

LOW DROP OR-ing POWER SCHOTTKY DIODE

MAJOR PRODUCT CHARACTERISTICS

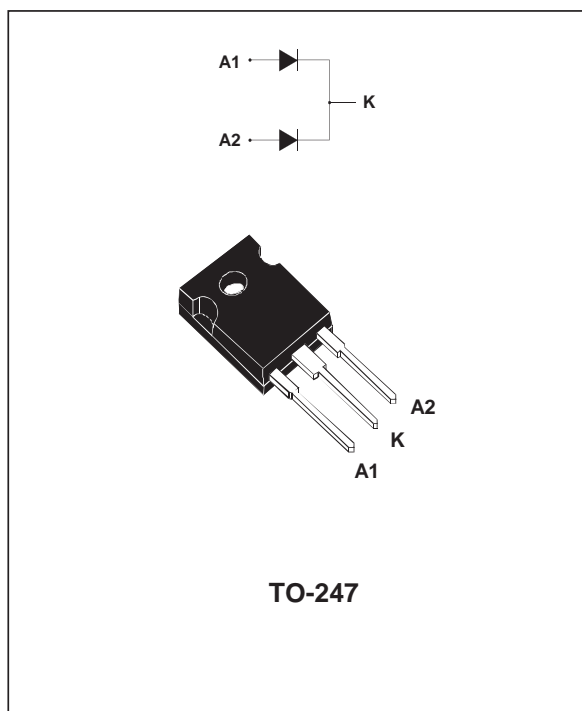
$I_{F(AV)}$	2 x 30 A
V_{RRM}	15 V
$T_j(\text{max})$	125°C
$V_F(\text{max})$	0.33 V

FEATURES AND BENEFITS

- VERY LOW FORWARD VOLTAGE DROP FOR LESS POWER DISSIPATION AND REDUCED HEATSINK SIZE
- OPERATION JUNCTION TEMPERATURE: 125°C
- REVERSE VOLTAGE SUITED TO OR-ing OF 3V, 5V and 12V RAILS

DESCRIPTION

Dual center tap schottky rectifier packaged in TO-247 and suited for N+1 redundancy operations, this device has an optimized forward voltage drop to reduce the power losses in the application.



ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter		Value	Unit	
V_{RRM}	Repetitive peak reverse voltage		15	V	
$I_{F(RMS)}$	RMS forward current		40	A	
$I_{F(AV)}$	Average forward current	$T_{case} = 115^\circ\text{C}$ $\delta = 0.5$	Per diode	30	A
			Per device	60	
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ Sinusoidal	400	A	
I_{RRM}	Peak repetitive reverse current	$t_p = 2 \mu\text{s}$ $F = 1 \text{ kHz}$	2	A	
I_{RSM}	Non repetitive peak reverse current	$t_p = 100 \mu\text{s}$	3	A	
T_{stg}	Storage temperature range		- 65 to + 150	°C	
T_j	Maximum operating junction temperature *		125	°C	
dV/dt	Critical rate of rise of reverse voltage		10000	V/ μs	

* : $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th}(j-a)}$ thermal runaway condition for a diode on its own heatsink

STPS60L15CW

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	0.8	$^{\circ}\text{C}/\text{W}$
		Total	0.55	
$R_{th(c)}$		Coupling	0.3	$^{\circ}\text{C}/\text{W}$

When the diodes 1 and 2 are used simultaneously:
 T_j (diode 1) = P (diode 1) x $R_{th(j-c)}$ (per diode) + P (diode 2) x $R_{th(c)}$

STATIC ELECTRICAL CHARACTERISTICS (Per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			16	mA
		$T_j = 100^{\circ}\text{C}$			0.35	0.85	
V_F^*	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 30\text{ A}$			0.41	V
		$T_j = 25^{\circ}\text{C}$	$I_F = 60\text{ A}$			0.49	
		$T_j = 125^{\circ}\text{C}$	$I_F = 30\text{ A}$		0.27	0.33	
		$T_j = 125^{\circ}\text{C}$	$I_F = 60\text{ A}$		0.39	0.44	

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

To evaluate the conduction losses use the following equation:

$$P = 0.22 \times I_{F(AV)} + 0.0036 I_F^2(\text{RMS})$$

Fig. 1: Conduction losses versus average current).

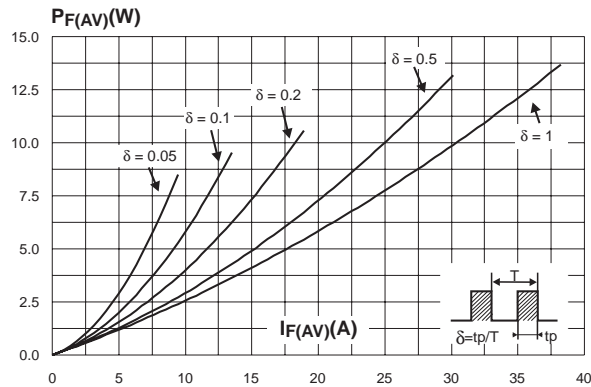


Fig. 2: Average forward current versus ambient temperature ($\delta=0.5$).

