

LOW DROP OR-ing POWER SCHOTTKY DIODE

MAJOR PRODUCT CHARACTERISTICS

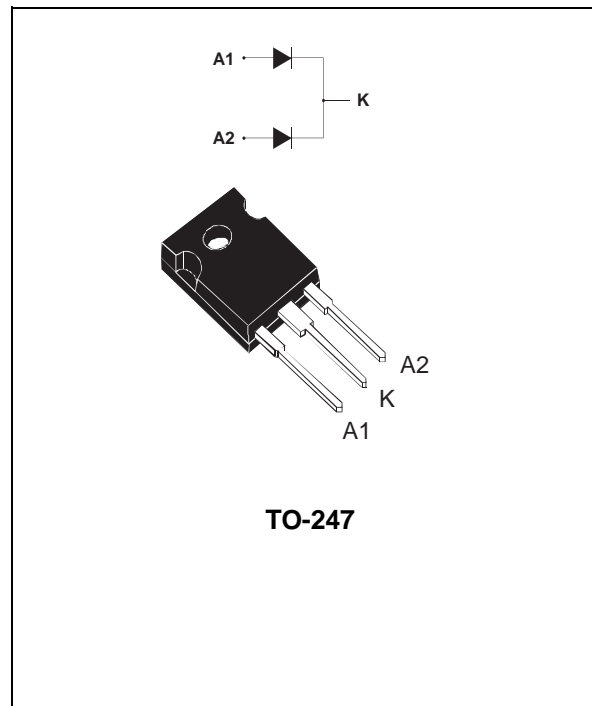
$I_{F(AV)}$	2 x 20 A
V_{RRM}	15 V
$T_j(\text{max})$	150°C
$V_F(\text{max})$	0.33 V

FEATURES AND BENEFITS

- VERY LOW FORWARD VOLTAGE DROP FOR LESS POWER DISSIPATION AND REDUCED HEATSINK SIZE
- REVERSE VOLTAGE SUITED TO OR-ing OF 3V, 5V and 12V RAILS

DESCRIPTION

Dual center tap schottky rectifier packaged in TO-247, this device is especially intended for use as OR-ing diode in fault tolerant power supply equipments.



ABSOLUTE RATINGS (limiting values, per diode)

Symbol	Parameter		Value	Unit	
V_{RRM}	Repetitive peak reverse voltage		15	V	
$I_{F(RMS)}$	RMS forward current		30	A	
$I_{F(AV)}$	Average forward current	$T_{case} = 140^\circ\text{C}$	Total	40	A
		$\delta = 1$	Per diode	20	
I_{FSM}	Surge non repetitive forward current	$t_p = 10 \text{ ms}$ Sinusoidal	310	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 *		150	°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

STPS40L15CW

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	1.6	$^{\circ}\text{C/W}$
		Total	0.85	
$R_{th(c)}$		Coupling	0.1	$^{\circ}\text{C/W}$

STATIC ELECTRICAL CHARACTERISTICS (Per diode)

Symbol	Parameter	Tests Conditions		Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_J = 25^{\circ}\text{C}$	$V_R = V_{RRM}$			6	mA
		$T_J = 100^{\circ}\text{C}$			200	500	
V_F^*	Forward voltage drop	$T_J = 25^{\circ}\text{C}$	$I_F = 19\text{ A}$			0.41	V
		$T_J = 25^{\circ}\text{C}$	$I_F = 40\text{ A}$			0.52	
		$T_J = 125^{\circ}\text{C}$	$I_F = 19\text{ A}$		0.28	0.33	
		$T_J = 125^{\circ}\text{C}$	$I_F = 40\text{ A}$		0.42	0.50	

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

To evaluate the conduction losses use the following equation :

$$P = 0.18 \times I_{F(AV)} + 0.008 I_{F(RMS)}^2$$

Fig. 1: Average forward power dissipation versus average forward current (per diode).

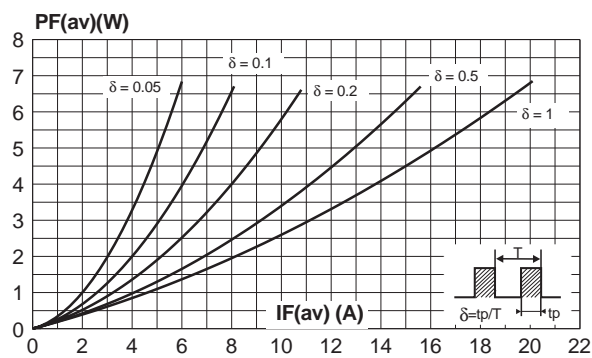


Fig. 2: Average forward current versus ambient temperature ($\delta=1$, per diode).

