

MSKSEMI 美森科

SEMICONDUCTOR



ESD



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GDT



PLED

STTH102A-MS

Product specification

Description

The STTH102A-MS, which is using new 200 V planar technology, is specially suited for switching mode base drive and transistor circuits. The device is also intended for use as a free wheeling diode in power supplies and other power switching applications.

Features

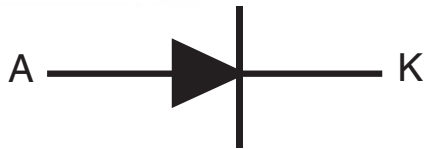
- Very low conduction losses
- Negligible switching losses
- Low forward and reverse recovery times
- High junction temperature

Reference News

STTH102A-MS	MARKING
 DO-214AC(SMA)	

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	1 A
V_{RRM}	200 V
$T_j(max)$	175° C
$V_F(max)$	0.78 V
$t_{rr} (max)$	20 ns



Absolute ratings (limiting values)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			200	V
$I_{F(AV)}$	Average forward current	SMA	$T_L = 148^\circ \text{C} \quad \delta = 0.5$	1	A
I_{FSM}	Surge non repetitive forward current	SMA	$t_p = 10 \text{ ms Sinusoidal}$	40	A
T_{stg}	Storage temperature range			-65 to + 175	°C
T_j	Maximum operating junction temperature			175	°C
dV/dt	Critical rate of rise of reverse voltage			10000	V/ μ s

Thermal resistance

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

Static electrical characteristics

Symbol	Parameter	Tests conditions		Min.	Typ	Max.	Unit
$I_R^{(1)}$	Reverse leakage current	$T_j = 25^\circ \text{C}$	$V_R = V_{RRM}$			1	μA
		$T_j = 125^\circ \text{C}$			1	25	
$V_F^{(2)}$	Forward voltage drop	$T_j = 25^\circ \text{C}$	$I_F = 700 \text{ mA (SMA)}$			0.90	V
			$I_F = 1 \text{ A}$			0.97	
		$T_j = 125^\circ \text{C}$	$I_F = 1 \text{ A}$		0.68	0.78	

1. Pulse test: $t_p = 5 \text{ ms}$, $\delta < 2\%$

2. Pulse test: $t_p = 380 \mu\text{s}$, $\delta < 2\%$

To evaluate the conduction losses use the following equation:

$$P = 0.65 \times I_{F(AV)} + 0.130 I_F^2(RMS)$$

Dynamic electrical characteristics

Symbol	Parameter	Tests conditions		Min	Typ	Max	Unit
t_{rr}	Reverse recovery time	$T_j = 25^\circ \text{C}$	$I_F = 0.5 \text{ A}$ $I_{rr} = 0.25 \text{ A}$ $I_R = 1 \text{ A}$		12	20	ns
t_{fr}	Forward recovery time	$T_j = 25^\circ \text{C}$	$I_F = 1 \text{ A}$ $dl_F/dt = 50 \text{ A/ms}$ $V_{FR} = 1.1 \times V_{Fmax}$		50		ns
V_{FP}	Forward recovery voltage	$T_j = 25^\circ \text{C}$	$I_F = 1 \text{ A}$ $dl_F/dt = 50 \text{ A/ms}$		1.8		V

Figure 1. Average forward power dissipation versus average forward current (SMA)

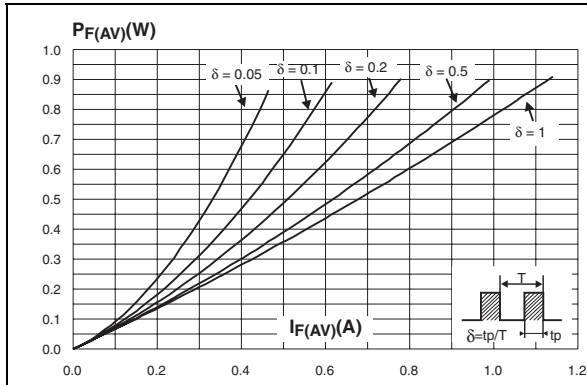


Figure 2. Average forward current versus ambient temperature ($\delta = 0.5$) (SMA)