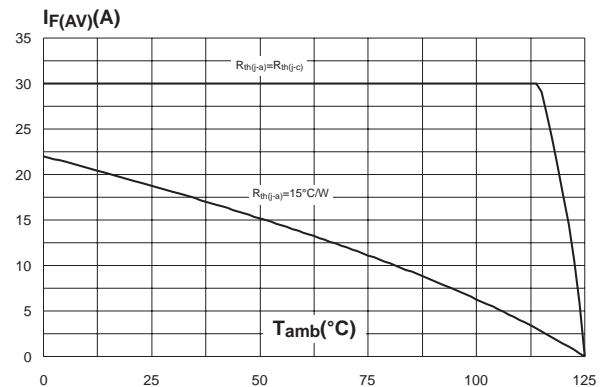


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values).

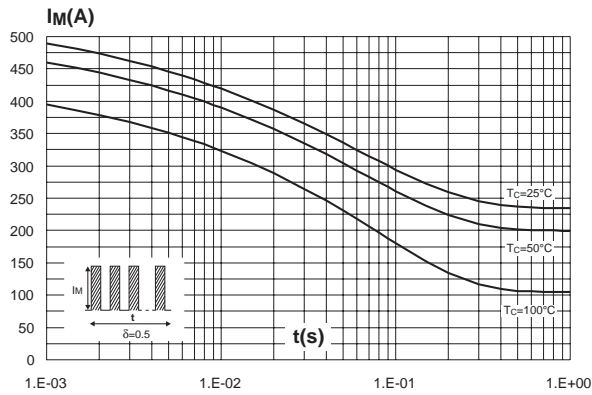


Fig. 4: Relative variation of thermal impedance junction to case versus pulse duration.

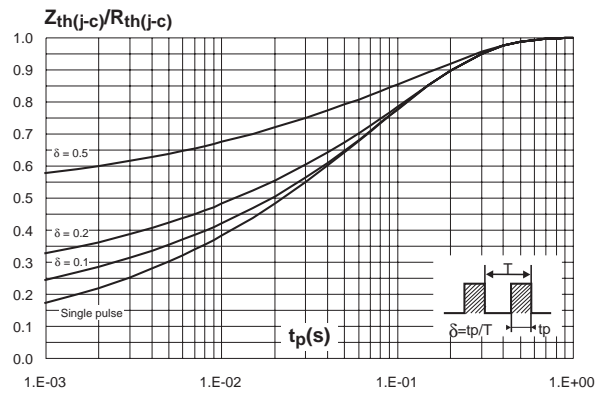


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).

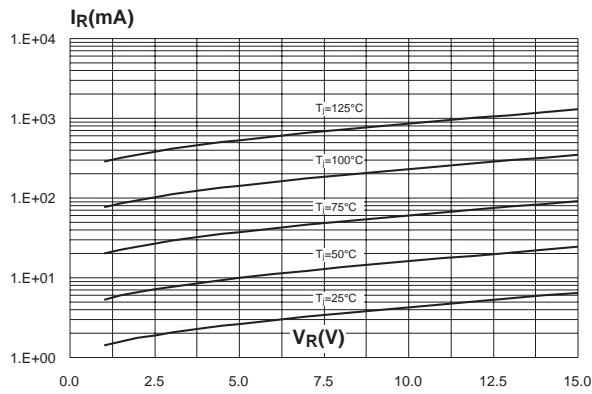


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).

