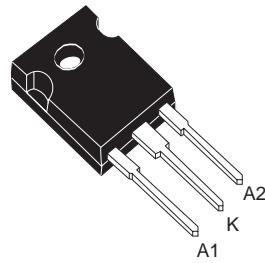


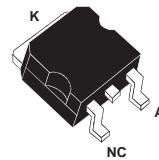
## HIGH FREQUENCY SECONDARY RECTIFIER

### MAJOR PRODUCT CHARACTERISTICS

$I_{F(AV)}$	2 x 15 A
$V_{RRM}$	300 V
$I_{RM} (\text{typ.})$	4.5A
$T_j (\text{max})$	175 °C
$V_F (\text{max})$	1.4 V
$\text{trr} (\text{max})$	35 ns



TO-247  
STTH30R03CW



D<sup>2</sup>PAK  
STTH30R03CG

### FEATURES AND BENEFITS

- Designed for high frequency applications.
- Hyperfast recovery competes with GaAs devices.
- Allows size decrease of snubbers and heatsinks.

### DESCRIPTION

The TURBOSWITCH "R" is an ultra high performance diode.

This TURBOSWITCH family, which drastically cuts losses in associated MOSFET when run at high  $dI_F/dt$ , is suited for HF OFF-Line SMPS and DC/DC converters.

### ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter			Value	Unit
$V_{RRM}$	Repetitive peak reverse voltage			300	V
$I_{F(\text{RMS})}$	RMS forward current			30	A
$I_{F(AV)}$	Average forward current	$T_c = 120^\circ\text{C}$	Per diode	15	A
$I_{FSM}$	Surge non repetitive forward current	$\delta = 0.5$	Per device	30	
$T_{\text{stg}}$	Storage temperature range			- 65 + 175	°C
$T_j$	Maximum operating junction temperature			+ 175	°C

## STTH30R03CW/CG

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### THERMAL AND POWER DATA

Symbol	Parameter	Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	2.0
		Total	1.2
$R_{th(c)}$	Coupling	0.4	

### STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
$I_R$ *	Reverse leakage current	$V_R = V_{RRM}$	$T_j = 25^\circ C$			20	$\mu A$
			$T_j = 125^\circ C$		30	200	
$V_F$ **	Forward voltage drop	$I_F = 15 A$	$T_j = 25^\circ C$			1.9	$V$
			$T_j = 125^\circ C$		1.1	1.4	

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

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

To evaluate the maximum conduction losses use the following equation :

$$P = 1 \times I_{F(AV)} + 0.026 I_{F(RMS)}^2$$

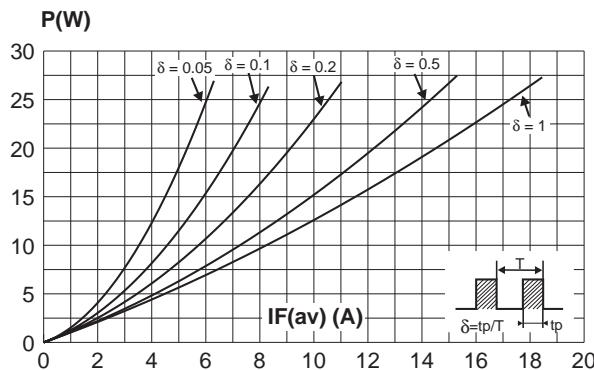
### RECOVERY CHARACTERISTICS

Symbol	Tests conditions			Min.	Typ.	Max.	Unit
$t_{rr}$	$I_F = 0.5 A$	$I_{rr} = 0.25 A$	$I_R = 1A$	$T_j = 25^\circ C$		20	ns
	$I_F = 1 A$	$dI_F/dt = -50 A/\mu s$	$V_R = 30V$			35	
$I_{RM}$	$V_R = 200 V$ $I_F = 15A$ $dI_F/dt = -200A/\mu s$			$T_j = 125^\circ C$		4.5	A
						0.4	

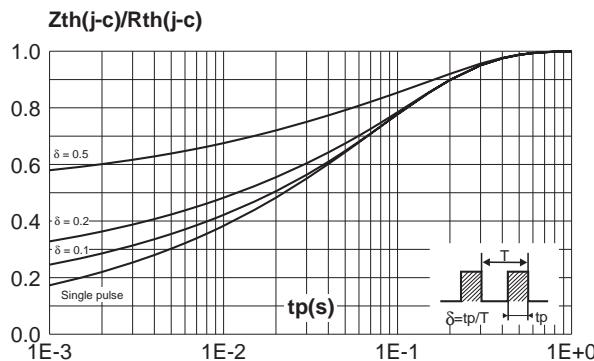
### TURN-ON SWITCHING CHARACTERISTICS

Symbol	Tests conditions	Min.	Typ.	Max.	Unit
$t_{fr}$	$T_j = 25^\circ C$ $I_F = 15A$ $dI_F/dt = 100A/\mu s$ measured at $1.1 \times V_{Fmax}$			300	ns
$V_{FP}$	$T_j = 25^\circ C$ $I_F = 15A$ $dI_F/dt = 100A/\mu s$			3.5	V

