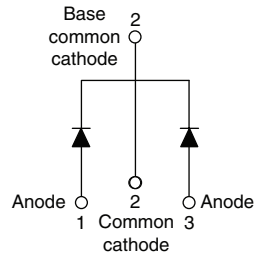


## Schottky Rectifier, 2 x 30 A


**TO-220AB**


### FEATURES

- 175 °C  $T_J$  operation
- Center tap TO-220 package
- Low forward voltage drop
- High frequency operation
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Guard ring for enhanced ruggedness and long term reliability
- Designed and qualified for industrial level

### DESCRIPTION

This center tap Schottky rectifier has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 175 °C junction temperature. Typical applications are in switching power supplies, converters, freewheeling diodes, and reverse battery protection.

### PRODUCT SUMMARY

$I_{F(AV)}$	2 x 30 A
$V_R$	45 V

### MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform (per device)	60	A
$V_{RRM}$		45	V
$I_{FRM}$	$T_C = 142\text{ °C}$ (per leg)	60	A
$I_{FSM}$	$t_p = 5\ \mu\text{s}$ sine	2600	
$V_F$	30 Apk, $T_J = 125\text{ °C}$	0.57	V
$T_J$	Range	- 65 to 175	°C

### VOLTAGE RATINGS

PARAMETER	SYMBOL	61CTQ045	UNITS
Maximum DC reverse voltage	$V_R$	45	V
Maximum working peak reverse voltage	$V_{RWM}$		

### ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current per leg per device	$I_{F(AV)}$	$T_C = 142\text{ °C}$ , rated $V_R$	30	A
			60	
Peak repetitive forward current per leg	$I_{FRM}$	Rated $V_R$ , square wave, 20 kHz, $T_C = 142\text{ °C}$	60	
Maximum peak one cycle non-repetitive surge current per leg	$I_{FSM}$	5 $\mu\text{s}$ sine or 3 $\mu\text{s}$ rect. pulse	2600	
		10 ms sine or 6 ms rect. pulse	350	
Non-repetitive avalanche energy per leg	$E_{AS}$	$T_J = 25\text{ °C}$ , $I_{AS} = 4\text{ A}$ , $L = 3.4\text{ mH}$	27	mJ
Repetitive avalanche current per leg	$I_{AR}$	Current decaying linearly to zero in 1 $\mu\text{s}$ Frequency limited by $T_J$ maximum $V_A = 1.5 \times V_R$ typical	4	A



ELECTRICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS		TYP.	MAX.	UNITS
Maximum forward voltage drop	$V_{FM}^{(1)}$	30 A	$T_J = 25\text{ }^\circ\text{C}$	0.57	0.61	V
		60 A		0.72	0.76	
		30 A	$T_J = 125\text{ }^\circ\text{C}$	0.53	0.57	
		60 A		0.70	0.74	
Maximum instantaneous reverse current	$I_{RM}$	$T_J = 25\text{ }^\circ\text{C}$	Rated DC voltage	0.06	1	mA
		$T_J = 125\text{ }^\circ\text{C}$		21	40	
Maximum junction capacitance	$C_T$	$V_R = 5\text{ }V_{DC}$ (test signal range 100 kHz to 1 MHz) 25 °C		1900		pF
Typical series inductance	$L_S$	Measured from top of terminal to mounting plane		8.0		nH
Maximum voltage rate of change	dV/dt	Rated $V_R$		10 000		V/ $\mu$ s

**Note**(1) Pulse width < 300  $\mu$ s, duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS								
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS				
Maximum junction and storage temperature range	$T_J, T_{Stg}$		- 65 to 175	$^\circ\text{C}$				
Maximum thermal resistance, junction to case per leg	$R_{thJC}$	DC operation	1.2	$^\circ\text{C/W}$				
Typical thermal resistance, case to heatsink	$R_{thCS}$	Mounting surface, smooth and greased	0.50					
Approximate weight			2	g				
			0.07	oz.				
Mounting torque	<table border="0"> <tr> <td style="text-align: center;">minimum</td> <td rowspan="2"> </td> <td rowspan="2">maximum</td> </tr> <tr> <td style="text-align: center;">_____</td> </tr> </table>	minimum		maximum	_____	Non-lubricated threads	6 (5)	kgf · cm (lbf · in)
		minimum					maximum	
_____								
12 (10)								
Marking device		Case style TO-220AB	61CTQ045					

