

10TQ045 Datasheet



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DiGi Electronics Part Number	10TQ045-DG
Manufacturer	Vishay General Semiconductor - Diodes Division
Manufacturer Product Number	10TQ045
Description	DIODE SCHOTTKY 45V 10A TO220AC
Detailed Description	Diode 45 V 10A Through Hole TO-220AC

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Manufacturer Product Number:

10TQ045

Series:

-

Technology:

Schottky

Current - Average Rectified (Io):

10A

Speed:

Fast Recovery =< 500ns, > 200mA (Io)

Capacitance @ Vr, F:

-

Package / Case:

TO-220-2

Operating Temperature - Junction:

-55°C ~ 175°C

Manufacturer:

Vishay General Semiconductor - Diodes Division

Product Status:

Obsolete

Voltage - DC Reverse (Vr) (Max):

45 V

Voltage - Forward (Vf) (Max) @ If:

760 mV @ 10 A

Current - Reverse Leakage @ Vr:

6 mA @ 45 V

Mounting Type:

Through Hole

Supplier Device Package:

TO-220AC

Base Product Number:

10TQ045

Environmental & Export classification

RoHS Status:

RoHS non-compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.10.0080

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

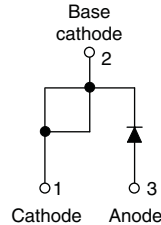
EAR99



Schottky Rectifier, 10 A



TO-220AC



FEATURES

- 175 °C T_J operation
- 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
- Lead (Pb)-free ("PbF" suffix)
- Designed and qualified for industrial level



RoHS*
COMPLIANT

DESCRIPTION

The 10TQ...PbF Schottky rectifier series 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

$I_{F(AV)}$	10 A
V_R	35/45 V

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	10	A
V_{RRM}		35/45	V
I_{FSM}	$t_p = 5 \mu s$ sine	1050	A
V_F	10 Apk, $T_J = 125 \text{ }^\circ\text{C}$	0.49	V
T_J	Range	- 55 to 175	$^\circ\text{C}$

VOLTAGE RATINGS

PARAMETER	SYMBOL	10TQ035PbF	10TQ045PbF	UNITS
Maximum DC reverse voltage	V_R	35	45	V
Maximum working peak reverse voltage	V_{RWM}			

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current See fig. 5	$I_{F(AV)}$	50 % duty cycle at $T_C = 151 \text{ }^\circ\text{C}$, rectangular waveform	10	A
Maximum peak one cycle non-repetitive surge current See fig. 7	I_{FSM}	5 μs sine or 3 μs rect. pulse	1050	
		10 ms sine or 6 ms rect. pulse	280	
Non-repetitive avalanche energy	E_{AS}	$T_J = 25 \text{ }^\circ\text{C}$, $I_{AS} = 2 \text{ A}$, $L = 6.5 \text{ mH}$	13	mJ
Repetitive avalanche current	I_{AR}	Current decaying linearly to zero in 1 μs Frequency limited by T_J maximum $V_A = 1.5 \times V_R$ typical	2	A

* Pb containing terminations are not RoHS compliant, exemptions may apply

10TQ...PbF Series

Vishay High Power Products Schottky Rectifier, 10 A

ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop See fig. 1	$V_{FM}^{(1)}$	10 A	$T_J = 25\text{ }^\circ\text{C}$	0.57	V
		20 A		0.67	
		10 A	$T_J = 125\text{ }^\circ\text{C}$	0.49	
		20 A		0.61	
Maximum reverse leakage current See fig. 2	$I_{RM}^{(1)}$	$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{Rated } V_R$	2	mA
		$T_J = 125\text{ }^\circ\text{C}$		15	
Maximum junction capacitance	C_T	$V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz) $25\text{ }^\circ\text{C}$		900	pF
Typical series inductance	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	R_{thJC}	DC operation See fig. 4		2.0	$^\circ\text{C}/\text{W}$
Typical thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth and greased		0.50	
Approximate weight				2	g
				0.07	oz.
Mounting torque	minimum			6 (5)	kgf · cm (lbf · in)
	maximum			12 (10)	
Marking device		Case style TO-220AC		10TQ035	
				10TQ045	



