



General Description

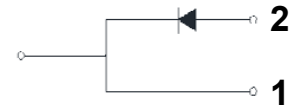
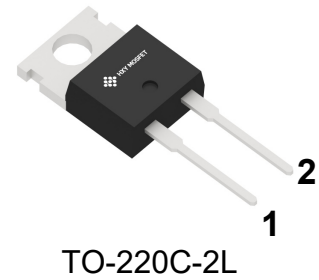
This product family offers state of the art performance. It is designed for high frequency applications where high efficiency and high reliability are required.

Features

- Low conduction loss due to low V_F
- Extremely low switching loss by tiny Q_c
- Highly rugged due to better surge current
- Industrial standard quality and reliability

Applications

- UPS
- Power Inverter
- High performance SMPS
- Power factor correction



Ordering Part Number	Package	Qty(PCS)
VS-3C20ET07T-M3	TO-220C-2L	50





Maximum Ratings (at $T_j = 25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	650	V
Surge Peak Reverse Voltage	V_{RSM}	650	V
DC Peak Reverse Voltage	V_R	650	V
Continuous Forward Current $T_C = 25^\circ\text{C}$ $T_C = 135^\circ\text{C}$ $T_C = 155^\circ\text{C}$	I_F	58 30 20	A
Repetitive Peak Forward Surge Current $T_C = 25^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$ $T_C = 110^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$	I_{FRM}	90 54	A
Non-Repetitive Forward Surge Current $T_C = 25^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$ $T_C = 110^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$	I_{FSM}	160 140	A
i^2dt value $T_C = 25^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$ $T_C = 110^\circ\text{C}, t_p=10\text{ms}, \text{Half Sine Pulse}$	$\int i^2 dt$	128 98	A^2s
Power dissipation $T_C = 25^\circ\text{C}$ $T_C = 110^\circ\text{C}$	P_{tot}	136 59	W
Operating junction Range	T_j	-55 to +175	$^\circ\text{C}$
Storage temperature Range	T_{stg}	-55 to +150	$^\circ\text{C}$

Thermal Resistance

Parameter	Symbol	Value	Unit
Thermal resistance, junction – case.	R_{thJC}	1.10	$^\circ\text{C/W}$



Electrical Characteristics (at $T_j = 25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Value			Unit	Test Condition
		min.	typ.	max.		
Forward Voltage	V_F	-	1.3	1.5	V	$I_F=20\text{A}$ $T_j=25^\circ\text{C}$ $T_j=175^\circ\text{C}$
Reverse Current	I_R	-	-	80	μA	$V_R=650\text{V}$ $T_j=25^\circ\text{C}$ $T_j=175^\circ\text{C}$
Total Capacitive Charge	Q_C	-	62	-	nC	$V_R=400\text{V}$, $T_j=25^\circ\text{C}$ $Q_C = \int_0^{V_R} C(V) dV$
Total Capacitance	C	-	1176	-	pF	$T_j=25^\circ\text{C}$, $f=1\text{MHz}$ $V_R=0\text{V}$ $V_R=200\text{V}$ $V_R=400\text{V}$

Characteristics Curve:

