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SEMICONDUCTOR



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PLED

STTH2R06x-MS

Product specification

Description

The STTH2R06x-MS uses Turbo 2 600 V planar Pt doping technology. It is specially suited for switching mode base drive and transistor circuits.

Packaged in axial, SMA, SMB and SMC, this device is intended for use in high frequency inverters, free wheeling and polarity protection.

Features

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

Reference News

STTH2R06A-MS	MARKING
 DO-214AC(SMA)	
STTH2R06U-MS	MARKING
 DO-214AA(SMB)	
STTH2R06S-MS	MARKING
 DO-214AB(SMC)	



Device summary

Symbol	Value
$I_{F(AV)}$	2 A
V_{RRM}	600 V
T_j	175 °C
$V_F(typ)$	1.0 V
$t_{rr} (typ)$	35 ns

Characteristics

Absolute Ratings (limiting values)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			600	V
$I_{F(RMS)}$	Forward rms current			7	A
$I_{F(AV)}$	Average forward current $\delta = 0.5$	SMA	$T_L = 85\text{ }^{\circ}\text{C}$	2	A
		SMB	$T_L = 100\text{ }^{\circ}\text{C}$		
		SMC	$T_L = 115\text{ }^{\circ}\text{C}$		
I_{FSM}	Surge non repetitive forward current	SMA / SMB / SMC	$t_p = 10\text{ms}$ sinusoidal	30	A
T_{stg}	Storage temperature range			-65 to + 175	$^{\circ}\text{C}$
T_j	Operating junction temperature range			-40 to + 175	$^{\circ}\text{C}$

Thermal resistance

Symbol	Parameter		Maximum	Unit
$R_{th(j-l)}$	Junction to lead	SMA	30	$^{\circ}\text{C/W}$
		SMB	25	
		SMC	20	

Static electrical characteristics

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
$I_R^{(1)}$	Reverse leakage current	$T_j = 25\text{ }^{\circ}\text{C}$	$V_R = V_{RRM}$	-	-	2	μA
		$T_j = 150\text{ }^{\circ}\text{C}$		-	12	85	
$V_F^{(2)}$	Forward voltage drop	$T_j = 25\text{ }^{\circ}\text{C}$	$I_F = 2\text{ A}$	-	-	1.7	V
		$T_j = 150\text{ }^{\circ}\text{C}$		-	1.0	1.25	

1. Pulse test: $t_p = 5\text{ ms}$, $\delta < 2\%$
2. Pulse test: $t_p = 380\text{ }\mu\text{s}$, $\delta < 2\%$

To evaluate the maximum conduction losses use the following equation:

$$P = 1 \times I_{F(AV)} + 0.125 I_F^2_{(RMS)}$$

Dynamic electrical characteristics

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
t_{rr}	Reverse recovery time	$T_J = 25\text{ }^{\circ}\text{C}$ $I_F = 0.5\text{ A}$, $I_{rr} = 0.25\text{ A}$, $I_R = 1\text{ A}$	-	-	30	ns
		$I_F = 1\text{ A}$, $di_F/dt = -50\text{ A}/\mu\text{s}$ $V_R = 30\text{ V}$	-	35	50	
t_{fr}	Forward recovery time	$T_J = 25\text{ }^{\circ}\text{C}$ $I_F = 2\text{ A}$, $di_F/dt = 100\text{ A}/\mu\text{s}$	-	-	100	ns
V_{FP}	Forward recovery voltage	$V_{FR} = 1.1 \times V_{Fmax}$	-	-	10	V

