

Features

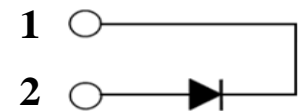
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Temperature independent Switching Behavior
- Positive Temperature Coefficient on V_F
- High-speed switching possible
- High surge current capability



TO-220F-2

Applications

- Switch Mode Power Supply (SMPS)
- Motor Drives
- Power Factor Correction (PFC)



Ordering Information		
Ordering code	Marking	Package
MPCF6N65A	MPCF6N65A	TO-220F-2

Absolute Maximum Ratings ($T_C = 25^\circ\text{C}$, unless otherwise noted)					
Parameter	Symbol	Test Conditions	Value	Unit	Note
Repetitive Peak Reverse Voltage	V_{RRM}		650	V	
Surge Peak Reverse Voltage	V_{RSM}		650	V	
DC Blocking Voltage	V_{DC}		650	V	
Continuous Forward Current	I_F	$T_C = 25^\circ\text{C}$	22	A	Fig.7
		$T_C = 150^\circ\text{C}$	6		
Non-Repetitive Forward Surge Current	I_{FSM}	$T_C = 25^\circ\text{C}, t_p = 8.3\text{ms}$, Half Sine Wave	60	A	
Non-Repetitive Forward Surge Current	$I_{F,Max}$	$T_C = 25^\circ\text{C}, t_p = 10\mu\text{s}$, Pulse	500	A	
Power Dissipation	P_{tot}	$T_C = 25^\circ\text{C}$	17	W	Fig.6
Operating Junction and Storage Temperature	T_J, T_{stg}		-55~+175	$^\circ\text{C}$	



MPCF6N65A

Electrical Characteristics ($T_J = 25^\circ\text{C}$, unless otherwise noted)							
Parameter	Symbol	Test Conditions	Value			Unit	Note
			Min.	Typ.	Max.		
Forward Voltage	V_F	$I_F = 6\text{A}, T_J = 25^\circ\text{C}$	--	1.4	1.65	V	Fig.1
		$I_F = 6\text{A}, T_J = 175^\circ\text{C}$	--	1.75	2.3		
Reverse Current	I_R	$V_R = 650\text{V}, T_J = 25^\circ\text{C}$	--	1	20	uA	Fig.2
		$V_R = 650\text{V}, T_J = 175^\circ\text{C}$	--	5	100	uA	
Total Capacitance	C	$V_R = 0\text{V}, f=1\text{ MHz}$	--	300	--	pF	Fig.3
		$V_R = 200\text{V}, f=1\text{ MHz}$	--	34	--		
		$V_R = 400\text{V}, f=1\text{ MHz}$	--	30	--		
Total Capacitive charge	Q_c	$V_{DD} = 400\text{V}, T_J = 25^\circ\text{C},$ $Q_c = \int_0^{V_R} C(V)dV$		18		nC	Fig.4
Capacitance Stored Energy	E_c	$V_R = 400\text{V}$		4.3		uJ	Fig.5

Thermal Characteristics				
Parameter	Symbol	Typ.	Unit	Note
Thermal Resistance from Junction to Case	R_{thJC}	8.8	$^\circ\text{C/W}$	Fig.8



MPCF6N65A

Typical Performance ($T_J = 25^\circ\text{C}$, unless otherwise noted)

