



Features

- 650-Volt Schottky Rectifier
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Extremely Fast Switching
- Positive Temperature Coefficient on V_F

Benefits

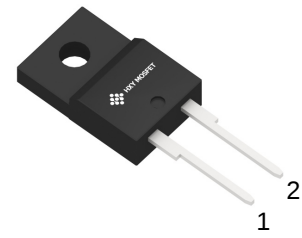
- Replace Bipolar with Unipolar Rectifiers
- Essentially No Switching Losses
- Higher Efficiency
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway

Applications

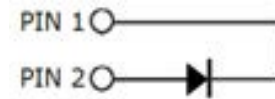
- Switch Mode Power Supplies
- Power Factor Correction
- Motor Drives



Part Number	Package	Qty(PCS)
NXPSC10650XQ	TO-220F-2L	50



TO-220F-2L



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

Symbol	Parameter	Value	Unit	Test Conditions
V_{RRM}	Repetitive Peak Reverse Voltage	650	V	
V_{RSM}	Surge Peak Reverse Voltage	650	V	
I_F	Continuous Forward Current	22.2 11.4 10	A	$T_C=25^\circ\text{C}$ $T_C=125^\circ\text{C}$ $T_C=134.5^\circ\text{C}$
I_{FRM}	Repetitive Peak Forward Surge Current	30	A	$T_C=25^\circ\text{C}$, $t_p = 10$ ms, Half Sine Wave
I_{FSM}	Non-Repetitive Peak Forward Surge Current	80	A	$T_C=25^\circ\text{C}$, $t_p = 10$ ms, Half Sine Wave
P_{tot}	Power Dissipation	63 27	W	$T_C=25^\circ\text{C}$ $T_C=110^\circ\text{C}$
T_J, T_{stg}	Operating Junction and Storage Temperature	-55 to +175	$^\circ\text{C}$	
	TO-220 Mounting Torque	1	Nm	M3 Screw
$\int i^2 dt$	$i^2 dt$ value	32	A^2s	$T_C=25^\circ\text{C}$, $t_p = 10$ ms, Half Sine Wave



Electrical Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
V_{DC}	DC Blocking Voltage	650			V	
V_F	Forward Voltage		1.37 1.74	1.7 2.5	V	$I_F = 10A$ $T_J = 25^{\circ}C$ $I_F = 10A$ $T_J = 175^{\circ}C$
I_R	Reverse Current		0.2 2	50 100	μA	$V_R = 650V$ $T_J = 25^{\circ}C$ $V_R = 650V$ $T_J = 175^{\circ}C$
Q_C	Total Capacitive Charge		28		nC	$V_R = 400V$ $T_J = 25^{\circ}C$
C	Total Capacitance		536 55 53		pF	$V_R = 0V$, $T_J = 25^{\circ}C$, $f = 1MHz$ $V_R = 200V$, $T_J = 25^{\circ}C$, $f = 1MHz$ $V_R = 400V$, $T_J = 25^{\circ}C$, $f = 1MHz$
E_C	Capacitance Stored Energy		6.8		μJ	$V_R = 400V$

Thermal Characteristics

Symbol	Parameter	Typ.	Unit
$R_{\theta JC}$	Thermal Resistance from Junction to Case	2.37	$^{\circ}C/W$