Figure 1. Conduction losses versus average forward current

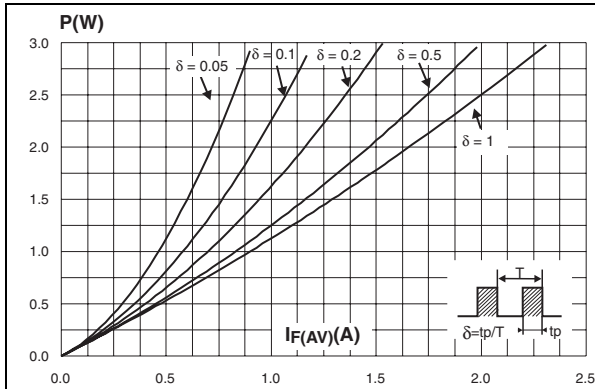


Figure 2. Forward voltage drop versus forward current

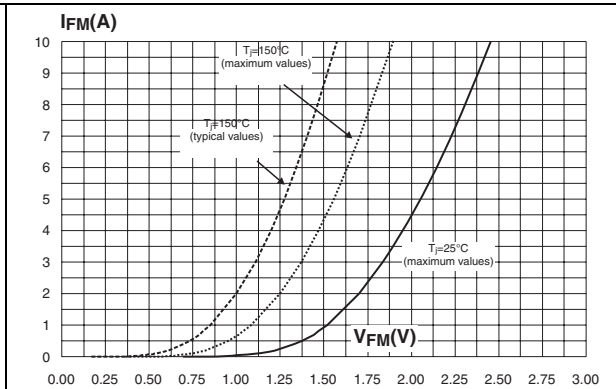


Figure 3. Relative variation of thermal impedance junction to case versus pulse duration

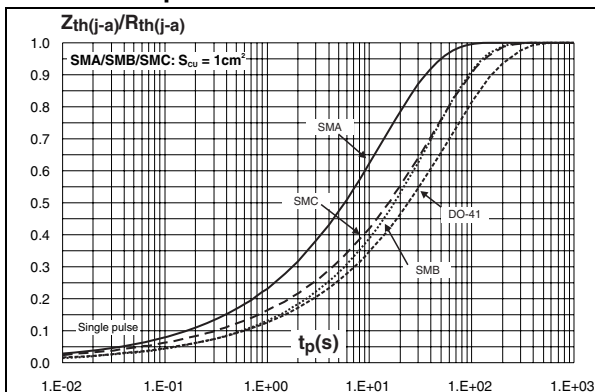


Figure 4. Peak reverse recovery current versus di_F/dt (typical values)

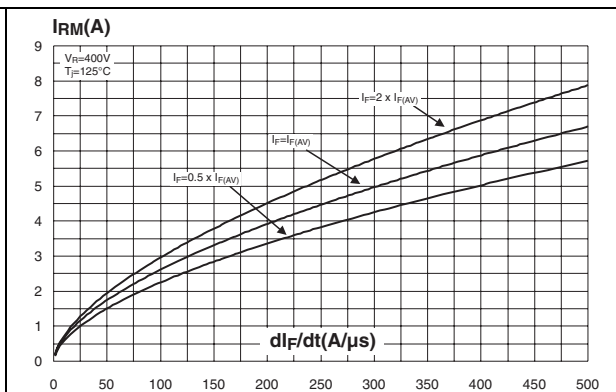


Figure 5. Reverse recovery time versus di_F/dt (typical values)

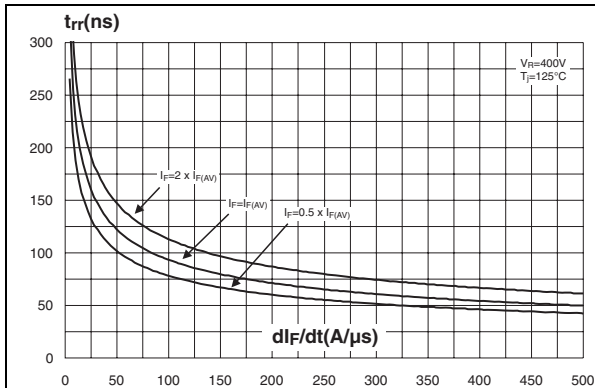


Figure 6. Reverse recovery charges versus di_F/dt (typical values)