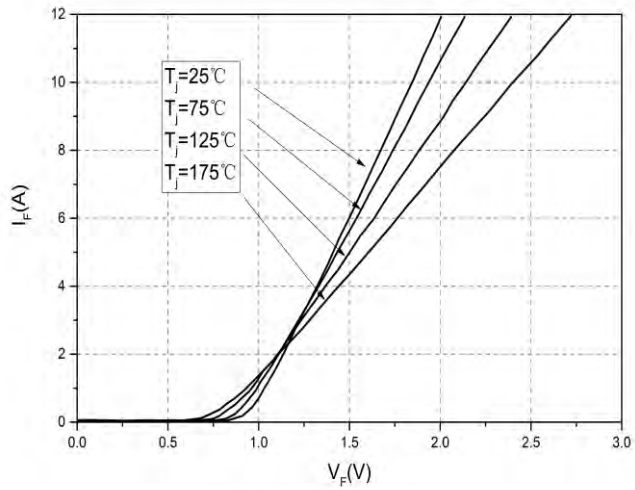


Figure 1. Forward Characteristics

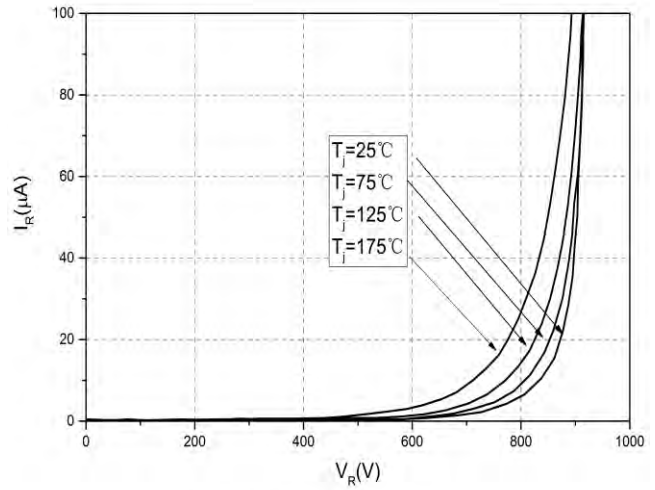


Figure 2. Reverse Characteristics

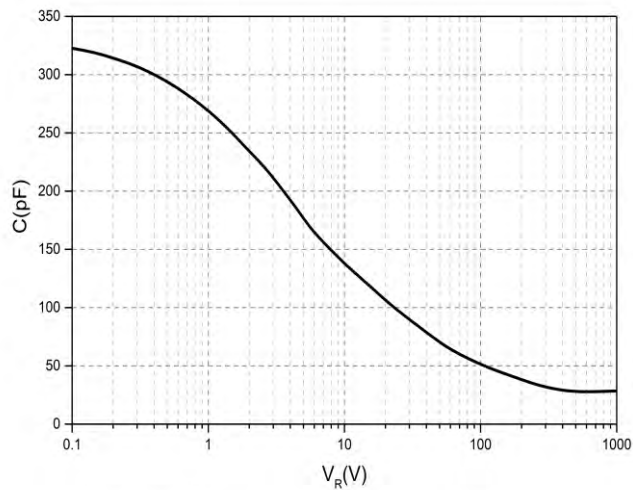


Figure 3. Capacitance vs. Reverse Voltage

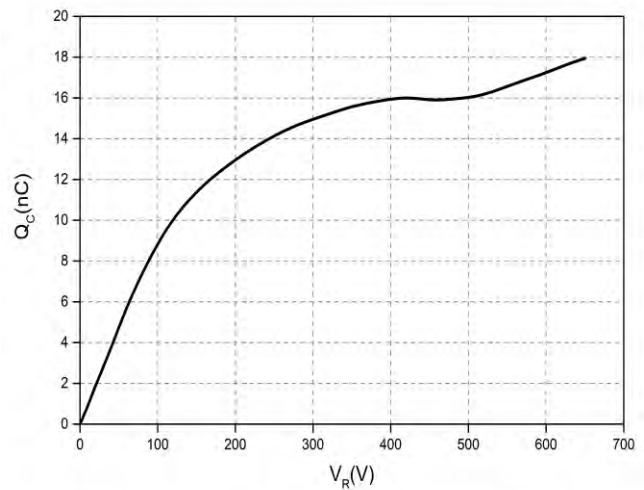


Figure 4. Total Capacitance Charge vs. Reverse Voltage



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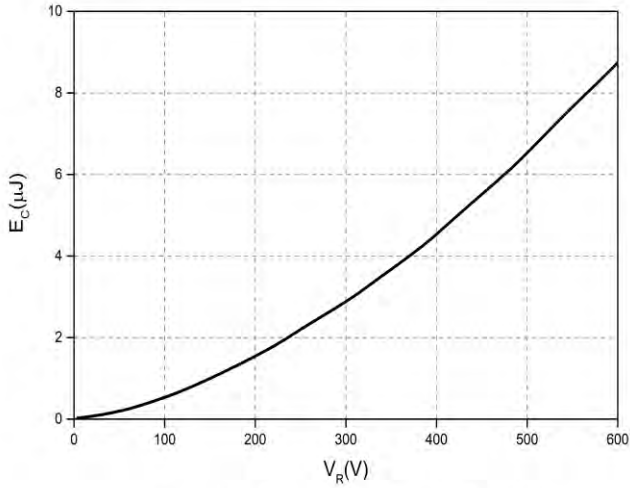