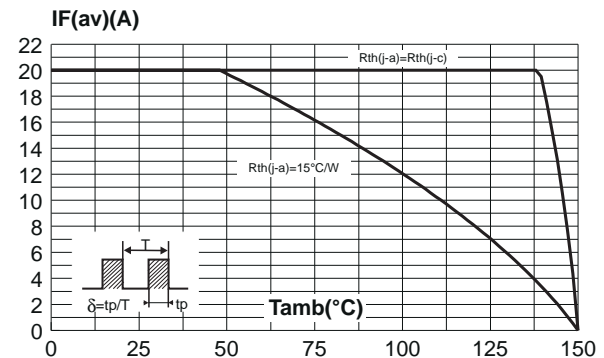


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values per diode).

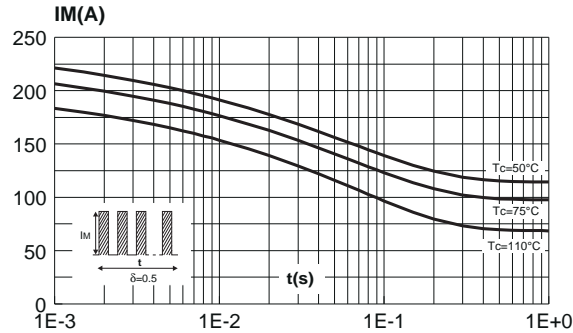


Fig. 4: Relative variation of thermal impedance junction to case versus pulse duration (per diode).

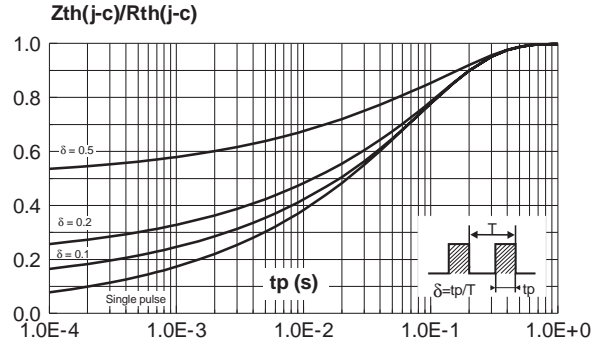


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values per diode).

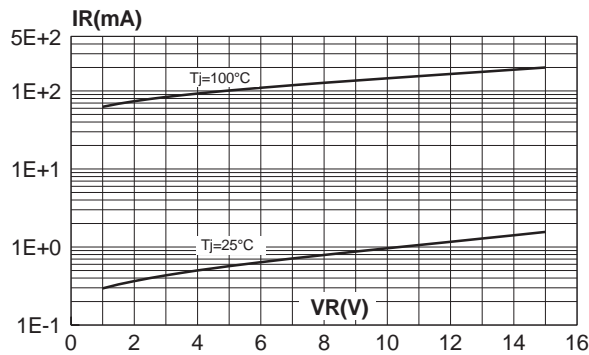


Fig. 6: Junction capacitance versus reverse voltage applied (typical values per diode).

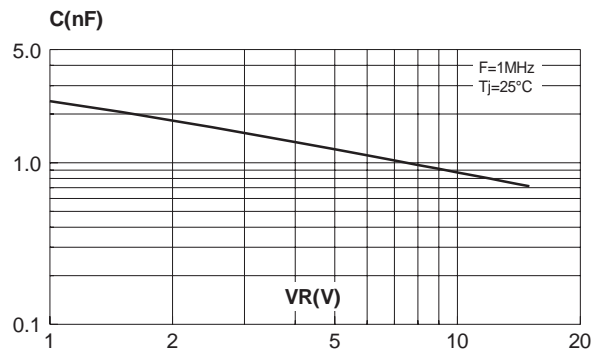


Fig. 7: Forward voltage drop versus forward current (typical values per diode).

