

Features

- Suited for SMPS
- Low losses
- Low forward and reverse recovery time
- High surge current capability
- High junction temperature
- ECOPACK®2 compliant component for D²PAK on demand

Description

Dual center tap rectifier suited for switch mode power supplies and high frequency DC to DC converters.

This device is especially intended for use in low voltage, high frequency inverters, freewheeling and polarity protection applications.

Table 1: Device summary

Symbol	Value
I _{F(AV)}	2 x 6.5 A
V _{RRM}	200 V
T _j (max)	175 °C
V _F (typ)	0.81 V
t _{rr} (typ)	16 ns

1 Characteristics

Table 2: Absolute ratings (limiting values, per diode, at 25 °C, unless otherwise specified)

Symbol	Parameter			Value	Unit
V_{RRM}	Repetitive peak reverse voltage			200	V
$I_{F(RMS)}$	Forward rms current			20	A
$I_{F(peak)}$	Average forward current $\delta = 0.5$, square wave	$T_c = 155$ °C	Per diode	6.5	A
		$T_c = 145$ °C	Per device	13	
I_{FSM}	Surge non repetitive forward current	$t_p = 10$ ms sinusoidal		70	A
T_{stg}	Storage temperature range			-65 to +175	°C
T_j	Maximum operating junction temperature			175	°C

Table 3: Thermal parameter

Symbol	Parameter		Max. value	Unit
$R_{th(j-c)}$	Junction to case	Per diode	3	°C/W
		Total	1.9	
$R_{th(c)}$	Coupling		0.8	°C/W

When the diodes 1 and 2 are used simultaneously:

$$\Delta T_{j(diode1)} = P_{(diode1)} \times R_{th(j-c)} \text{ (per diode)} + P_{(diode2)} \times R_{th(c)}$$

Table 4: Static electrical characteristics (per diode)

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
$I_R^{(1)}$	Reverse leakage current	$T_j = 25$ °C	$V_R = V_{RRM}$	-		6	µA
		$T_j = 125$ °C		-	3	60	
$V_F^{(2)}$	Forward voltage drop	$T_j = 25$ °C	$I_F = 6.5$ A	-		1.10	V
		$T_j = 125$ °C		-	0.81	0.95	
		$T_j = 25$ °C	$I_F = 13$ A	-		1.25	
		$T_j = 125$ °C		-	0.95	1.10	

Notes:

(1)Pulse test: $t_p = 5$ ms, $\delta < 2\%$

(2)Pulse test: $t_p = 380$ µs, $\delta < 2\%$

To evaluate the conduction losses, use the following equation:

$$P = 0.80 \times I_{F(AV)} + 0.023 \times I_{F^2(RMS)}$$

Table 5: Dynamic electrical characteristics (per diode)

Symbol	Parameter	Test conditions		Min.	Typ.	Max.	Unit
t_{rr}	Reverse recovery time	$T_j = 25 \text{ }^\circ\text{C}$	$I_F = 0.5 \text{ A},$ $I_{rr} = 0.25 \text{ A},$ $I_R = 1 \text{ A}$	-	16	25	ns
t_{fr}	Forward recovery time		$I_F = 6.5 \text{ A},$ $dI_F/dt = 100 \text{ A}/\mu\text{s},$ $V_{FR} = 1.1 \times V_{Fmax},$	-	70		ns
V_{FP}	Forward recovery voltage		$I_F = 6.5 \text{ A},$ $dI_F/dt = 100 \text{ A}/\mu\text{s}$	-	2.2		V

1.1 Characteristics (curves)

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

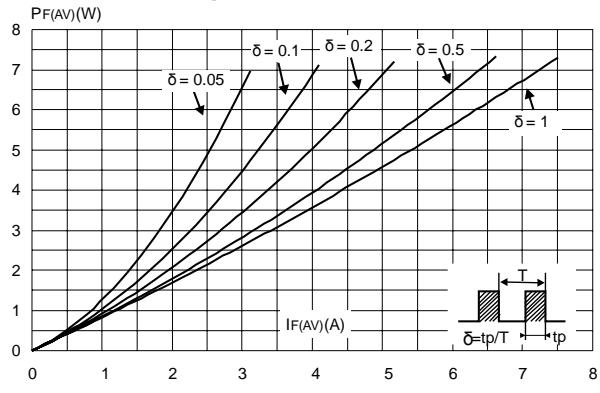


Figure 2: Peak current versus duty cycle (per diode)

