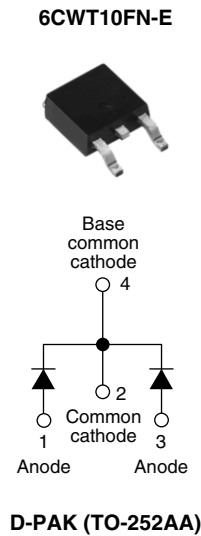
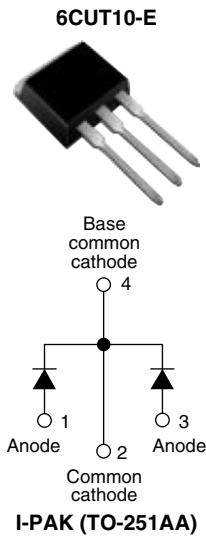


High Performance Schottky Generation 5.0, 2 x 3 A



FEATURES

- 175 °C high performance Schottky diode
- Very low forward voltage drop
- Extremely low reverse leakage
- Optimized V_F vs. I_F trade off for high efficiency
- Increased ruggedness for reverse avalanche capability
- RBSOA available
- Negligible switching losses
- Submicron trench technology
- Compliant to RoHS directive 2002/95/EC
- AEC-Q101 qualified



RoHS
COMPLIANT

APPLICATIONS

- Specific for PV cells bypass diode
- High efficiency SMPS
- Automotive
- High frequency switching
- Output rectification
- Reverse battery protection
- Freewheeling
- DC/DC systems
- Increased power density systems

PRODUCT SUMMARY

$I_{F(AV)}$	2 x 3 A
V_R	100 V
Maximum V_F at 3 A at 125 °C	0.63 V

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
V_{RRM}		100	V
V_F	3 A _{pk} , $T_J = 125$ °C (typical, per leg)	0.6	
T_J	Range	- 55 to 175	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	6CUT10-E 6CWT10FN-E	UNITS
Maximum DC reverse voltage	V_R	$T_J = 25$ °C	100	V

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current <small>per leg</small> <small>per device</small>	$I_{F(AV)}$	50 % duty cycle at $T_C = 166$ °C, rectangular waveform	3	A
			6	
Maximum peak one cycle non-repetitive surge current per leg	I_{FSM}	5 μ s sine or 3 μ s rect. pulse	440	
		10 ms sine or 6 ms rect. pulse	70	
Non-repetitive avalanche energy per leg	E_{AS}	$T_J = 25$ °C, $I_{AS} = 4$ A, $L = 1.5$ mH	12	mJ
Repetitive avalanche current per leg	I_{AR}	Limited by frequency of operation and time pulse duration so that $T_J < T_J$ max. I_{AS} at T_J max. as a function of time pulse. See fig. 8	I_{AS} at T_J max.	A

6CUT10-E, 6CWT10FN-E



Vishay High Power Products High Performance Schottky
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ELECTRICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS		TYP.	MAX.	UNITS
Forward voltage drop per leg	$V_{FM}^{(1)}$	3 A	$T_J = 25\text{ }^\circ\text{C}$	0.720	0.79	V
		6 A		0.825	0.91	
		3 A	$T_J = 125\text{ }^\circ\text{C}$	0.60	0.63	
		6 A		0.69	0.74	
Reverse leakage current per leg	$I_{RM}^{(1)}$	$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{Rated } V_R$	0.3	30	μA
		$T_J = 125\text{ }^\circ\text{C}$		0.3	1	mA
Junction capacitance per leg	C_T	$V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz), $25\text{ }^\circ\text{C}$		114	-	pF
Series inductance per leg	L_S	Measured lead to lead 5 mm from package body		8.0	-	nH
Maximum voltage rate of change	dV/dt	Rated V_R		-	10 000	V/ μs

Note

(1) Pulse width < 300 μs , duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range	T_J, T_{Stg}		- 55 to 175	$^\circ\text{C}$
Maximum thermal resistance, junction to case per leg	R_{thJC}	DC operation	4.7	$^\circ\text{C/W}$
Maximum thermal resistance, junction to case per device			2.35	
Typical thermal resistance, case to heatsink	R_{thCS}		0.3	
Approximate weight			0.3	g
			0.01	oz.
Marking device		Case style I-PAK	6CUT10	
		Case style D-PAK	6CWT10FN	