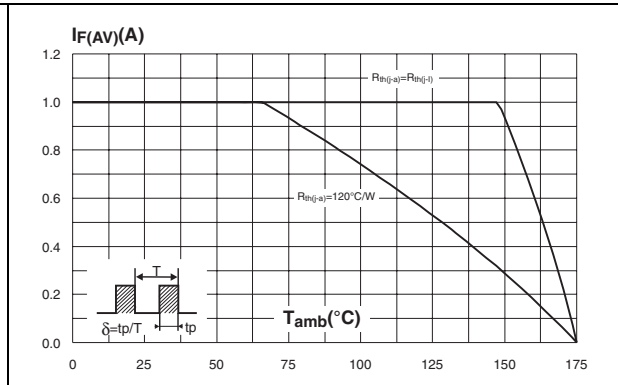


Figure 3. Relative variation of thermal impedance junction to ambient versus pulse duration (epoxy printed circuit board, $e_{Cu} = 35 \mu m$, recommended pad layout) (SMA)

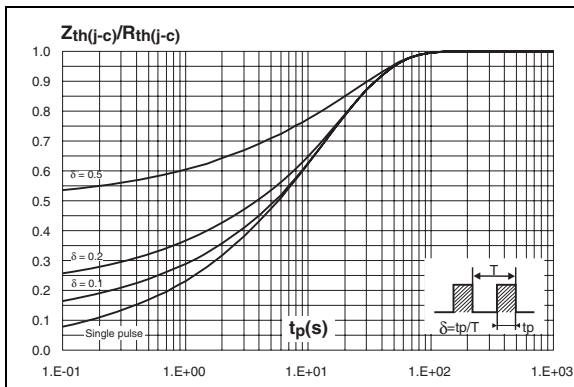


Figure 4. Forward voltage drop versus forward current

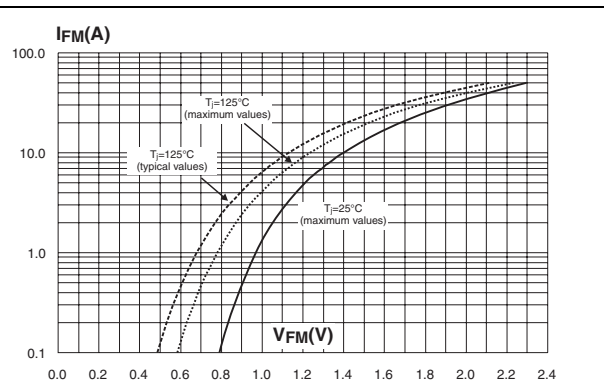


Figure 5. Junction capacitance versus reverse voltage applied (typical values)

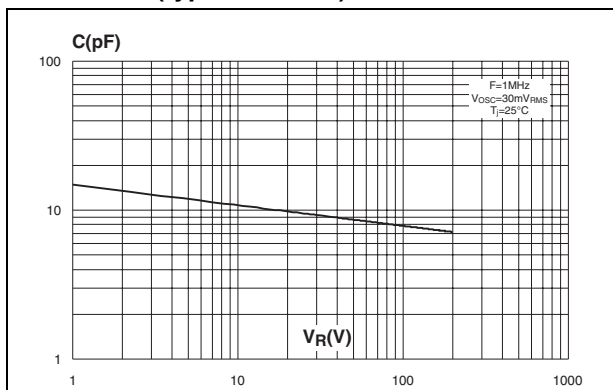


Figure 6. Reverse recovery time versus dl_F/dt (90% confidence)

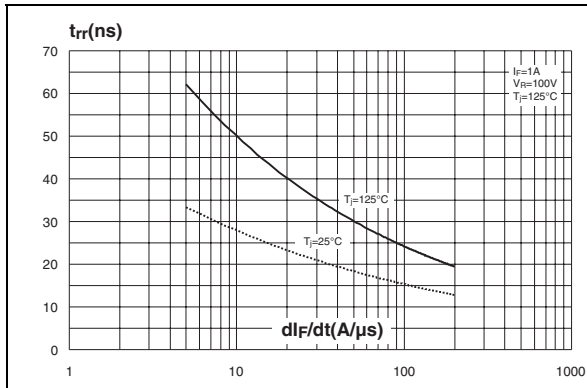


Figure 7. Peak recovery current versus dl_F/dt (90% confidence)