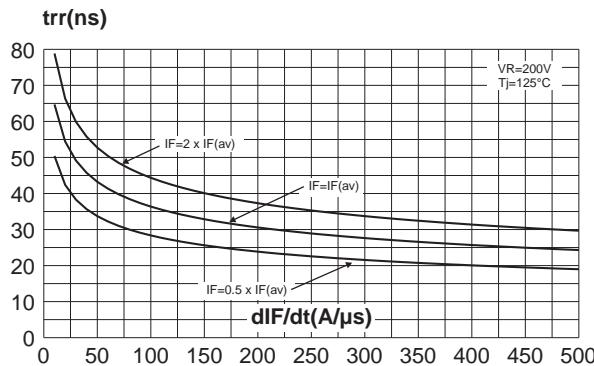
**Fig. 1:** Conduction losses versus average current



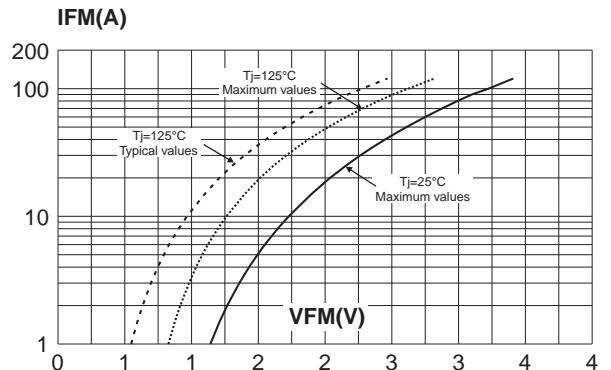
**Fig. 3:** Relative variation of thermal impedance junction to case versus pulse duration.



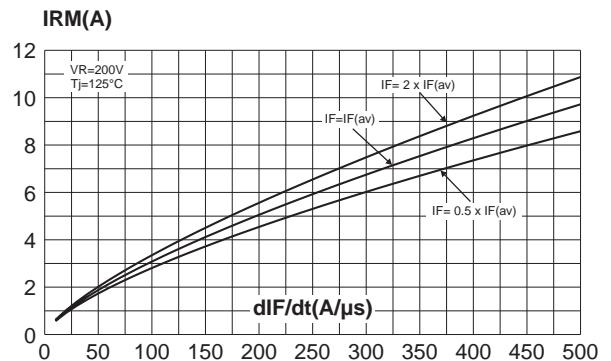
**Fig. 5:** Reverse recovery time versus  $dIF/dt$  (90% confidence).



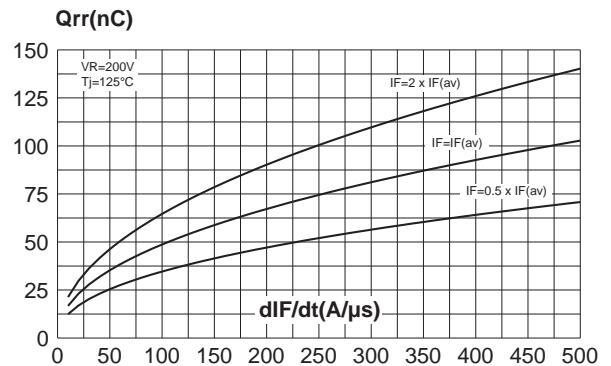
**Fig. 2:** Forward voltage drop versus forward current.