6CUT10-E, 6CWT10FN-E

High Performance Schottky Vishay High Power Products
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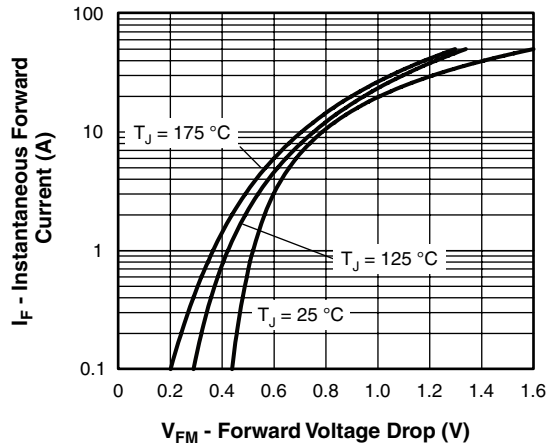


Fig. 1 - Maximum Forward Voltage Drop Characteristics

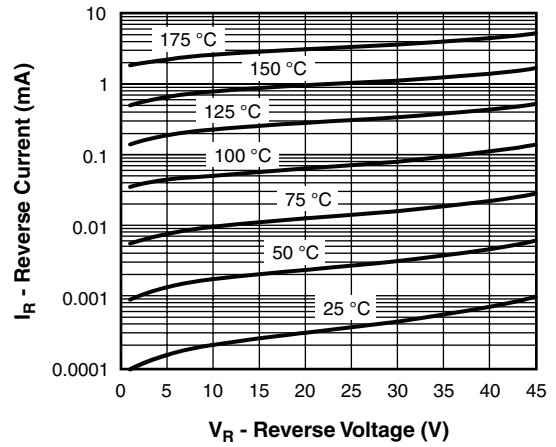


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

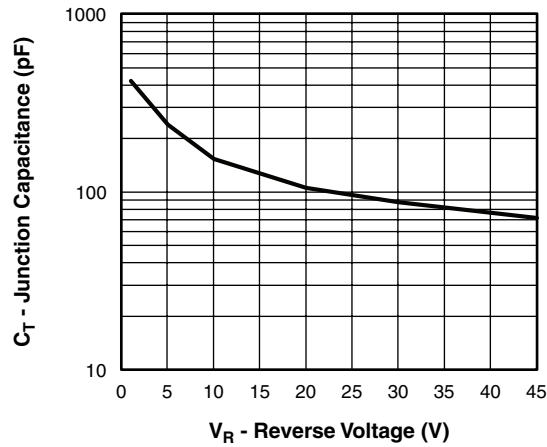


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

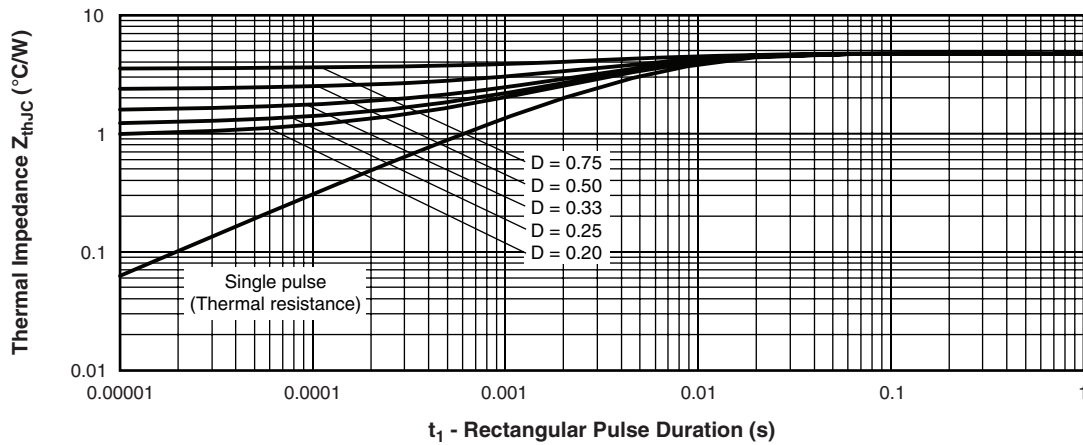


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

6CUT10-E, 6CWT10FN-E



