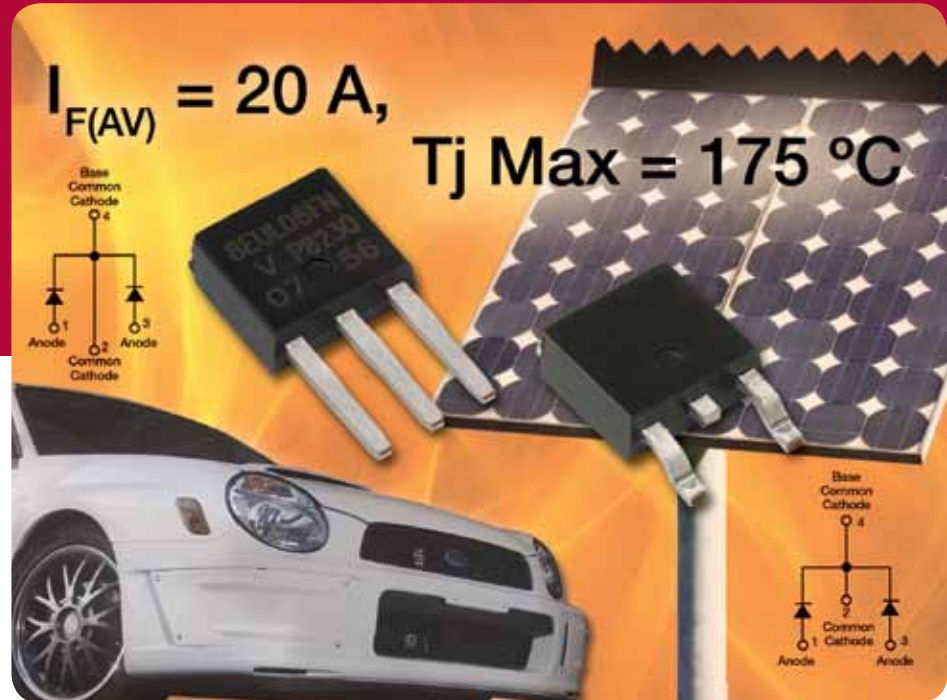




# HIGH-PERFORMANCE GEN 5.0 SCHOTTKY DIODES

20WT04FN



## Schottky Diodes Built on Submicron Trench Technology Feature Maximum Junction Temperature to + 175 °C and Low Reverse Leakage Down to 3 mA

### KEY BENEFITS

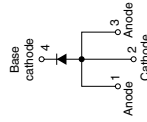
- $T_{j,max} = 175\text{ °C}$
- Very low forward voltage drop ( $V_F$  max: 0.530 V at 20 A, 125 °C)
- Extremely low reverse leakage ( $I_R$  max: 7 mA at 45 V, 125 °C)
- Optimized  $V_F$  vs.  $I_R$  trade-off for high efficiency
- Increased ruggedness for reverse avalanche capability

### APPLICATIONS

- PV cell bypass diodes
- High-efficiency SMPS
- Automotive AEC-Q101 qualified
- High-frequency switching
- Output rectification
- Reverse battery protection

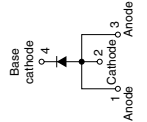
# High Performance Schottky Generation 5.0, 20 A

20UT04



I-PAK (TO-251AA)

20WT04FN



D-PAK (TO-362AA)

### 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
- Full lead (Pb)-free and RoHS compliant devices
- Qualified for AEC Q101



RoHS COMPLIANT

### APPLICATIONS

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

### PRODUCT SUMMARY

$I_F$ (AV)	20 A
$V_{FRM}$	45 V
Maximum $V_F$ at 20 A at 125 °C (1)	0.530 V

**Note**

(1) Measured connecting 2 anode pins

### ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_F$ (AV)	50 % duty cycle at $T_C = 153$ °C, rectangular waveform	20	A
Maximum peak one cycle non-repetitive surge current	$I_{FSM}$	Following any rated load condition and with rated $V_{FRM}$ applied (1)	900	A
		10 ms sine or 6 ms rect. pulse	220	A
Non-repetitive avalanche energy	$E_{AS}$	$T_J = 25$ °C, $I_{AS} = 7$ A, $L = 4.4$ mH	108	mJ
Repetitive avalanche current	$I_{AR}$	Limited by frequency of operation and time pulse duration so that $T_J < T_{JM}$ , $I_{AS}$ at $T_{JM}$ , $I_{AS}$ at $T_{JM}$ max. as a function of time pulse	$I_{AS}$ at $T_{JM}$ max.	A

**Note**

(1) Measured connecting 2 anode pins

### ELECTRICAL SPECIFICATIONS

PARAMETER	SYMBOL	TEST CONDITIONS	TYP.	MAX.	UNITS
Forward voltage drop	$V_{FM}$ (1,2)	10 A	0.505	0.540	V
		20 A	0.570	0.610	
		10 A	0.415	0.450	
Reverse leakage current	$I_{RM}$ (1)	20 A	0.520	0.580	µA
		$T_J = 25$ °C	-	100	
Junction capacitance	$C_T$	$T_J = 125$ °C	-	7	pF
		$V_R = 5$ V <sub>DC</sub> (test signal range 100 kHz to 1 MHz), 25 °C	1900	-	
Series inductance	$L_S$	Measured lead to lead 5 mm from package body	-	-	nH
Maximum voltage rate of change	$dV/dt$	Rated $V_R$	-	10 000	V/µs

**Notes**

- (1) Pulse width < 300 µs, duty cycle < 2 %
- (2) Only 1 anode pin connected

### MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$V_{FRM}$		45	V
$V_F$	20 Apk, $T_J = 125$ °C (typical, measured connecting 2 anode pins)	0.480	V
$T_J$	Range	- 55 to 175	°C

### VOLTAGE RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum DC reverse voltage	$V_R$	$T_J = 25$ °C	20UT04 20WT04FN	V
			45	V

Revision 20-Jan-09

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