Typical Performance

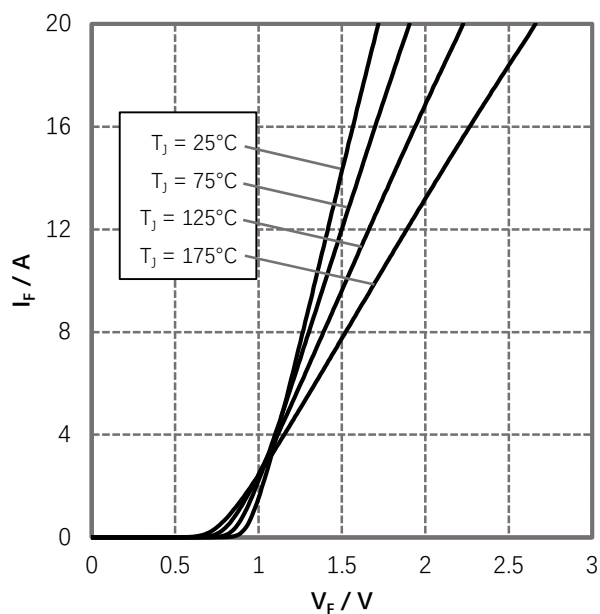


Figure 1. Forward Characteristics

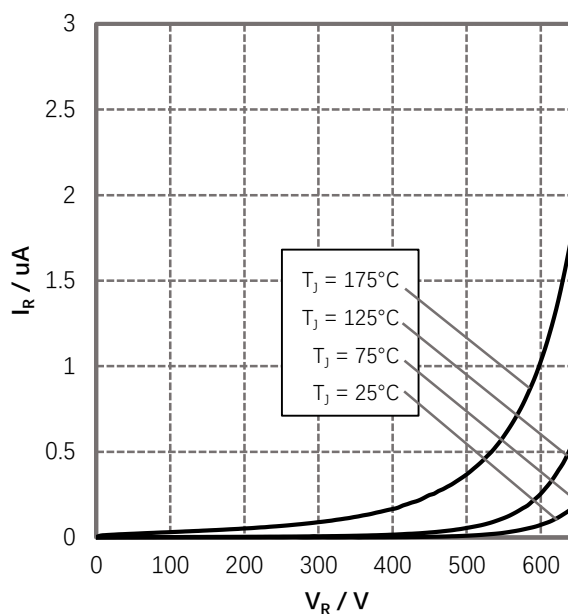


Figure 2. Reverse Characteristics

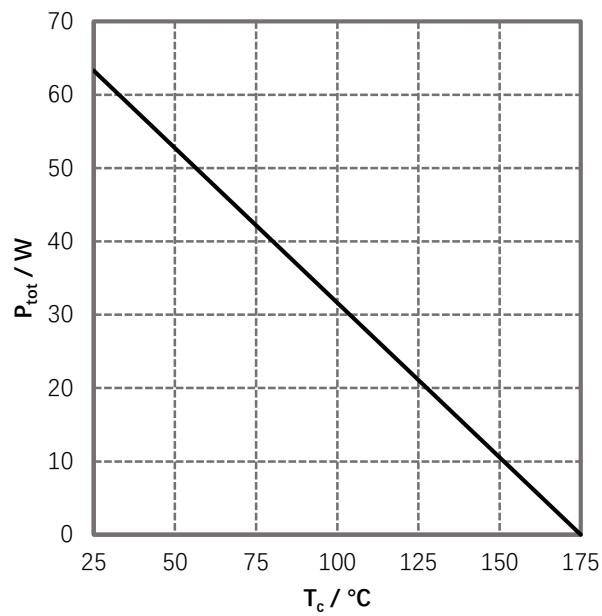


Figure 3. Power Derating

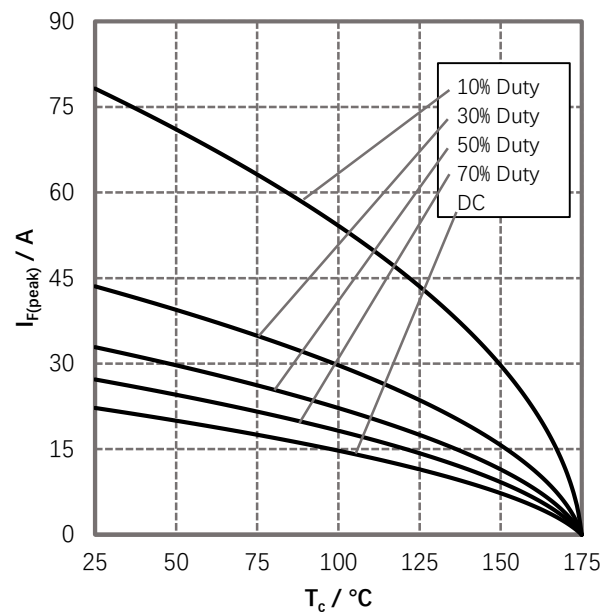


Figure 4. Current Derating

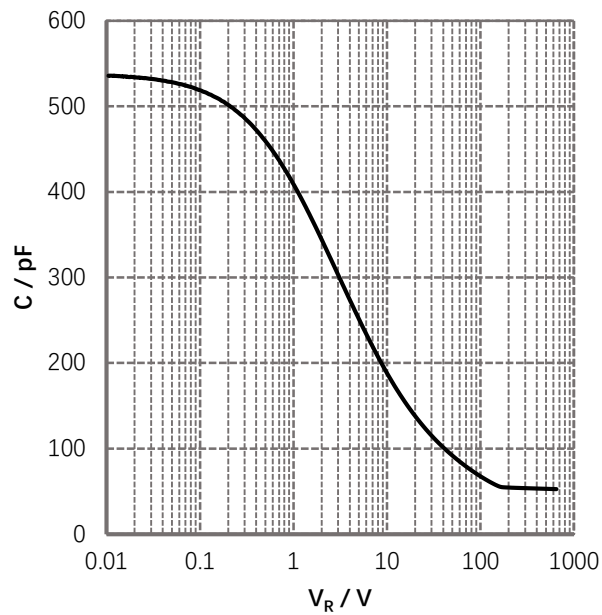


Figure 5. Capacitance vs. Reverse Voltage