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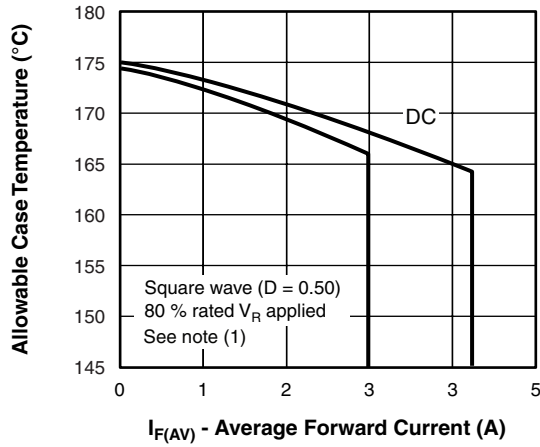


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

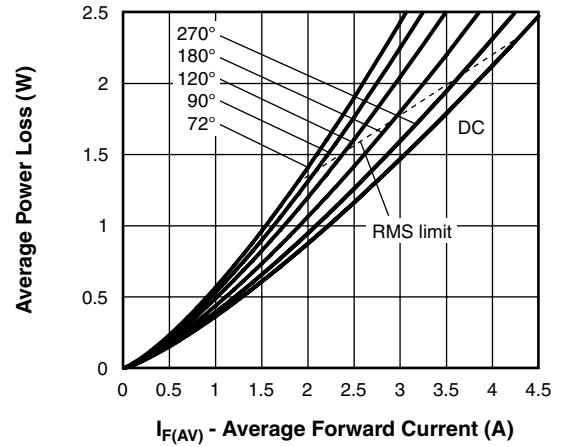


Fig. 6 - Forward Power Loss Characteristics

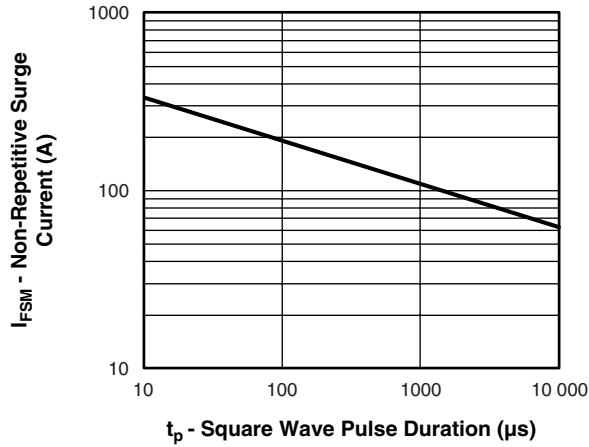


Fig. 7 - Maximum Non-Repetitive Surge Current

Note

- (1) Formula used: $T_C = T_J - (P_d + P_{d_{REV}}) \times R_{thJC}$
 P_d = Forward power loss = $I_{F(AV)} \times V_{FM}$ at $(I_{F(AV)}/D)$ (see fig. 6);
 $P_{d_{REV}}$ = Inverse power loss = $V_{R1} \times I_R (1 - D)$; I_R at $V_{R1} = 80\%$ rated V_R



