High voltage ultrafast rectifier

Description

The STTH112A which is ultrafast high voltage planar technology, is specially suited for free-wheeling, clamping, snubbering, demagnetization in power supplies and other power switching applications

SMA

MARKING:H12

Features

- Low forwarded voltage drop
- High reliability
- High surge current capability
- Soft switching for reduced EMI disturbances
- Planar technology

Table 1. Device summary

Symbol	Value
$I_{F(AV)}$	1 A
V_{RRM}	1200 V
$T_{j\ (max)}$	175 °C
$V_{F\ (max)}$	1.65 V

Absolute ratings (limiting values)

Symbol	Parameter	Value	Unit
V_{RRM}	Repetitive peak reverse voltage	1200	V
$V_{(RMS)}$	Voltage rms	850	V
$I_{F(AV)}$	Average forward current	1	A
I_{FSM}	Forward surge current t = 8.3 ms	18	A
T_{stg}	Storage temperature range	- 50 + 175	°C
T_j	Maximum operating junction temperature	+ 175	°C

Table 2. Thermal parameters

Symbol	Parameter		Value	Unit
$R_{th\ (j-l)}$	Junction to lead		30	°C/W

Table 3. Static electrical characteristics

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I_R	Reverse leakage current	V_R = 1200 V	T_j = 25 °C			5	µA
			T_j = 125 °C			50	
V_F	Forward voltage drop	I_F = 1 A	T_j = 25 °C			1.9	V
			T_j = 125 °C		1.17	1.65	
			T_j = 150 °C		1.10	1.55	

Table 4. Dynamic electrical characteristics

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
t_{rr}	Reverse recovery time	I_F = 0.5 A I_{rr} = 0.25 A I_R = 1A	T_j = 25 °C			75	ns
t_{fr}	Forward recovery time	I_F = 1 A dI_F/dt = 50 A/µs V_{FR} = 1.1 x V_{Fmax}	T_j = 25 °C			500	ns
V_{FP}	Forward recovery voltage					30	V

Figure 1. Conduction losses versus average current

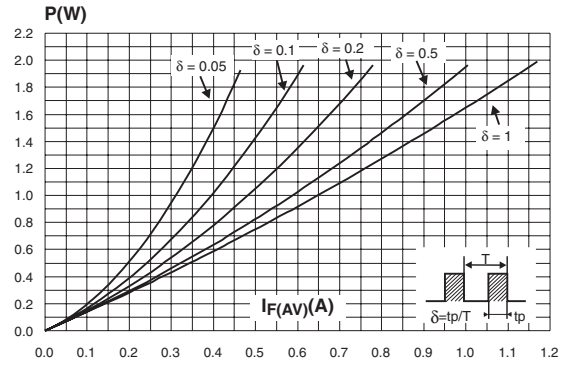

Figure 2. Forward voltage drop versus forward current

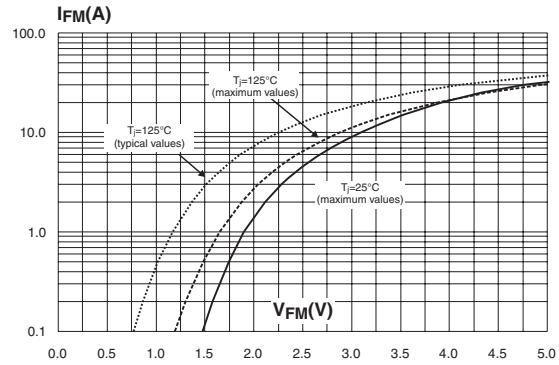

Figure 3. Relative variation of thermal impedance junction ambient versus pulse duration (epoxy FR4) (SMA)

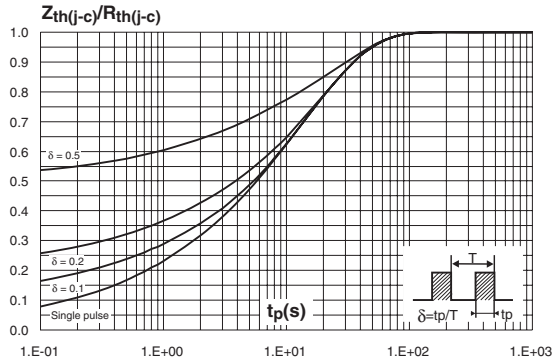

Figure 4.Thermal resistance junction to ambient versus copper surface under each lead (epoxy printed circuit board FR4, copper thickness: 35µm) (SMA)