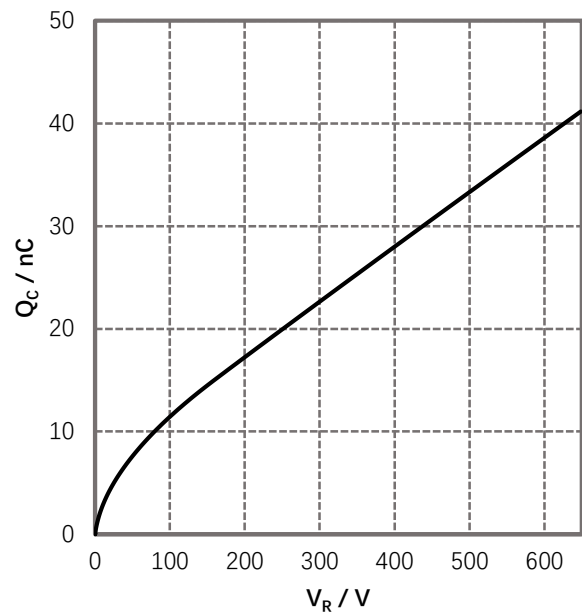


Figure 6. Total Capacitance Charge vs. Reverse Voltage

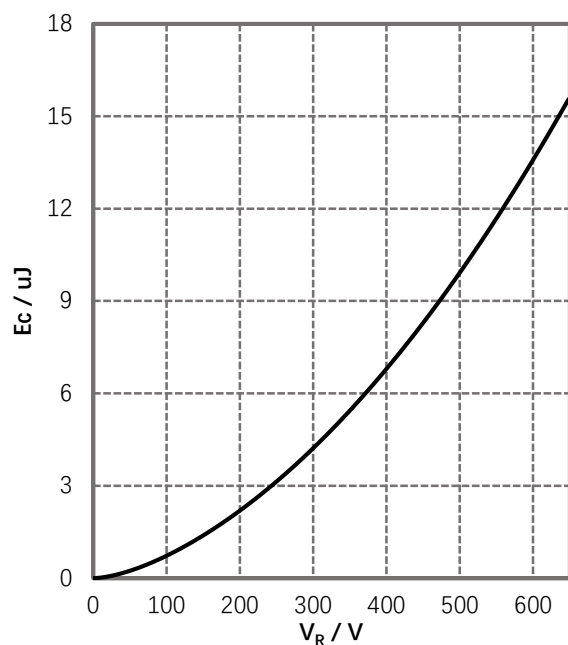


Figure 7. Capacitance Stored Energy

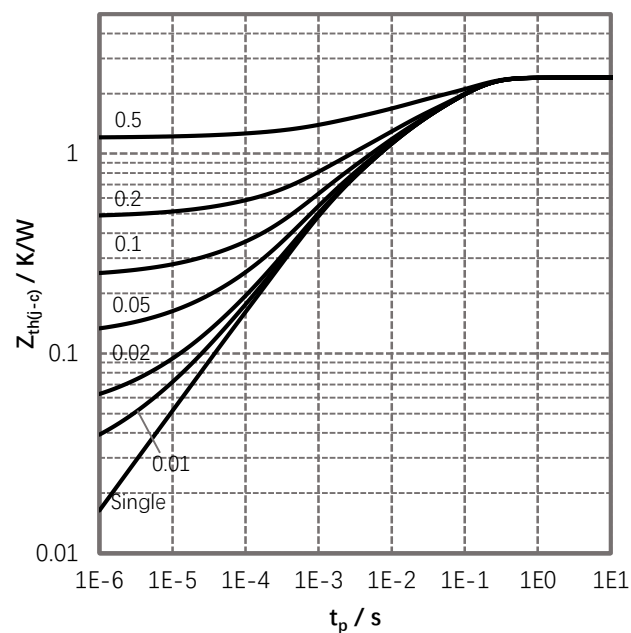
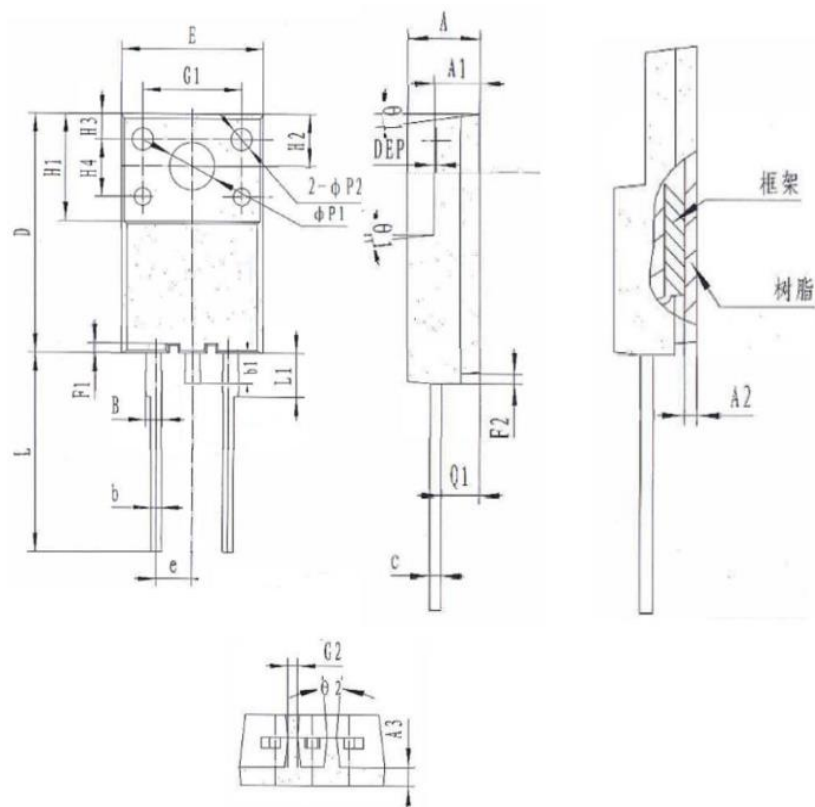


Figure 8. Transient Thermal Impedance



Package Information
TO-220F-2L



项目	规范(mm)	
	MIN	MAX
A	4.30	4.70
A1	2.68	2.88
A2	0.55	0.65
A3	0.86	1.06
b	0.77	0.87
b1	0.60	0.80
B	1.07	1.25
c	0.45	0.55
D	15.70	16.10
E	9.90	10.22
F1	0.40	0.60
F2	0.50	0.70
G1	6.90	7.10
G2	0.60	0.70
H1	6.80	7.20
H2	3.25	3.45
H3	1.50	1.90
H4	3.65	4.05
e	2.49	2.59
L	13.00	13.60
L1	3.20	3.40
Q1	2.20	2.40
θ 1	4°	10°
θ 2	7°	13°
φ P 1	3.06	3.26
φ P 2	1.40	1.60
DEP	0.05	0.20



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