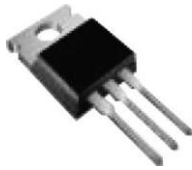
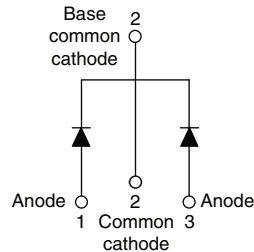


## High Performance Schottky Generation 5.0, 30 A


**TO-220AB**

**FEATURES**

- 175 °C high performance Schottky diode
- Very low forward voltage drop
- Extremely low reverse leakage
- Optimized  $V_F$  vs.  $I_R$  trade off for high efficiency
- Increased ruggedness for reverse avalanche capability
- RBSOA available
- Negligible switching losses
- Submicron trench technology
- Full lead (Pb)-free and RoHS compliant devices
- Designed and qualified for industrial level


**RoHS  
COMPLIANT**
**PRODUCT SUMMARY**

$I_{F(AV)}$	30 A
$V_R$	100 V

**APPLICATIONS**

- High efficiency SMPS
- Automotive
- High frequency switching
- Output rectification
- Reverse battery protection
- Freewheeling
- Dc-to-dc systems
- Increased power density systems

**MAJOR RATINGS AND CHARACTERISTICS**

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	30	A
$V_{RRM}$		100	V
$V_F$	15 Apk, $T_J = 125\text{ °C}$ (per leg)	0.67	
$T_J$	Range	- 55 to 175	°C

**VOLTAGE RATINGS**

PARAMETER	SYMBOL	TEST CONDITIONS	30CTT100	UNITS
Maximum DC reverse voltage	$V_R$	$T_J = 25\text{ °C}$	100	V

**ABSOLUTE MAXIMUM RATINGS**

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	50 % duty cycle at $T_C = 144\text{ °C}$ , rectangular waveform	15	A
			30	
Maximum peak one cycle non-repetitive surge current per leg	$I_{FSM}$	5 $\mu$ s sine or 3 $\mu$ s rect. pulse	920	A
		10 ms sine or 6 ms rect. pulse		
Non-repetitive avalanche energy per leg	$E_{AS}$	$T_J = 25\text{ °C}$ , $I_{AS} = 1.1\text{ A}$ , $L = 60\text{ mH}$	36	mJ
Repetitive avalanche current per leg	$I_{AR}$	Limited by frequency of operation and time pulse duration so that $T_J < T_{J\text{ max}}$ . $I_{AS}$ at $T_J\text{ max}$ . as a function of time pulse See fig. 8	$I_{AS}$ at $T_J\text{ max}$ .	A



ELECTRICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS		TYP.	MAX.	UNITS
Forward voltage drop per leg	$V_{FM}^{(1)}$	15 A	$T_J = 25\text{ }^\circ\text{C}$	-	0.81	V
		30 A		-	0.92	
		15 A	$T_J = 125\text{ }^\circ\text{C}$	-	0.67	
		30 A		-	0.79	
Reverse leakage current per leg	$I_{RM}^{(1)}$	$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{Rated } V_R$	-	120	$\mu\text{A}$
		$T_J = 125\text{ }^\circ\text{C}$		-	5	mA
Junction capacitance per leg	$C_T$	$V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz) $25\text{ }^\circ\text{C}$		550	-	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/ $\mu\text{s}$

**Note**(1) Pulse width < 300  $\mu\text{s}$ , 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	2.5	$^\circ\text{C/W}$
Typical thermal resistance, case to heatsink	$R_{thCS}$	Mounting surface, smooth and greased	0.5	
Approximate weight			2	g
			0.07	oz.
Mounting torque	minimum		6 (5)	kgf · cm (lbf · in)
	maximum		12 (10)	
Case style			TO-220AB	
Marking device			30CTT100	

