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SEMICONDUCTOR



ESD



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GDT



PLED

STTH302S-MS

Product specification

Description

The STTH302S-MS, which is using new 200V planar technology, is specially suited for switching mode base drive & transistor circuits.

The device is also intended for use as a free wheeling diode in power supplies and other power switching applications.

Features

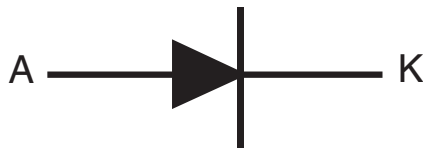
- Very low conduction losses
- Negligible switching losses
- Low forward and reverse recovery times
- High junction temperature

Reference News

STTH302S-MS	MARKING
 DO-214AB(SMC)	

MAIN PRODUCT CHARACTERISTICS

IF(AV)	3A
VRRM	200 V
Tj (max)	175 °C
VF (max)	0.75 V
trr (max)	35 ns



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
VRRM	Repetitive peak reverse voltage		200	V
IF(AV)	Average forward current	TI = 107°C δ=0.5	3	A
IFSM	Surge non repetitive forward current	tp = 10 ms Sinusoidal	100	A
Tstg	Storage temperature range		- 65 + 175	°C
Tj	Maximum operating junction temperature		175	°C

THERMAL PARAMETERS

Symbol	Parameter	Maximum	Unit
Rth (j-l)	Junction to lead	20	°C/W

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_j=25^{\circ}\text{C}$	$V_R = V_{RRM}$			3	μA
		$T_j=125^{\circ}\text{C}$			4	75	
V_F^{**}	Forward voltage drop	$T_j=25^{\circ}\text{C}$	$I_F = 3\text{ A}$			0.95	V
		$T_j=125^{\circ}\text{C}$	$I_F = 3\text{ A}$		0.66	0.75	

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

** $t_p = 380\mu\text{s}$, $\delta < 2\%$

To evaluate the maximum conduction losses use the following equation :
 $P = 0.60 \times I_{F(AV)} + 0.05 I_F^2 (RMS)$

DYNAMIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
trr	Reverse recovery time	$T_j = 25^{\circ}\text{C}$	$I_F = 1\text{ A}$ $I_{rr} = -50\text{ A}/\mu\text{s}$ $V_R = 30\text{V}$			35	ns
tfr	Forward recovery time	$T_j = 25^{\circ}\text{C}$	$I_F = 3\text{ A}$ $dI_F/dt = 50\text{ A}/\mu\text{s}$ $V_{FR} = 1.1 \times V_{Fmax}$		70		ns
V_{FP}	Forward recovery voltage	$T_j = 25^{\circ}\text{C}$	$I_F = 3\text{ A}$ $dI_F/dt = 50\text{ A}/\mu\text{s}$		1.6		V

Fig. 1: Average forward power dissipation versus average forward current.

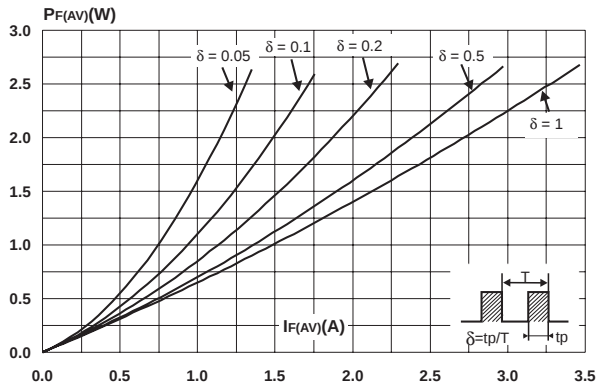


Fig. 2: Average forward current versus ambient temperature ($\delta = 0.5$).

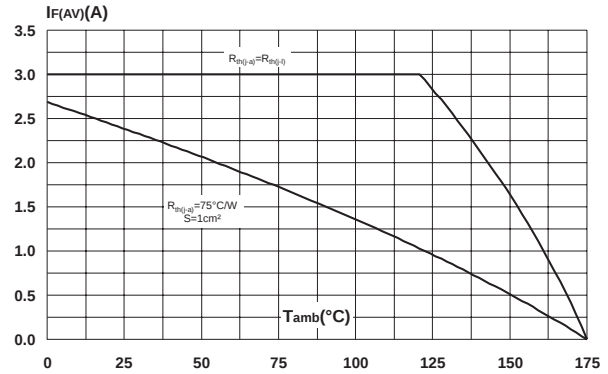


Fig. 3: Relative variation of thermal impedance junction ambient versus pulse duration (Printed circuit board epoxy FR4).

