

Features:

- 650V Schottky Diode
- Zero Reverse Recovery Current
- High Frequency Operation
- Positive Temperature Coefficient
- Temperature independent

Switching

Benefits:

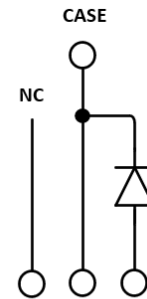
- Unipolar Rectifier
- Minimal switching loss
- Higher Efficiency
- Low cooling requirement

Symbol	Value	Unit
V_{RRM}	650	V
I_F ($T_C = 143^\circ\text{C}$)	20	A
Q_C	43	nC

Applications:

- Switch Mode Power Supply
- Booster diodes in PFC, DC/DC
- AC/DC converters

Outline

TO-247-3
Circuit

Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions
V_R	DC Peak Reverse Voltage	650	V	$T_J = 25^\circ\text{C}$
V_{RRM}	Repetitive Peak Reverse	650	V	$T_J = 25^\circ\text{C}$
V_{RSM}	Surge Peak Reverse Voltage	650	V	$T_J = 25^\circ\text{C}$
I_F	Continuous Forward Current	52	A	$T_C = 25^\circ\text{C}$
		23.5		$T_C = 135^\circ\text{C}$
		20		$T_C = 143^\circ\text{C}$
I_{FRM}	Repetitive Peak	128	A	$T_C = 25^\circ\text{C}, T_P = 10\text{ms}, \text{Half Sine Wave}$
	Forward Surge Current	105		$T_C = 125^\circ\text{C}, T_P = 10\text{ms}, \text{Half Sine Wave}$
I_{FSM}	Non-Repetitive Peak	153	A	$T_C = 25^\circ\text{C}, T_P = 10\text{ms}, \text{Half Sine Wave}$
	Forward Surge Current	132		$T_C = 125^\circ\text{C}, T_P = 10\text{ms}, \text{Half Sine Wave}$
P_D	Power Dissipation	170	W	$T_C = 25^\circ\text{C}$
		57		$T_C = 125^\circ\text{C}$
$T_{J,max}$	Operating Junction Temperature	175	$^\circ\text{C}$	
T_{stg}	Storage Temperature Range	-55 to 175	$^\circ\text{C}$	

Thermal characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit
R_{thJC}	Thermal Resistance		0.88		°C/W

Electrical Characteristics

Symbol	Parameter	Value			Unit	Test Conditions
		Min.	Typ.	Max.		
V_{DC}	DC Blocking Voltage	650			V	$I_R = 500\mu A, T_J = 25^\circ C$
V_F	Forward Voltage		1.55 1.8	1.9 2.1	V	$I_F = 20A, T_J = 25^\circ C$ $I_F = 20A, T_J = 175^\circ C$
I_R	Reverse Current		5 50	100 500	μA	$V_R = 650V, T_J = 25^\circ C$ $V_R = 650V, T_J = 175^\circ C$
Q_C	Total Capacitive Charge		43		nC	$I_F = 20A, dI/dt = 400A/\mu s$ $T_J = 25^\circ C, V_R = 400V$
C	Total Capacitance		915 128 127		pF	$V_R = 1V, T_J = 25^\circ C, f = 1 MHz$ $V_R = 200V, T_J = 25^\circ C, f = 1 MHz$ $V_R = 400V, T_J = 25^\circ C, f = 1 MHz$

