TOSHIBA SCHOTTKY BARRIER RECTIFIER STACK SCHOTTKY BARRIER TYPE

10FWJ2CZ47M

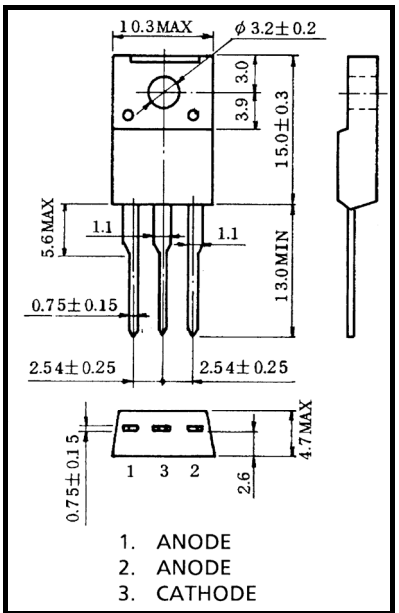
LOW FORWARD VOLTAGE SCHOTTKY BARRIER DIODE

SWITCHING MODE POWER SUPPLY APPLICATION

CONVERTER & CHOPPER APPLICATION

- Peak Forward Voltage: $V_{FM} \leq 0.47V$
- Repetitive Peak Reverse Voltage: $V_{RRM} = 30V$
- Average Output Rectified Current: $I_O = 10A$
- Low Switching Losses and Output Noise.

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	12-10C1A

Weight: 2.0 g (typ.)

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Repetitive Peak Reverse Voltage	V_{RRM}	30	V
Average Output Rectified Current	I_O	10	A
Peak One Cycle Surge Forward Current (Sine Wave)	I_{FSM}	100 ($50Hz$)	A
		110 ($60Hz$)	
Junction Temperature	T_j	−40~125	°C
Storage Temperature Range	T_{stg}	−40~150	°C
Screw Torque	—	0.6	N · m

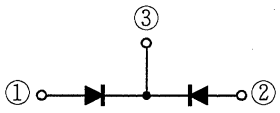
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook (“Handling Precautions”/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

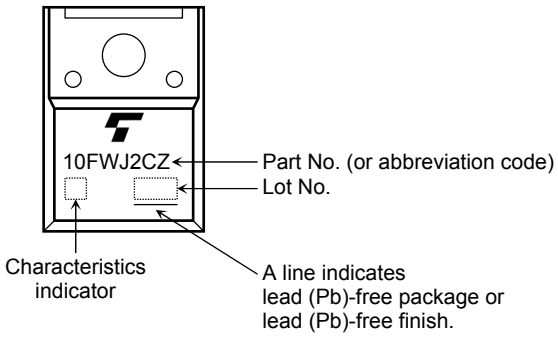
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Peak Forward Voltage (Note 1)	V_{FM}	$I_{FM} = 5A$	—	—	0.47	V
Repetitive Peak Reverse Current (Note 1)	I_{RRM}	$V_{RRM} = 30V$	—	—	3.5	mA
Junction Capacitance (Note 1)	C_j	$V_R = 10V$, f = 1.0MHz	—	290	—	pF
Thermal Resistance	$R_{th\ (j-c)}$	Total DC, Junction to Case	—	—	3.0	°C / W

Note 1: A value applied to one cell.

POLARITY



MARKING



Abbreviation Code	Part No.
10FWJ2CZ	10FWJ2CZ47M

Handling Precaution

Schottky barrier diodes have reverse current characteristics compared to other diodes.
There is a possibility SBD may cause thermal runaway when it is used under high temperature or high voltage.
Please take forward and reverse loss into consideration during design.

The absolute maximum ratings denote the absolute maximum ratings, which are rated values and must not be exceeded during operation, even for an instant. The following are the general derating methods that we recommend when you design a circuit with a device.

V_{RRM}: Use this rating with reference to the above. V_{RRM} has a temperature coefficient of 0.1%/°C. Take this temperature coefficient into account designing a device at low temperature.