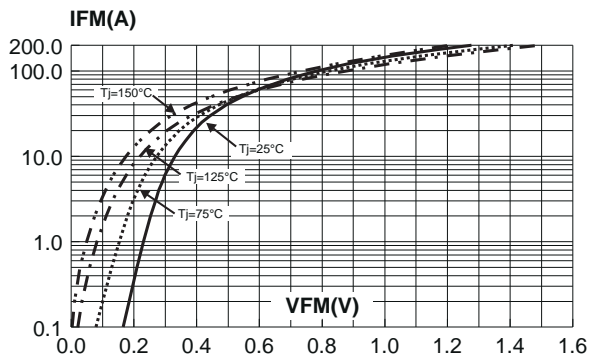
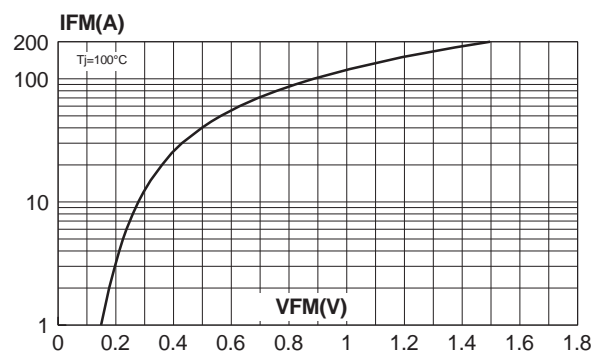
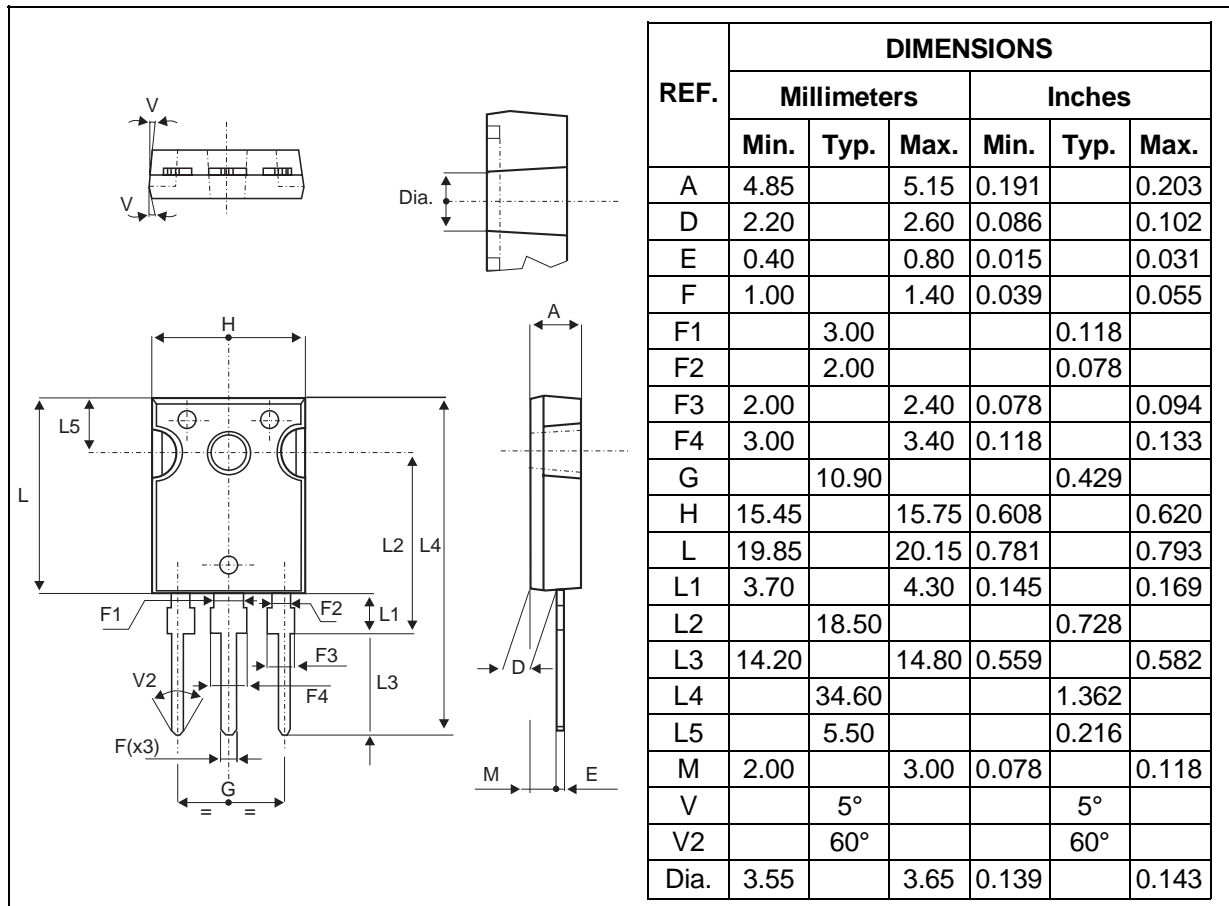


Fig. 8: Forward voltage drop versus forward current (typical maximum per diode).



STPS40L15CW

PACKAGE MECHANICAL DATA TO-247



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS40L15CW	STPS40L15CW	TO-247	4.4 g.	30	Tube

- Cooling method : by conduction (C)
- Recommended torque value : 0.8 N.m.
- Maximum torque value : 1.0 N.m.
- Epoxy meets UL94,V0

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