Typical Performance

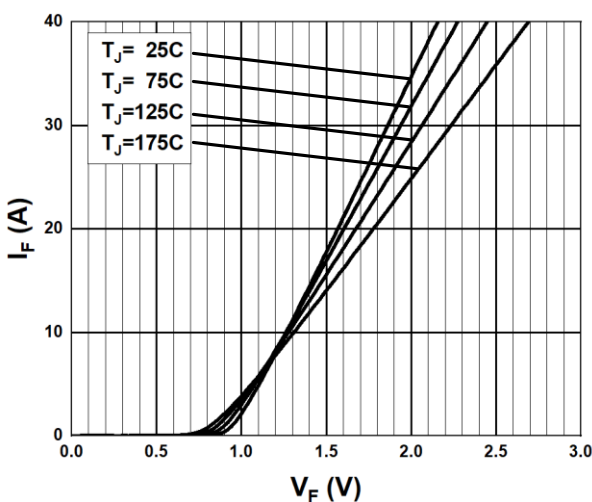


Fig. 1 Forward Characteristics

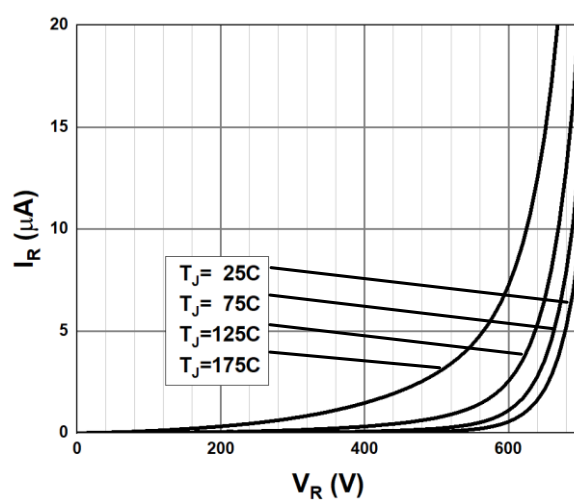


Fig. 2 Reverse Characteristics

Typical Performance

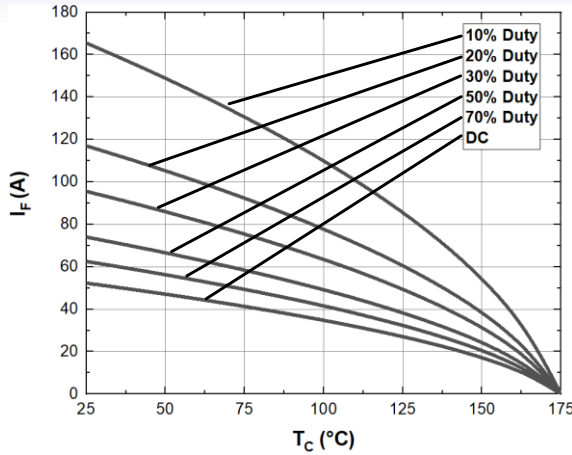


Fig. 3 Current Derating

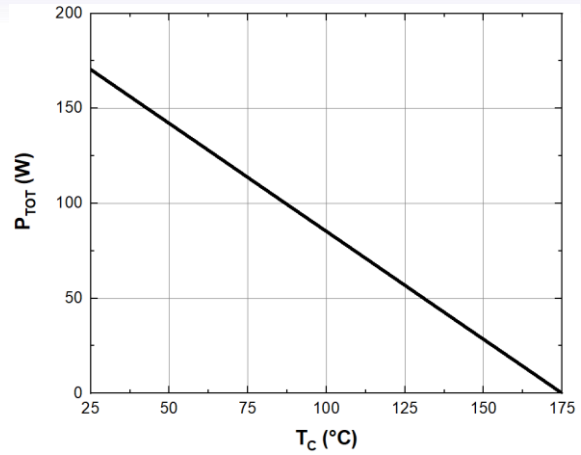


Fig. 4 Power Derating

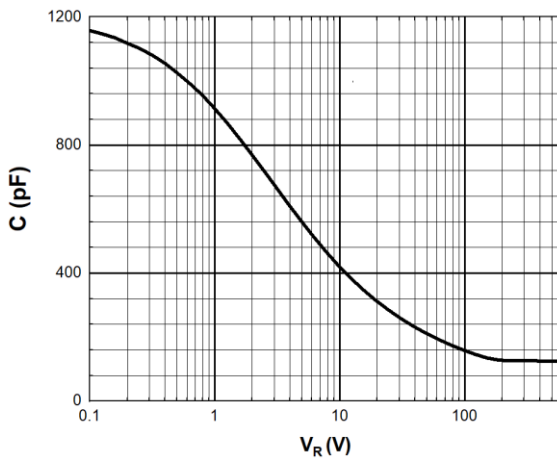


Fig. 5 Capacitance vs. Reverse Voltage

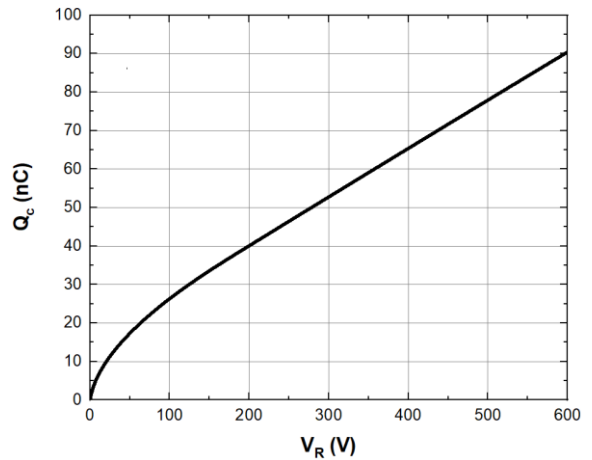


Fig. 6 Recovery Charge vs. Reverse Voltage

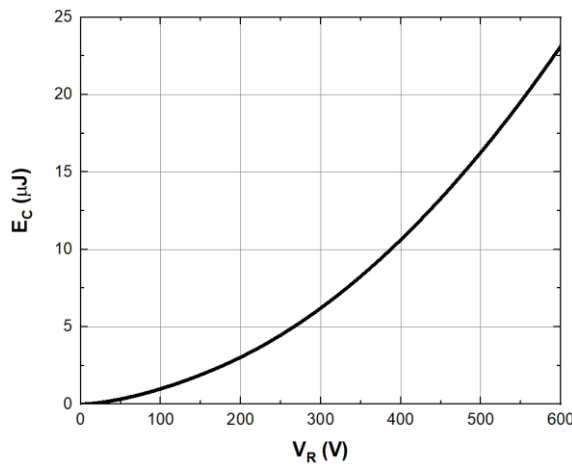


Fig. 7 Capacitance stored Energy