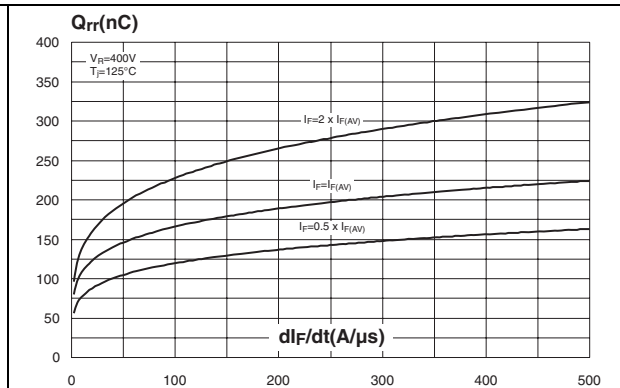


Figure 7. Relative variations of dynamic parameters versus junction temperature

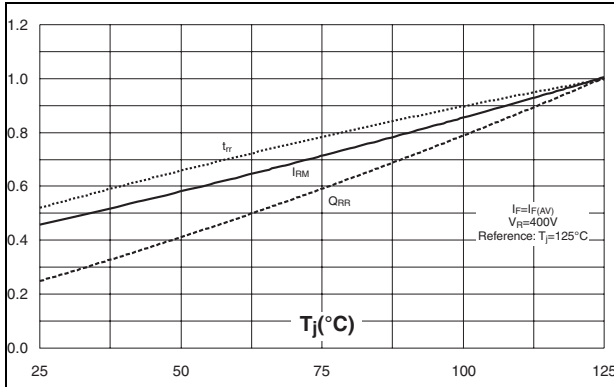


Figure 8. Transient peak forward voltage versus di_F/dt (typical values)

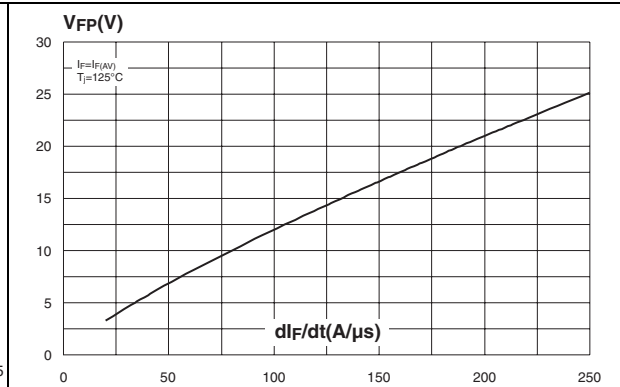


Figure 9. Forward recovery time versus di_F/dt (typical values)

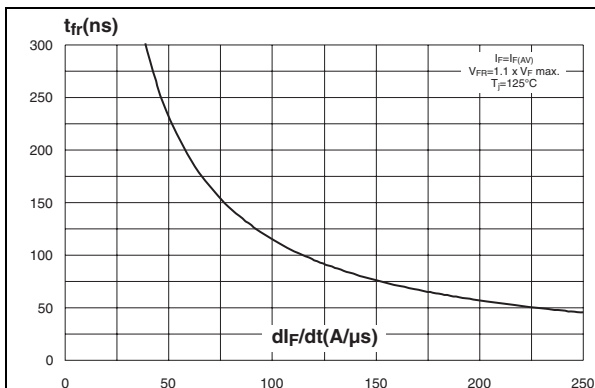


Figure 10. Junction capacitance versus reverse voltage applied (typical values)

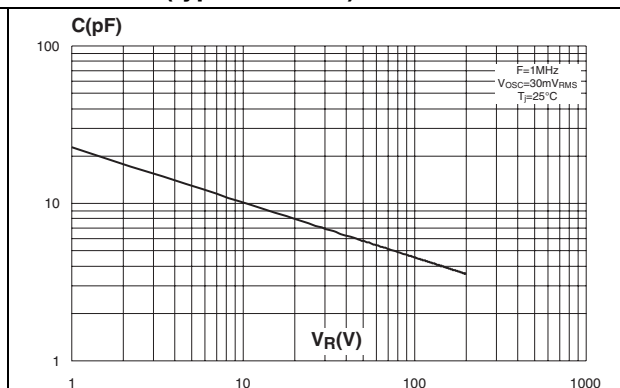
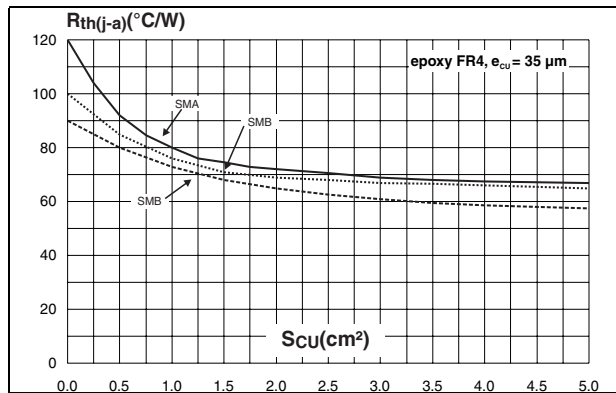
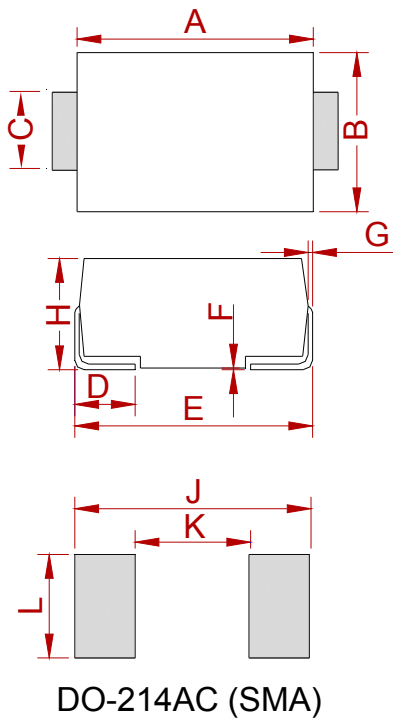