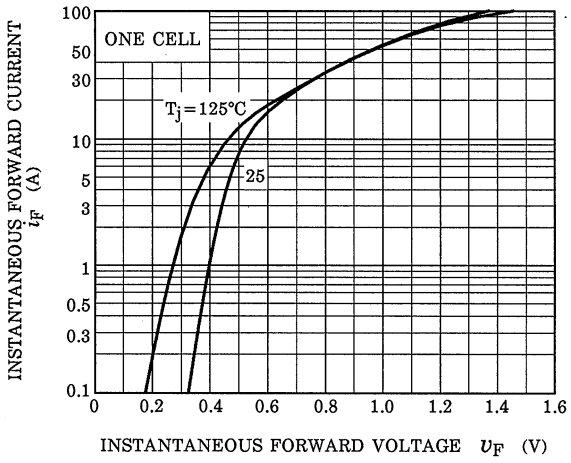
I_O: We recommend that the worst case current be no greater than 80% of the absolute maximum rating of I_O and T_j be below 100°C. When using this device, take the margin into consideration by using an allowable Tamax-I_O curve.

I_{FSM}: This rating specifies the non-repetitive peak current. This is only applied for an abnormal operation, which seldom occurs during the lifespan of the device.

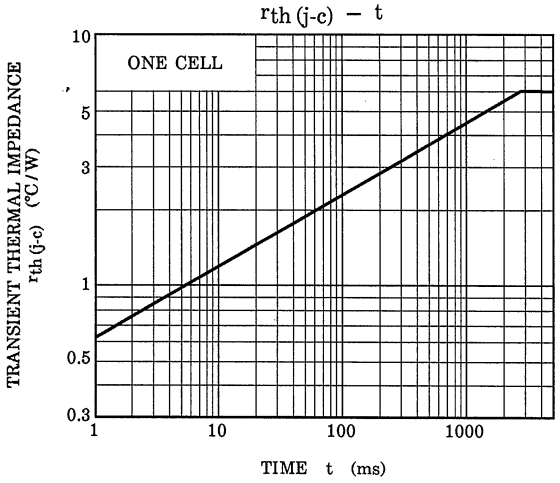
T_j: Derate this rating when using a device in order to ensure high reliability. We recommend that the device be used at a T_j of below 100°C.

Please refer to the Rectifiers databook for further information.