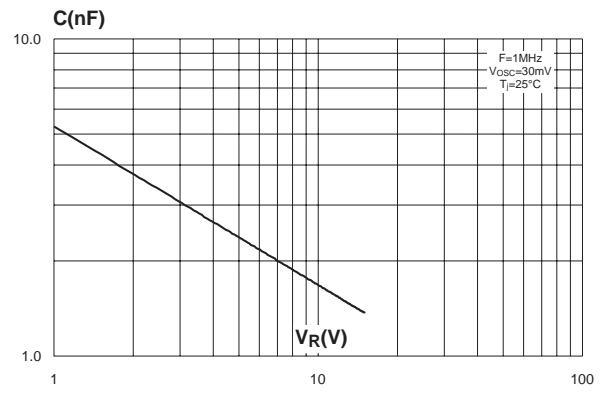
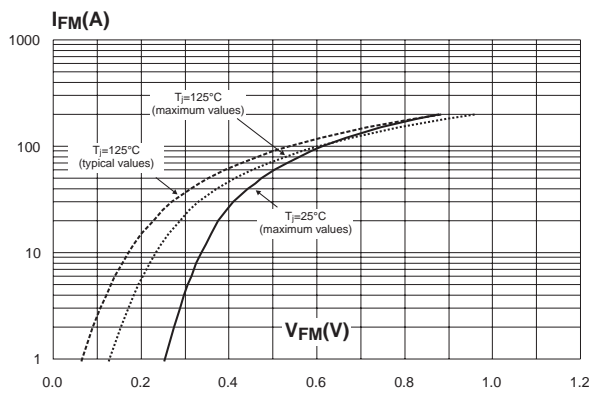
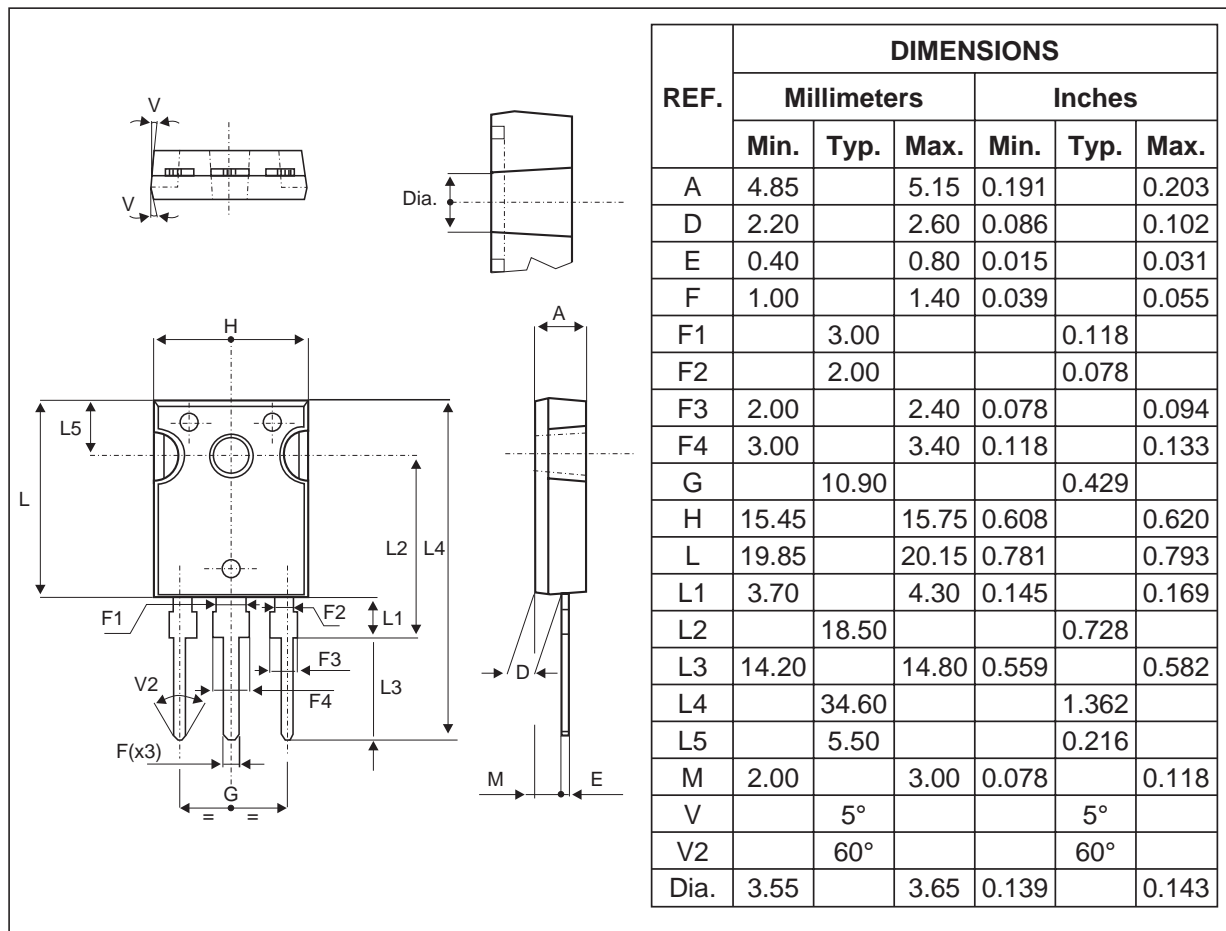


Fig. 7: Forward voltage drop versus forward current.



STPS60L15CW

PACKAGE MECHANICAL DATA TO-247



- Cooling method: C
- Recommended torque value: 0.8 m.N
- Maximum torque value: 1.0 m.N

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS60L15CW	STPS60L15CW	TO-247	4.4 g.	30	Tube

- Epoxy meets UL94,V0

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