

TOSHIBA High Efficiency Diode Stack (HED) Silicon Epitaxial Type

## 5DL2C48A, 5FL2C48A, U5DL2C48A, U5FL2C48A

Switching Mode Power Supply Application  
 Converter & Chopper Application

- Repetitive peak reverse voltage:  $V_{DRM} = 200\text{ V}, 300\text{ V}$
- Average output rectified current:  $I_O = 5\text{ A}$
- Ultra fast reverse-recovery time:  $t_{rr} = 35\text{ ns (Max)}$
- Low switching losses and output noise

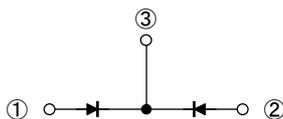
### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Characteristics	Symbol	Rating	Unit
Repetitive peak Repetitive voltage	5DL2C48A	200	V
	U5DL2C48A		
	5FL2C48A	300	
	U5FL2C48A		
Average output rectified current	$I_O$	5	A
Peak one cycle surge forward current	$I_{FSM}$	25 (50 Hz)	A
		27.5 (60 Hz)	
Junction temperature	$T_j$	-40~150	$^\circ\text{C}$
Storage temperature range	$T_{stg}$	-40~150	$^\circ\text{C}$

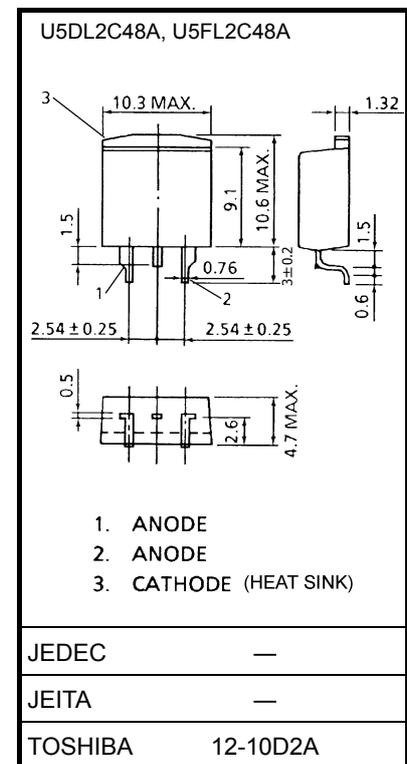
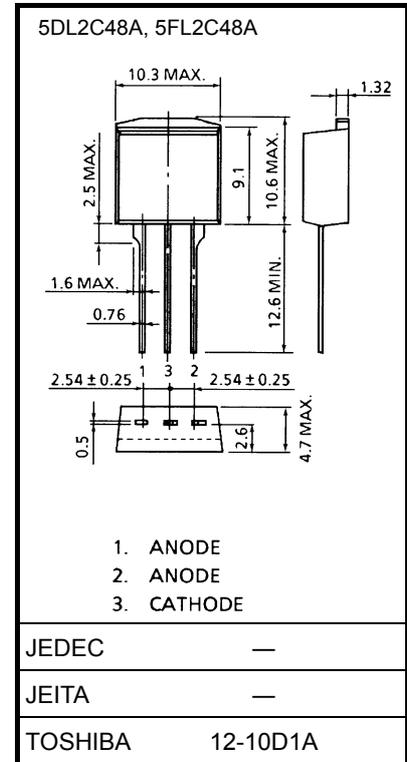
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) 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).

### Polarity



Unit: mm

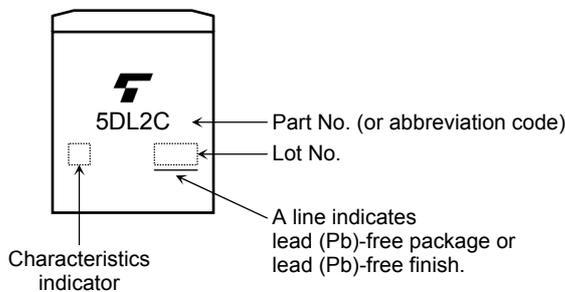


## Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Typ.	Max	Unit
Peak forward voltage	V <sub>FM</sub>	I <sub>FM</sub> = 2.5 A	—	0.98	V
				1.3	
			—	—	
			—	—	
Repetitive peak reverse current	I <sub>RRM</sub>	V <sub>RRM</sub> = Rated	—	10	μA
Reverse recovery time	t <sub>rr</sub>	I <sub>F</sub> = 2 A, di/dt = -20 A/μs	—	35	ns
Forward recovery time	t <sub>fr</sub>	I <sub>F</sub> = 1 A	—	100	ns
Thermal resistance	R <sub>th(j-c)</sub>	Total DC, junction to case	—	3.5	°C/W

V<sub>FM</sub>, I<sub>RRM</sub>, t<sub>rr</sub>, t<sub>fr</sub>: A Value applied to one cell.