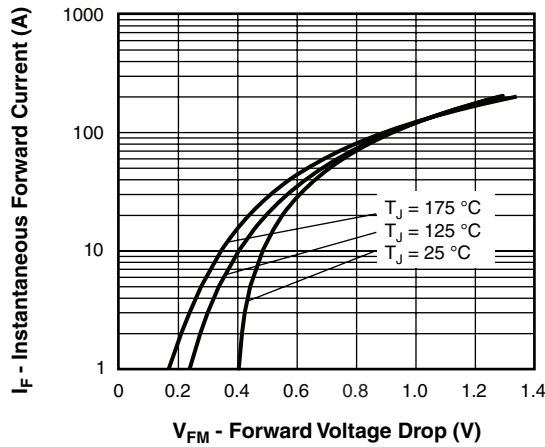


Fig. 1 - Maximum Forward Voltage Drop Characteristics

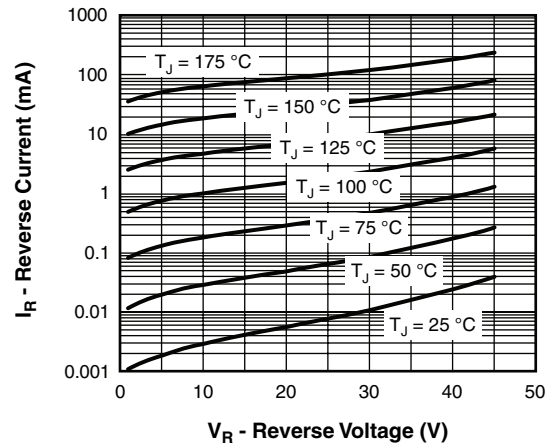


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

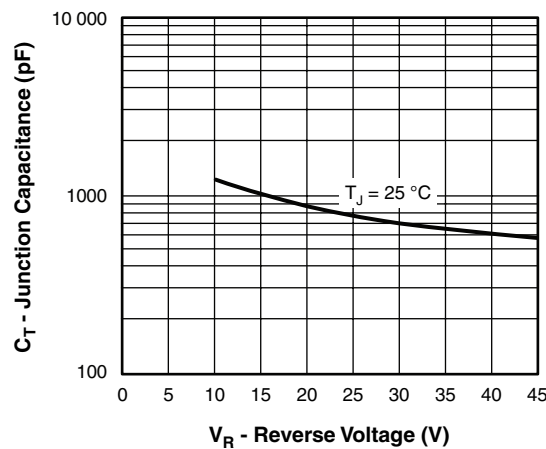
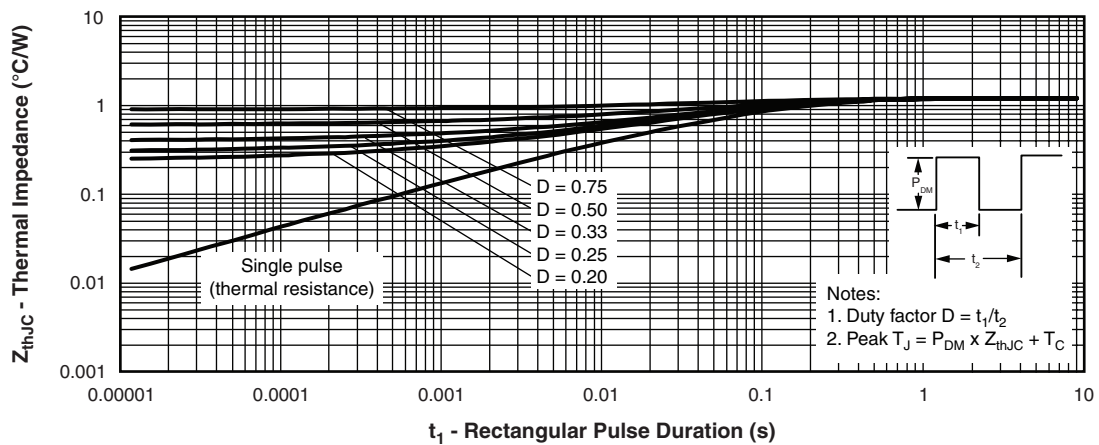