Figure 11. Thermal resistance junction to ambient versus copper surface under each lead



PACKAGE MECHANICAL DATA

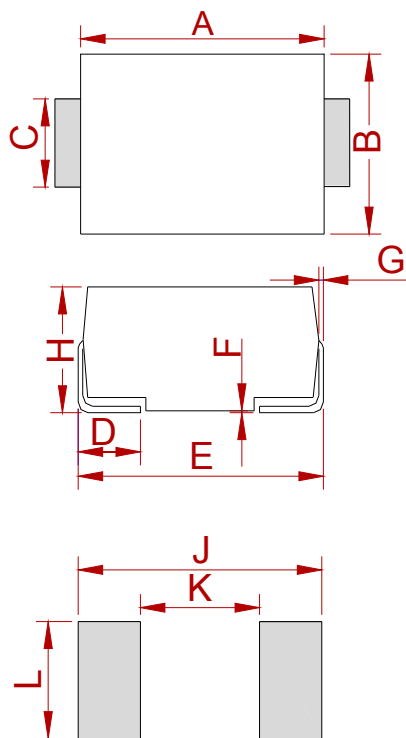


Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.25	4.65	0.167	0.183
B	2.50	2.90	0.098	0.114
C	1.35	1.65	0.053	0.065
D	0.76	1.52	0.030	0.060
E	4.93	5.28	0.194	0.208
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	1.98	2.41	0.078	0.095
J	6.50		0.256	
K		2.30		0.090
L	1.70		0.067	

REEL SPECIFICATION

P/N	PKG	QTY
STTH2R06A-MS	DO-214AC (SMA)	5000

PACKAGE MECHANICAL DATA



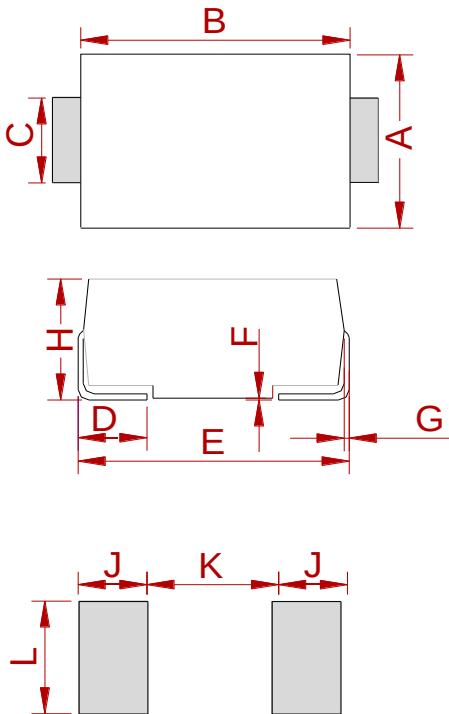
DO-214AA (SMB)

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.25	4.75	0.167	0.187
B	3.30	3.94	0.130	0.155
C	1.85	2.21	0.073	0.087
D	0.76	1.52	0.030	0.060
E	5.08	5.59	0.200	0.220
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.11	2.44	0.083	0.096
J	6.80		0.270	
K		2.60		0.100
L	2.40		0.090	

REEL SPECIFICATION

P/N	PKG	QTY
STTH2R06U-MS	DO-214AA (SMB)	2500

PACKAGE MECHANICAL DATA



DO-214AB (SMC)

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
STTH2R06S-MS	DO-214AB (SMC)	2500

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