6CUT10-E, 6CWT10FN-E

High Performance Schottky Vishay High Power Products
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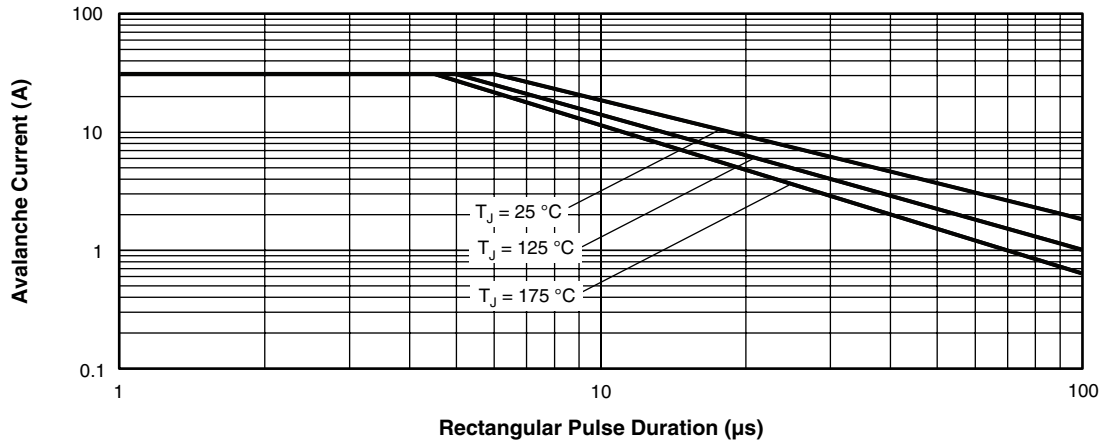


Fig. 8 - Reverse Bias Safe Operating Area (Avalanche Current vs. Rectangular Pulse Duration)

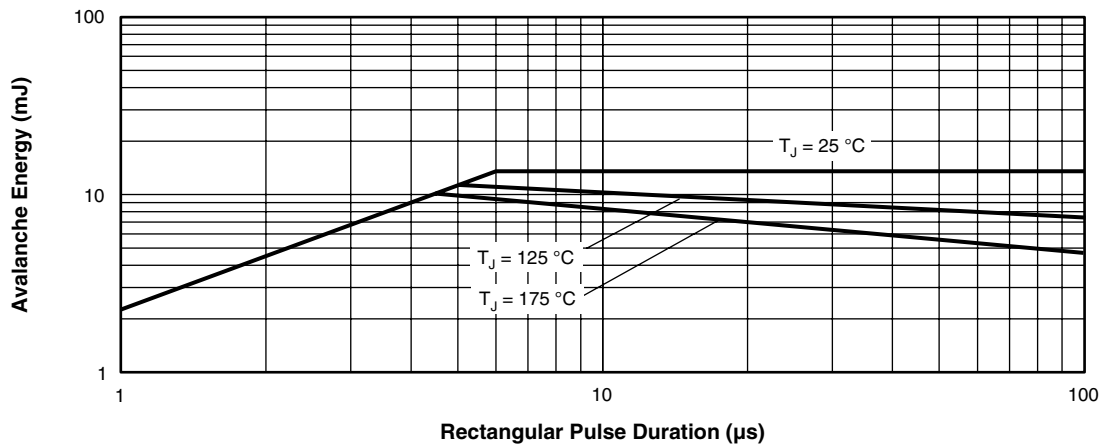


Fig. 9 - Reverse Bias Safe Operating Area (Avalanche Energy vs. Rectangular Pulse Duration)

6CUT10-E, 6CWT10FN-E



Vishay High Power Products High Performance Schottky
Generation 5.0, 2 x 3 A

ORDERING INFORMATION TABLE

Device code	6	C	U	T	10	FN	TRL	-	E
	①	②	③	④	⑤	⑥	⑦		⑧

- 1** - Current rating (2 x 3 A)
- 2** - Circuit configuration:
C = Common cathode
- 3** - Package:
 - U = I-PAK
 - W = D-PAK
- 4** - T = Trench
- 5** - Voltage rating (10 = 100 V)
- 6** - TO-252AA (D-PAK)
- 7** - D-PAK, I-PAK:
None = Tube (75 pieces)
D-PAK only:
 - TR = Tape and reel
 - TRL = Tape and reel (left oriented)
 - TRR = Tape and reel (right oriented)
- 8** - E = RoHS compliant and termination lead (Pb)-free

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95024
Part marking information	www.vishay.com/doc?95097



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