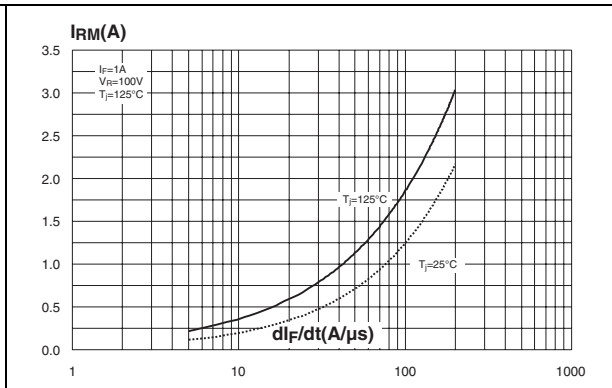


Figure 8. Reverse recovery charges versus dl_F/dt (90% confidence)

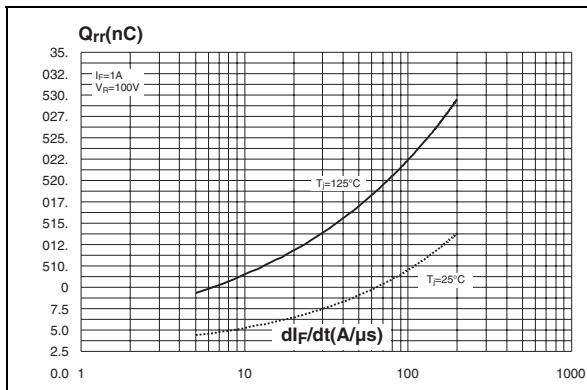


Figure 9. Relative variations of dynamic parameters versus junction temperature

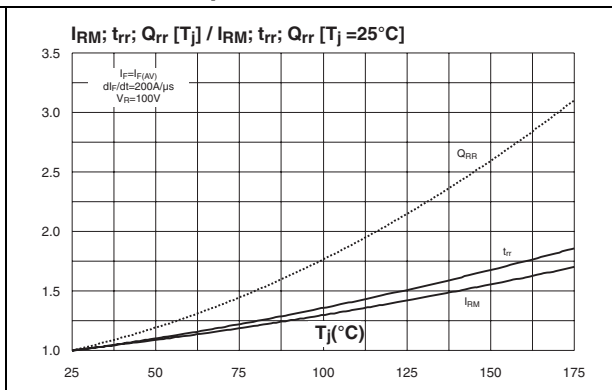
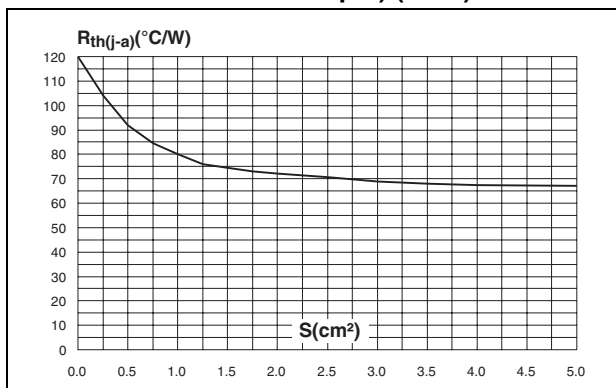
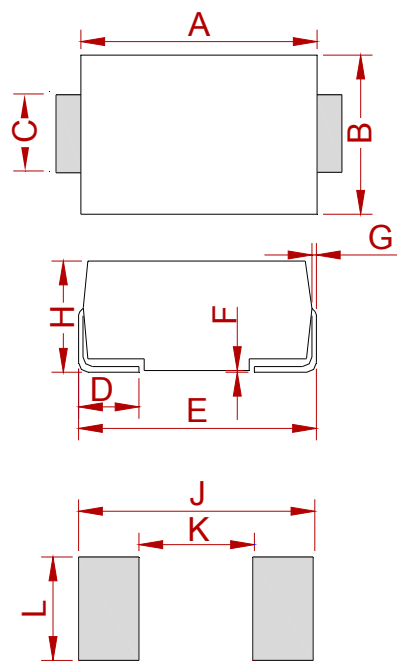


Figure 10. Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness: 35 μ m) (SMA)



PACKAGE MECHANICAL DATA



DO-214AC (SMA)

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.25	4.65	0.167	0.183
B	2.50	2.90	0.098	0.114
C	1.35	1.65	0.053	0.065
D	0.76	1.52	0.030	0.060
E	4.93	5.28	0.194	0.208
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	1.98	2.41	0.078	0.095
J	6.50		0.256	
K		2.30		0.090
L	1.70		0.067	

REEL SPECIFICATION

P/N	PKG	QTY
STTH102A-MS	DO-214AC (SMA)	5000

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