**Fig. 4:** Peak reverse recovery current versus  $dIF/dt$  (90% confidence).

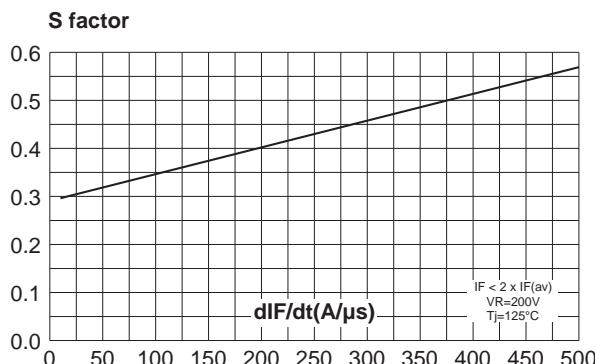


**Fig. 6:** Reverse recovery charges versus  $dIF/dt$  (90% confidence).

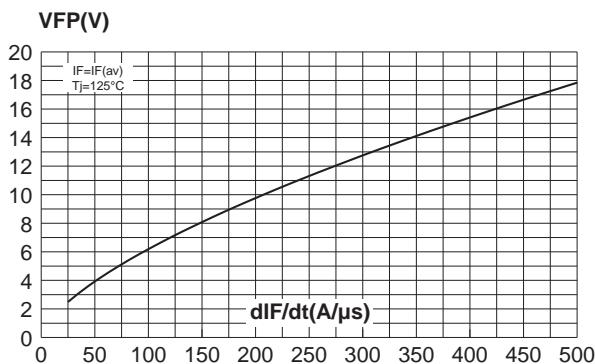


## STTH30R03CW/CG

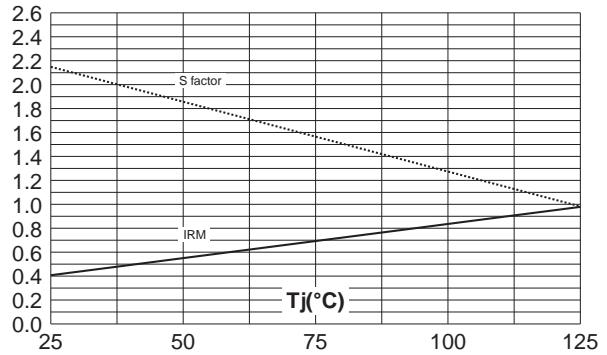
**Fig. 7:** Softness factor (tb/ta) versus  $dI_F/dt$  (typical values).



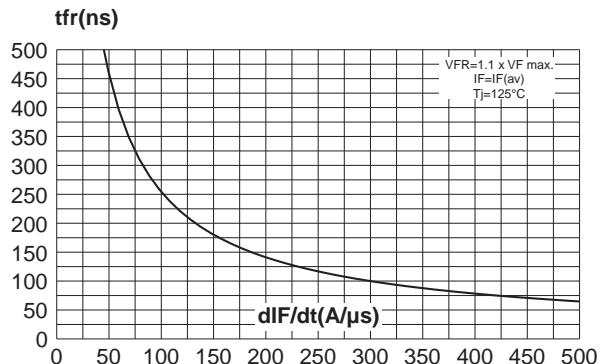
**Fig. 9:** Transient peak forward voltage versus  $dI_F/dt$  (90% confidence).



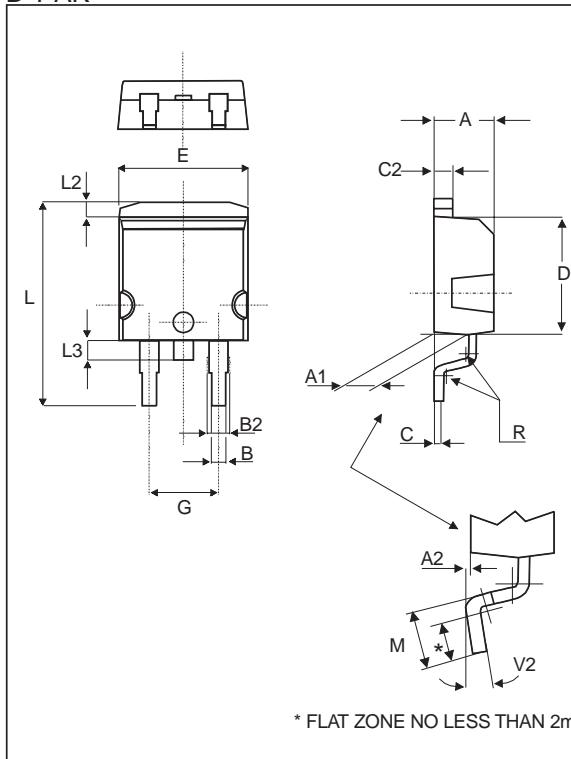
**Fig. 8:** Relative variation of dynamic parameters versus junction temperature (Reference:  $T_j=125^\circ C$ ).



