_{CB}=0V		810		pF
$Q_{GS(tot)}$	Gate-source charge	V_{CS}=15V V_{GS}=10V V_{CB}=0V I_C =1.4A		45.6		nC
 t_s t_f	INDUCTIVE LOAD Storage time Fall time	V_{GS} =10V R_G =47Ω V_{Clamp} =1200V t_p =4µs I_C =4A I_B =0.8A		 690 10		 ns ns
 t_s t_f	INDUCTIVE LOAD Storage time Fall time	V_{GS} =10V R_G =47Ω V_{Clamp} =1200V t_p =4µs I_C =4A I_B =0.4A		 340 10		 ns ns
$V_{CS(dyn)}$	Collector-source dynamic voltage (500ns)	V_{CC} =V_{Clamp} =600V V_{GS} =10V I_C =2A I_B = 0.4A R_G =47Ω t_{peak} =500ns I_{Bpeak} =4A		2.8		V
$V_{CS(dyn)}$	Collector-source dynamic voltage (1µs)	V_{CC} =V_{Clamp} =600V V_{GS} =10V I_C =2A I_B = 0.4A R_G =47Ω t_{peak} =500ns I_{Bpeak} =4A		1.7		V
V_{CSW}	Maximum collector-source voltage switched without snubber	R_G =47Ω 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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