

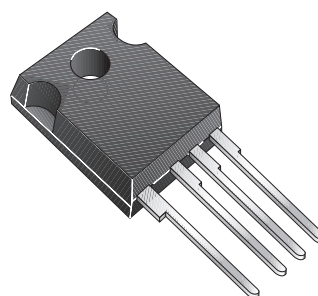


# STC20DE90

900 V - 20 A - 60 mΩ ESBT

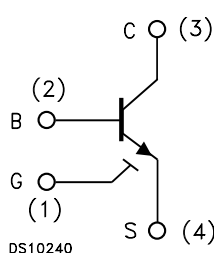
## ADVANCE DATA

- HIGH VOLTAGE / HIGH CURRENT  
CASCODE CONFIGURATION
- LOW EQUIVALENT ON RESISTANCE
- VERY FAST-SWITCH UP TO 150 KHz
- SQUARED RBSOA UP TO 900 V
- ULTRA LOW  $C_{iss}$
- LOW DYNAMIC  $V_{CS(ON)}$

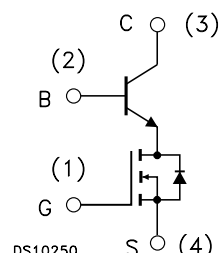


TO-247 4 Leads

## INTERNAL SCHEMATIC DIAGRAM



Electrical Symbol



Device Structure

## ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
$V_{CS(SS)}$	Collector-Source Voltage ( $V_{BS} = V_{GS} = 0V$ )	900	V
$V_{BS(OS)}$	Base-Source Voltage ( $I_C = 0, V_{GS} = 0V$ )	30	V
$V_{SB(OS)}$	Source-Base Voltage ( $I_C = 0, V_{GS} = 0V$ )	10	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_C$	Collector Current	20	A
$I_{CM}$	Collector Peak Current ( $t_p \leq 5 \text{ ms}$ )	60	A
$I_B$	Base Current	4	A
$I_{BM}$	Base Peak Current ( $t_p \leq 1 \text{ ms}$ )	20	A
$P_{tot}$	Total Dissipation at $T_c = 25^\circ\text{C}$	tbd	W
$T_{stg}$	Storage Temperature	-65 to 150	$^\circ\text{C}$
$T_j$	Max. Operating Junction Temperature	150	$^\circ\text{C}$

## THERMAL DATA

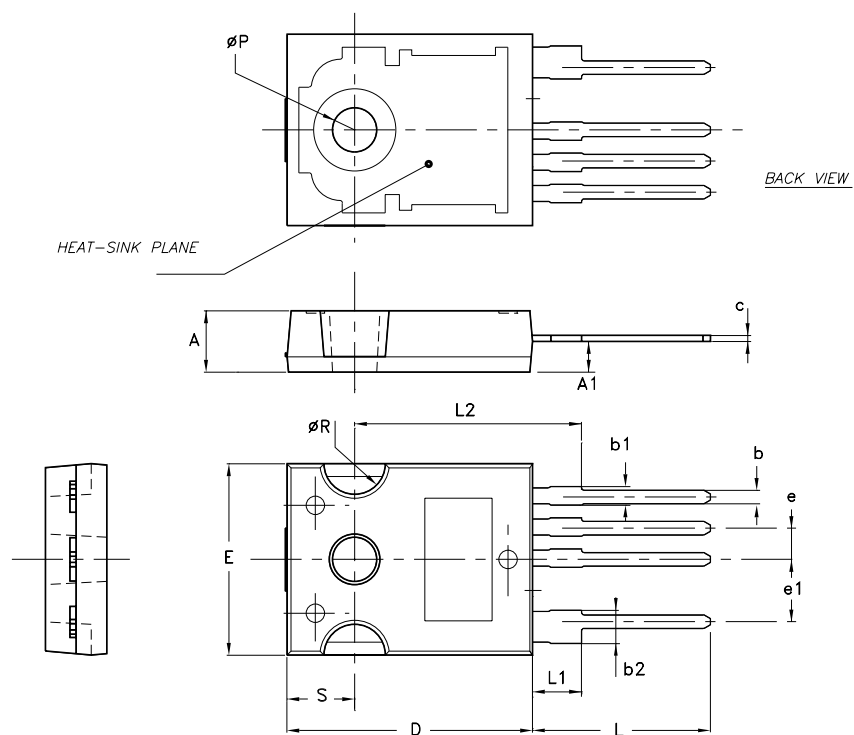
$R_{thj-case}$	Thermal Resistance Junction-Case	Max	tbd	$^{\circ}\text{C/W}$
$R_{thc-h}$	Thermal Resistance Case- heatsink With Conductive Grease Applied	Max	tbd	$^{\circ}\text{C/W}$

ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}\text{C}$  unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CS(SS)}$	Collector-Source Current ( $V_{BS} = V_{GS} = 0\text{ V}$ )	$V_{CS(SS)} = 900\text{ V}$			100	$\mu\text{A}$
$I_{BS(OS)}$	Base-Source Current ( $I_C = 0, V_{GS} = 0\text{ V}$ )	$V_{BS(OS)} = 30\text{ V}$			10	$\mu\text{A}$
$I_{SB(OS)}$	Source-Base Current ( $I_C = 0, V_{GS} = 0\text{ V}$ )	$V_{SB(OS)} = 10\text{ V}$			100	$\mu\text{A}$
$I_{GS(S)}$	Gate-Source Leakage ( $V_{BS} = 0\text{ V}$ )	$V_{GS} = \pm 20\text{ V}$			100	nA
$V_{CS(ON)}$	Collector-Source ON Voltage	$V_{GS} = 10\text{ V}$ $I_B = 3\text{ A}$ $I_C = 15\text{ A}$		1	1.4	V
$R_{CS(ON)}$	Equivalent ON Resistance	$V_{GS} = 10\text{ V}$ $I_B = 3\text{ A}$ $I_C = 15\text{ A}$		60	75	m $\Omega$
$h_{FE}$	DC Current Gain	$I_C = 15\text{ A}$ $V_{CS} = 1\text{ V}$ $V_{GS} = 10\text{ V}$	6	9	12	
$V_{BS(ON)}$	Base-Source ON Voltage	$I_C = 15\text{ A}$ $V_{GS} = 10\text{ V}$ $I_B = 3\text{ A}$		1.4	1.8	V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{BS} = V_{GS}$ $I_B = 250\text{ }\mu\text{A}$	1	1.7	2.5	V
$C_{iss}$	Input Capacitance	tbd	tbd	tbd	tbd	pF
$Q_{GS}$	Gate-Source Charge	tbd	tbd	tbd	tbd	nC
$t_s$ $t_f$	INDUCTIVE LOAD Storage Time Fall Time	tbd	tbd tbd	tbd tbd	tbd tbd	$\mu\text{s}$ ns
$t_{d(on)}$	INDUCTIVE LOAD Time Delay Turn-on	tbd	tbd	tbd	tbd	ns
$t_{r(on)}$	INDUCTIVE LOAD Time Rise Turn-off	tbd	tbd	tbd	tbd	ns
$V_{CS(dyn)}$	Collector-Source Dynamic Voltage	tbd	tbd	tbd	tbd	V
$V_{CSW}$	Maximum Collector Source Voltage without Snubber	tbd	tbd	tbd	tbd	V

## TO-247 4 Leads MECHANICAL DATA

DIM.	mm		
	MIN.	TYP.	MAX.
A	4.85		5.15
A1	2.20		2.60
b	0.95	1.10	1.30
b1	1.30		1.70
b2	2.50		2.90
c	0.40		0.80
D	19.85		20.15
E	15.45		15.75
e		2.54	
e1		5.08	
L	14.20		14.80
L1	3.70		4.30
L2		18.50	
ØP	3.55		3.65
ØR	4.50		5.50



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