## Marking



Abbreviation Code	Part No.
5DL2C	5DL2C48A
5DL2C	U5DL2C48A
5FL2C	5FL2C48A
5FL2C	U5FL2C48A

## Handling Precaution

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.

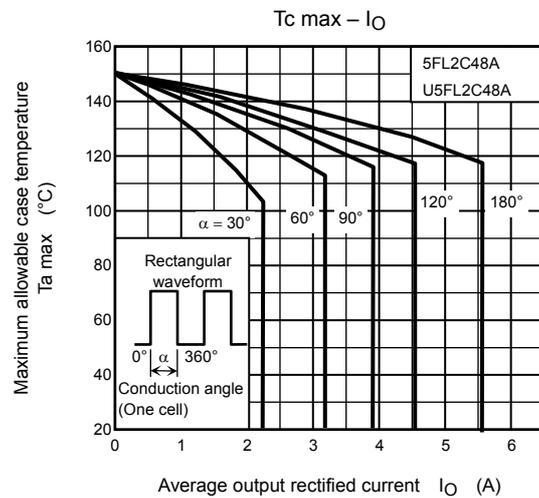
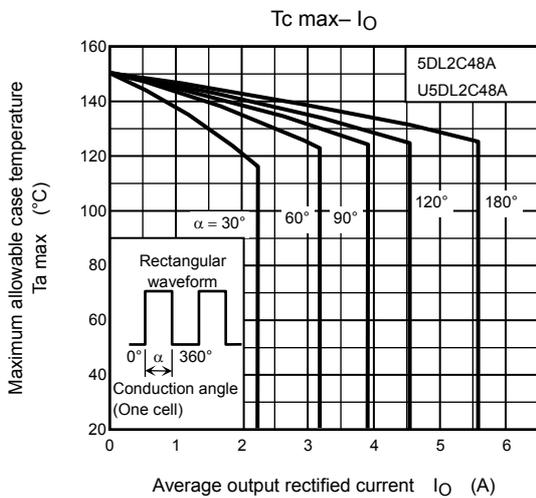
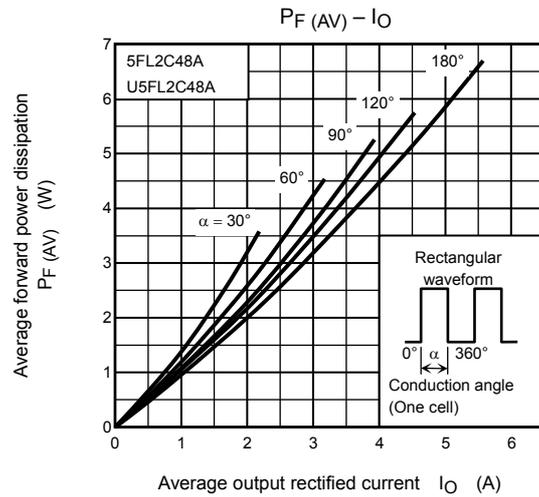
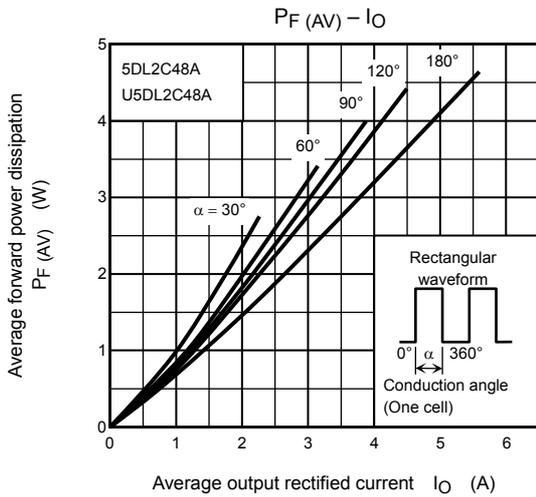
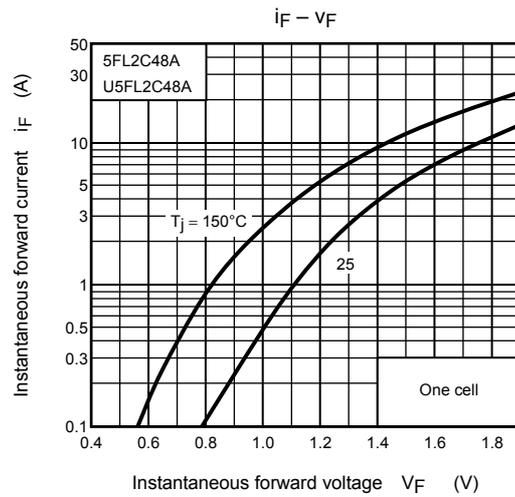
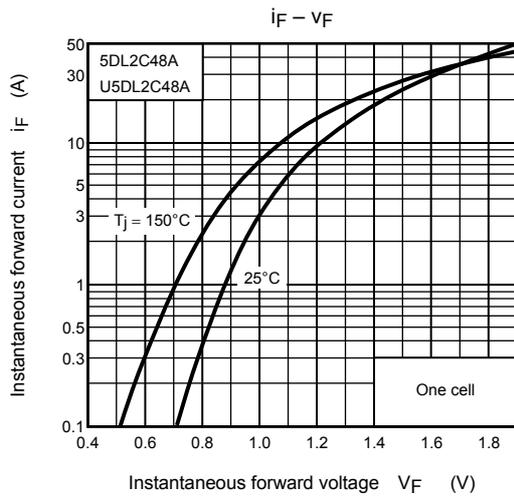
**V<sub>RRM</sub>:** We recommend that the worst case voltage, including surge voltage, be no greater than 80% of the absolute maximum rating of V<sub>RRM</sub> for a DC circuit and be no greater than 50% of that of V<sub>RRM</sub> for an AC circuit. V<sub>RRM</sub> has a temperature coefficient of 0.1%/°C. Take this temperature coefficient into account designing a device at low temperature.