10TQ...PbF Series

Schottky Rectifier, 10 A

Vishay High Power Products

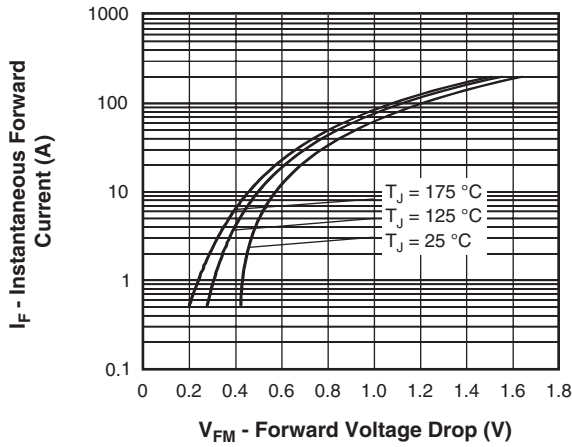


Fig. 1 - Maximum Forward Voltage Drop Characteristics

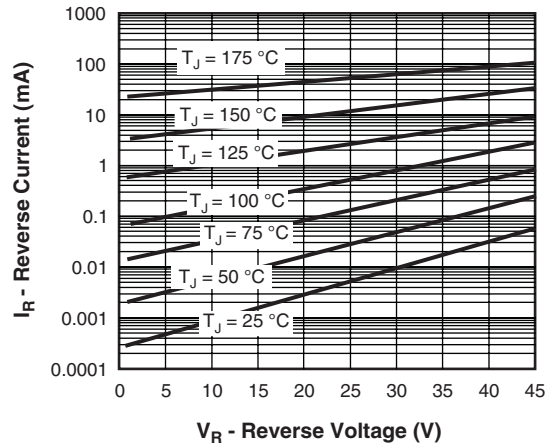


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

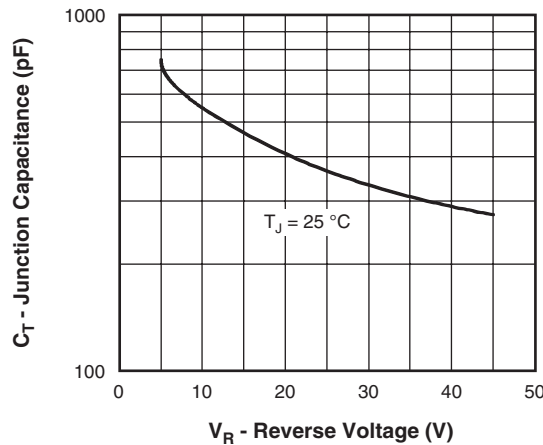


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

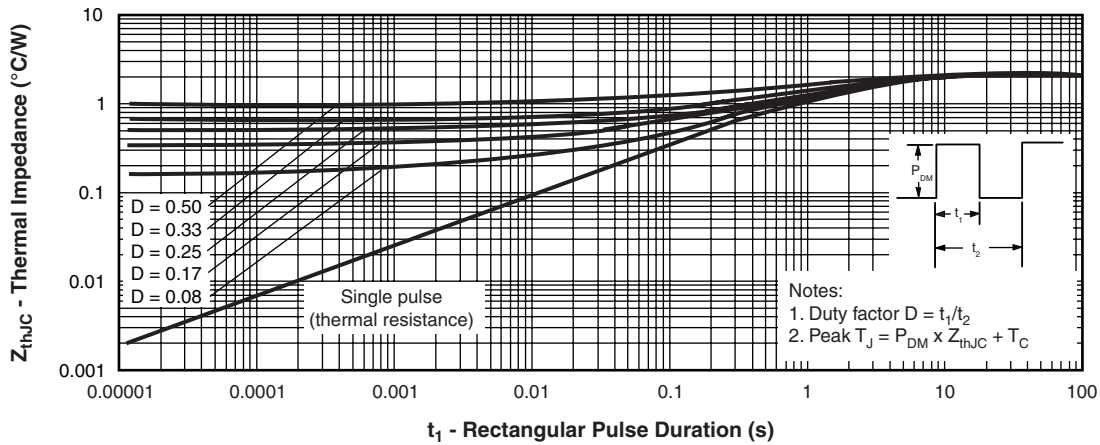


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

10TQ...PbF Series



Vishay High Power Products Schottky Rectifier, 10 A

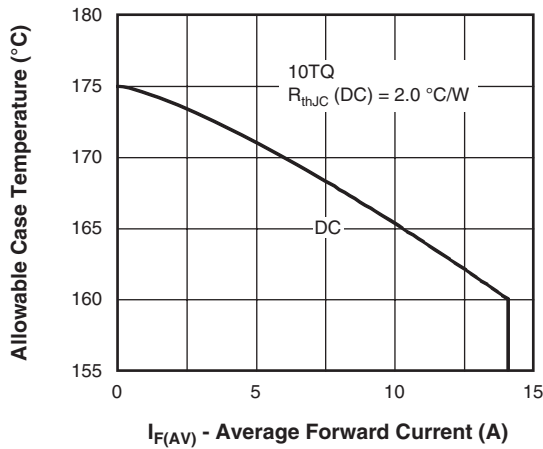


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

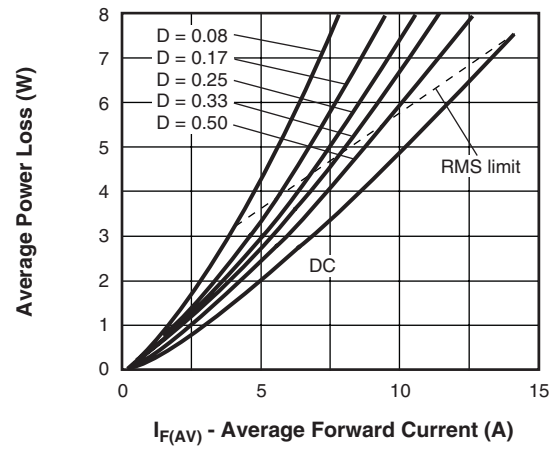


Fig. 6 - Forward Power Loss Characteristics