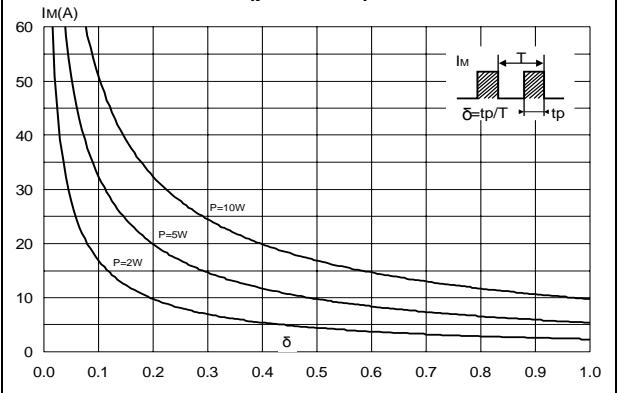


Figure 3: Forward voltage drop versus forward current (per diode)

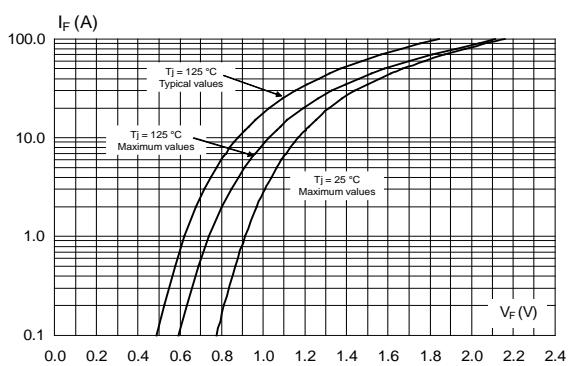


Figure 4: Relative variation of thermal impedance junction to case versus pulse duration

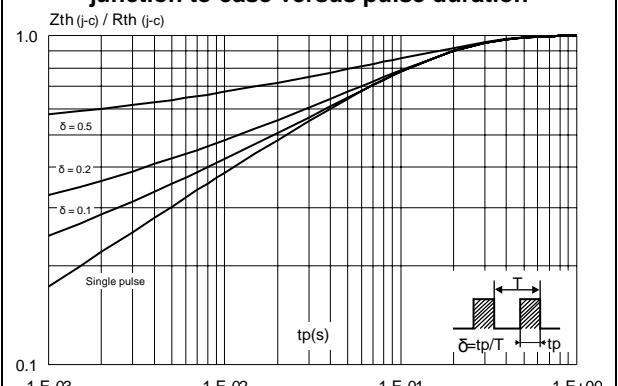


Figure 5: Average forward current versus ambient temperature ($\delta = 0.5$, per diode)

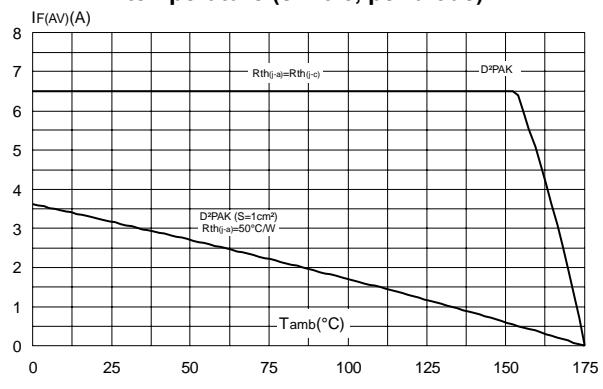


Figure 6: Junction capacitance versus reverse voltage applied (typical values, per diode)