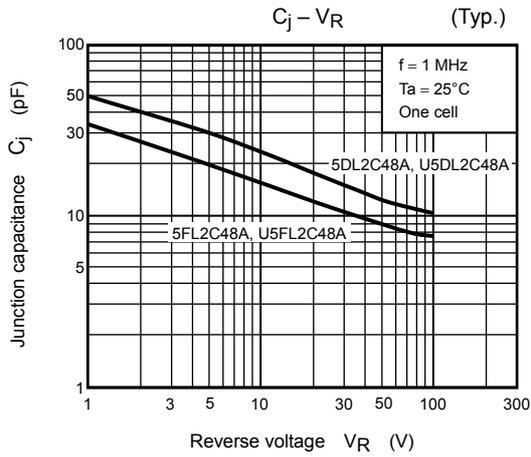
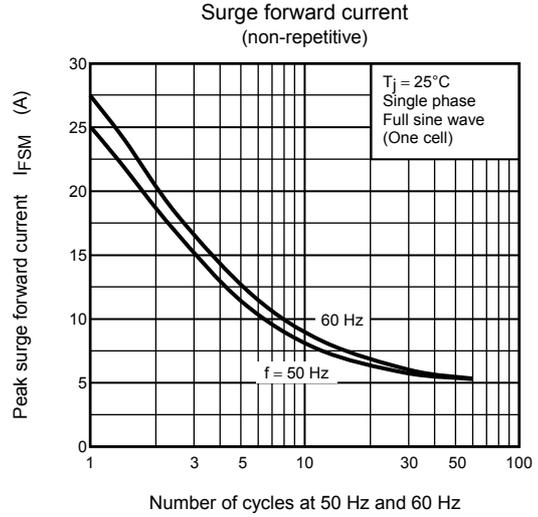
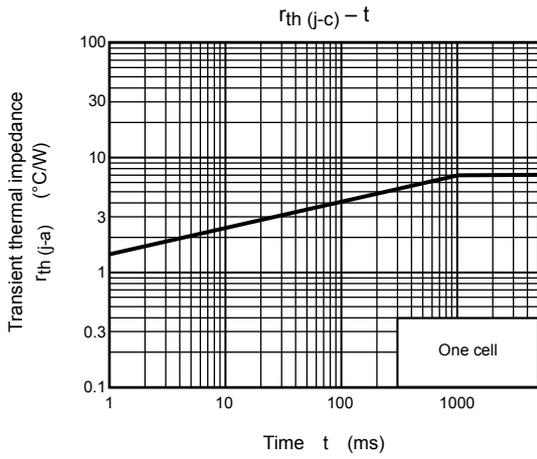
**I<sub>O</sub>:** We recommend that the worst case current be no greater than 80% of the absolute maximum rating of I<sub>O</sub>. Carry out adequate heat design. If you can't design a circuit with excellent heat radiation, set the margin by using an allowable Tamax-I<sub>O</sub> curve.

This rating specifies the non-repetitive peak current in one cycle of a 50-Hz sine wave, condition angle 180. Therefore, this is only applied for an abnormal operation, which seldom occurs during the lifespan of the device.

We recommend that a device be used at a T<sub>j</sub> of below 120°C under the worst load and heat radiation conditions.

Please refer to the Rectifiers databook for further information.





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