**Fig. 10:** Forward recovery time versus  $dI_F/dt$  (90% confidence).



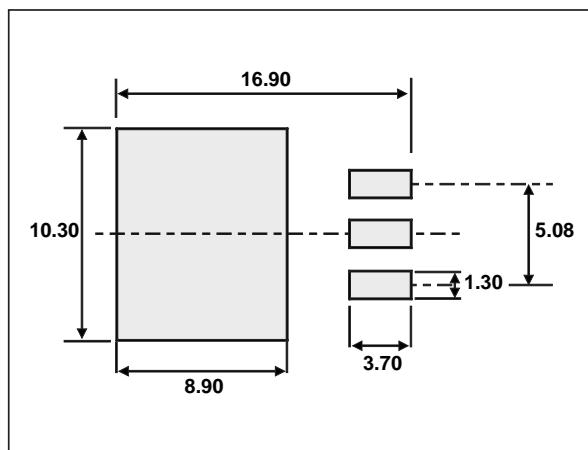
## PACKAGE MECHANICAL DATA

D<sup>2</sup>PAK


The diagram shows a 3D perspective view of the D<sup>2</sup>PAK package. The top view indicates the overall width (E), height (L), and lead spacing (G). The side view provides detailed dimensions for the leads (A, A1, A2, C, C2, D, R) and the body height (B, B2, L2, L3). A callout shows the lead pitch (M) and the lead angle (V2). A note at the bottom states: \* FLAT ZONE NO LESS THAN 2mm.

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.40	4.60	0.173	0.181
A1	2.49	2.69	0.098	0.106
A2	0.03	0.23	0.001	0.009
B	0.70	0.93	0.027	0.037
B2	1.14	1.70	0.045	0.067
C	0.45	0.60	0.017	0.024
C2	1.23	1.36	0.048	0.054
D	8.95	9.35	0.352	0.368
E	10.00	10.40	0.393	0.409
G	4.88	5.28	0.192	0.208
L	15.00	15.85	0.590	0.624
L2	1.27	1.40	0.050	0.055
L3	1.40	1.75	0.055	0.069
M	2.40	3.20	0.094	0.126
R	0.40 typ.		0.016 typ.	
V2	0°	8°	0°	8°

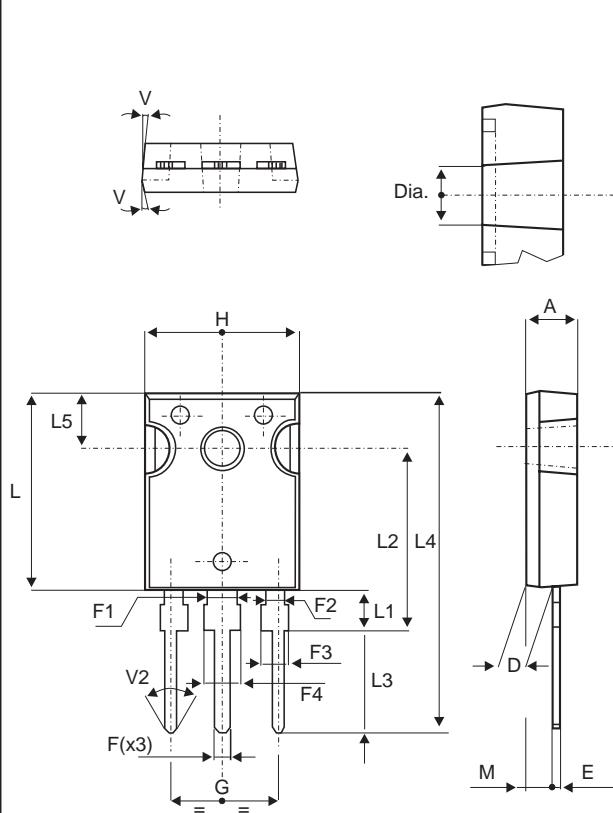
## FOOTPRINT



## STTH30R03CW/CG

### PACKAGE MECHANICAL DATA

TO-247



REF.	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.85		5.15	0.191		0.203
D	2.20		2.60	0.086		0.102
E	0.40		0.80	0.015		0.031
F	1.00		1.40	0.039		0.055
F1		3.00			0.118	
F2		2.00			0.078	
F3	2.00		2.40	0.078		0.094
F4	3.00		3.40	0.118		0.133
G		10.90			0.429	
H	15.45		15.75	0.608		0.620
L	19.85		20.15	0.781		0.793
L1	3.70		4.30	0.145		0.169
L2		18.50			0.728	
L3	14.20		14.80	0.559		0.582
L4		34.60			1.362	
L5		5.50			0.216	
M	2.00		3.00	0.078		0.118
V		5°			5°	
V2		60°			60°	
Dia.	3.55		3.65	0.139		0.143

Ordering code	Marking	Package	Weight	Base qty	Delivery mode
STTH30R03CW	STTH30R03CW	TO-247	4.36g	30	Tube
STTH30R03CG	STTH30R03CG	D <sup>2</sup> PAK	1.48g	50	Tube
STTH30R03CG-TR	STTH30R03CG	D <sup>2</sup> PAK	1.48g	1000	Tape & Reel

- Cooling method: by conduction (C)
- Recommended torque value: 0.8 N.m.
- Maximum torque value: 1 N.m.
- Epoxy meets UL 94,V0

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