Figure 5. Capacitance Stored Energy

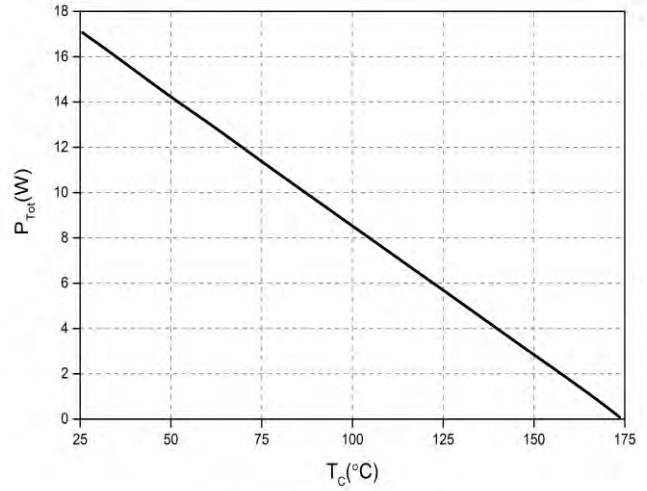


Figure 6. Power derating

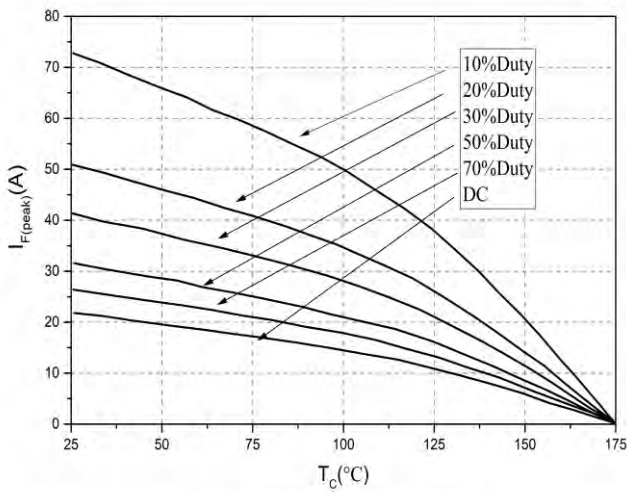


Figure 7. Current Derating

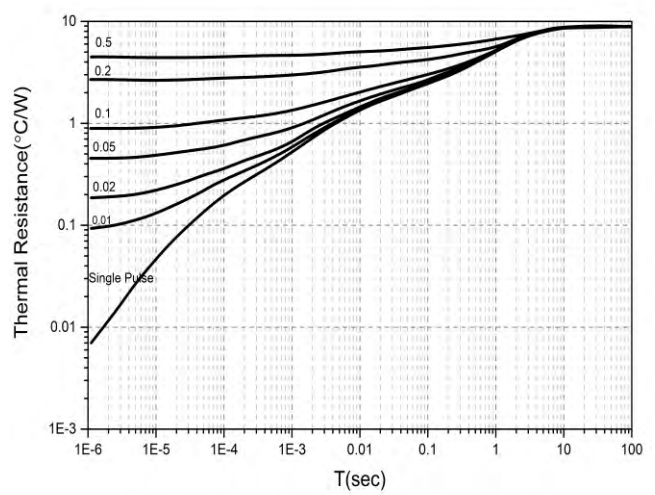
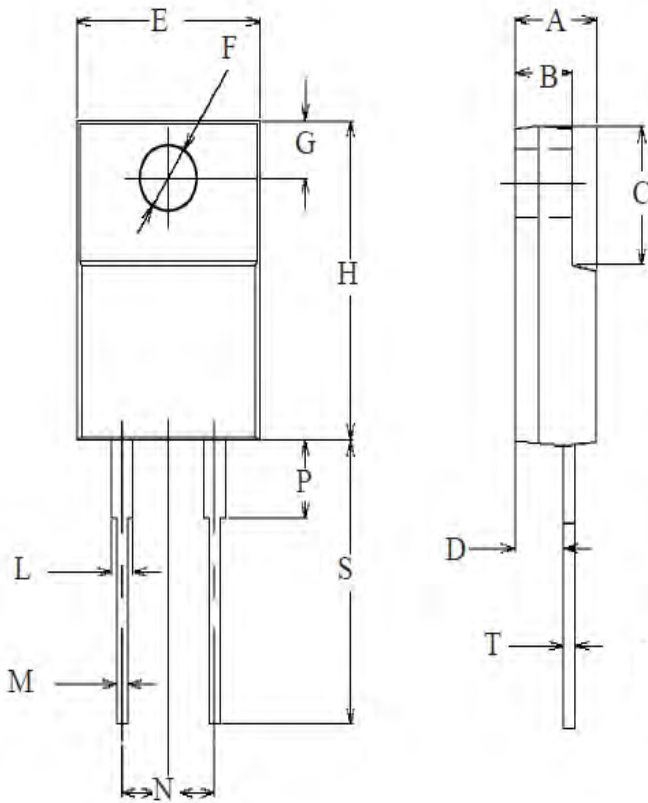


Figure 8. Transient Thermal Impedance

Outline Dimensions

TO-220F-2



POS	Inches		Millimeters	
	Min	Max	Min	Max
A	0.177	0.194	4.5	4.93
B	0.092	0.108	2.34	2.74
C	0.256	0.272	6.5	6.9
D	0.098	0.117	2.5	2.96
E	0.39	0.408	9.9	10.36
F	0.117	0.134	2.98	3.4
G	0.122	0.138	3.1	3.5
H	0.617	0.633	15.67	16.07
L	0.039	0.055	1	1.4
M	0.016	0.036	0.4	0.91
N	0.200 TYP		5.08 TYP	
P	0.114	0.154	1.9	3.9
S	0.476	0.519	12.1	13.18
T	0.016	0.031	0.4	0.8

NOTE:

1. Dimension L, M, T apply for Solder Dip Finish