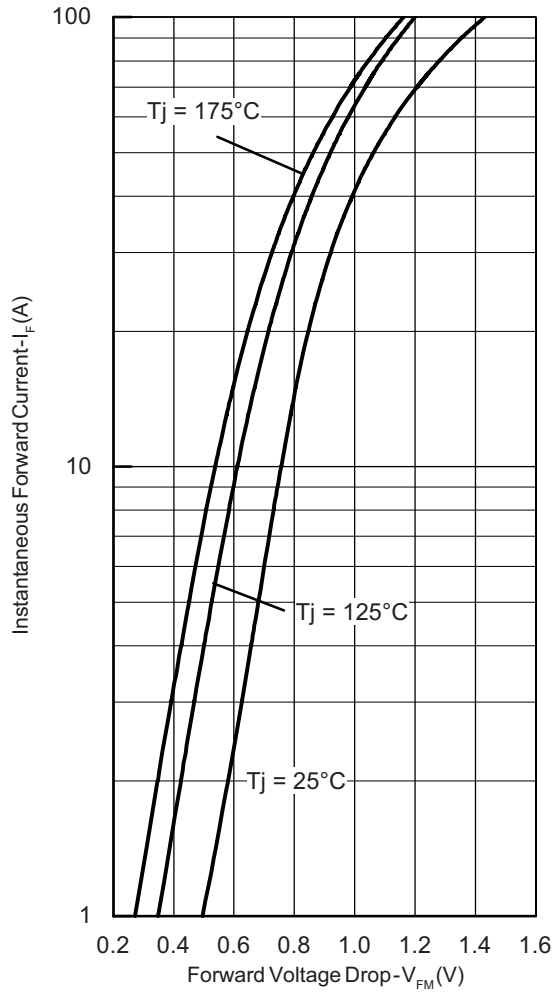


Fig. 1 - Maximum Forward Voltage Drop Characteristics

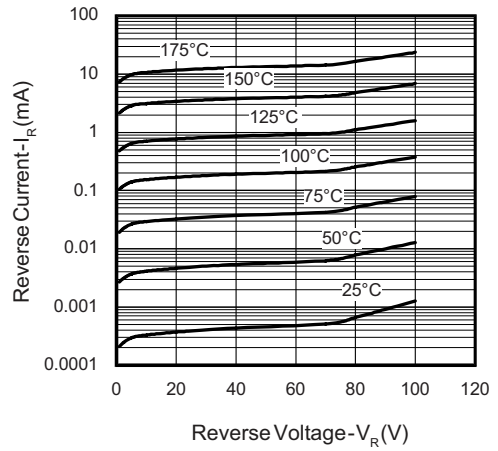


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

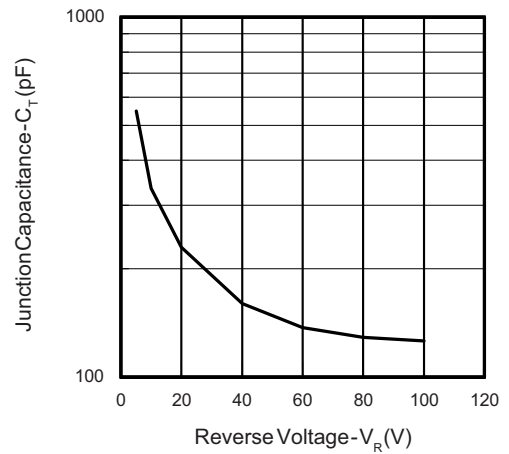


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

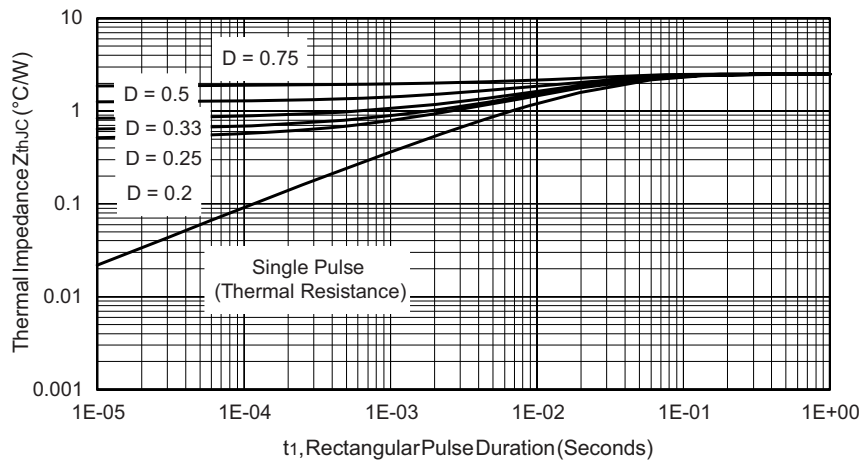


Fig. 4 - Maximum Thermal Impedance  $Z_{thJC}$  Characteristics

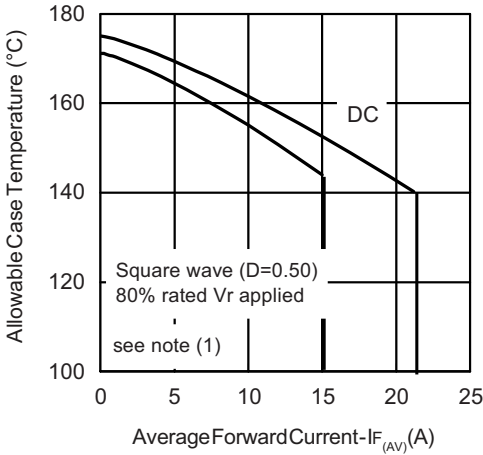


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

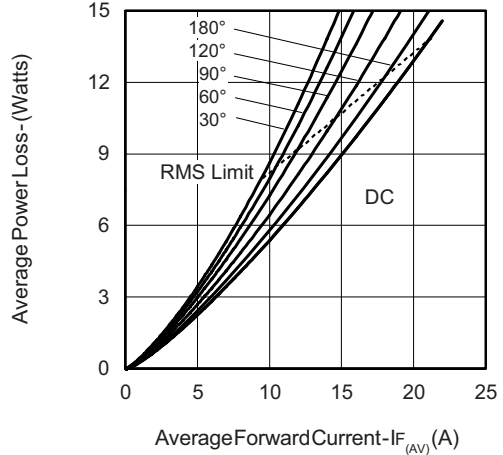


Fig. 6 - Forward Power Loss Characteristics

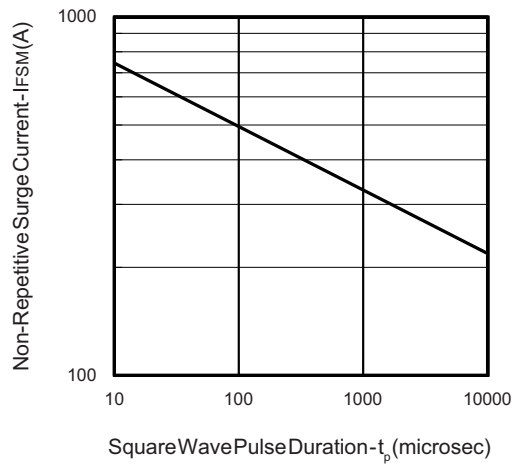


Fig. 7 - Maximum Non-Repetitive Surge Current

**Note**

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

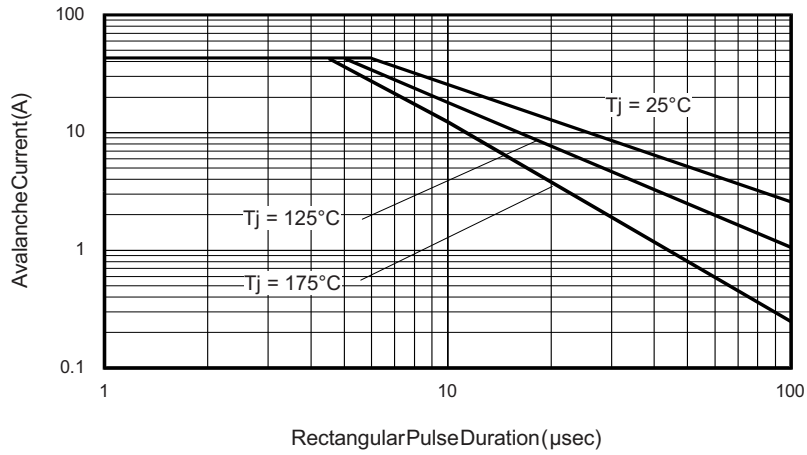