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage


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

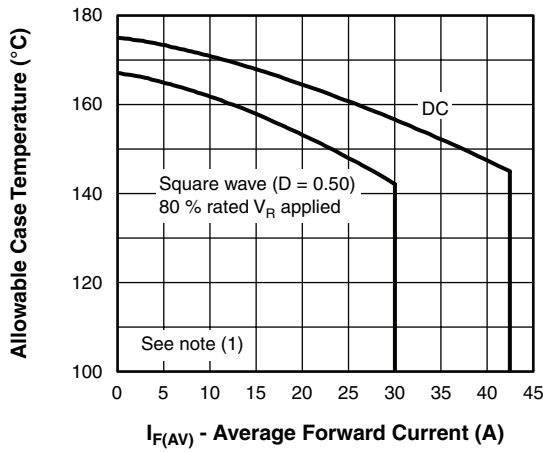


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

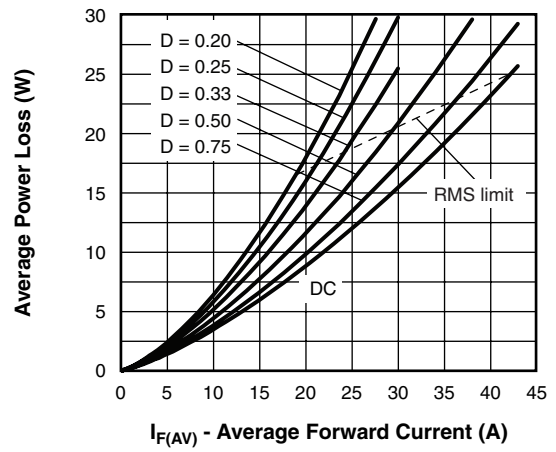


Fig. 6 - Forward Power Loss Characteristics

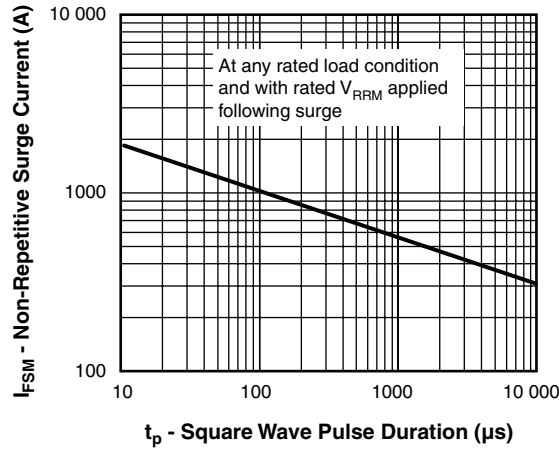


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

**Note**

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



**ORDERING INFORMATION TABLE**

Device code	<b>61</b>	<b>C</b>	<b>T</b>	<b>Q</b>	<b>045</b>	<b>-</b>
	①	②	③	④	⑤	⑥

- 1** - Current rating (60 = 60 A)
- 2** - Circuit configuration:  
C = Common cathode
- 3** - Package:  
T = TO-220
- 4** - Schottky "Q" series
- 5** - Voltage rating (045 = 45 V)
- 6** -
  - None = Standard production
  - PbF = Lead (Pb)-free

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>



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