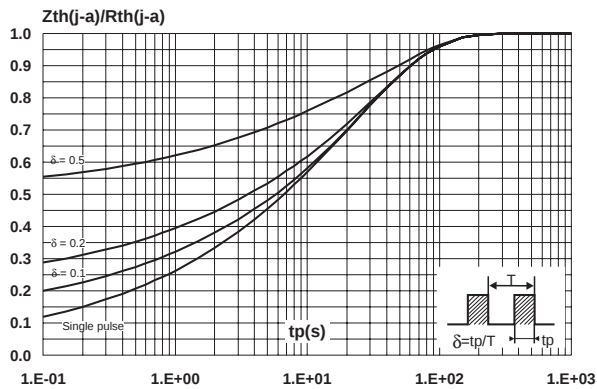


Fig. 4: Forward voltage drop versus forward current.

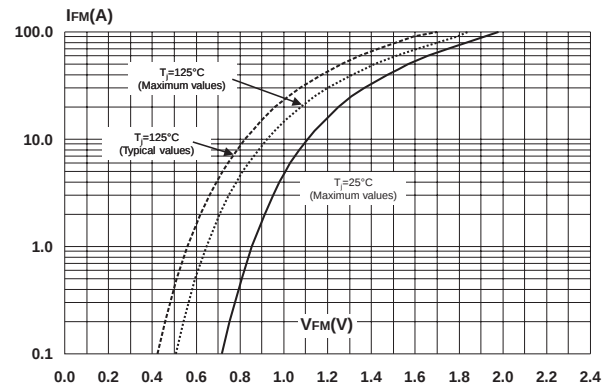


Fig. 5: Junction capacitance versus reverse voltage applied (typical values).

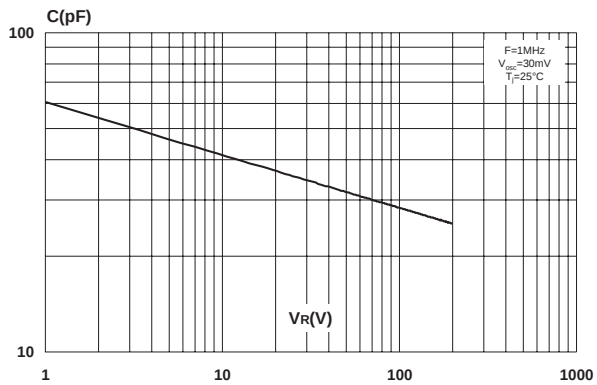


Fig. 6: Reverse recovery time versus di_F/dt (90% confidence).

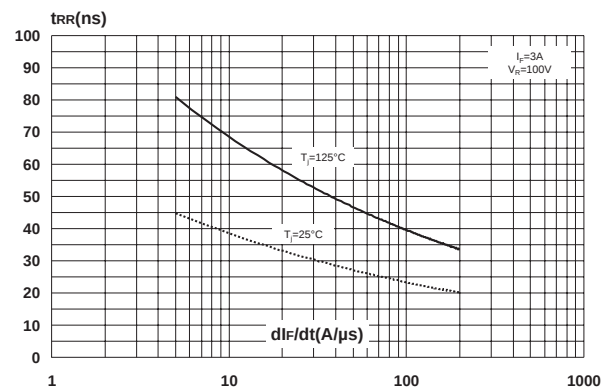


Fig. 7: Peak reverse recovery current versus dl_F/dt (90% confidence).

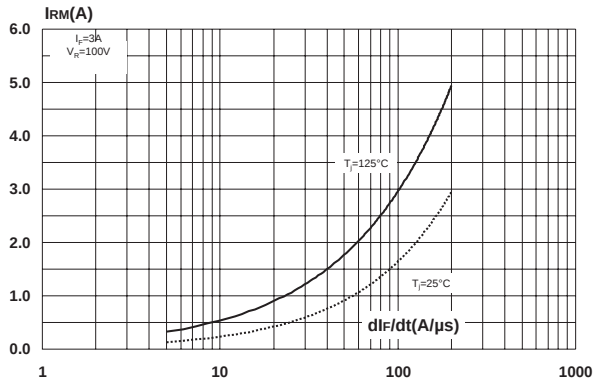


Fig. 8: Reverse recovery charges versus dl_F/dt (90% confidence).

