STGW45HF60WD

45 A, 600 V ultra fast IGBT

Features

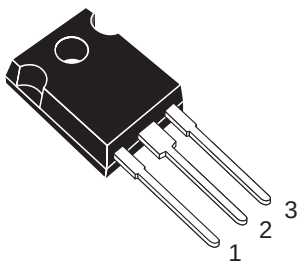
- Improved E_{off} at elevated temperature
- Low C_{RES} / C_{IES} ratio (no cross-conduction susceptibility)
- Ultra fast soft recovery antiparallel diode

Applications

- Welding
- High frequency converters
- Power factor correction

Description

The “HF” family is based on a new advanced planar technology concept to yield an IGBT with more stable switching performance (E_{off}) versus temperature, as well as lower conduction losses. The “W” series is a subset of products tailored to high switching frequency operation (over 100 kHz).



TO-247

Figure 1. Internal schematic diagram

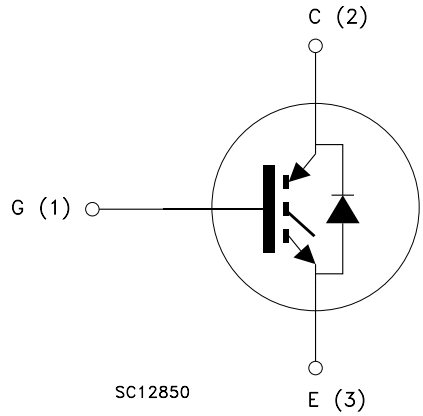


Table 1. Device summary (1)

Order code	Marking	Package	Packaging
STGW45HF60WD	GW45HF60WDA	TO-247	Tube
	GW45HF60WDB		
	GW45HF60WDC		

1. Collector-emitter saturation voltage is classified in group A, B and C, see *Table 5: VCE(sat) classification*. STMicroelectronics reserves the right to ship from any group according to production availability.

1 Electrical ratings

Table 2. Absolute maximum ratings

Symbol	Parameter	Value	Unit
V_{CES}	Collector-emitter voltage (V_{GE} = 0)	600	V
I_C (1)	Continuous collector current at T_C = 25 °C	70	A
I_C (1)	Continuous collector current at T_C = 100 °C	45	A
I_{CP} (2)	Pulsed collector current	150	A
I_{CL} (3)	Turn-off latching current	80	A
V_{GE}	Gate-emitter voltage	± 20	V
I_F	Diode RMS forward current at T_C = 25 °C	30	A
I_{FSM}	Surge not repetitive forward current t_p= 10 ms sinusoidal	120	A
P_{TOT}	Total dissipation at T_C = 25 °C	250	W
T_{stg}	Storage temperature	– 55 to 150	°C
T_j	Operating junction temperature		

1. Calculated according to the iterative formula:

$$I_C(T_C) = \frac{T_{j(max)} - T_C}{R_{thj-c} \times V_{CE(sat)(max)}(T_{j(max)}, I_C(T_C))}$$

2. Pulse width limited by maximum junction temperature and turn-off within RBSOA
3. V_{CLAMP} = 80% (V_{CES}), V_{GE} = 15 V, R_G = 10 Ω, T_J = 150 °C

Table 3. Thermal data

Symbol	Parameter	Value	Unit
$R_{thj\text{-}case}$	Thermal resistance junction-case IGBT	0.5	°C/W
	Thermal resistance junction-case diode	1.5	°C/W
$R_{thj\text{-}amb}$	Thermal resistance junction-ambient	50	°C/W