Fig. 8 - Reverse Bias Safe Operating Area (Avalanche Current vs. Rectangular Pulse Duration)

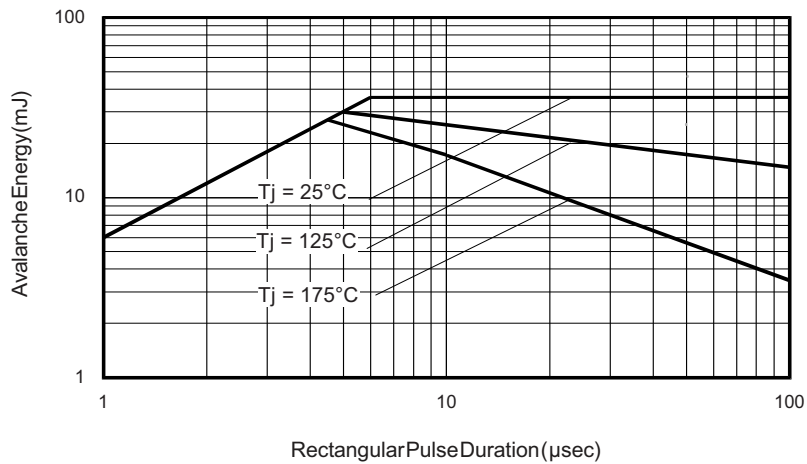


Fig. 9 - Reverse Bias Safe Operating Area (Avalanche Energy vs. Rectangular Pulse Duration)



## ORDERING INFORMATION TABLE

Device code	<b>30</b>	<b>C</b>	<b>T</b>	<b>T</b>	<b>100</b>
	①	②	③	④	⑤
	<b>1</b>	-	Current rating (30 A)		
	<b>2</b>	-	Circuit configuration: C = Common cathode		
	<b>3</b>	-	Package: T = TO-220		
	<b>4</b>	-	T = Trench		
	<b>5</b>	-	Voltage code (100 V)		

Tube standard pack quantity: 50 pieces

LINKS TO RELATED DOCUMENTS	
Dimensions	<a href="http://www.vishay.com/doc?95222">http://www.vishay.com/doc?95222</a>
Part marking information	<a href="http://www.vishay.com/doc?95225">http://www.vishay.com/doc?95225</a>