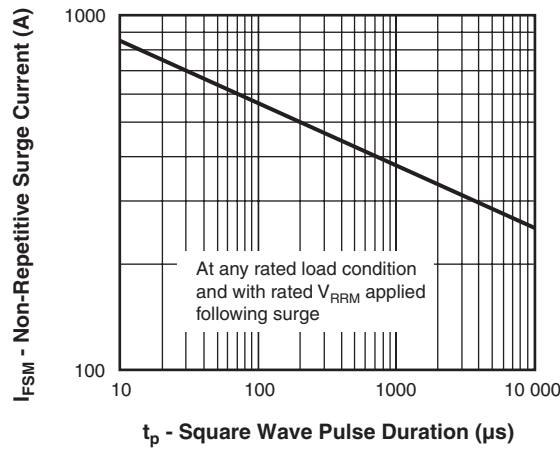


Fig. 7 - Maximum Non-Repetitive Surge Current

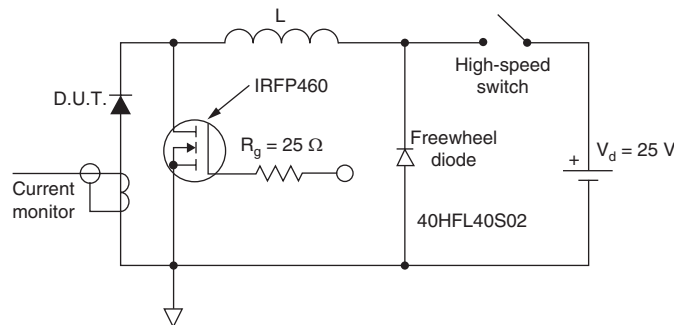


Fig. 8 - Unclamped Inductive Test Circuit



10TQ...PbF Series

Schottky Rectifier, 10 A

Vishay High Power Products

ORDERING INFORMATION TABLE

Device code	10	T	Q	045	PbF
	①	②	③	④	⑤
1	- Current rating (10 = 10 A)				
2	- Package: T = TO-220				
3	- Schottky "Q" series				
4	- Voltage ratings				
5	<ul style="list-style-type: none"> • None = Standard production • PbF = Lead (Pb)-free 				

035 = 35 V
045 = 45 V

Tube standard pack quantity: 50 pieces

LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95221
Part marking information	http://www.vishay.com/doc?95224



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