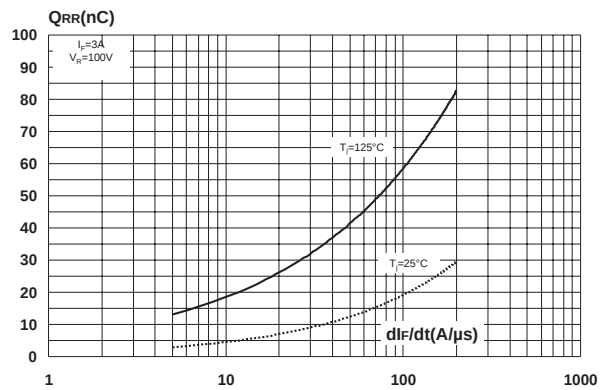


Fig. 9: Relative variations of dynamic parameters versus junction temperature.

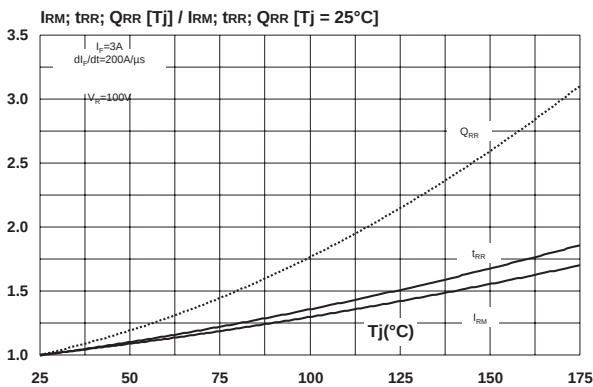
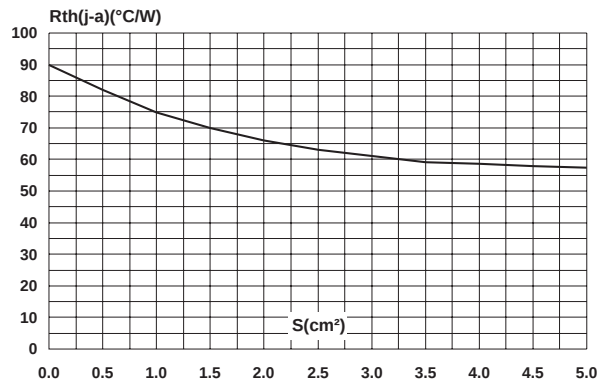
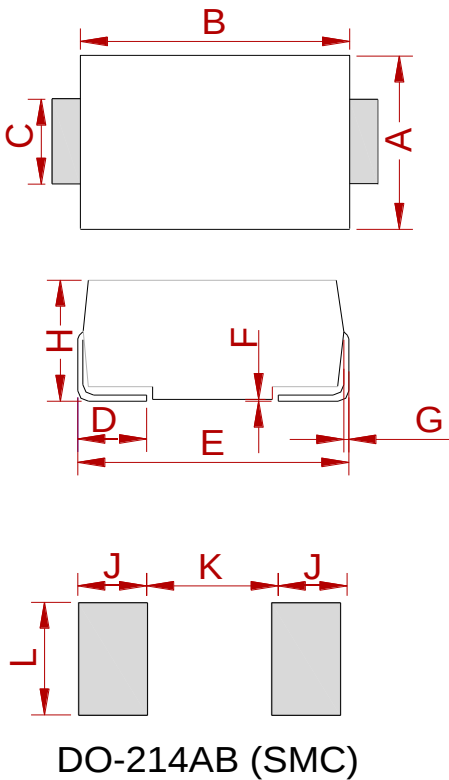


Fig. 10: Thermal resistance junction to ambient versus copper surface under each lead (epoxy FR4, $e = 35\mu\text{m}$).



PACKAGE MECHANICAL DATA



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	5.75	6.25	0.226	0.246
B	6.90	7.40	0.272	0.291
C	2.75	3.25	0.108	0.128
D	0.95	1.52	0.037	0.060
E	7.70	8.20	0.303	0.323
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.15	2.62	0.085	0.103
J	2.40		0.094	
K		4.20		0.165
L	3.30		0.130	

REEL SPECIFICATION

P/N	PKG	QTY
STTH302S-MS	DO-214AB (SMC)	2500

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