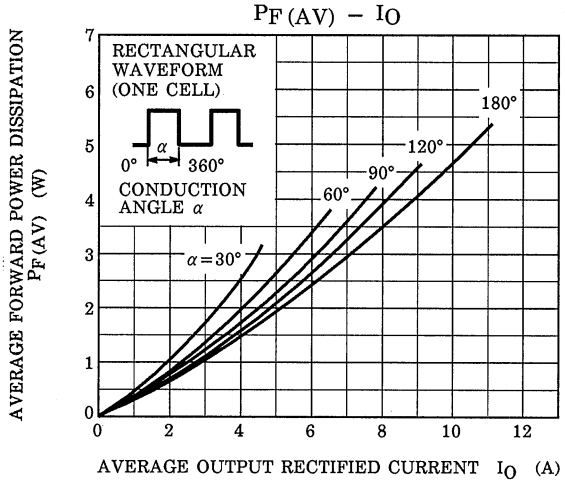
$i_F - v_F$



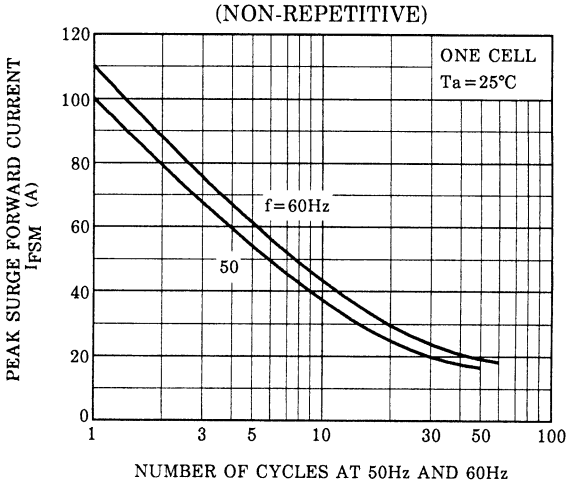
$r_{th\,(j\text{-}c)} - t$



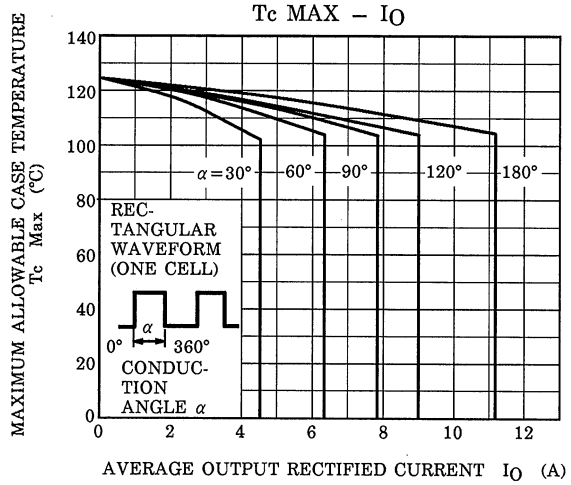
$P_{F\,(AV)} - I_O$



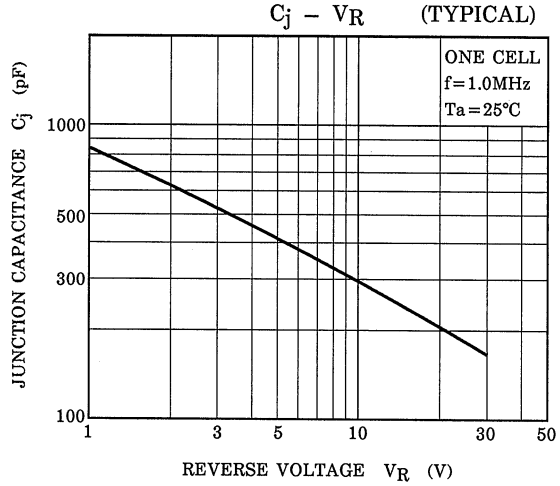
SURGE FORWARD CURRENT (NON-REPETITIVE)

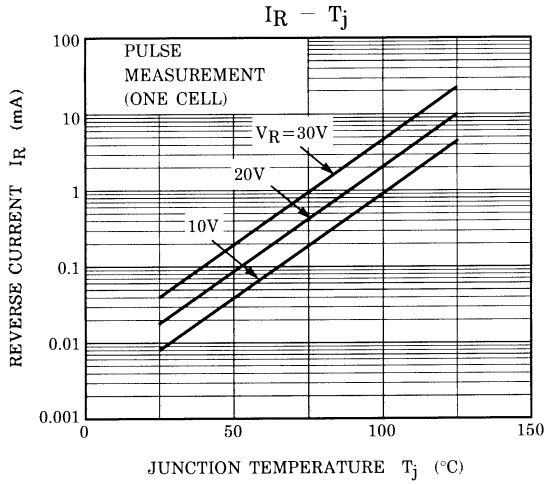


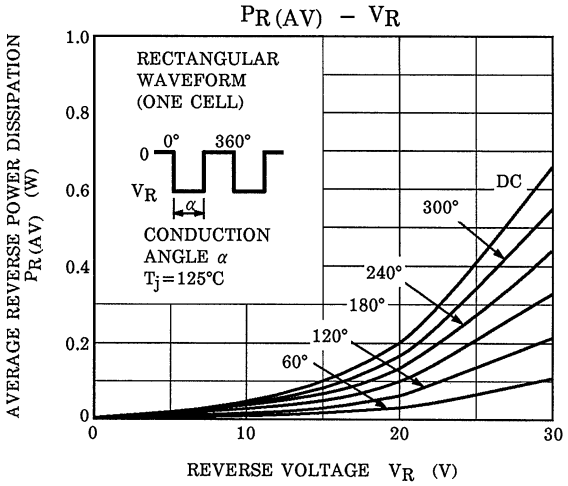
Tc MAX – I_O



$C_j - V_R$ (TYPICAL)




I_R – T_j
PULSE
MEASUREMENT
(ONE CELL)
V_R=30V
20V
10V
REVERSE CURRENT I_R (mA)
100
10
1
0.1
0.01
0.001
0
50
100
150
JUNCTION TEMPERATURE T_j (°C)


$P_{R(AV)}$ – V_R
RECTANGULAR
WAVEFORM
(ONE CELL)
0°
360°
0
V_R
α
CONDUCTION
ANGLE α
T_j=125°C
DC
300°
240°
180°
120°
60°
AVERAGE REVERSE POWER DISSIPATION
$P_{R(AV)}$ (W)
1.0
0.8
0.6
0.4
0.2
0
0
10
20
30
REVERSE VOLTAGE V_R (V)

RESTRICTIONS ON PRODUCT USE

20070701-EN

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