Fig 1: Forward Characteristics

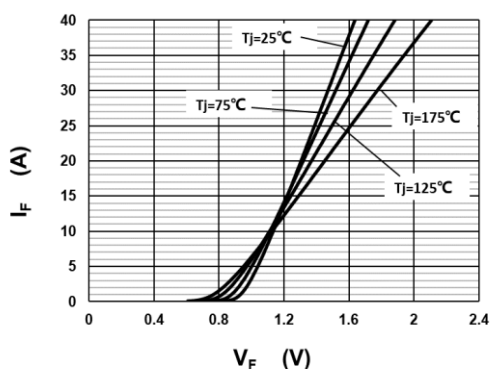


Fig 2: Reverse Characteristics

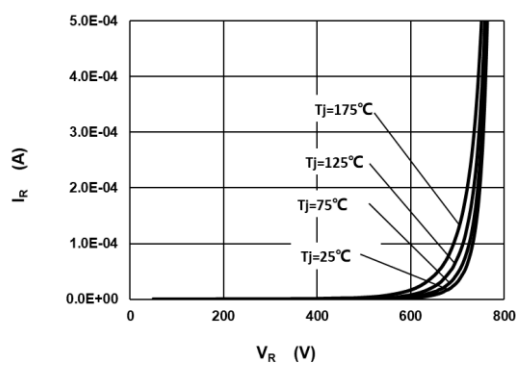


Fig 3: Current Derating

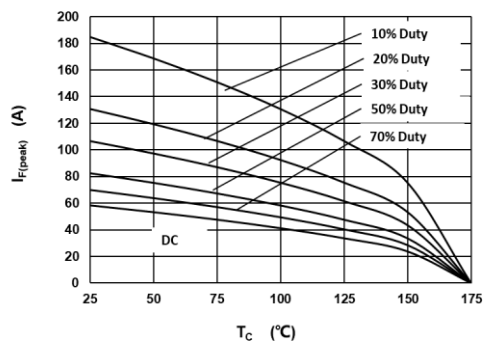


Fig 4: Power Derating

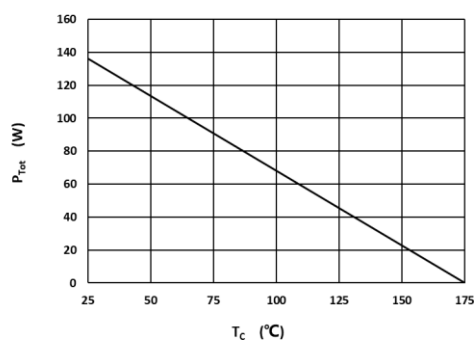




Fig 5: Capacitance vs. Reverse Voltage

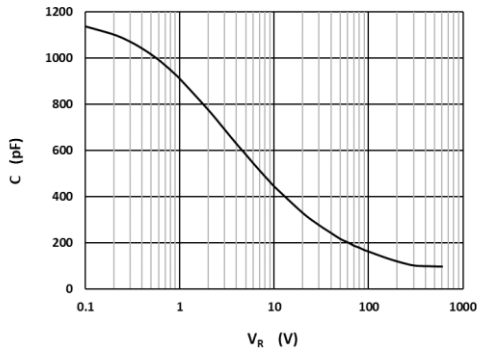


Fig 6: Reverse Charge vs. Reverse Voltage

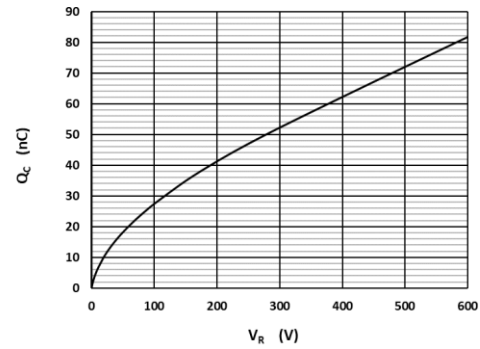


Fig 7: Typical Capacitance Stored Energy

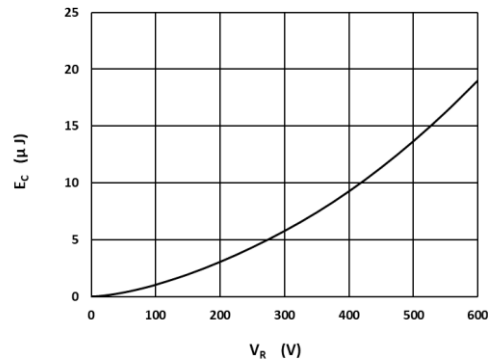
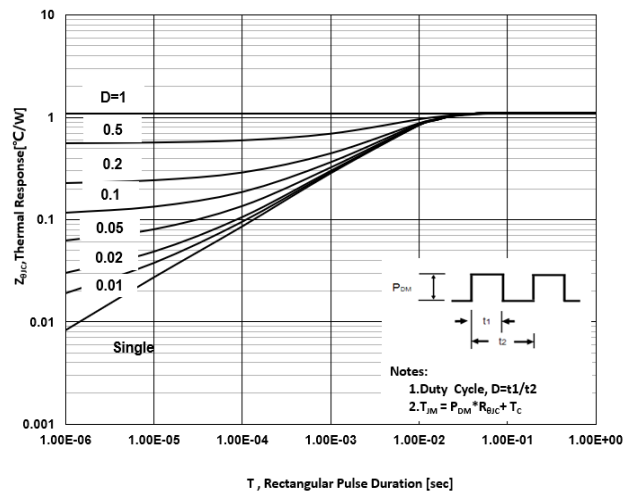
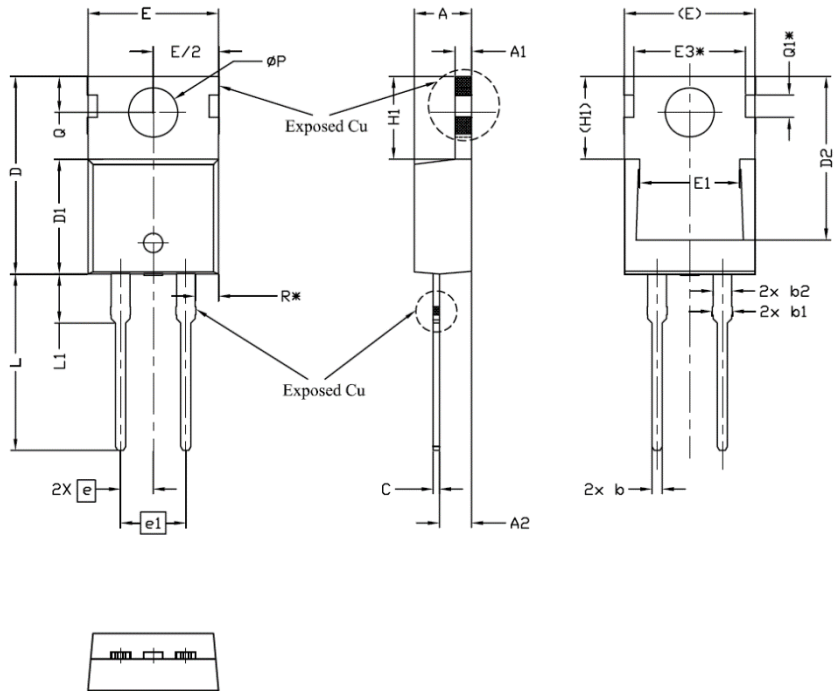


Fig 8: Transient Thermal Impedance



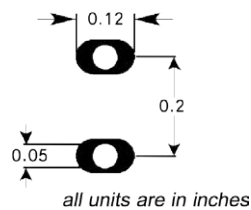
Package Dimensions

Package TO-220C-2L



SYMBOL	DIMENSIONS			NOTES
	MIN.	NOM.	MAX.	
A	4,24	4,44	4,64	
A1	1.15	1.27	1.40	
A2	2,30	2,48	2,70	
b	0.70	0.80	0.90	
b1	1.20	1.55	1.75	
b2	1,20	1,45	1,70	
c	0.40	0.50	0.60	
D	14,70	15,37	16,00	4
D1	8,82	8,92	9,02	
D2	12,43	12,73	12,83	5
E	9,96	10,16	10,36	4,5
E1	6,86	7,77	8,89	5
E3*	8.70REF.			
e	2.54BSC			
e1	5.08BSC			
H1	6,30	6,45	6,60	5,6
L	13,47	13,72	13,97	
L1	3.60	3.80	4.00	
ØP	3,75	3,84	3,93	
Q	2,60	2,80	3,00	
Q1*	1.73REF.			
R*	1.82REF.			

Recommended Solder Pad Layout



TO-220C-2L



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