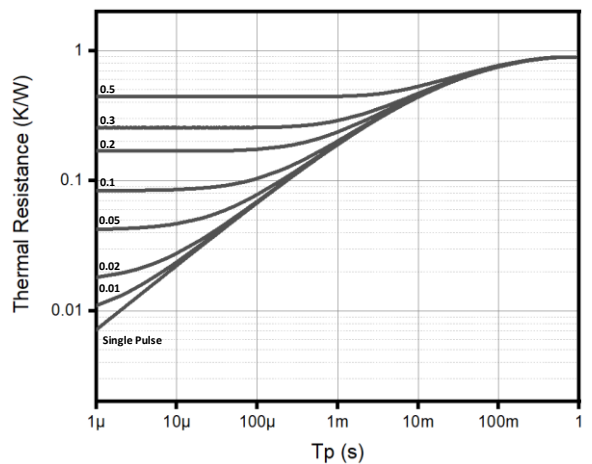
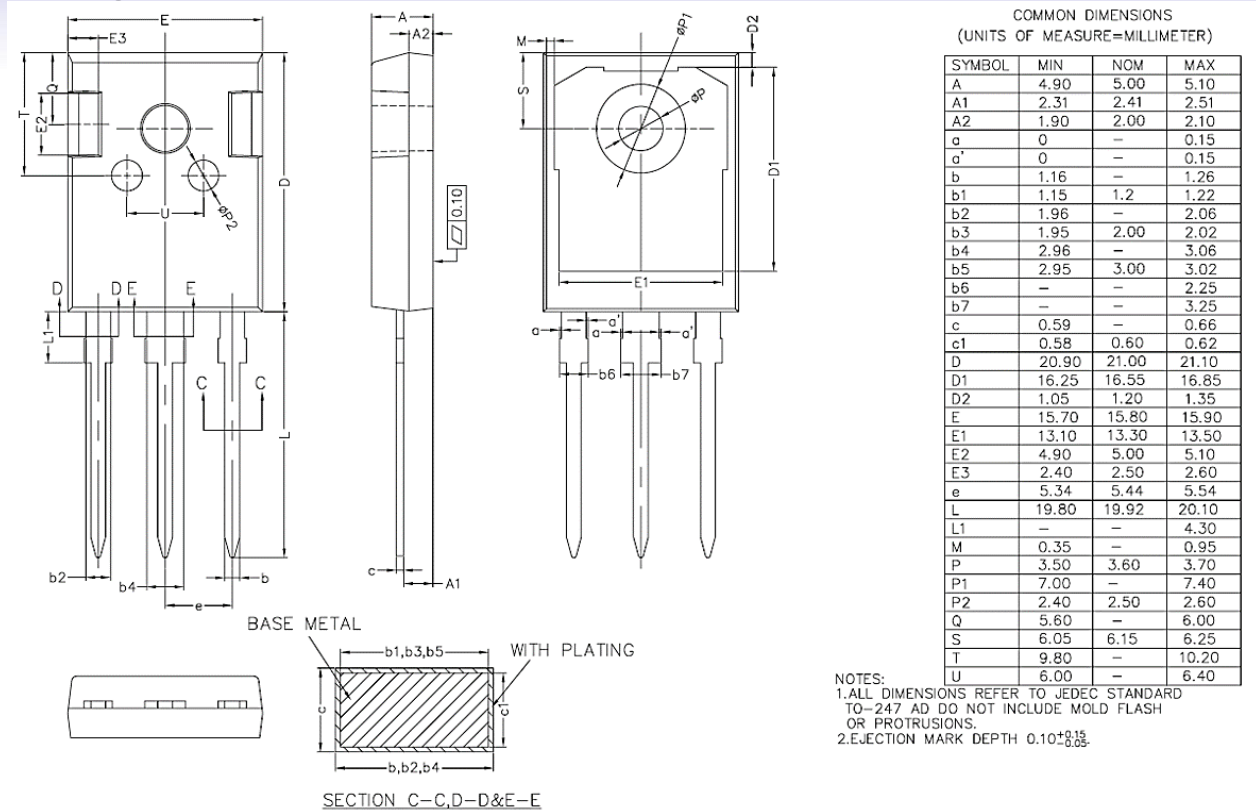


Fig. 8 Thermal Impedance

Package TO-247-3 (Unit: mm)



This Product has not been designed or tested for use in, and is not intended for use in, applications implanted into the human body nor in applications in which failure of the product could lead to death, personal injury or property damage, including but not limited to equipment used in the operation of nuclear facilities, life-support machines, systems, or air-traffic control systems.

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